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UNIVERSITY OF ECONOMICS

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**The 1st International Student Research
Conference on Economics and Business
(SR-ICYREB 2022)**



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Welcome



On behalf of The University of Danang, University of Economics, I'd like to welcome you to the 1st International Student Research Conference on Economics and Business. SR-ICYREB 2022 is honored to have the BIDV, Vietcombank, and VietinBank as our key sponsors, and we hope that all of you will continue to support us in the future.

The SR-ICYREB aims to create and develop an environment for research students' academic exchange from higher education institutions in economics, business, and management. The annual event is to promote students' scientific research activities in the period of international integration and in responding to the "New Normal" of the post-Covid-19 pandemic.

In closing, I'd like to recognize the hard work of the organizing committee, including our partner universities. I wish you well in your discussions.

A/P. Manh Toan Nguyen,
Rector

On behalf of the organizing committee, I would like to welcome you to the 2022 International Student Research Conference on Economics and Business (SR-ICYREB).

Following the success of last seven consecutive years' conferences of International Conference for Young Researchers in Economics and Business (ICYREB) from 2015 through 2021; today, we are honored to be the host for the first ICYREB version for research students in our beautiful Danang city. This initiative presents a tremendous opportunity for students and their supervisors to collaborate and develop new ideas, and explores the current and emerging trends on a domestic and international scale.

We are especially honored to have an expert in NFTs and cryptocurrencies, Professor Mieszko mazur, as our keynote speaker.

The event has an impressive line-up of presenters and talented students and I thank them for their time and for sharing their insights. I hope you find this conference inspiring, transformative and enjoyable.

A/P. Thuy Anh Vo,

Vice Rector for Research & International Cooperation

Keynote Speaker



Associate Professor MAZUR Mieszko,
Professor of Finance, ESSCA School of Management, France.

Professor MAZUR obtained PhD in Management Sciences and Finance at Tilburg University.

His research interests include several aspects of financial markets - their design and market microstructure, blockchains, cryptocurrencies and decentralized finance.

Professor MAZUR has served as the editorial committee member of several academic

professional journals in Finance, including *Journal of Banking & Finance*, *Applied Economics*, *Journal of Multinational Financial Management*, and *Finance Research Letters*. He also received a number of research grants from European Commission Research Fellowship Program and European Commission.

His research has been published in peer-reviewed journals including *Journal of Financial Markets*, *Journal of Alternative Investments*, *Journal of Applied Corporate Finance*, *Finance Research Letters*, and *Journal of Small Business Management*.

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- Truong Trong Hieu, *University of Economics and Law – VNU HCMC*

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08.15- 08.30	ICYREB Group MOU signing ceremony	
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	Digital Economy. On the importance of NFTs, cryptocurrencies, and metaverse Associate Professor MAZUR Mieszko <i>ESSCA School of Management (France)</i>	
09.15- 09.30	Tea-break	
09.30- 12.00	Parallel Sessions	
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09.55- 10.20	Does macroprudential policy foster or constraint economic growth? <i>Authors: Nguyen Thi Phuong Thao, Nguyen Ngoc Tram (University of Economics and Business – Vietnam National University Hanoi)</i>	
10.20- 10.45	Economic integration and energy intensity: An empirical study from Asia-Pacific countries <i>Authors: Nguyen Thi Ngoc Linh, Nguyen Phuong Duy, Nguyen Thao Nguyen (University of Economics Ho Chi Minh City)</i>	

10.45-11.05	<p>Does rising gasoline price affect the shifts in selection on means of transportation? Vietnamese students' perspectives</p> <p><i>Authors: Le Thanh Bao Ngan, Do Hoai Bao, Cao Do Thu Huong, Ly Thi Tuyet Nhung (Hoa Sen University)</i></p>
11.05-11.30	<p>Socio-economic impact of the Covid-19 pandemic on tourism: Preliminary evidence from labors working in Hue city</p> <p><i>Author: Nguyen Gia Tieu Ngoc (University of Economics – Hue University)</i></p>
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09.30-09.55	<p>Investigate the impact of Covid-19 on commercial and service sectors in Danang</p> <p><i>Authors: Tran Thi Huyen Trang, Le Thi Phuong Anh, Nguyen Thi Phuong Dung, Nguyen Tien Vuong (The University of Danang – University of Economics)</i></p>
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10.20-10.45	<p>Enterprise digital transformation and labor productivity: An empirical study in Vietnam</p> <p><i>Authors: Nguyen Thi Hang, Tran Thi Quynh Nhu, Hua Thi Thanh, Nguyen Thi Lan Anh, Nguyen Hoa Kim Thai (University of Economics and Law – Vietnam National University Ho Chi Minh City)</i></p>
10.45-11.05	<p>The role of foreign supplier diversification in export performance: An empirical study on Vietnam's textile industry</p> <p><i>Authors: Dang Thi My Hanh (The University of Danang – University of Economics)</i></p>
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<p>Building D Room D.104</p>	
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09.55-10.20	Debt, growth opportunity and investment of Vietnam listed companies <i>Authors: Dang Van Tan, Huynh Thi Tuyen, Le Thi Thao Nhi, Tran Ly Hoang Quyen, Nguyen Duy Anh (University of Economics and Law – Vietnam National University Ho Chi Minh City)</i>		
10.20-10.45	Does FDI affect climate change? Evidence from Asian developing economies <i>Authors: Le Quang Duc, Dao Ngoc Thuy Vi, Than Thi Hong Nguyen, Ngo Ngoc Minh Khue, Pham Le Ngoc Nhu (Foreign Trade University)</i>		
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09.55-10.20	Influence of sustainable marketing on customer loyalty: A study of Vietnamese Coffee <i>Authors: Tran Thi Lam, Cao Khanh Linh, Ngo Quynh Nga (University of Economics and Business - Vietnam National University Hanoi)</i>		
10.20-10.45	Participation of Vietnam in the global garment and textile value chain <i>Authors: Nguyen Thi Thanh Tu, Nguyen Thi Thao Van, Nguyen Bang Nhi (University of Economics and Business – Vietnam National University Hanoi)</i>		
10.45-11.05	Purchase intention of smart home services in Ho Chi Minh city and vicinity: A stimulus – organism – response model <i>Authors: Doan Thanh Thien Kim, Huynh Quang Bach, Phan Mai Thuy Trinh, Do Thanh Danh (University of Economics Ho Chi Minh City)</i>		
11.05-11.30	Factors influencing on fake news sharing behaviour about Covid-19 on social media <i>Authors: Tran Thi Phuong Vy, Pham Minh Chau, Nguyen Thi Hai Nguyet, Truong Pham Bao Nhi, Pham Khanh Linh (University of Economics and Law – Vietnam National University Ho Chi Minh City)</i>		

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10.20-10.45	Make me trust or give me joy: Mechanisms inducing consumer purchase intention in live streaming commerce <i>Authors: Nguyen Van Thao, Ho Kha Mung, Pham Thi Le Hang</i> (The University of Danang – University of Economics)		
10.45-11.05	A research on young customers' usage decisions in Vietnam for Fintech's products and services <i>Authors: Nguyen Luu Hoai Thuong, Nguyen Thi Nhat Anh, Pham Thi Thanh Tu, Truong Thai Ngoc, Nguyen Hoang Vinh</i> (University of Economics Ho Chi Minh City)		

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09.55-10.20	A deep - net approach to scenario generator: Application for bank stress test <i>Authors: Vu Hoang Lan (University of Economics and Business - Vietnam National University Hanoi)</i>
10.20-10.45	Impact of taxation on dividend: Evidence from Vietnam <i>Authors: Nguyen Gia Khiem, Luong Bao Thanh Khoa, Nguyen Nhat Vy (University of Economics Ho Chi Minh City)</i>
10.45-11.05	Digital transformation in banking - Situation and solutions <i>Authors: Dao Minh Anh, Vu Hanh Nguyen, Ha Van Chi, Le Vu Ngoc Hue (Academy of Finance)</i>

11.05-11.30	Bank business complexity and the implications for bank risk and bank profitability - Evidence from Vietnam <i>Authors:</i> Dinh Ngoc Han, Nguyen Hong Hanh, Dang Thi Phuong Tu, Nguyen Quynh Anh , Nguyen Duy Nghia, Tran Thi Van Trang (Banking Academy of Vietnam)	
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10.45-11.05	The impacts of capital inflows on bank lending in Vietnam <i>Authors:</i> Nguyen Thi Nhung , Pham Ngoc Nguyet Minh (Banking Academy of Vietnam)	
11.05-11.30	Stock market reaction to Covid-19 pandemic: Evidence from an emerging market <i>Authors:</i> Huynh Thi Thanh Phuong (The University of Danang – University of Economics)	
11.30-11.55	Herd behavior in Vietnamese Stock Market during COVID-19 pandemic: The influences of Government Policies <i>Authors:</i> Nguyen Thi Thu Ha , Tran Duc Nam, Dao Nhat Nam, Hong Ngoc Truc Linh (Foreign Trade University)	
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ASSET MANAGEMENT AT AN PHAT BIOPLASTICS JOINT STOCK COMPANY

Author: Le Minh Hanh¹

Mentor: Nguyen Huu Tan

Academy of Finance – Corporate Finance

ABSTRACT

The overall objective of the study is to analyze the asset management situation of An Phat Bioplastics Joint Stock Company from 2018 to 2020 and point out the advantages and limitations in asset management of the Company by analysis of asset management ratios. The findings indicate that the asset management of AAA enterprises in particular and companies in the plastic manufacturing industry in general are relatively heavily influenced by price fluctuation of raw materials. Since then, the author has made some recommendations to solve the limitations in asset management of An Phat Bioplastics Joint Stock Company.

Keywords: asset management; An Phat Bioplastic Joint Stock Company; price fluctuation of raw materials; asset management ratios.

1. Introduction

Recently, competition between businesses is getting more and more challenging, meanwhile, investors only choose the investment which brings them the maximum profits with minimum risks. In other words, corporations must have a competitive advantage in order to attract investors to invest in them; and to have a firm foothold in the market. The priorities are having stable production and business activities and ensuring sustainable development in the long run. Thus, businesses need to stabilize their financial situation, profit margin, and capital source so that they can come up with practical solutions and make appropriate economic decisions. One of the factors that are always the top concern of managers and investors is how efficiently or intensively a firm uses its assets to generate sales. In terms of the Bioplastics industry, this issue is significantly important because of its struggling competition. The measures in terms of asset management of the enterprise are a prerequisite for accurately analyzing the financial capacity and showing the strength of the enterprise. Therefore, the urgent problem for firms recently is to determine the efficiency of asset management by analyzing asset utilization ratios, including inventory turnover, receivables turnover, payables turnover, working capital turnover, and total asset turnover. Therefore, the author researched the topic: “Asset management at An Phat Bioplastics Joint Stock Company (AAA) from 2018-2020”.

The objective of the research is to review theoretical issues about asset management and evaluate the situation of asset management at An Phat Bioplastics Joint Stock Company (AAA) from 2018-2020 by calculating financial ratios related to asset utilization. From that, the author suggests some recommendations for An Phat Bioplastics Joint Stock Company. The object of the study is asset management at An Phat Bioplastics Joint Stock Company (AAA) from 2018-2020.

2. Theoretical framework of the assets management

2.1. Asset management

Assets are resources, arising from past transactions or events, are controlled by the firm and will bring future economic benefits to the firm. Assets are classified as either current and non-current. A current asset has a life less than one year, which means an asset converted into cash within a year is classified as a current asset. Otherwise, a non-current asset is one that has a relatively long life. [1]

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Asset management is the practice of increasing total wealth over time by acquiring, maintaining, and trading investments that have the potential to grow in value. The management of assets is related to various types of assets, including: working capital, cash, receivables, inventories... [2] Inventory management is the process of handling the inventories in order to ensure normal operation of business and a certain level of customer service. Receivables management is the process of managing receivables in order to maximize the firm value while remaining a reasonable balance between risk and profitability. Moreover, the basic target of management of receivables is to enhance the overall return on the optimum level of investment made by the firm in receivables. The periodic goal of receivables management is to strike a golden point among risk, liquidity, and profitability.

Working capital is the capital invested to create the current assets, working capital management is the process of managing and monitoring activities related to working capital. Cash is classified as a current asset, cash management is the process of holding cash for transaction, precautionary, speculative motives, and the trade-off between value of cash holding or the use of cash as a hedging tool.

2.2. Criteria to evaluate asset management

2.2.1. Assets management

Asset utilization ratios are intended to describe how efficiently or intensively a firm uses its assets to generate sales. The specific ratios we discuss can all be interpreted as measures of turnover.

Inventory turnover and Days of inventory (DSI)

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average Inventories}} \quad [1]$$

Inventory turnover represents how many times a company sells its inventory. The small inventory turnover ratio (a figure that is much smaller than it used to be or smaller than the industry average) would imply there is unproductive investment. Accordingly, keeping close track of the rate of inventory turnover is a significant function of management.

Days of inventory (DSI)

$$\text{Days of inventory} = \frac{360 \text{ days}}{\text{Inventory turnover}} \quad [1]$$

DSI gives the number of days the firm can keep selling without producing new goods or buying merchandise.

Receivable turnover and Days sales outstanding (DSO)

$$\text{Receivable turnover} = \frac{\text{Annual Credit sales}}{\text{Average Accounts receivables}} \quad [1]$$

This ratio is the speed with which a company can obtain payment from customers for outstanding receivable balances, and is crucial for the reduction of cash requirements. In order to conclude whether receivable turnover of a firm is good or not, we also need to consider its credit sale policy.

$$\text{DSO} = \frac{360 \text{ days}}{\text{Receivable turnover}} \quad [1]$$

DSO is used to appraise account receivable. It represents the average length of time that the company must wait after making a sale before receiving cash, which is the average collection period. The DSO may be short or long, depending on the firm's credit policy or the customers not paying their bills on time.

Payables turnover and Days of payables outstanding (DPO)

$$\text{Payables turnover} = \frac{\text{Total purchases or COGS}}{\text{Average Account Payables}} \quad [1]$$

This ratio is the number of times per year that purchases are being paid off. DPO represents the number of days a firm can take before paying its commercial obligations. If the account payable days are inordinately long, this is probably a sign that the company does not have sufficient cash flow to pay its bills

and may soon find itself out of business in short order. Otherwise, a small number of accounts payable days indicate that a company is either taking advantage of early payment discount or is simply paying its bills earlier than it has to.

$$\text{DPO} = \frac{360 \text{ days}}{\text{Payables turnover}} \quad [1]$$

Cash conversion cycle (CCC)

$$\text{CCC} = \text{DSO} + \text{DSI} - \text{DPO}$$

Cash conversion cycle measures how many days the firms need to complete a cycle of cash. The faster cash conversion cycle is, the more effective the cash management and the performance of company are.

Working capital turnover and days of working capital

$$\text{Working capital turnover} = \frac{\text{Net Sales}}{\text{Average Working Capital}} \quad [1]$$

This ratio shows the level of working capital supporting sales. “Working capital must increase in line with sales if undercapitalisation is to be avoided and so this ratio can be used to forecast the level of working capital needed for a given level of sales when projecting financial statements.” [2]

$$\text{Days of working capital} = \frac{360 \text{ days}}{\text{Working capital turnover}} \quad [1]$$

Days of working capital represents the number of days an investment in operating assets can be turned back in cash. A low number of days of working capital show a highly efficient use of working capital and vice versa.

Total asset turnover

$$\text{Total asset turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}} \quad [1]$$

Total asset turnover measures how efficiently the firm uses its total asset in order to generate sales.

Fixed Asset Turnover Ratio

$$\text{Fixed Asset Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Total Fixed Assets}} \quad [1]$$

The higher the ratio the better, the company is using its fixed assets. Although it shouldn't be too high, because then it would be over-optimization of fixed assets. Over-usage of fixed assets might lead to higher depreciation and would ultimately be a loss to the company.

2.2.2. Asset structure

$$\text{Current asset ratio} = \frac{\text{Current Assets}}{\text{Total Assets}} \quad [1]$$

This ratio describes the proportion of current assets in total assets of a firm. Correspondingly, the ratio of each current asset is calculated by dividing it by total assets.

$$\text{Non-current asset ratio} = \frac{\text{Non-current Assets}}{\text{Total Assets}} \quad [1]$$

This ratio describes the proportion of non-current assets in total assets of a firm. Correspondingly, the ratio of each non-current asset is calculated by dividing it by total assets.

In order to evaluate whether the firm's asset structure is reasonable or not, the author needs to consider the characteristics and performance of the firm.

3. Research method

The author analyzes the asset management situation of An Phat Bioplastics Joint Stock Company from 2018 to 2020 and point out the advantages and limitations in asset management of the Company by analysis

of asset management ratios. We used the elementary theory of Corporate Finance and financial ratios in order to evaluate the potential and risk of AAA.

4. The situation of the asset management at the An Phat Bioplastics Joint Stock Company (AAA) from 2018 to 2020

4.1. The situation of the asset management at the An Phat Bioplastics Joint Stock Company

4.1.1. Asset structure

At first glance, the asset structure of AAA from 2018 to 2020 remained stable. The stability in the structure of assets may indicate a stable policy in asset management of the company. However, the author needs to shed light on the changes of proportion in each asset in order to reinforce the above affirmation.

Current asset

From 2018 to 2019, the increase in inventory is due to AAA buying more goods and materials, while the increase in inventory in 2020 is due to AAA selling all the goods and a part of imported materials. back in 2019. Between 2018 and 2019, inventory of AAA fluctuated because of the changes in sales strategy. The reason for these changes is that the tension between the US and China escalated in the period of 2018-2019, and the outbreak of the Covid-19 pandemic in 2020, causing continuous fluctuations in world oil prices. AAA is a company specializing in the production of plastic materials, so the raw materials needed are plastic particles - a product of the petrochemical industry, currently AAA is still dependent on imported raw materials. This issue leads the company to bear a lot of risk of exchange rate changes. Therefore, AAA has changed its sales policies to transfer those risks to customers, so that even if the world oil price fluctuates, AAA will not be affected too much. The proof is that in all 3 years, AAA did not incur slow-moving inventories, this is a signal that AAA's inventory management level is very good.

The steady increase of receivables over the past 3 years is also a result of AAA's sales policy. In 2018, the increase in receivables from customers and receivables from short-term loans were the two main reasons for the increase in receivables. However, in the period of 2019-2020, the above two amounts decreased, showing that AAA is managing receivables well, customers have good credit history and especially AAA has not incurred provisions for doubtful debts during over 3 years. On the other hand, in the period of 2019-2020, AAA increased investment in equity capital contribution, causing the receivables from profits to be divided from business cooperation contracts to increase sharply. This is the reason why receivables in this period continue to increase. This is also a signal that AAA is gradually expanding its business scale.

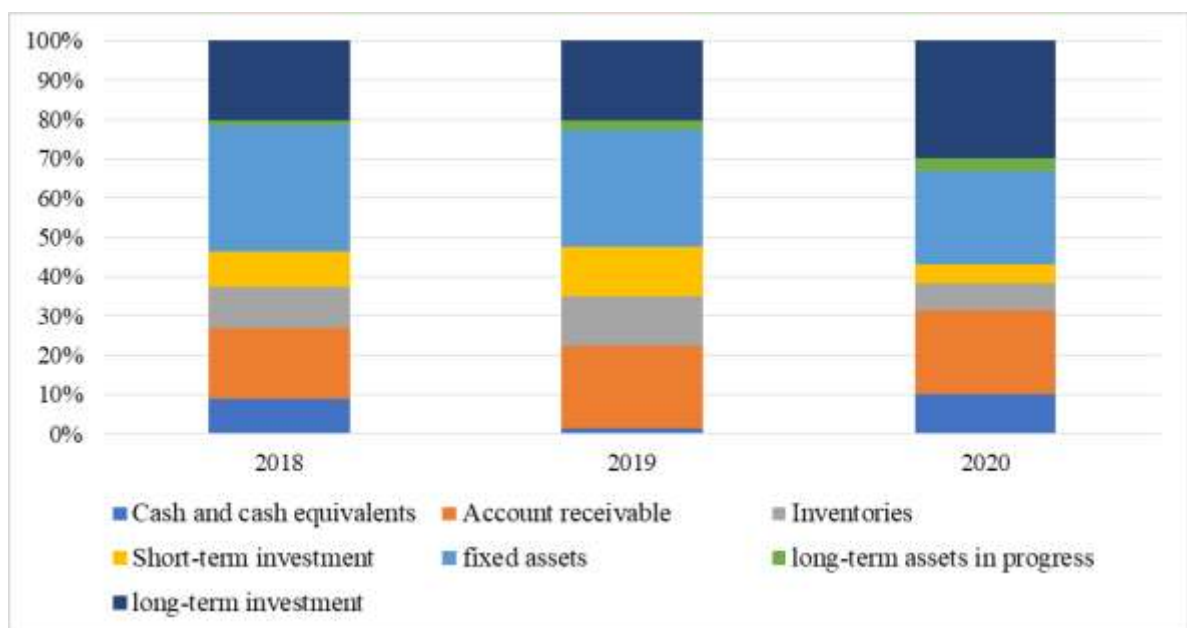


Chart 1. Asset structure of An Phat Bioplastics Joint Stock Company (AAA)

Source: Calculated by the author from the financial statement of AAA from 2018 to 2020

Non-current assets

The decrease in fixed assets is mainly due to the annual depreciation of fixed assets. AAA's fixed assets were all in the early stages, the residual value was still very large. In addition, the annual cost AAA spent to buy new fixed assets was not much. The above shows that the company only needed a very small fixed cost to maintain production per year. In other words, the company is effectively using fixed assets.

On the other hand, long-term investments tend to grow rapidly over a 3-year period. During this period, AAA invested and contributed capital in subsidiaries to strengthen its position and control over these companies. This is a signal that AAA is gradually expanding its business scale.

4.1.2. Assets management

Inventory turnover

AAA's inventory turnover tended to decrease steadily between 2018 and 2020. Therefore, Day's sales in Inventory experienced a slight increase from 39 days to 51 days, which means inventory sits nearly 2 months on average before it was sold in 2020. However, this coefficient of AAA is still significantly lower than the industry average. The cause of this trend is AAA's inventory policy in the period of 2018-2020 - The company determined selling price by the updated raw material price formula on the market, and applied this policy for short-term contracts, which means customers did bear all the risks of exchange rate changes. When analyzing the asset structure, the author confirmed that the fluctuation in inventory structure was due to the increase in goods and raw materials in 2019 but then AAA sold all goods and used the above imported raw materials in 2020. This led to a slight decrease in inventories in 2020 compared to 2019. [4], [5], [6]

AAA's main business is plastic packaging business, so it is necessary to import plastic beads - a product of the petrochemical industry. Thus, the author confirmed that this input material is not suitable for long-term storage with large amounts of reserves. The first reason is because this source of raw materials is greatly affected by the unpredictable fluctuation of world oil price, which can affect AAA's production and supply ability of goods to the market. The second reason is that AAA has not been able to find alternative sources of stable high-quality imports, because the domestic petrochemical industry is still underdeveloped and most of AAA's raw materials are still imported from abroad. From the above two reasons, it can be seen that AAA's flexible inventory policy is reasonable in the context that the world economy is being affected by unpredictable political and epidemiological events. In other words, AAA can avoid the risks from exchange rate differences when importing raw materials, on the other hand, these risks have been borne by customers. However, this policy cannot completely mitigate the risks faced by AAA. Because the company does not store a large amount of raw materials for production, the company must continuously import this source of raw materials, which can increase transportation costs, ordering costs, etc. may increase the cost of the finished goods, which makes AAA's products become less attractive to customers.

In short, AAA's inventory management was very effective, however, due to the extremely competitive characteristics of the plastic industry and the volatile fluctuations in the price of plastic beans of this industry, AAA is still facing risks related to input materials.

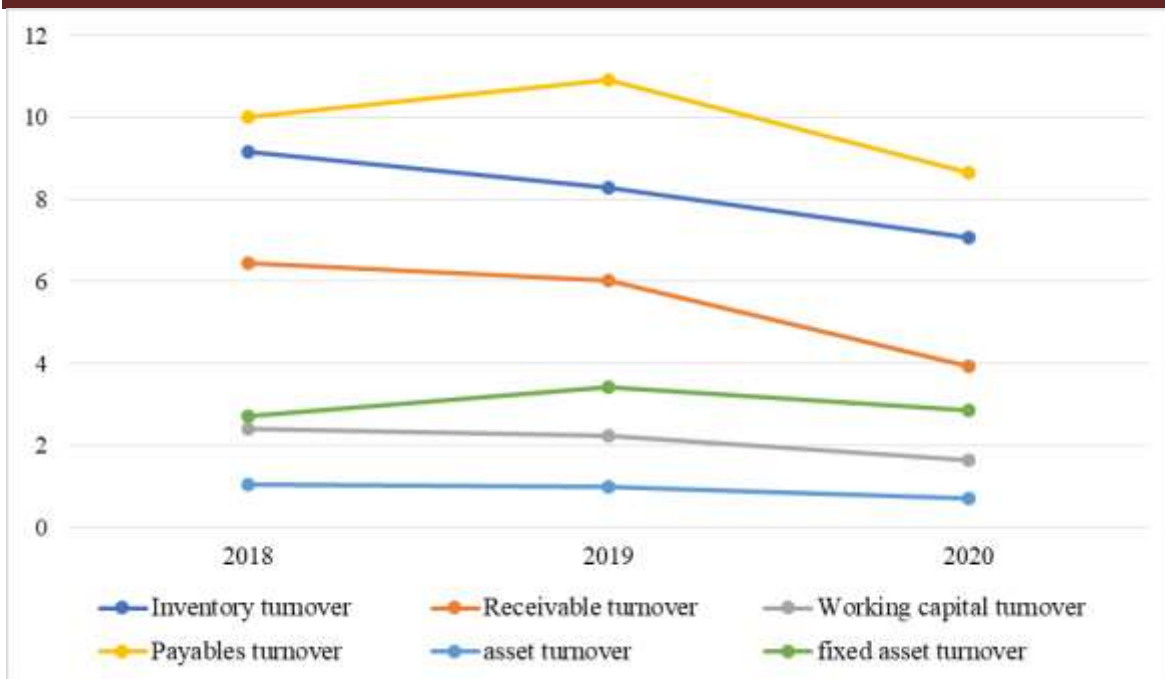


Chart 2. Asset management of An Phat Bioplastics Joint Stock Company (AAA)

Source: Calculated by the author from the financial statement of AAA from 2018 to 2020

Receivable turnover

The volatility of AAA's receivables turnover may indicate the relatively challenging impact of the Covid-19 pandemic on the performance of the company in the period 2018-2020. Specifically, account receivable turnover remained at 6 times from 2018 to 2019, but decreased sharply to nearly 4 times in 2020. As a result, days' sales outstanding of the AAA also increased significantly (from 2 months to 3 months), which means the company must wait about 3 months after making a sale before receiving cash in 2020. The main reason is due to the heavy impact of the Covid-19 pandemic, some of AAA's customers were affected, leading to the extension of the company's days' sales outstanding. By nature, increasing in days' sales outstanding is still a potential risk for enterprises, because the nature of this indicator is the number of days the business is misappropriated capital by customers. The longer the misappropriated capital period is, the harder it is for the company to recover capital for reinvestment in production. This ratio is influenced by two factors: net sales and average receivables.

AAA's net sales increased during 2018-2019 but decreased in 2020. The increase in net sales in the first period was due to the tension between the US and China, leading to foreign customers looking for more stable, cheaper suppliers in the Vietnamese market. This is an opportunity for AAA to generate sales. However, the company also suffered the impact of the decrease in input material costs in 2020, which led to a decrease in net revenue during this period. [5]

Contrary to the decrease in net sales, average account receivable of AAA witnessed an increase over 3 years. However, the company does not incur any allowance for doubtful debts, which can show that AAA's customers all have good credit history, and AAA's credit sales policy is also promoting its effectiveness. The increase in the company's days' sales outstanding can help AAA become more attractive to customers, thereby increasing competitiveness during difficult economic situations because of the Covid-19 pandemic. According to the previous analysis, the increase in receivables in 2020 mainly came from receivables from profits divided from business cooperation contracts. Meanwhile, receivables from customers and receivables from short-term loans decreased. This may indicate that the company's business activities were still going on stably and customers kept paying debts for the company, so the increase of this coefficient of AAA was not a negative signal. In other words, AAA managed the receivables relatively well.

Payable turnover

AAA's receivables turnover also experienced an identical trend with its receivable turnover one during 2018-2020. Receivable turnover remained stable at 10 times in the first 2 years of the period but decreased slightly to 8 times in 2020. In other words, the company increased the period of paying cash after purchasing from 36 days to 42 days. In essence, this indicator shows the number of days the company appropriates capital from suppliers. On the other hand, this indicator can also be used to assess the financial health of the company. Investors will consider this coefficient to determine whether this is a business with good creditworthiness or not. However, in fact, in order to properly comment on this coefficient, we need to clearly analyze two factors: cost of goods sold and average payables to customers.

As analyzed previously, AAA's cost of goods sold increased in the first two years of the period but fell sharply in 2020. The reason is that in the period of 2018-2019, the tension between the US and China escalated. Thus, the world's plastic raw materials fluctuated strongly, significantly affecting the price of input materials of the plastic industry in general and of AAA. However, in 2020, the world price of plastic materials dropped sharply due to the impact of the Covid-19 pandemic, causing a dramatic fall in the cost of goods sold. This has shown that the potential problem of AAA was that the source of raw materials fluctuates unpredictably and was easily affected by external factors. AAA's payables to suppliers had almost no significant changes in the period 2018-2020. This is a good sign that the company's financial health was still stable. Indeed, AAA always proactively repaid its loans annually to its creditors. During 3 years, the holding company and subsidiaries did not incur provision of long-term payables that affected business results. At the same time, the Company paid on time for obligations arising with suppliers, customers, and related parties.

The decline in AAA's supplier turnover did not come from a decline in the company's financial health. The truth is that AAA's finances and operations were still going well from 2018 to 2020. Therefore, it is not possible to confirm that the decrease in turnover indicates that the company's payables management was having difficulty.

Cash Conversion Cycle

AAA's Cash Conversion Cycle experienced a significant increase during 3 years. This coefficient is considered a consequence of interaction of days sales in Inventory, days' sales outstanding, and days payables outstanding. An increase in the cash conversion cycle may indicate that the company's money management was becoming less effective. At the same time, it also reflected the results of all three management activities analyzed previously. Cash conversion cycle increased dramatically from 59 days to more than 3 months, which means, the firm needed more than 3 months on average to complete a cycle of cash. The author summarized a number of reasons for this coefficient to increase. Firstly, the company increases investment in investment projects from 3 months to 1 year. Another one is that the company adjusted the loan collection time due to the Covid-19 pandemic situation. Furthermore, the company was affected by a sharp decrease in COGS, which led to a decrease in net revenue, resulting in a slow down in asset turnover.

Working capital turnover

The management and use of working capital of AAA is indicated by evaluating three criteria, including: Working capital turnover, days of working capital and return on working capital. AAA's working capital turnover ratio tended to decrease in all three years, which led to an increase in the company's working capital turnover. In other words, in the period from 2018 to 2020, the company's working capital turnover rate tended to slow down. By nature, this is a negative signal that the company's working capital performance was becoming less efficient. In addition, although return on working capital slightly increased in the first two years, this ratio decreased sharply in 2020. This showed that AAA's working capital efficiency was less effective than before.

Working capital turnover is affected by two factors: average working capital and net sales of the AAA. As analyzed before, the company's working capital, also known as the company's current assets, increased

steadily between 2018 and 2020. Furthermore, the proportion of current assets in the structure of the company's total assets was almost unchanged over three years. Meanwhile, the company's net revenue fluctuated strongly due to the impact of the cost of goods sold. It can be seen that the fluctuation of net sales, especially the sharp decrease in 2020 is the main reason for the decreasing trend of working capital turnover. AAA's revenue includes sales of goods and sales of finished goods. The significant decrease in the revenue of goods, resulting from the decrease in the cost of imported goods, is the main reason for the fall of net sales. In other words, AAA's selling activities suffered from the fluctuation in cost of goods sold and was the main reason for the decrease in net sales during this period. The problem is that the company applied a sales policy which determined the selling price by the market value. This policy can help the company avoid the risk of fluctuations in the price of raw materials, but the side effect of this policy is that the revenue always depends on the cost of goods sold. With the current economic situation, the world plastic price can continue to decrease, this policy is likely to bring more disadvantages than benefits to AAA.

The company's return on working capital bounded in 2019 and fell deeply in 2020 mainly due to the volatility of the company's profit after taxes. The year 2020 was a negative development year for AAA when revenue decreased due to the impact of input material prices, on the other hand, selling expenses, administrative expenses, interest expenses almost had no changes. As a result, the company's profit after taxes dropped sharply to only 188 billion VND, which did not complete AAA's 2020 mission. In order to further evaluate the efficiency of working capital use of AAA, the author compared those criteria of working capital management of this company with Binh Minh Plastics Joint Stock Company (BMP) - companies in the same plastic industry, from 2018 to 2020.

Compared to Binh Minh Plastics Joint Stock Company (BMP) - a company in the same plastic industry, it can be seen that BMP's return on working capital was much higher and more stable than AAA's. Especially, the return of working capital of BMP witnessed an upward trend, which was contrary to AAA's. BMP also increased significantly in both net income and net sales. Moreover, BMP's working capital turnover ratio also tended to be more stable and much higher than that of AAA, resulting in a shorter capital turnover period than that of AAA. It can be seen that AAA's working capital performance was less efficient than in the past and worse than other companies in the same industry. This was a negative signal for the company in terms of working capital management. The reason for the contrary growth trends of the two businesses was due to the business policies of the two businesses during the Covid-19 pandemic. In 2020, the widespread of Covid-19 pandemic affected the global economy, reducing oil consumption demand, leading to a sharp drop in oil prices; along with a lack of approval on the cut down production policy of Organization of The Petroleum Exporting Countries (OPEC) are factors which were considered beneficial for businesses in the plastic industry. BMP considered this an opportunity, closely monitoring the volatile situation of the economy in general and the market of plastic materials in particular. As a result, BMP's COGS remained stable in all three years while revenue grew steadily, leading to a growth in BMP's net profit even during the Covid-19 pandemic. On the contrary, AAA's policy of selling price determined by market value is considered to be less flexible in the context of the Covid-19 pandemic, making the company's cost of goods sold fluctuate, negatively impacting the company's profits. As can be seen, the Covid-19 pandemic is a test to assess the management and use of working capital of plastic enterprises. Accordingly, AAA needs to change the company's working capital management method to recover growth momentum after Covid-19 pandemic.

Table 1. Working capital return of Binh Minh Plastics Joint Stock Company (BMP)

Items	Unit	2018	2019	2020
1. Average of working capital	Billion VND	1606.5	1420	1528
2. Net sales	Billion VND	3803	4163	4561
3. Net income	Billion VND	391	397	621
4. Working capital turnover (2)/(1)	times	2.367	2.932	2.985

5. Days of working capital 360/(4)	days	152	123	121
6. Return on working capital (3)/(1)	%	24.34%	27.96%	40.64%

Source: Calculated by the author from the financial statement of BMP from 2018 to 2020

Asset turnover

AAA's asset turnover steadily decreased from 1,0x times in 2018 to 0.7x times in 2020. This steady decline may indicate that the company's total asset management was becoming less efficient than before. Average total assets had been steadily increasing over the past 3 years, while net sales of the company fluctuated significantly. It was the main reason for the downward trend of total asset turnover. The increase in assets did not generate revenue for AAA, in other words, the company is managing assets relatively inefficiently, resulting in assets being wasted when it cannot generate revenue for the company. To reinforce the above statement, the author compared the above criteria of AAA with those of Binh Minh Plastics Joint Stock Company (BMP). We can easily see the difference in the upward trend of BMP compared to that of AAA. While BMP's net sales increased steadily from 2018 to 2020 at a relatively stable pace, the company's total assets remained almost unchanged. As a result, BMP's total asset turnover increased steadily from 1,3x to 1,6x, much higher than AAA's total asset turnover. It can be affirmed that BMP is making more and more effective use of the assets of the business to increase profits. [7]

Table 2. Asset turnover of AAA and BMP

Items	Unit	2018		2019		2020	
		AAA	BMP	AAA	BMP	AAA	BMP
1. Average of total assets	Billion VND	4827	2752	5952	2665	6124	2722
2. Net sales	Billion VND	5006	3803	5823	4163	4420	4561
3. Total asset turnover	times	1.037	1.382	0.978	1.562	0.722	1.676

Source: Calculated by the author from the financial statements of BMP and AAA (2018-2020)

Total assets are made up of current assets and non-current assets, so the analysis of limitations in asset management will include current asset management, also known as working capital management; and non-current asset management, also known as fixed capital management. As analyzed before, working capital management of AAA was facing challenges during the Covid-19 period. The reason for this issue is due to the inflexible sales policy leading to slow working capital turnover. In this section, the author continued to evaluate the non-current asset management of AAA, especially the fixed asset items. The company's fixed assets in the period 2018 - 2020 tended to decrease, the company also did not spend too much cash to buy new fixed assets every year. In addition, these fixed assets only depreciated 10-20% of the original value of the assets. AAA's cash flow statement for the period of 2018-2020 recorded a significantly high adjustment for depreciation and amortization of fixed assets at about VND 200 billion. The adjusted ratio for depreciation and amortization of fixed assets to accounting profit before taxes was always approximately 80-90%, which was a remarkably high ratio. This rate of BMP was only about 30-35%, which was much lower than that of AAA. The latter adjusted a high annual depreciation rate to shorten the depreciation period of fixed assets, so when the fixed assets are fully depreciated but they are actually still in use, then the fixed assets will generate a real profit for AAA without any depreciation expense. In general, the company was still managing its fixed assets well because the figures on fixed assets did not record much fluctuations, the company did not need to spend too much money to maintain annual production.

Overall, AAA asset management company was much more ineffective and underperforming than itself in the past and much lower than other companies in the same industry. This decline in efficiency mainly

came from the current asset management company and especially issues related to the company's sales policy.

Fixed Asset turnover

Table 3. Fixed Asset turnover of AAA and BMP

Items	Unit	2018		2019		2020	
		AAA	BMP	AAA	BMP	AAA	BMP
1. Average of total fixed assets	Billion VND	1844.5	863	1705.5	727.5	1548.5	558
2. Net sales	Billion VND	5006	3803	5823	4163	4420	4561
3. Total fixed asset turnover	times	2.714	4.407	3.414	5.722	2.854	8.174

Source: Calculated by the author from the financial statements of BMP and AAA (2018-2020)

AAA's fixed asset turnover increased slightly in the first two years but decreased in 2020, reaching approximately 2.8x times. The reason of slight fluctuation of this indicator is that the average fixed assets and net sales within 3 years have not changed much. However, while the average fixed assets decreased steadily due to annual depreciation, net revenue increased slightly in 2019 and decreased sharply in 2020, resulting from the impact of Covid-19 pandemic, which made the performance of AAA get worse. However, contrary to AAA, this ratio of BMP witnessed a significant increase from 2018 to 2020. The reasons for this trend are both the decrease in average fixed assets due to annual depreciation and net revenue still increased. Through the above comparisons, it can be seen that AAA's fixed asset management is lacking in stability and efficiency compared to the previous period and with competitors in the same industry. However, the positive side of AAA in the management of fixed assets is that the company did not need to invest too much cash in purchasing new fixed assets, which shows that the company did not need to spend too much fixed capital to maintain annual operation. In other words, the company was still maintaining its position in the market without spending too much capital to maintain.

4.2. Assessment of the asset management at the An Phat Bioplastics Joint Stock Company (AAA)

4.2.1. Results

In general, AAA's asset management activities in the period 2018 - 2020 had many positive signals. The first is about inventory management activities remaining at a stable level. Despite being affected by fluctuations in raw material prices, within 3 years, the company did not incur a slow-moving inventory, the inventory turnover period was lower than the industry average, indicating a good inventory management. This helped the company's business performances operate continuously, and at the same time, it helped reduce the cost of storing goods and raw materials; avoid wasting resources. Receivables management was also relatively effective. Despite the strong impact of the Covid-19 pandemic, some of AAA's customers faced difficulties, the company did not incur doubtful debts, showing that the business's customer receivables are still managed at a safe level. In addition, the increase in the turnover of receivables from customers can help businesses increase sales and become more attractive in the eyes of customers. Payable management was also well controlled. In the period 2018-2020, AAA suffered many negative impacts, but its liabilities were still well managed, maintaining the credibility of the business to investors and creditors. The enterprise's cash management was slightly stable, the enterprise can determine the optimal amount of money to hold to fulfill its financial obligations, and at the same time can still make profitable investments.

4.2.2. Shortcomings

On the other hand, enterprises still have many limitations that need to be overcome. In general, AAA tried its best to manage cash, inventory, account receivables and account payables over the past 3 years.

However, it cannot be denied that the rotation of these assets was gradually becoming less efficient. This shows that the asset management of the company was no longer appropriate in the current situation, especially when the business is operating in an extremely competitive industry, accompanied by the volatile price of input materials.

The first problem is the policy of inventory management with low reserves. In theory, a low amount of inventory may help AAA save storage and preservation costs, and the company also did not incur slow-moving inventories that negatively affect production activities. However, since the price of raw materials fluctuated unpredictably, this policy caused AAA to incur additional ordering costs, affecting the final product price. Second, the company was managing receivables less effectively than before, which can lead to stagnant capital due to the inability to collect debts from customers. In the complicated situation of covid-19 and unpredictable political events in the world, this issue has many potential risks for the business. As analyzed before, AAA's working capital management was inefficient, leading to an increase in working capital without increasing sales for the business. In other words, part of the working capital of the business was being wasted. As a result, the company's asset utilization performance also became less efficient, resulting in a decline in net revenue and net profit in 2020. Besides, the cash conversion cycle also slows down gradually over the 3 years. Although the business was still maintaining optimal cash and cash equivalents, an increase in cash conversion cycle was a negative sign that cash management of the business was becoming less effective than before.

4.2.3. Suggested solutions for improving asset management at An Phat Bioplastics Joint Stock Company (AAA)

Recommendations for Inventory management

AAA needs to maintain an optimal amount of inventory to ensure normal operation of the company and a certain level of customer service. Meanwhile, the company must always supervise the amount of inventory so as not to incur slow-moving inventory.

On the other hand, the company needs to always monitor the price fluctuations of input materials. Because the price of plastic materials is greatly influenced by the world economic situation. From there, the company can develop a reasonable inventory policy. In the near future, when the economic situation is recovered due to the Covid-19 pandemic being calmed down, oil prices will rise again. Along with that, the price of plastic materials will rise again. Therefore, the author recommends that the company should increase the investment in inventory of plastic materials before the price of plastics materials rise again.

In addition, the political situation among countries in the world also greatly affects the price of oil. If the political situation in a certain region becomes unstable, the price of oil will inevitably escalate, leading to an increase in the price of plastic materials. Therefore, businesses need to always update these market signals to decide the reasonable amount of inventory to hold. Therefore, the author recommends businesses to build a Forecast Analysis department to perform the task of analyzing market demand, forecasting product trends and industry fluctuations to build a timely response plan.

Recommendations for receivables and payables management

AAA's receivables and payables turnover tends to decrease, showing that AAA's management of those things is less effective than before. Although increasing the receivables cycle can help AAA increase sales, the truth is that the company's sales have not grown as expected in three years. Thus, the author believes that the company should adjust policy on management of accounts receivable and accounts payable. To solve this problem, the author recommends that enterprises can change the collection policy or resell debt instruments to other units. In this way, enterprises can transfer risks to other units, and at the same time, enterprises can shorten the days sales outstanding to continue to reinvest in production activities.

In addition, receivables and payables are greatly affected by the impact of interest rates, so enterprises need to closely monitor relevant market conditions including financial and monetary markets in the future. The company should make a specific loan and payment plan for each loan, at the same time find and take advantage of long-term loans with preferential interest rates and control cash flow reasonably.

Recommendations for cash management

Although the amount of money of the company was always maintained at a safe level, which can both ensure the fulfillment of financial obligations to related parties and can invest; the increase in cash conversion cycle showed that the cash management of the business was getting less efficient. The author recommends that businesses should consider investing in short-term projects, in order to shorten the capital turnover cycle, thereby quickly recovering money to reinvest in production. In addition, it is necessary to consider expanding production activities and investing decisions in subsidiaries carefully in an economic situation which has not completely recovered. This may cause selling expenses, administrative expenses, etc.

Other recommendations

Plastic industry is a relatively competitive industry, so market issues are also one of the factors affecting production activities of enterprises and asset management of the company. AAA faced the risk of losing market share and risk of being caught up by competitors in the same industry. In addition, the Industrial Revolution 4.0 has a strong impact on businesses in many fields with increasing automation, increasing competition pressure at home and abroad in response to the requirements of consumers. At the same time, environmental concerns about plastic waste may cause consumers to limit the amount of plastic packaging used, affecting the company's business. Faced with that situation, businesses need to closely monitor consumer tastes, thereby developing products that are suitable for consumers' tastes, ensuring environmental protection factors.

In addition, the cost of input materials is a factor that greatly affects the revenue of the business. The author recommends that AAA enterprises should change the method of determining the selling price of goods depending on unpredictable fluctuations in raw material prices. In addition, the company needs to diversify suppliers to ensure competitive prices, regularly evaluate and check the quality of raw materials.

5. Conclusion

The study researched the theoretical basis and the situation of asset management at An Phat Bioplastics Joint Stock Company (AAA) in the period 2018-2020. The report shed light on the benefits and drawbacks of the company in asset management. Within three years, despite the impacts of the market, macroeconomics and politics, AAA's assets were still managed relatively stable. The advantage is that AAA did not incur slow-moving inventories, doubtful debts, or provisions for payables to sellers. Furthermore, AAA always paid off their due debts for creditors. These are the good points that AAA maintains in asset management. However, the company still has some limitations in asset management, including working capital turnover, total asset turnover, ... all decreased due to increase in assets but decrease in revenue. This shows that the asset management of enterprises is less effective than before. From there, the author makes recommendations including adjusting inventory levels, changing the company's credit policy, etc. to solve the above limitations and increase. Asset management is an extremely important issue that indicates the production activities of the company. Good asset management will help the company make the most of the available resources to carry out production. On the contrary, if management is inefficient, a part of unused assets will not be able to generate revenue, causing loss to the company.

6. Appendix

Appendix A. Asset Structure of An Phat Bioplastics.,JSC (AAA)

	31/12/2018		31/12/2019		31/12/2020	
Items	Value (Billion VND)	%/total asset	Value (Billion VND)	%/total asset	Value (Billion VND)	%/total asset
1. Total Assets	5937	100.00%	5967	100.00%	6281	100.00%
2. Current	2579	43.44%	2649	44.39%	2706	43.08%

Assets						
3. Non-current Assets	3359	56.58%	3318	55.61%	3576	56.93%
4. Cash and cash equivalents	491	8.27%	86	1.44%	616	9.81%
5. Account receivable	989	16.66%	1139	19.09%	1328	21.14%
6. Inventories	581	9.79%	703	11.78%	417	6.64%
7. Short-term investment	484	8.15%	677	11.35%	302	4.81%
8. Fixed assets	1772	29.85%	1639	27.47%	1458	23.21%
9. Long-term assets in progress	69	1.16%	132	2.21%	214	3.41%
10. Long-term investment	1107	18.65%	1107	18.55%	1839	29.28%

Source: Calculated by the author from the financial statement of AAA from 2018 to 2020
Appendix B. Assets management of An Phat Bioplastics.,JSC (AAA)

Items	Unit	2018	2019	2020
1. Average of total assets	Billion VND	4827	5952	6124
2. Average of working capital	Billion VND	2085.5	2614	2677.5
3. Average of receivable	Billion VND	854	1064	1233.5
4. Average of inventories	Billion VND	495.5	642	560
5. Net sales	Billion VND	5006	5823	4420
6. COGS	Billion VND	4543	5316	3968
7. Average of payable	Billion VND	453.5	486.5	459
8. Inventory turnover (6)/ (4)	Times	9.169	8.280	7.086
9. Day's sales in Inventory 360/ (8)	Days	39	43	51
10. Receivable turnover ((5) *(1+VAT rate))/ (3)	Times	6.448	6.020	3.942
11. Days' sales outstanding 360/(10)	Days	56	60	91
12. Working capital turnover (5)/(2)	Times	2.400	2.228	1.651

13. Days of working capital 360/(12)	Days	150	162	218
14. Payables turnover (6)/(7)	Times	10.018	10.927	8.645
15. Days Payables Outstanding 360/(15)	Days	36	33	42
16. Cash conversion Cycle (11)+(9)-(15)	Days	59	70	100

Source: Calculated by the author from the financial statement of AAA from 2018 to 2020

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PROFITABILITY MEASUREMENT IN THE CASE OF KIDO CORPORATION

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ABSTRACT

This research was conducted to analyse the impact of tax on dividend policy with the sample of 430 non-financial companies listed at Ho Chi Minh Stock Exchange (HOSE) and Ha Noi Stock Exchange (HNX) from 2007 to 2018. Based on static and dynamic panel data, this paper used regression models including OLS, FEM, REM and GMM to analyse that relationship. The results of the study show that the new personal income tax law related to dividend and capital gains income of investors has effects on the corporate dividend policy, though the level of influence is not much. Along with that is the biggest impact of the profit variable. The size, leverage and last year's dividends also significantly influenced the dividend policy of enterprises in Vietnam's stock market.

Keywords: personal income tax; dividend policy; Vietnam

1. Introduction

Recently, competition between businesses is getting more and more challenging, meanwhile, investors only choose the investment which brings them the maximum profits with minimum risks. In other words, corporations must have a competitive advantage in order to attract investors to invest in them; and to have a firm foothold in the market. The priorities are having stable production and business activities and ensuring sustainable development in the long run. Thus, businesses need to stabilize their financial situation, profit margin, and capital source so that they can come up with practical solutions and make appropriate economic decisions. One of the factors that are always the top concern of managers and investors is the business performance. In terms of the Food & drink industry, this issue is significantly important because of its struggling competition. The measures in terms of profitability are a prerequisite for accurately analyzing the financial capacity and showing the strength of the enterprise. Therefore, the urgent problem for firms recently is to analyze the performance of KIDO Corporation (KDC) from 2018 to 2020 and point out the advantages and limitations in terms of performance of the Company by analysis of profitability measurement. Therefore, the author researched the topic: “profitability measurement in the case of KIDO corporation from 2018-2020”.

The objective of the research is to review theoretical issues about profitability and evaluate the situation of business performance at KIDO Corporation (KDC) from 2018 to 2020 by calculating financial ratios related to profitability measurement. From that, the author suggests some recommendations for KIDO Corporation.

2. General reasoning about the effectiveness of the business

2.1. Business performance concept:

The business performance of the business is a counter-economic category the level of use of resources in business activities; organizational level, management of enterprises to implement at the highest level of socio-economic objectives at the lowest cost.

2.2. Content analysis of business performance

The main content is the analysis of business results indicators such as: revenue, Sales, expenses, profits... Delve into the factors affecting business results expressed on these indicators.

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2.3. Criteria for evaluating business performance

The business results report is a consolidated financial statement reflecting in a general way the situation and business results in an accounting period. The data in the business results report provides the total information to consolidate the performance of the business in the period and indicate that, the activities. It is profitable or loss-making, and through it also reflects the situation use of capital, labor, technical and experience management potentials business of business. This is a financial statement that is very important to the subjects mind, because it provides data on the performance of the business has done in one period. For financial managers, it's also used as a copy. A guide to predicting how the business will perform in the future.

The general assessment of the business results of the enterprise is conducted through analysis, consider the fluctuations of each indicator on the report on the results of business activities in the middle of this period with the previous period based on the comparison of both absolute and relative numbers on each target. At the same time, it also analyzes the indicators reflected the level of use of expenses and business results of the business. Special pay attention to the fluctuation of net revenue, total profit from business activities business, pre-tax profit and after-tax profit while explaining the total profit The profit from increased or decreased business activities is due to what factors, based on formula:

$$LN = DT - GV + (Dtc - Ctc) - CB - CQ$$

In which:

LN: Business profit

DT: Net sales and service provision

GV: Value of capital sold

Dtc: Financial operating revenue

Ctc: Financial costs

CB: Cost of sales

CQ: Business management costs

2.4. Group of performance coefficients

After-tax profit margin on revenue (ROS): This indicator shows when making a co-revenue in the period, the business can earn a large amount of revenue profit.

$$\text{Return on Sales (ROS)} = \frac{\text{Net profit}}{\text{Sales}}$$

Basic Earning Power (BEP): This indicator reflects the ability profitability of assets or business capital does not take into account the effect of the source business capital and corporate income tax.

$$\text{Basic Earning Power (BEP)} = \frac{\text{EBIT}}{\text{Average total assets}}$$

Pre-tax profit margin on business capital: This indicator represents each how much profitable business capital in the period is likely to make a profit after paying interest on the loan.

$$\text{Profit margin first tax on business capital} = \frac{\text{Profit before tax in the period}}{\text{Average working capital}}$$

Return on Assets (ROA): This coefficient reflects how much each dollar of capital used in the period generates after-tax profits.

$$\text{Return on Assets (ROA)} = \frac{\text{Net income}}{\text{Average of total assets}}$$

Return on Equity (ROE): This ratio measures profitability after tax collected on each owner's capital in the period.

$$\text{Return on Equity (ROE)} = \frac{\text{Net profit}}{\text{Average Equity}}$$

Earning Per Share (EPS): This indicator reflects how much profit each share usually makes in the year after tax.

$$\text{Earning Per Share (EPS)} = \frac{\text{Net income} - \text{Dividends on Preferred Stock}}{\text{Total outstanding Shares}}$$

3. Research method

The author analyzes the performance of KIDO Corporation (KDC) from 2018 to 2020 and point out the advantages and limitations in terms of performance of the Company by analysis of profitability measurement. We used the elementary theory of Corporate Finance and financial ratios in order to evaluate the potential and risk of KDC.

4. The situation of the profitability measurement in the case of KIDO Corporation (KDC)

4.1. The situation of the profitability measurement at KIDO Corporation

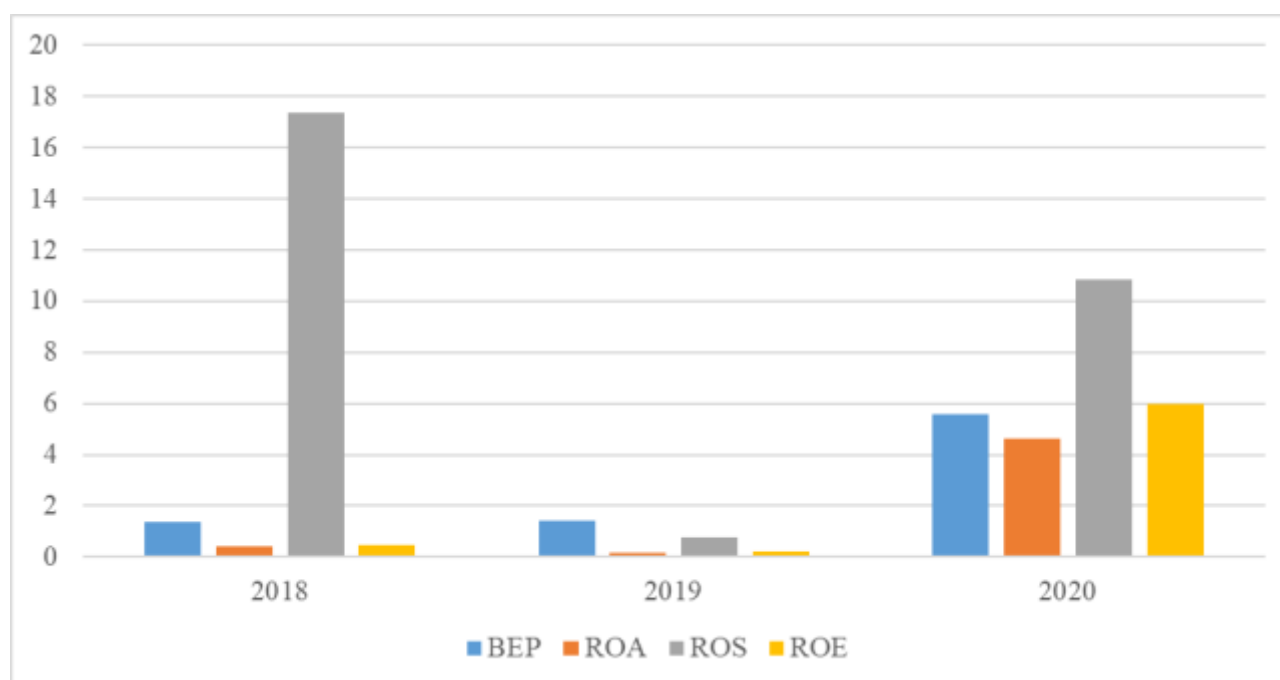


Chart 1: Profitability measurement at KIDO Corporation (KDC)

Source: Calculated by the author from the financial statement of KDC from 2018 to 2020

BEP:

KDC's Basic Earning Power during the three years experienced significant enhancement. Specifically, 2020 witnessed an impressive leap, hitting 5.57%, quadrupling the statistics from 2018.

The major contributor to the development of BEP was the relative acceleration in both EBIT and total assets of the company. The increase in KDC's total assets was constituted by a shift in both short-term assets and long-term assets, which had a predominant influence resulting mainly from long-term financial investments. KDC has continued an expanding focus on financial activities and taken care of its subsidiaries by pouring a higher volume of capital into these companies, leading to an absolute increase of approximately VND 900 billion as seen in the financial statement.

Nevertheless, the growth rate of the corporation's total assets could not keep pace with that of EBIT. Before the 3-year period, KDC's profit was primarily earned from financial revenue, particularly since the company sold its confectionery business. However, upon embarking on the field of cooking oils, as well as ice cream and other products, KDC wisely embraced the opportunities to change its EBIT. Albeit the enterprise's earnings before interest and taxes underwent erratic alterations, after the three years of stabilization, KDC achieved a better amount of EBIT, standing at roughly VND 300 billion, created by the enormous revenue of VND 3,100 billion.

That BEP increased significantly, though remaining humble, was a good sign for investors to expect that the business could go on developing more brilliantly in the foreseeable future. In addition, when considering BEP associated with interest rate, it is noticeable that with interest expense varying around VND75 billion and a slight increase of 1.5 times of liabilities, the utilization of financial leverage was having such positive impacts on the profitability of equity.

ROA:

ROA (return on assets) of KIDO in the period 2018-2020 fluctuated a lot, the lowest in 2019 (0.16%) and the highest in 2020 (4.61%).

In 2019, KIDO's ROS and total asset turnover both reached low levels, leading to the lowest ROA in 2019. Moreover, profit after tax this year was only nearly 0.5 times in 2018 and 0.03 times in 2020. This is also one of the reasons why the ROA in 2019 fell so deeply.

In 2020, ROA will reach 4.61%, which means that every 1 dong of capital used in the period generates 0.0461 dong of after-tax profit. In 2019, ROA reached 0.16%, which means that every 1 dong of capital used in the period generates 0.016 dong of after-tax profit. This is a positive sign and can be explained by the first reason that ROS increased by more than 14 times compared to 2019 and the second reason is due to operational efficiency. The efficiency of using assets of enterprises also tends to increase. The third reason for the strong increase in ROA in 2020 can be explained by Dupont: Profit after tax increased sharply, reaching more than 337 billion VND, 12.5 times higher in 2018 and 34 times in 2019.

ROS:

Generally speaking, the corporation's ROS in the three years period was followed by a decreasing pattern, from 17.33% in the beginning year to 10.82% in 2020. Distinctively, there was a sudden and overwhelming plummet in 2019, which bottomed at 0.77%, the lowest level in observation years.

To comprehend this decelerating phenomenon, it is necessary to initially anatomize net revenue that abruptly surged to a respectable peak. To clarify, KDC's net sales in 2018 were VND 157 billion. However, after experiencing 3 years of development, that number has skyrocketed approximately 20 times, reaching more than VND 3100 billion, setting a milestone of sea changes for such a holding company like KDC as net revenue surpassed financial income. On the other hand, the company's earnings after tax also jumped further, from VND 27 billion in 2018 to VND 337 billion in 2020. Business activities were among the greatest factors contributing to these two income statement indicators since two giant cooking oil companies, VOC and TAC, were merged into KDC in 2017. Another consolidation also took place in 2018 between KDC and GHN company, bringing a better income for the corporation. Furthermore, ice cream also acted as a major product that greatly contributed to the company's business results, particularly in the 2nd and 3rd quarters with such a hot-baking summer.

Nevertheless, although profit after tax observed a substantial and rapid shift, it clearly could not be compared with the growth rate of net sales, resulting in the decelerating pattern of ROS. However, it is such an underestimation if the company's business activities are considered emaciated. It only shows that KDC was facing challenging and complicated cost management problems. Indeed, once the corporation decided to expand its production and business activities, specifically in the field of cooking oil, the company's expenses, such as depreciation expenses, selling expenses, and administrative expenses, were considerably increased altogether. For example, COGS underwent a surging increase, 30 times higher after three years. The cost problem in 2019 manifested in the most extreme and unpleasant way, harshly reducing corporate profits and causing ROS to drop to unprecedented levels of 0.77%.

ROE:

ROE (Return on equity) is the financial ratio reflecting the effective level of the company in terms of using its shareholder's equity, being calculated equal to net profit margin*asset turnover*financial leverage.

From 2018 to 2020, Return on equity (ROE) increased with different paces, reaching a peak of 6% in 2020, meaning that VND 1 asset generated VND 0.06 of profit after tax for investors, but when compared to the industry average, this target is still very low. This shows that KDC has been using assets more effectively

and had better policies and decisions in operation but these are not enough. Specifically, KDC's equity multiplier during this period was lower than that of the industry as a whole.

Considering 3 factors affecting ROE, which are net profit margin, asset turnover and financial leverage (Dupont analyzing); we can infer the reason why this financial ratio has experienced significant change during the 3-year period from 2018 to 2020. The first element that has an impact on ROE is asset turnover. During the period, the factor has followed an increasing trend with a prominent rate, which has a major impact on the change in ROE from 2018 to 2020. More specifically, the rate of asset turnover in 2020 was 21 times as much as it was in 2018 (0,42 in 2020 compared to 0,02 in 2018). The significant change of financial leverage and profit margin also affected the performance of ROE during this period.

It is a positive sign for the company's performance because although the rate of ROE experienced major change from 2018 to 2020, it still followed an increasing trend and the company needed to give some strategies to prevent this rate from growing too fast.

EPS:

KDC's earnings per share experienced remarkable growth over three observation years, reaching 987 in 2020, nearly seven times higher than in 2018. This stood a positive sign, proving that the business oriented to the appropriate industrial field, which created its competitiveness against other businesses, simultaneously affirming its position in the market. That EPS equaled 987 data clearly communicates that each common share in 2020 helped shareholders earn VND 987.

The figures for EPS in these three years are noticeably lower than in previous years; for example, EPS in 2018 balanced at 2029, while EPS in 2017 reached a high of 5714. This situation stemmed from the harsh decrease in net sales when the company sold its confectionery business, which led to the dependence of profit mainly on financial income. However, the fact that EPS has improved in 3 years was an optimistic message, confirming the company's ability to operate more stably and effectively. Having implemented M&A deals, KDC aspired to become a leading enterprise in the cooking oil field. Even though the previous years, the company's business segment had not proved efficient with a low level of profit margin while challenging costs, the determination of business leaders in developing KDC was undeniable. In fact, after 3 years of stabilizing operations, KDC's profit after tax significantly increased. EPS was expected to continue its evolving journey in the foreseeable future, reaching or even surpassing the admirable EPS of previous years and bringing better dividends to its shareholders.

4.2. Assessment of the profitability measurement at KIDO corporation (KDC)

By analyzing the company's profitability ratios, we can conclude several advantages and disadvantages below:

Strength:

Since 2020, with the dominance of the COVID-19 pandemic, the international economy has been driven to the brink of paralysis and recession. The food industry that KDC takes part in is not an extraordinary one that is not adversely impacted by the infectious calamity. Nevertheless, the company still managed to create a brilliant performance, such as earning a giant volume of revenue upon embarking on the field of cooking oil. KIDO has demonstrated its burning attempt to establish remarks on the journey of development even in the detrimental tragedy, thereby being honored as a National Brand, Top 10 Prestigious Food Companies, and Top 50 Leading Brands, Vigorously stimulating revenue would, in turn, set a solid foundation for profit after tax to continue on a stable climb with acceleration, leading to the improvement of profitability ratios.

The increasing BEP rate during the 3-year period is a positive sign, contributing to the growth of ROE and EPS. In addition to this, after paying for interest and taxation, the holder has the ability to gain a significant amount of profit. The shareholder's equity has experienced stable and increasing trends through the period.

Weakness:

KDC was challenged by a relatively complicated cost problem as the business had just changed its business field. The business had previously existed almost entirely on financial income before concentrating on the production of cooking oil. The cost problem was renewed but more difficult to solve thoroughly, as all types of costs rose sharply, thereby reducing the amount of profit that businesses could actually earn.

Besides general costs, interest expenses were also a puzzled issue that KDC should take into consideration. Interest expenses increased due to the company's expanding borrowing activities, putting the business at risk and affecting KDC's cash flow when making payments.

Although EPS increased, it was still lower than other businesses operating in the same industry. In other words, this could be an unattractive investment in the eyes of investors. Increasing the company's EPS was a pivotal task if KDC wished to mobilize a larger volume of capital and make a better impression on investors.

Measures to improve profitability at KDC

The cost issue was such a conundrum that KDC had to deal with. It directly affected the corporation's earnings before tax as well as profit after tax in the most negative way. Thoroughly solving this challenging cost issue would greatly assist the enterprise in reducing the current payment burden as well as maximizing profits and corporate value, thereby not only stimulating the company's growth but also attracting investors' capital contribution.

To ensure cost optimization, KDC could refer to the following methods. As for administrative costs, the company should reduce office costs and avoid buying unnecessary items. In addition, it is ideal to negotiate with suppliers on incentives or discounts for stationery. In terms of COGS, KDC should concentrate on the issue of production costs by utilizing inputs, such as trying to dispose of excess materials or finding ways to use them to produce materials and other products. The production space should be carefully constructed to be used to the fullest and avoid the repair costs incurred, and the excess space could also be used for leasing as an office or a warehouse. In particular, it is indispensable to always keep an eye on monitoring and measuring the performance of the business in order to adjust and optimize the use of available resources. For financial costs, it is necessary to carefully research the insurance and interest rates to prevent circumstances that incur unnecessary costs. At the same time, do not arbitrarily create unnecessary debt without analyzing the cost of capital, opportunity cost, and the effect of debt payment on cash flow. Furthermore, corporations can reduce salary costs and other unnecessary needs by utilizing scientific or information technology advancements.

Besides effectively managing cost problems existing in the company, KDC should also focus on raising its revenue, which directly impacts the corporation's performance and profitability. Some suggestions are recommended for KDC as follows: Training in order to enhance employee skills, thereby maximizing work efficiency; Increasing the level of human resource management, investing in modern machinery and technology in a timely and right direction, helping businesses increase the quality of consumed products; Expanding markets, thereby increasing revenue, increasing EBIT, improving profitability indicators, and improving business performance; Improving service quality, improving product design and packaging, and increasing competitiveness; Enhancing brand and reputation, which in turn, make a special impression on customers and make them loyal to the company's products.

5. Conclusion

KDC is one of the largest Vietnamese corporations in the Food & Drink industry. The assignment did research about the performance of KDC based on financial ratios which were calculated from financial statements. Due to the above analysis, we concluded that the cost management, asset management and financing decisions of KDC are becoming better in spite of the effects of COVID-19 pandemic.

6. Appendix

Appendix A. Profitability measurement at KIDO Corportion (KDC)

Items	Unit	2018	2019	2020
BEP	%	1,38	1,41	5,57
ROS	%	17,33	0,77	10,82
ROE	%	0,48	0,20	6,00
Average industry	%	21,78	24,60	28,80
ROA	%	0,40	0,16	4,61
Average industry	%	13,61	16,27	18,45
EPS	VND	144	284	987

Source: Calculated by the author from the financial statement of KDC from 2018 to 2020

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SOLUTIONS TO IMPROVE THE QUICK RATIO OF LISTED CEMENT COMPANIES IN VIETNAM

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ABSTRACT

One of the most important factors that every business needs to pay special attention to in the current period is solvency, especially the quick ratio indicator. In recent years, in Vietnam's stock market, enterprises in the construction materials manufacturing sector, including cement enterprises, have always attracted a lot of attention from individual investors, large investment funds and also foreign investors. Therefore, the need to delve into the financial situation in general and the solvency in particular of cement enterprises listed in Vietnam is extremely large. This research paper will focus on the analysis of the results obtained as well as the remaining limitations on the quick ratio indicator of cement enterprises listed in Vietnam in the period 2018-2020, thereby making recommendations to improve the efficiency of production activities and the quick ratio indicator of cement companies in the upcoming periods.

Keywords: quick ratio, listed cement companies, financial situation, solutions

1. Introduction

1.1. Definition

The concept of solvency has so far been proposed by many researchers. In the book "Giao trinh Phan tich Tai chinh", Financial Publishing House (2017) of the author Assoc.Prof.Dr. Nguyen Trong Co and Assoc.Prof.Dr. Nghiem Thi Tha, the solvency of an enterprise is the financial capacity that this company has to meet the needs of paying debts to individuals and organizations that have relationships with the enterprise for loans or debts. In there:

- The financial capacity of the enterprise exists in the form of cash (cash, deposits...), receivables from individuals indebted to the business, assets that can be quickly converted into cash such as goods, finished products, goods for sale.

- Debts of the enterprise can be bank loans, money debts arising from the relationship of buying and selling inputs or products and goods, which are the payables to the seller or the purchases in advance from customers, unpaid taxes to the state bank, unpaid wages.

In addition, in the book "Corporate Finance", McGraw Hill (2002) of authors Stephen A. Ross, Randolph W. Westerfield, Bradford D. Jordan, solvency can also be understood as the ability to convert assets of the enterprise into cash to pay the debts of the enterprise by an appropriate time.

Quick ratio is a strict evaluation indicator, determined by current assets (short-term assets) minus inventory and divided by current liabilities (short-term liabilities). With quick ratio, inventory is excluded because in current assets inventory is said to have less liquidity. Compared with the current ratio of solvency (without deducting inventory), we can see that the quick ratio is more accurate and tight.

Formula to determine quick ratio:

$$\text{Quick ratio} = \frac{\text{Short - term assets} - \text{Inventories}}{\text{Short - term liabilities}}$$

This ratio indicates the ability of a business to pay its short-term debts without needing to urgently liquidate its inventory. When this coefficient is greater than or equal to 1, it reflects the enterprise is able to pay its due debts without needing to urgently liquidate its inventory. Nevertheless, if this coefficient is less

than 1, it shows that the enterprise is having difficulty paying its due debts, forcing the enterprise to liquidate its inventory, leading to a loss in selling price.

1.2. Rationale

Nowadays, the economy of Vietnam in particular as well as the world economy in general has witnessed many difficulties and negative impacts from unpredictable movements of the global financial market and the influence of the consequences caused by the Covid-19 pandemic. Domestic production has faced many difficulties, import and export situation has been heavily affected by the pandemic, the stock market has continuously plunged for many sessions, reflecting investors' pessimism about the economic-society situation. Many businesses during this period had to file for bankruptcy due to insolvency. Faced with the above situation, domestic enterprises need to have effective management and administration strategies to maintain production and business activities in order to overcome this difficult period. One of the most important factors that every manufacturing business have to concentrate on is the solvency. Solvency of an enterprise is the financial capacity that this company has to meet the needs of paying all short-term and long-term debts to individuals and organizations. An enterprise with high solvency means that it has good financial capacity, ensuring its ability to pay its debts well. On the contrary, if the solvency of the enterprise is low, this shows that the enterprise is currently having financial problems and is taking many risks leading to uncertain solvency in the upcoming periods, possibly even insolvency. If this situation is prolonged, the business will face the risk of going bankrupt.

Recognizing the importance and urgency of analysing solvency in businesses, especially with cement businesses in the construction materials production industry, our team has researched "Solutions to improve the quick ratio of listed cement companies in Vietnam". The article aims to contribute to understanding the financial situation of enterprises in general and the quick ratio of listed cement enterprises in particular, thereby finding out the advantages and disadvantages of each enterprise and proposing solutions to improve production efficiency and the solvency of enterprises.

2. Theoretical framework

Solvency is the top concern of businesses, reflecting the financial stability in the development process, and at the same time enhancing the reputation and value of the business for partners, customers and investors. Therefore, solvency is a problem that most businesses have to face and is also a content that has appeared in many research topics in recent years, such as:

(1) Nguyen Thi Nhung (2011) - "*Solvency of Cement Transport Materials JSC VICEM (Vietnamese)*", Graduation Thesis. In this thesis, the author focused on studying the solvency of Cement Transport Materials Joint Stock Company VICEM in 2011. Specifically, the author generalized the theory of solvency of a business then analyzed the solvency and its factors at VICEM Cement Transport Materials Joint Stock Company in 2011. However, with the level of graduation thesis, the scope of this study was only limited to one enterprise, a joint stock company of cement transportation materials in the year 2010-2011, so the topic was not generalized to the problem of solvency in cement enterprises. In addition, the current economic-society background is also quite different from the years this thesis discussed.

(2) Tran Thi Huong Giang, Nguyen Thi Phuong Thao (2016) - "*Scientific research on the solvency of steel companies listed on Vietnam's stock market (Vietnamese)*", Student scientific research project, Academy of Finance. In this topic, the authors focused on the solvency of steel enterprises listed on the Vietnamese stock market. Specifically, in addition to a general summary of the theoretical basis and theory of solvency in a business, the authors delved into the analysis of solvency and factors related to solvency of listed steel companies on Vietnam's stock market, which are also manufacturing companies, in the period 2014-2016.

(3) Dr. Le Thi Nhung (2018) – "*Factors affecting capital structure of listed cement companies in Vietnam*", Journal of Banking Science and Training. In this topic, the author researched the capital structure of cement companies listed in Vietnam with the observed samples of 7, over a period of 11 years from 2010 to 2019. By econometrics model, the author pointed out the factors affecting the capital structure of

enterprises such as enterprise size, asset structure, profitability, growth ability.... Thus, the author did not mentioned in detail the solvency of listed cement companies in Vietnam.

(4) Dr. Bui Van Van, Dr. Vu Van Ninh (2013) - "*Giao trinh Tai chinh Doanh nghiep*", Financial Publishing House; Assoc. Prof. Nguyen Trong Co, Assoc. Prof. Nghiem Thi Tha (2017) - "*Giao trinh Phan tich Tai chinh*", Finance Publishing House. The authors have systematized the indicators with formulas reflecting the solvency of enterprises.

(5) Stephen A. Ross, Randolph W. Westerfield, Bradfort D. Jordan (2002) - "Corporate Finance", McGraw Hill; B.N. Lalithchandraa and Dr. N. Rajendhiranb (2021) – "Liquidity Ratio: An Important Financial Metrics", Periyar University. Foreign authors have provided an overview of the concept, formula and importance of solvency indicators in general and quick ratio indicator in particular.

Based on reports and studies which have the similar research topic, with a serious study of the theory and analysis of solvency of cement businesses, the article "Solutions to improve the quick ratio of listed cement enterprises in Vietnam" will contribute to clarifying some basic issues in the theory of quick ratio along with the current situation and proposing solutions to improve the solvency situation in general and the quick ratio in particular at listed cement companies.

3. Research method

The object of the study: is the quick ratio of listed cement companies in Vietnam, thereby proposing solutions to improve the quick ratio in order to develop listed cement enterprises in particular and the entire cement industry in Vietnam in general.

Research scope: quick ratio of 10 listed cement enterprises in Vietnam with data used from 2018 - 2020.

The authors use a variety of research methods such as:

- Qualitative method: collect empirical information and data over time (secondary data of stocks is obtained from websites such as: <https://vietstock.vn>; <https://cafef.vn>; <https://fireant.vn>).

- Method of calculation and comparison: select the appropriate criteria for calculation and set out in the article, from which it can be compared with other similar indicators.

- Forecasting method: based on the calculated and collected results, the authors make a forecast about the development trend in the next periods of the object being evaluated.

The combination and use of many different research methods is aimed at helping the process of studying the current situation of quick ratio of listed cement companies in Vietnam with high reliability and achieving better quality.

4. Results and discussion

4.1. Results

Overview of the study sample

By the end of 2021, according to statistics on the website vietstock.vn, there are about 41 companies on the three stock exchanges of Vietnam's HOSE, HNX and UPCOM working in the Cement and concrete products industry. Most of the cement manufacturing companies are just small-scale businesses, the market capitalization is not high, there are only 5 enterprises with the market capitalization of over 1,000 billion VND. Among these 41 companies, there are many companies that are not specialized in cement production. Within the scope of this research, the authors have selected a number of typical listed cement companies based on a number of criteria such as capitalization scale, degree of specialization in cement production, basic financial situation, the level of liquidity of company shares on the stock market, Therefore, 10 selected enterprises are the leading typical cement manufacturing enterprises on the Vietnamese stock market, they are shown in the table below:

Table 1: List of research companies

Stock Exchange	Symbol	Market cap (billion VND)	Full name
HOSE	HT1	8.623	Vicem Ha Tien Cement Joint Stock Company
	HVX	327	Vicem Hai Van Cement Joint Stock Company
HNX	BCC	3.043	Bim Son Cement Joint Stock Company
	BTS	1.396	Vicem But Son Cement Joint Stock Company
	HOM	655	Vicem Hoang Mai Cement Joint Stock Company
	CLH	329	VVMI La Hien Cement Joint Stock Company
UPCOM	FIC	3.543	Fico Corporation Joint Stock Company
	BDT	1.582	Dong Thap Building Materials & Construction Joint Stock Company
	QNC	514	Quang Ninh Construction & Cement Joint Stock Company
	CCM	322	Can Tho Mineral & Cement Joint Stock Company

Source: Author group obtained from vietstock.vn

With the research methods mentioned above, our team has calculated the quick solvency indicators of listed cement companies in Vietnam with the following results:

Table 2: Quick ratio of listed cement companies from 2018 to 2020 (unit: time)

Category		Quick ratio				
Formula		(Short-term assets - Inventories) / Short-term liabilities				
Company		2018	2019	2020	Change (value)	Change (%)
HOSE	HT1	0.34	0.33	0.35	0.01	2.55%
	HVX	0.31	0.19	0.09	-0.22	-70.22%
HNX	BCC	0.10	0.11	0.10	0.00	-3.61%
	BTS	0.14	0.16	0.11	-0.02	-17.36%
	HOM	0.51	0.50	0.60	0.10	18.95%
	CLH	0.21	0.27	0.58	0.37	178.40%
UPCOM	FIC	0.77	0.39	0.48	-0.29	-37.22%
	BDT	1.61	1.53	1.35	-0.26	-16.11%
	QNC	0.27	0.36	0.47	0.20	72.60%
	CCM	0.81	0.94	1.42	0.61	75.99%
Industry average		0.51	0.48	0.56	0.05	9.69%

Source: Author group calculated based on relevant statistics

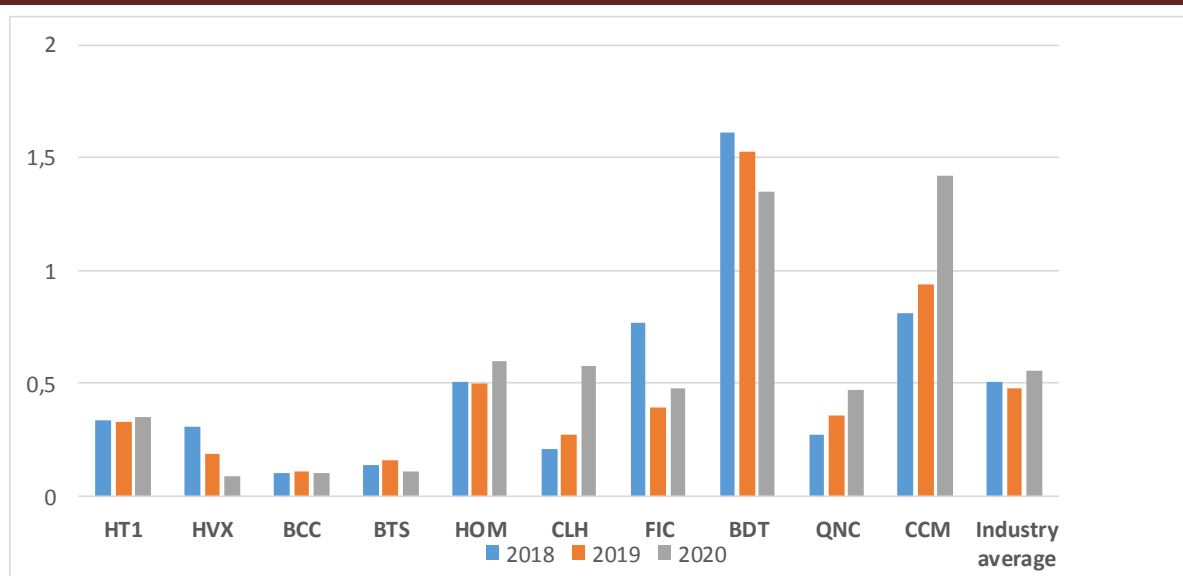


Chart 1: Quick ratio of listed cement companies from 2018 to 2020 (unit: time)

Source: Author group calculated based on relevant statistics

Table 3: Factors affecting the quick ratio of listed cement companies between 2018 and 2020

(unit: billion VND)

Categories		Short-term assets			Short-term liabilities			Inventories		
Company		2018	2019	2020	2018	2019	2020	2018	2019	2020
HOSE	HT1	1,923	2,074	2,332	3,727	4,101	4,628	654	728	716
	HVX	209	158	136	293	269	317	117	106	106
HNX	BCC	1,042	632	538	2,631	2,503	1,980	775	353	345
	BTS	666	709	588	1,953	2,063	1,836	395	381	376
	HOM	610	537	588	698	532	488	256	273	294
	CLH	46	47	73	153	128	88	14	12	22
UPCOM	FIC	2,037	1,766	1,419	1,876	1,908	1,531	590	1,022	677
	BDT	565	621	586	305	363	391	73	64	56
	QNC	409	467	573	1,088	1,111	1,083	115	71	67
	CCM	188	195	263	156	144	152	61	59	45

Source: Author group obtained from vietstock.vn

4.2. Discussion

4.2.1. Results

a) About quick ratio:

Based on table 2 and chart 1 above, we can see that most of the listed cement companies had quick liquidity ratios lower than 1 in the research period, many companies were lower than the industry average. In 2020, there were only 2 enterprises achieving quick ratio higher than 1, that was BDT and CCM, the remaining 8 enterprises all recorded this indicator at a level lower than 1. In the period 2018-2020, 5 enterprises recorded positive growth and 5 enterprises recorded negative growth in quick ratio indicator. During this period, the industry average quick ratio indicator of listed cement companies increased slightly from 0.51 to 0.56 times, increasing by 0.05 or 9.69%.

These results show that listed cement companies in Vietnam tried to improve their quick ratio throughout this period. In general, in large-cap companies, this indicator was usually stable and had little significant difference over the years. In contrast, in small-cap companies, this indicator often had strong fluctuations during the research period. For example, for large-cap companies like HT1, BCC, this indicator hardly changed significantly in the period 2018-2020, while for small-cap companies like CLH, CCM, this indicator had a significant fluctuation.

Overall, the quick ratio of listed cement companies in the research period was still quite low. In 2020, only BDT and CCM were enterprises with quick ratio > 1 , while the rest had values < 1 . This ratio indicates the ability of a business to pay its short-term debts without needing to urgently liquidate its inventory. When this coefficient is less than 1, it shows that the enterprise is having difficulty paying its due debts, forcing the enterprise to liquidate its inventory, leading to a loss in selling price. As a result, it is apparent that the solvency of most listed cement companies in this period were not guaranteed.

b) About factors affecting quick ratio:

To see more clearly the impact of each factor on the quick ratio of the listed cement companies, we have table 3. The quick solvency formula is similar to the current ratio formula, the only difference being in the numerator is Current assets - Inventories. With quick ratio, inventory is excluded because in current assets inventory is said to have less liquidity.

It can be seen that large-cap companies had more stability in the financial position of the business, less significant changes in the size of assets and capital. In contrast, for small-cap companies, the size of assets and capital sources of these businesses often had large fluctuations. This explains why the quick ratio of large-scale cement enterprises was usually stable and had little significant difference during the research period and vice versa. It is worth noticing that, for listed cement companies in Vietnam, in short-term assets, the inventory category always hold an important position and account for a high proportion of total short-term assets. Therefore, when excluding inventory in the calculation of the quick solvency ratio of an enterprise, the recorded results will more objectively and accurately reflect the financial situation and health of each enterprise.

- **Large capital intensive industry with long payback period:**

The cement industry is a heavy industry with a large investment in fixed assets and a long payback period, so the source of funding is long-term capital, mainly equity. However, the financial structure of Vietnam's cement enterprises includes short-term debt, long-term debt and equity, in which debt is the main source of funding.

- **Cyclical and seasonal industry, depending on economic growth and construction demand:**

Depending largely on economic development, national urbanization and construction demand in each economic cycle, the cement industry has the same development cycle as other economic sectors such as: Real estate, Construction, Public Investment.

- Period for cement consumption to drop sharply: February every year because this is the time of the Vietnamese Lunar New Year, the demand for construction decreases sharply.

- Period of high cement consumption: the second and fourth quarters of each year are usually the highest (after the Lunar New Year and the dry season in the South, favorable for construction).

- **High-risk industry:**

Cement businesses have high business risks, business results depend greatly on the ability to consume products. In the past years, the cement industry has faced a situation supply exceeds demand, along with the economic slowdown, the policy of cutting public investment, the real estate market freezes, causing revenue to decline and unsold inventory to increase. Many businesses have faced financial difficulties and a state of declining solvency.

In the recession period, many cement businesses that were newly invested in the previous stage, have encountered many difficulties in capturing the market share, consuming products, increasing unsold inventories, and increasing pressure in paying interest and debt. Therefore, the cement businesses have difficulty in capital to maintain the stable operation of the business. Accessing to bank capital is also limited due to the lack of available assets to mortgage.

- **Characteristics of cost and selling price of products:**

Cement businesses are characterized by cost of goods sold accounting for a relatively high proportion of net revenue. Input factors for cement production such as coal, electricity, and transportation costs have increased in recent years, putting high pressure on product prices and selling prices and greatly affected the business results of the enterprise.

Cement production is an industry with transportation costs accounting for up to 30% of product costs because input materials such as coal, limestone, clinker... are products with heavy loads, difficult to transport. Therefore, any enterprise that has the advantage of production location near mining mines, convenient infrastructure for transportation or mainly focusing on local consumption market will has a competitive advantage in price (thanks to cost savings) compared to cement producers in other places.

- **Unequal distribution between regions:**

There is an unequal distribution between regions because most of the cement enterprises are concentrated in the North and the North Central region. Cement factories are unevenly distributed, factories are concentrated mainly in the northern provinces such as Ha Nam, Ninh Binh, Thanh Hoa, Hai Duong, Because these provinces are places where many limestone and coal quarries are concentrated (in the North, there are currently 340 active limestone mines and mining sites - the main raw material for cement production), so that many cement factories are built here to save transportation costs of materials and facilitate exploitation, in when the number of large factories in the South is very limited. Therefore, the supply of cement in the North is often in excess, while the South is in short supply. In addition, for long-distance transportation, consumption costs increased in the South region.

4.2.2. Proposing solutions

In general, the quick ratio indicator of the whole cement industry has gradually improved year by year, but there have been still a number of enterprises with this indicator that only achieves a low coefficient and has not yet seen any clear growth. Therefore, a reasonable management policy will contribute positively to the improvement of the quick ratio of listed cement enterprises in the upcoming period. In addition, timely support from the Government is also essential to contribute significantly in improving this indicator.

With listed cement companies in Vietnam:

Firstly, listed cement enterprises need to build a reasonable asset structure, thereby creating safety for production and business activities, minimizing financial risks as well as ensuring the solvency of the business. We can see that most of the listed cement companies maintain their asset structure at a level where the proportion of long-term assets is larger than short-term assets. This is a reasonable asset structure with enterprises in the manufacturing industry in general and cement enterprises in particular. During the research period, listed cement companies always tried to maintain this reasonable rate. In the coming period, for businesses that have achieved the above ratio, the company must not be subjective but need to continue to maintain this reasonable asset structure. For companies that have not achieve this ratio, they should rebalanced gradually and appropriately in accordance with the conditions of each company.

Secondly, listed cement enterprises need to have a method to strictly control the inventory. It is necessary to develop a specific plan for production and consumption of products, suitable to the conditions and situation of each period. Too much inventory will lead to increased costs, loss of materials and damage during storage. Conversely, insufficient inventory will reduce sales or may cause customers to switch to competitors when they do not meet the necessary needs. Thus, it is necessary to predict accurately the market's demand to avoid losses, minimize the amount of excess goods, which can help save costs of fuel, labor and warehousing. In the research period, the inventory of some listed cement companies tended to

decrease. Although it shows that the consumption of cement products of the business is good, the business still needs to maintain a sufficient amount of available inventory to avoid falling into a shortage of goods and not being able to meet the demand of customers and market needs. As for the businesses that have not been effective in promoting the situation of inventory consumption, this is an issue that should be paid special attention because of the characteristics of cement products. Similar to many other building material products, cement products require huge storage capacity and are influenced by external factors such as weather, climate, If the products are stored for too long and have not been consumed, this will cause the warehouse capacity to be overloaded as well as the quality of cement to be significantly affected, thereby negatively affecting the products consumption process of the enterprise. Some solutions to help stimulate demand such as reducing sales prices, giving incentives to customers, reliable partners, simplifying the sales process, ... are options that should be considered carefully to increase products consumption.

Thirdly, It is necessary to study seriously the market and make a plan to consume inventory in accordance with the conditions of each period. Each different economic period always has certain risks. In order to be able to promptly respond and adapt to the conditions of each period, listed cement companies need to conduct market research, make detailed plans for each stage, For example, in 2020, many listed cement companies had difficulty in consuming products due to the impact of the Covid-19 epidemic. At that time, Vietnam's economy was strongly affected by the general difficulties of the world economy as well as the negative impact of the Covid-19 pandemic. In Vietnam, many construction, real estate, public investment projects have been delayed, this directly affects the construction material manufacturing industry in general and cement production industry in particular. These are all industries that greatly depend on the construction progress of works and projects. Before that, there were also periods when product consumption was affected by the difficult general economic situation. Therefore, businesses must always have a plan to stick to the conditions of each period. In the upcoming years, in order to prevent similar events that may occur, listed cement enterprises need to have a suitable plan to help improve their company's inventory management, ensure the output of the company's products, thereby contributing to improving the solvency of the business.

With the State, Government and relevant departments, ministries and branches:

Firstly, the State should apply synchronous solutions to improve the business environment of the cement industry. Improving the business environment helps listed cement companies minimize costs in the process of production and business activities, thereby improving operational efficiency and helping to improve solvency. Some solutions can be mentioned such as: The State needs to step up administrative reform, improve the efficiency and management capacity of the cement industry, thereby facilitating the implementation of State policies and regulations for businesses; with the local units, it is necessary to establish a number of organizations to serve the requirements of market economic development and international economic integration such as trade promotion centers, investment promotion centers and technology transfer centers, thereby to meet the economic development needs of the cement enterprises in that area; the local government also needs to maintain and create favorable conditions for listed cement enterprises in its region, such as planning the regional development strategy of the cement industry as a basis for businesses to operate, creating favorable conditions for the business like operation area, infrastructure, business location,; the Government and departments, ministries and branches need to coordinate to maintain a stable economic situation, coordinate harmoniously between monetary and fiscal policies to control inflation, stabilize exchange rates and purchasing power of Vietnam dong, These actions will create favorable conditions for the production and business activities of listed cement enterprises.

Secondly, the State should support enterprises in corporate finance management and financial risk management. In order to support financial risk management for listed cement companies, the Government and businesses need to coordinate a comprehensive assessment of financial risks, thereby helping to control factors that may cause problems and can support or finance loss when the risk occurs. To help businesses manage financial risks, specialized authorities also need to implement some solutions such as organizing seminars to help raise awareness and skills in financial risk management, promoting and spreading financial policies to enterprises; promoting the transparency of corporate financial information in order to build a

national database on corporate finance; Although the Government needs to strengthen the management and supervision of corporate finances, improve the efficiency of capital and asset management at enterprises, it should limit administrative interference, hindering production and business activities, and the right to freedom and self-responsibility of the enterprise. From there, businesses will be easier to mobilize, allocate and use financial resources, in order to achieve high efficiency in production and business activities and ensure safe and stable solvency.

5. Conclusion

Although the research period from 2018 to 2020 was full of difficulties and challenges for the construction materials in general and the cement industry in particular, the listed cement companies in the Vietnam's stock market constantly tried to grow bigger and stronger, gradually overcame the weaknesses of each enterprise and asserted its position in the market. The solvency was gradually managed and improved by listed cement companies, thereby gradually meeting the payment needs in the process of production and business activities of enterprises. However, the quick ratio of listed cement companies in Vietnam was still low, year-on-year growth was also still slow. There were still many limitations, not commensurate with the potential of the business and industry. In the upcoming periods, along with practical solutions that businesses can apply as well as the facilitation from the authorities, listed cement companies is believed to develop significantly and achieve more success in the future.

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RAISING CAPITAL- A VITAL FACTOR FOR THE HOTEL TOURISM BUSINESS

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ABSTRACT

Capturing the current situation of capital mobilization through the issuance of shares of listed companies in the tourism-hotel industry on the Vietnam Stock Exchange. Specifically:

+ Analyze information on financial situation and business performance of enterprises in recent years from the following tables: (1) Balance sheet; (2) Statement of business results; (3) Cash Flow Table

+ Analyze the situation of capital mobilization through the issuance of shares of listed companies in the tourism-hotel industry on Vietnam's stock market

From the above analysis, the achieved results and limitations need to be overcome, thereby making suggestions and proposals in improving the ability to raise capital through the issuance of shares as well as the situation in the future. corporate finance, creating favorable conditions for businesses listed in the tourism-hotel industry on the Vietnam stock market to develop

Keywords: capital mobilization through the issuance of shares; tourism-hotel industry on the Vietnam; Analyze the situation of capital mobilization

1. Introduction

Through nearly 61 years of continuous development, the Tourism - Hospitality industry has made a great contribution to the completion of the country's socio-economic tasks, is one of the spearhead industries of Vietnam's economy. , step by step innovation, development and regional and international integration. Therefore, the tourism - hotel industry is interested by many economists:

- The ministerial-level scientific research project in 2016 "Research and propose solutions for investment and development of tourist resorts", by many authors, chaired by the Institute of Tourism Research and Development, and chaired by Mr. Le Van Minh . The topic has raised the practical experience of investment and development in tourist resorts of China, Thailand, Korea, Malaysia, and has assessed the current situation of the system of mechanisms and policies of the Party and the State. in the field of tourism investment, mechanisms and policies related to tourism development, the current situation of investment and development of tourist areas in Vietnam, which clearly states the reality of foreign investment in the field of tourism. tourism, infrastructure investment in tourist areas, investment in the development of high-quality resorts, investment in development in selected tourist areas, research and general assessment of food investment in the development of tourist areas. On that basis, the topic proposes 10 solutions to improve investment policy, including: Solutions on mobilizing investment capital sources to develop tourism areas

- Report "Master plan on tourism development in the North Central region to 2020, with a vision to 2030" of the Ministry of Culture, Sports and Tourism. Content of the Report has focused on a number of issues such as assessing the current situation of tourism development in the North Central region; identify opportunities and challenges for tourism development in the region. On the basis of giving viewpoints, goals and forecasts of tourism development targets, a number of development orientations have been proposed, which set out orientations to attract investment in tourism development. The report also proposed solutions and organized the implementation of the plan, including groups of solutions such as group of investment solutions and investment capital mobilization

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- Doctoral thesis of Ho Chi Minh National Academy of Politics "Tourism economy in the Northern key economic region in international integration" by Doan Thi Trang, 2017. The thesis has presented the theoretical basis, and the reality of tourism economy in the key economic region in international economic integration, analyzing the current economic situation of tourism in the northern key economic region in international integration in the 2011-2015 period, from The thesis provides directions and key solutions to develop the tourism economy in the northern key economic region in international integration until 2020, with a vision to 2030

In addition, there are a number of Master's theses in Economics such as:

- Attracting investment capital to develop Khanh Hoa tourism until 2020 – Vo Van Can

- Mobilizing investment capital for tourism development in Quang Ngai- Nguyen Thanh Nam, 2011. The author has summarized the situation of capital mobilization for tourism development in Quang Ngai province. The solutions are synchronous, meeting the needs of tourism development in Quang Ngai province. However, due to the research context and research time being quite far away from the present time, moreover, the issue of raising capital through the issue of shares has not been mentioned

However, the above works have not been studied and analyzed in a complete and in-depth manner; The data has not been updated in a timely manner when analyzing the current situation of capital mobilization through the issuance of shares of listed companies in the tourism - hotel industry in Vietnam. Therefore, the article " Raising capital – A vital factor for the hotel tourism business " is not duplicated with previous studies on space and time. research. The author hopes that the topic will be the most complete, comprehensive and up-to-date research work on raising capital through the issuance of shares and factors that affect the business, either directly or indirectly, directly or indirectly. Listing industry in our country's tourism - hotel industry today so that we can propose the most practical solutions to restore, stabilize and develop sustainably in the coming period.

2. The situation of raising capital through the issuance of shares of listed enterprises in the tourism - hotel industry in Vietnam

2.1. Statistics of profitability ratios of listed tourism - hotel companies in Vietnam

Table 1. Statistics of profitability ratios of listed tourism - hotel companies in Vietnam

Serial	Business	Stocks	Year 2016		Year 2017		Year 2018		Year 2019		Year 2020	
			EPS (thousand dong)	ROE (%)	EPS (thousand dong)	ROE (%)	EPS (thousand dong)	ROE (%)	EPS (thousand dong)	ROE (%)	EPS (thousand dong)	ROE (%)
1	OCH Hotel and Service JSC	OCH	0,73	13,38	-0,03	-0,49	0,21	3,36	0,19	3,17	1,49	17,07
2	Thanh Cong Tourism Joint Stock Company	VNG	0,1	0,08	0,4	2,4	0,61	4,49	0,19	2,01	0,2	1,72
3	Dong A Hotel Group Joint Stock Company	DAH	1,08	7,88	0,8	7,3	0,26	2,49	0,02	0,17	-0,97	-10,09
4	Royal International Joint Stock Company	RIC	-0,26	-1,76	-1,88	-14,45	0,25	1,82	-1,03	-8,27	-1,16	-10,24
5	Orient Petroleum Tourism Joint Stock Company	PDC	0,33	3,47	0,43	4,33	0,01	0,08	0,12	1,15	-0,57	-6,07
6	Saigon Hotel Joint Stock Company	SGH	1,25	5,2	1,08	10,56	1,34	11,95	1,48	11,69	0,27	2,63
7	Ben Thanh Service Joint Stock Company	BSC	0,42	4,58	0,24	2,41	0,11	2,89	0,23	2,02	0,24	2,36
8	Dam Sen Water Park JSC	DSN	5,81	35,54	6,26	38,37	6,74	38,97	6,7	38,39	2,89	19,95
9	Hoi An Tourism - Service Joint Stock Company	HOT	1,17	9,61	1,35	10,38	2,28	16,33	1,46	10,93	-3,13	-32,12
Average			1,181	8,664	0,961	6,757	1,312	9,153	1,040	6,807	-0,082	-1,643

Source: Author compiled from financial statements of listed travel and hotel companies, years 2016-2020

The profitability of tourism - hotel businesses in Vietnam is expressed through the return on equity of the enterprise (ROE) and earnings per common share EPS. (Table 1). Specifically:

Vietnam's tourism and hospitality enterprises have an increasing trend of ROE, but the increase is unstable in the period 2016 - 2019 at about 6.7% - 9.2% of the whole industry, until 2020 again. fell heavily to negative 1.643 %. To explain this, in 2020, HOT company has a very large negative ROE coefficient, up to 32.12% or DAH and RIC companies are negative more than 10%. These two numbers show that HOT, DAH and RIC have serious problems using their capital and are in danger of closing down in the coming years. On the contrary, DSN company has continuously maintained its performance with high ROE, even in 2018, the company's ROE reached 38.97%. At the same time, 2 companies SGH and OCH also achieved return on equity ratio of up to 11.95% and 17.07%. According to William O'Neil's CANSLIM criteria, the company's ROE must also be at least 15% and if the business can maintain ROE \geq 20% and last for at least 3 years, then it can be convinced that it has a position on the top market.

2.2. Total mobilized capital increases every year

Table 2: Statistics of the total annual increase in mobilized capital of listed tourism - hotel companies in Vietnam

Unit: million VND

Stocks	31/12/2016	31/12/2017	31/12/2018	31/12/2019	31/12/2020
OCH	3.388.888	3.335.863	3.299.567	3.128.169	2.708.515
VNG	416.388	1.606.248	1.849.713	2.141.916	2.164.803
DAH	720.025	721.808	726.128	624.018	613.536
RIC	1.370.115	1.126.415	1.155.883	1.000.681	941.032
PDC	192.326	310.255	312.579	303.411	296.4867
SGH	147.886	161.73	172.117	186.209	179.053
BSC	44.758	47.576	46.488	43.697	40.339
DSN	243.111	263.961	276.0323	224.222	200.709
HOT	146.935	148.167	148.727	144.592	89.155
Average	741.16	858.003	887.471	866.324	803.737

Source: Author compiled from financial statements of listed travel and hotel companies, years 2016-2020

3. Result and limit

3.1. Result

According to the General Statistics Office, in 2018, the tourism industry welcomed 15.6 million international visitors, served over 80 million domestic tourists, and earned a total revenue of VND 620 trillion. In 2019, along with promoting promotion, advertising and tourism quality, Vietnam continues to maintain the title of "Asia's Leading Destination" for the second consecutive year by the World Travel

Awards (World Travel Awards). WTA) vote. In particular, Vietnam attracted the highest number of international visitors ever, reaching 18,008.6 thousand arrivals, up 16.2% over the previous year. Total revenue of accommodation and food services in 2020 is estimated at 586.7 trillion VND, accounting for 11.9% of the total and up 9.8% over the previous year. Travel revenue in 2019 reached VND 46 trillion, accounting for 0.9% of the total and up 12.1% over the previous year. Other service revenue in 2019 reached VND 556.4 trillion, accounting for 11.3% of the total and an increase of 8.5% compared to 2018

3.2. Limit

Entering 2020, the tourism industry in Vietnam as well as in other countries around the world has experienced an unprecedented sharp decline due to the Covid-19 pandemic. International visitors to our country are mainly foreign experts and technical workers working at projects in Vietnam because Vietnam has taken measures to prevent and control the Covid-19 epidemic, which has not yet opened to international tourism. economic. International visitors to our country in May 2020 were estimated at 22.7 thousand arrivals, down 13.6% over the previous month, of which arrivals by air decreased by 12.2%; by road decreased by 38%; by sea increased 161%. Compared to the same period last year, international visitors to our country in May decreased by 98.3%, of which arrivals by air decreased by 97.9%; by road reduced by 99.6% and by sea by 99%; visitors from Asia decreased by 97.9%; from Europe down 99.8%; from Australia down 99.9%; from the Americas by 99.8% and from Africa by 99.3%

4. Analysis of factors affecting capital mobilization through stock issuance of listed companies in the tourism - hotel industry in Vietnam

4.1. Natural, socio-economic conditions, tourism development potential of the locality

First of all, natural conditions must refer to climate and weather. This is an important factor affecting the decision of tourists, which in turn also affects investors. With favorable weather all year round, businesses will feel secure to invest because the number of tourists will be guaranteed to be stable, on the contrary, a lot of unfavorable weather will lead to limited tourists, making revenue when Mining will be limited, profits will decrease, thereby limiting investment.

Socio-economic characteristics also significantly affect the investment attraction of enterprises. A locality with a high socio-economic level will be prepared with good infrastructure such as traffic, electricity, communication, etc. for tourism business, with better support from local authorities in many areas. face. In addition, local human resources will meet the requirements for investors to recruit, much more convenient for recruiting workers in other localities. The higher socio-economic level means a higher standard of living of the people, which is a significant source of local tourists for tourism businesses, thereby increasing investment attraction

4.2. Economic, political - social stability and investment law

Economic, political and social stability is a state of normal, orderly and disciplined development in all areas of social life, ensuring that the economy is operated to meet production needs. business production and people's lives, the province's political system operates effectively, promotes the strength of unity and consensus of the whole people, political security and social order and safety are maintained. healthy economic and social environment. Economic, political - social stability is stabilizing life in all aspects for the people and for the normal development of the economy. Therefore, economic, political and social stability in the province holds a particularly important position today. It is both a condition for ensuring socio-economic development and attracting business investment in tourism development. If economic, political and social instability occurs in the province, it will adversely affect investment attraction of businesses, including tourism businesses.

The reality in our country shows that, in some provinces before, in order to cause socio-political instability, not only the economy did not develop, but the social field also had many pressing problems. Therefore, attracting investment does not work, especially attracting investment from businesses in tourism development

Thus, economic, political and social stability in the province is a prerequisite to minimize the risks of investment capital beyond the control of the investor. The economic - political - social instability causes the tourism business to be halted because tourists do not come to ensure their safety, the invested capital is difficult to recover, this is not the case. not only slows down the investment capital flow, but also makes the investment flow to move to another place safer and more attractive.

4.3. Flexibility and attractiveness of the system of policies to encourage investment

Investment attraction policies are always mechanisms and policies issued to create attractiveness and attract investors to make investment decisions. Investment attraction policies can be financial incentives such as tax incentives, including tax exemption and reduction; policies on supporting credit loans, minimizing risks; support policies on land, support policies on site clearance for investment projects; policies on labor, employment, policies on housing for employees; policies on science, technology, information support, product promotion...

The level of financial incentives that localities give businesses must first ensure that enterprises seek the highest profit in the general business conditions of the whole country. In which, tax incentives occupy the leading position among financial incentives for investment

Higher tax incentives are always reserved for investment projects with high investment ratio, large scale, long-term, using a lot of raw materials and labor in the province, reinvesting profits and having a high profit margin. higher level of “localization” of products and technology

Thus, once the risks are reduced and the rate of return increases, the investment will be abundant and stable, even if the overall growth rate of that province slows down. On the contrary, businesses will be more cautious, even leaving if the investment receiving place has outdated policies, not for the benefit of both parties. At that time, even with very high financial incentives offered by the locality, it is still difficult to attract businesses with active, prudent capital, always wanting and often having many opportunities to choose the appropriate investment market in Vietnam. many other places.

4.4. The development of the workforce, the level of science - technology and the business system in the country and in the area

A highly skilled workforce is a very important condition for a locality to overcome limitations in natural conditions and natural resources and become attractive to businesses investing in tourism. calendar. The lack of leaders, good managers, skilled technical human resources and the backwardness of science and technology level will hardly meet the requirements of enterprises to deploy their projects. them, slowing down and narrowing the flow of investment capital into tourism development

The development of science and technology will support tourism businesses to improve labor productivity and apply technological achievements to improve business efficiency. Therefore, with advanced technology, it is possible to attract more and more effectively investment capital flows of businesses in general and tourism businesses in particular

4.5. The country's international integration affects the attraction of business investment in tourism development in each locality

The country's deeper and more comprehensive international integration creates significant influences on attracting investment in tourism development. International integration creates favorable conditions for the development of trade and investment liberalization between countries, the visa policy is relaxed, low-cost airlines boom, thereby increasing travel between countries... This is a favorable condition to attract more international tourists, the tourist market therefore has a larger scale, thereby creating an attraction for businesses to increase investment in tourism development.

Competition is an inevitable element of the market economy and it is pushed higher in the context of international integration. Therefore, in order to improve the competitiveness of enterprises in attracting investment in tourism development in Vietnam, especially foreign-invested enterprises, the country must have great potential in terms of quality. quantity of human resources and conditions of tourism infrastructure,

state administrative apparatus, mechanisms, policies and the equal development of many other related industries such as transportation, energy, telecommunications, culture... can become an attractive point for foreign tourism businesses to invest in Vietnam

On the other hand, international integration makes domestic tourism businesses to compete with foreign tourism businesses in terms of attracting tourists, expanding tourist markets, competing in products, etc. tourism services... Therefore, in order to attract business investment in tourism development in our country, it is necessary to have the active support of the government in all aspects so that enterprises can rise up, produce and do business effectively. , increasing competitiveness with foreign enterprises

5. Solutions to improve the efficiency of capital mobilization through the issuance of shares of listed companies in the tourism - hotel industry in Vietnam

5.1. Improving business efficiency creates attraction for tourism-hotel stocks

Catching up with the wave of tourism after a fairly long period of social distancing from 2020 until now is the need not only of people and tourists but also necessary to promote socio-economic development. This requires a large amount of capital to invest, restore, repair and renovate tourist areas that have not been repaired for a long time due to lack of funds, and at the same time create a good experience for tourists. It is necessary that tourism businesses need a large amount of capital. However, in order to successfully raise equity capital, tourism businesses need to complete the following issues first:

- Enterprises need to actively improve the company's business strategy, towards green and sustainable tourism.
- Actively develop effective capital mobilization and investment plans
- Promote market research to attract customers
- Improve the staff team
- Implement Marketing - Mix policies suitable for each target market segment
- Strengthening joint venture activities

5.2. Corporate restructuring, corporate value enhancement, creating attractiveness for investors to corporate shares

The current situation of Vietnamese enterprises, when investing outside their main business areas, but the investment efficiency is not high, causing many large corporations to suffer losses, requiring corporations to quickly take restructuring measures to develop their businesses. develop better. Therefore, in order for the restructuring to take place successfully and effectively, tourism-hotel businesses need to continue to promote business restructuring solutions as follows:

First, appreciate the importance of restructuring.

Enterprises need to disseminate views on corporate restructuring to members of the company so that everyone can see the importance of the restructuring process.

Second, equipping the workforce with necessary knowledge about restructuring.

The restructuring process will have many changes, so it is necessary to train and equip the workforce with the necessary knowledge to be able to adapt to the new model and new problems after the restructuring

Third, determine the right time for restructuring.

Opportunity is always an important factor for businesses in any situation. Therefore, businesses should analyze and evaluate the operating cycle, the change of the business environment and from there determine the most reasonable time and decision to restructure.

Fourth, regularly restructure capital sources in accordance with each stage of business development in order to increase enterprise value.

In financial terms, the loss causes the asset value of the enterprise to decrease and of course the owner's equity is also reduced. Therefore, enterprises need to evaluate their debt solvency and interest

expenses to know how much debt should be mobilized from bond issuance and make an appropriate repayment plan

5.3. *Improve the management mechanism, business plan to mobilize capital effectively*

In the market economy, the opportunity to raise capital depends a lot on the reputation of enterprises. To ensure smooth capital mobilization, businesses need to pay attention to the following contents:

- (i) Prioritize exploiting the maximum potential of capital from within enterprises;
- (ii) Diversifying forms of capital mobilization;
- (iii) Derived from the characteristics of production and business and their capital situation to choose the appropriate form of capital mobilization;
- (iv) Only mobilize capital in the forms permitted by law.

For capital inside the enterprise, the Company must make better use of fixed assets, mobilize all existing fixed assets into production and business. For assets that are no longer suitable, not in use, not in use, etc., it is necessary to liquidate or sell them immediately to put "dead capital" into circulation.

5.4. *Improve capital efficiency*

Strengthening innovation of machinery and equipment, bringing into full play the capacity of machinery and equipment: In the current fierce competition, the investment in purchasing fixed assets in the right direction, for the right purposes, and for effective use. extremely important efficiency in improving the efficiency of capital use in general and fixed capital in particular. At the same time, the right investment will contribute to improve labor productivity and product quality, lower the cost of raw materials and prevent invisible wear and tear caused by scientific and technical progress. contribute to increase the prestige of the company's products and competitiveness in the market. Along with the renewal of machinery and equipment, the Company needs to choose an appropriate depreciation method, in order to quickly recover capital and limit invisible wear and tear, and at the same time ensure that the cost is not too high. In addition, the scientific organization of labor, the appropriate use of specialized or integrated teams, as well as the correct use of economic stimulus levers also have the effect of improving the efficiency of capital use.

5.5. *Capacity building of staffs*

Investment in management staff will bring higher profit rates and social efficiency than investment in other economic sectors, so this team requires better training to acquire knowledge. stable and capable of creative work... Labor of managers is one of the types of high-level labor, so it is necessary to recruit selectively, train thoughtfully and have similar remuneration. worthy, satisfactory. Besides, as mentioned above, the hotel - tourism industry is a smokeless industry, the main tourist who comes into contact with this service provider is the labor force of this business. Therefore, the training of professional service attitude, hospitality is an attraction for tourists to return to the places they have gone through. Therefore, besides the management team, businesses also need to focus on investing and training their staff to create the best service quality and attract customers

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FORECAST OF BANKRUPTCY RISK IN CONSTRUCTION ENTERPRISES LISTED ON VIETNAM'S STOCK MARKET

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ABSTRACT

Forecasting the bankruptcy risk of construction enterprises in Vietnam in order to contribute to the economy in our country is a very necessary and highly practical job. This article uses quantitative research methods to determine the relationship between bankruptcy risk and variables belonging to the groups of factors such as solvency, financial leverage, profitability ratio, operational efficiency, size and growth rate, cash flow, and asset structure of construction enterprises listed on Vietnam's stock market in the period from 2009 to 2020. The results showed the following factors including financial leverage, solvency, operational efficiency, scale, size and growth rate have an impact on the bankruptcy risk of construction industry enterprises. Through the analysis, the authors propose a number of solutions to prevent and limit the risk of bankruptcy in these enterprises in the coming time.

Keywords: bankruptcy risk, forecasting bankruptcy risk, construction enterprises.

1. Introduction

At the present time, construction industry enterprises have many development opportunities, but these enterprises also face many challenges and risks. The main reason leading to the bankruptcy of large enterprises in many countries around the world comes from abnormal signs in market economic conditions. From the impact of the economic crisis, the continuous fluctuations of interest rates and inflation as well as the policies of the state management directly affect businesses. Therefore, the prediction of bankruptcy risk is an important factor that businesses need to pay attention to. Forecasting the bankruptcy risk will help businesses identify imminent risks in time, thereby avoiding collapses, being able to stand firm against the fluctuations of the economy, and avoiding the risk of bankruptcy. With the collected data, the authors analyzed, evaluated, and forecasted the bankruptcy risk of construction industry enterprises listed on the Vietnamese stock market from 2009 to 2020, the results of the study are the basis for providing solutions to help construction enterprises in Vietnam overcome these bankruptcy risks.

2. Literature review and hypothesis in research model

2.1. Literature review

Over the years, there have been many studies on forecasting bankruptcy risk for businesses. Each project has many different approaches, in which there are some typical works:

Altman (1968) used the discriminant analysis method to predict the bankruptcy of manufacturing enterprises in the US, including 33 bankrupt enterprises and 33 non-bankrupt enterprises from 1946 to 1965. The results show that there are five independent variables that have the best predicting ability for the probability of a firm's default, which is the ratio: tax profit, interest and depreciation/total assets, cash/total assets and tax profit, interest, and depreciation/interest expense.

Research by James A.O (1980) on financial indicators and predictability of bankruptcy presented quantitative research results predicting business failure. The study shows four important groups of factors that are statistically affecting the failure of a business within a year, which are: (1) size of the business, (2) financial structure, (3) efficiency, and (4) liquidity.

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Research by Evridiki Neophytou, Andreas Charitou, and Chris Charalambous (2000) on predicting business failure has developed a classification model of industrial enterprises bankruptcy for the UK, using the technique of logit analysis. The dataset includes 51 bankrupt and non-bankrupt industrial enterprises in the UK for the period 1988 - 1997. The results show that a model that includes three financial variables namely profitability, cash flow, and variable financial leverage can accurately explain an overall 83% of a business's probability of bankruptcy before one year. The author's model can help managers, shareholders, financial institutions, and auditors in the UK to predict the financial crisis.

In Vietnam, there are also studies related to bankruptcy risk such as research by Nguyen Minh Ha, Nguyen Ba Huong (2016) analyzing factors affecting bank failure risk by Z-Score method, that put in place appropriate policies to enhance stability and soundness in the operation of Joint Stock Commercial Bank of Vietnam. The study uses data including 115 observations from 2009 to 2013. The research results show that factors have a negative relationship with bank failure risks such as credit growth, bad debt provision ratio, the ratio of net interest income, equity to total assets, income diversification, state ownership, and a number of years of operation of the bank and the listed bank. Factors that have a positive relationship with bank failure risk, include cost-effectiveness and scale.

2.2. Hypothesis in research model

2.2.1. Selection of variables for the model

Based on theoretical research on bankruptcy risk in enterprises and previous research results, the research team selects variables for the bankruptcy risk prediction model of construction enterprises listed on Vietnam Stock Exchange. The Vietnamese stock market is as follows:

Dependent variable: The dependent variable is a qualitative variable that reflects the bankruptcy risk of the enterprise (with bankruptcy risk and no bankruptcy risk). The authors use a binary variable to classify enterprises related to the possibility of bankruptcy risk. In which, companies at risk of bankruptcy are identified by one of the following signs: net working capital (NWC) < 0, return on total assets (ROA) < 0 and book value of total assets is less than total liabilities. The dependent variable is described in the following table:

Table 1: Description of dependent variable

Bankruptcy Risk = 1	Bankruptcy Risk = 0
The company has bankruptcy risk = 1 or is in danger of bankruptcy when it has one of 3 signs: NWC < 0, or ROA < 0, or the book value of total assets is less than total liabilities.	The company has bankruptcy risk =0 when there is no risk of bankruptcy, satisfying the condition NWC > 0, ROA > 0, and the book value of total assets is greater than total liabilities.
Businesses at risk of bankruptcy	The business is not at risk of bankruptcy

The selection of conditions to identify companies at risk of bankruptcy is based on the opinion of Altman (2007) conducting research on diagnosing the financial distress of companies on the Chinese stock market. In which, the NWC and ROA indicators are measured by:

$$NWC = \text{Average Current Assets} - \text{Average Current Liabilities}$$

NWC is net working capital which is the difference between current assets and current liabilities. It is a measure of a company's liquidity, operating performance, and short-term financial health. A company with NWC > 0 represents short-term assets sufficient to cover short-term liabilities. In contrast, NWC < 0 indicates that a part of long-term assets is being financed by short-term debt in other words, the company does not have enough current assets to ensure payment of debts, so it may fall into an insolvency situation.

$$ROA = \frac{\text{Profit after corporate income tax}}{\text{Total average assets}}$$

ROA is a measure of a company's profitability per dollar of assets. ROA provides investors with information about the profits generated from the amount of capital invested (or the number of assets). A

company with $ROA < 0$ shows inefficiency in business, and negative profit after tax due to loss can cause difficulties leading to bankruptcy.

When an enterprise with information about bankruptcy risk is given, say the i th enterprise, will be characterized by a vector of explanatory variables. $X_i = (X_{2i}, X_{3i}, \dots, X_{ki})$. Then investors, as well as economic actors, will be interested. to the probability that the enterprise is at risk of bankruptcy or in other words, the probability that the enterprise is at risk of bankruptcy.

$$P (RRPS = 1|X = X_i) \text{ (Probability of Bankruptcy risk).}$$

Independent variables : The variables are selected according to the quantitative Z-Score model. The independent variables in the model are the factors affecting the bankruptcy risk of an enterprise including solvency, leverage, profitability, operational efficiency, size and growth rate, cash flow, asset structure. The representative criteria for each factor are specifically defined as follows:

- Solvency: Solvency represents the ability to convert assets into cash to pay off debts. To measure the solvency of enterprises, the topic selected the current solvency criterion (CR) is determined as follows:

$$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

- Financial leverage: Financial leverage represents the extent to which debt is used in a company's total capital. The study uses the ratio of debt ratio (LEVD) to represent the financial leverage factor.

$$LEVD = \frac{\text{Total Liabilities}}{\text{Total Capital}}$$

- Return on equity: Reflecting the profitability of the company, the topic of selecting indicators Return on Equity (ROE) represents a company's rate of return.

$$ROE = \frac{\text{Profit after Corporate Incomes Tax}}{\text{Average equity}}$$

- Operational efficiency: Evaluate power force anime move of the capital coin. To represent the company's performance, the topic is to choose indicators total asset turnover (AT)

$$AT = \frac{\text{Net revenue}}{\text{Total average assets}}$$

- Size and growth rate: Growth rate reflects the ability to increase the size of the business. To reflect the growth rate of enterprises, the topic selects indicators The growth rate of total assets (AGROW) is determined as follows:

$$AGROW = \frac{(\text{Total assets in year } t - \text{Total assets in year } t-1)}{\text{Total assets in year } t-1}$$

- Net cash flow: Cash flow of a business reflects the cash flow and ability to generate cash in the business's operations. Enterprises with abundant cash flow bring positive influences to ensure the payment of debts. On the contrary, businesses with a shortage of money are at risk of not being able to pay their debts and facing bankruptcy. To reflect the company's cash flow situation, the topic of choosing the ratio of net cash flow to total assets is determined as follows:

$$CFA = \frac{\text{Net cash flow from operating activities}}{\text{Average total assets}}$$

- Asset structure: Asset structure reflects the proportion of each asset part to total assets. To reflect the company's asset structure, the topic is selected as the ratio of fixed assets to total assets (TANG). This indicator reflects the level of investment in fixed assets that determines productivity:

$$TANG = \frac{\text{Ratio of fixed assets}}{\text{Total assets}}$$

2.2.2. Hypothesis in research model

To reflect the factors affecting the enterprise's bankruptcy risk, the research team chooses a Figure research assist as after:

$$Y_{it} = \beta_1 + \beta_2 CR_{it} + \beta_3 LEVD_{it} + \beta_4 ROE_{it} + \beta_5 AT_{it} + \beta_6 AGROW_{it} + \beta_7 CFA_{it} + \beta_8 TANG_{it} + \varepsilon_{it}$$

The hypothesis for the research model is built based on the assessment of factors affecting the bankruptcy risk of enterprises. The following hypotheses are proposed in the research model:

Hypothesis H1: Liquidity ratio has a negative impact on the bankruptcy risk of enterprises.

Hypothesis H2: Financial leverage has a positive impact on the bankruptcy risk of enterprises.

Hypothesis H3: Profitability has a negative impact on the bankruptcy risk of enterprises.

Hypothesis H4: Operational efficiency has a negative impact on the bankruptcy risk of enterprises.

Hypothesis H5: Size and growth rate has a negative impact on the bankruptcy risk of enterprises.

Hypothesis H6: Net cash flow to average total assets has a negative impact on the bankruptcy risk of enterprises

Hypothesis H7: The proportion of fixed assets investment has a positive impact on the bankruptcy risk of enterprises.

3. Research method

3.1. Collected data

After removing the samples that are not eligible, the authors build a model of 126 construction companies listed on the Vietnam stock market in the period 2009 - 2020 (Vietstock.vn, Cafef.vn, Cophieu68.vn, FiinPro). The study classified the data samples into 2 groups. Group 1 has bankruptcy risk =1 and group 2 have bankruptcy risk = 0. With a total of observations of group 1 including 506 samples with bankruptcy risk and group 2 with 1030 samples without bankruptcy risk.

Use the correlation coefficient to consider the degree of correlation between the explanatory variables and the dependent variable and the correlation relationship between the explanatory variables together. Checking the phenomenon of multicollinearity between variables through the coefficient of variance exaggeration obtained the results $VIF = 1.1 < 10$. Before estimating and testing the model, through Levin-Lin-Chu test (2002) and Harris-Tzavalis test (1999) and test results at 5% significance level, all data series in the sample are stationary series.

3.2. Data processing methods

There are many methods used to estimate models with dependent variables receiving binary values such as the linear probability model, Logit model, Probit model, Tobit model. This study uses the Logit model and Probit.

Logit model (Maddala, 1984), the p_i is determined by:

$$P(Y_{it} = 1|X_{it}) = \frac{1}{1+e^{-Y_{it}}} = \frac{e^{Y_{it}}}{1+e^{Y_{it}}} \quad (2.1)$$

Mô hình Logit không nghiên cứu ảnh hưởng trực tiếp của các biến độc lập đối với biến phụ thuộc mà xem xét ảnh hưởng của các biến độc lập đến xác suất Y (rủi ro tài chính) nhận giá trị bằng 1 hay kỳ vọng toán của Y.

$$\text{Set the OR ratio (Odds ratio): } OR = \frac{p_i}{1-p_i} = e^{Y_i} \quad (2.2)$$

OR indicates how many times the probability $Y=1$ (with bankruptcy risk) is equal to the probability $Y=0$ (without bankruptcy risk).

Transform formula (2.1) into linear form:

$$L_{it} = \ln \ln \left(\frac{p_{it}}{1-p_{it}} \right) = \beta_1 + \beta_2 CR_{it} + \beta_3 LEVD_{it} + \beta_4 ROE_{it} + \beta_5 AT_{it} + \beta_6 AGROW_{it} + \beta_7 CFA_{it} + \beta_8 TANG_{it} + \varepsilon_{it} \quad (2.3)$$

Use (2.4) to estimate $\ln \ln \left(\frac{P_i}{1-P_i} \right)$ (also known as Log – Odds).

Since the survey data sample is panel data, we will use the Logit model with panel data. The regression models with panel data used are: the population mean regression model (PA), fixed effects regression model (FEM), and random effects regression model (REM). Correspondingly there will be Logit PA, Logit FEM, and Logit REM methods.

Mô hình Probit: This method was proposed by Goldberger (1964) with the assumption that: the dependent variable Y will receive the value 0 or 1 depending on the utility I determined by the independent variables. The greater the utility, the greater the probability that Y = 1.

Supposing that:

$$I_{it} = \beta_1 + \beta_2 CR_{it} + \beta_3 LEVD_{it} + \beta_4 ROE_{it} + \beta_5 AT_{it} + \beta_6 TA_{it} + \beta_7 CFA_{it} + \beta_8 TANG_{it} \quad (2.4)$$

Assume there is a limit I^* so that: $Y = \begin{cases} 1 & I > I^* \\ 0 & I < I^* \end{cases}$

I^* is not observable. Assuming that:

$$I^* = I + U$$

Or:

$$I^* = \beta_1 + \beta_2 CR_{it} + \beta_3 LEVD_{it} + \beta_4 ROE_{it} + \beta_5 AT_{it} + \beta_6 TA_{it} + \beta_7 CFA_{it} + \beta_8 TANG_{it} + U_i$$

If U is distributed according to the normal rule $N(0,1)$, then (2.4) can be estimated: $p_i = P(Y = 1 | X_{ji}) = P(I_i^* < I_i) = F(I_i)$

where F is the cumulative probability distribution function of U .

The survey data sample is panel data, so the PA Probit and REM Probit models will be used.

4. Model results

4.1. FEM Logit model estimation results

Table 2: Results of regression analysis of FEM Logit model 1

Conditional fixed-effects logistic regression	Number of obs	=	1,104
Group variable: id	Number of groups	=	92
	Obs per group:		
	min	=	12
	avg	=	12.0
	max	=	12
	LR chi2(6)	=	182.31
Log likelihood = -370.69091	Prob > chi2	=	0.0000

y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
cr	-.628492	.2333085	-2.69	0.007	-1.085768 - .1712158
levd	4.69513	1.005721	4.67	0.000	2.723953 6.666307
roe	-1.250071	.2833324	-4.41	0.000	-1.805393 - .6947501
at	-1.930889	.2738697	-7.05	0.000	-2.467664 -1.394115
ta	-1.79e-13	7.10e-14	-2.52	0.012	-3.18e-13 -3.95e-14
cfa	1.521997	1.190869	1.28	0.201	-.8120634 3.856057
tang	.9877817	.6344349	1.56	0.119	-.2556878 2.231251

Source: Author's team calculated on STATA 15 software

The estimated results of the FEM Logit method model are statistically significant with the research sample. At the 5% significance level, there are variables CR, LEVD, ROE, AT, TA that have an effect on the dependent variable Y. There are two factors CFA, TANG is not affected.

Regarding the impact direction of the variables:

The coefficient shows the positive impact of financial leverage on bankruptcy risk. The larger the difference, the greater the probability (bankruptcy risk = 1) of bankruptcy of construction companies.

Coefficient $\hat{\beta}_2 < 0$; $\hat{\beta}_4 < 0$; $\hat{\beta}_5 < 0$; shows the negative impact of current ratio, return on equity, asset turnover, average total assets on bankruptcy risk, respectively.

The coefficient $\hat{\beta}_3 > 0$ shows the positive impact of financial leverage on the probability of bankruptcy risk.

4.2. Re-estimated results after removing variables that are not statistically significant

Table 3: Results of regression analysis of FEM Logit 2 model

Conditional fixed-effects logistic regression	Number of obs	=	1,104
Group variable: id	Number of groups	=	92
	Obs per group:		
	min	=	12
	avg	=	12.0
	max	=	12
	LR chi2(4)	=	178.48
	Prob > chi2	=	0.0000
Log likelihood	=	-372.60994	

y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
cr	-.7272601	.2318909	-3.14	0.002	-1.181758 - .2727623
levd	4.626468	1.001809	4.62	0.000	2.662959 6.589976
roe	-1.2445	.2832065	-4.39	0.000	-1.799575 -.6894256
at	-1.920445	.2705472	-7.10	0.000	-2.450708 -1.390182
ta	-1.73e-13	6.84e-14	-2.54	0.011	-3.07e-13 -3.95e-14

Source: Author's team calculated on STATA 15 software

4.3. Forecast results from the model

Forecast: The study uses FEM Logit1 and FEM Logit2 models to make predictions on observations of data samples. The following table will show the forecast results and calculate the statistics on the forecast results.

Table 4: Forecast results of FEM Logit1 and FEM Logit2 models

Classified	FEM Logit 1			FEM Logit 2		
	1	0	Total	1	0	Total
1	425	81	506	380	126	506
0	473	557	1030	398	632	1030
Total	898	638	1536	778	758	1536
Sensitivity	83.99%			75.10%		
Specificity	54.08%			61.36%		
Rate of type I error	45.92%			38.64%		
Rate of type II error	16.01%			24.90%		
Correct classification	63.93%			65.89%		

Source: Author's team calculated on STATA 15 software

From the table, it can be seen that, for the FEM Logit1 model, the accuracy of the classification is 63.93% while the FEM Logit2 model is 65.89%. Levels of violations of type I and II are 45.92% and 16.01%, respectively, for the FEM Logit1 model; 38.64% and 24.9% for the FEM Logit2 model.

4.4. Estimation results of REM Probit model

With the data set of the study, the REM Probit regression model estimate gives the following results:

Table 5: REM Probit model estimation results

```

Random-effects probit regression      Number of obs      =      1,536
Group variable: id                   Number of groups   =      128

Random effects u_i ~ Gaussian        Obs per group:
                                      min =      12
                                      avg =     12.0
                                      max =      12

Integration method: mvaghermite      Integration pts.   =      12

Wald chi2(6)                         =      .
Prob > chi2                           =      .

Log likelihood = -648.34968
    
```

y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
cr	-.2423485	.0789382	-3.07	0.002	-.3970646 - .0876325
levd	2.743576	.4312283	6.36	0.000	1.898384 3.588768
roe	-.0004095	.005548	-0.07	0.941	-.0112833 .0104644
at	-.9808188	.1300976	-7.54	0.000	-1.235805 -.7258322
ta	-7.54e-14	2.38e-14	-3.16	0.002	-1.22e-13 -2.87e-14
cfa	.2590576	.6361438	0.41	0.684	-.9877614 1.505876
tang	1.720794	.2990671	5.75	0.000	1.134634 2.306955
_cons	-1.533271	.3925545	-3.91	0.000	-2.302664 -.7638786
/lnsig2u	-.2883213	.2233514			-.7260821 .1494394
sigma_u	.8657487	.0966831			.6955579 1.077582
rho	.4284149	.0546933			.3260551 .5372905

LR test of rho=0: chibar2(01) = 138.88 Prob >= chibar2 = 0.000

Source: Author's team calculated on STATA 15 software

Similar to the FEM Logit model, the Probit REM model also shows the factors that affect the probability of financial risk (with a significance level of 5%). There are two unaffected variables, ROE and CFA. In the said report, the standard deviation of the random effect is 0.8657487. This coefficient indicates that the estimated results obtained with REM are different from those obtained with the OLS method. Estimation results of the REM Probit model after removing the factors that do not affect the dependent variable.

Table 6: REM Probit model estimation

Random-effects probit regression	Number of obs =	1,536
Group variable: id	Number of groups =	128
Random effects u_i ~ Gaussian	Obs per group:	
	min =	12
	avg =	12.0
	max =	12
Integration method: mvaghermite	Integration pts. =	12
Log likelihood = -648.43481	Wald chi2(4) =	.
	Prob > chi2 =	.

y	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
cr	-.2454637	.078614	-3.12	0.002	-.3995444	-.0913831
levd	2.737701	.4304107	6.36	0.000	1.894111	3.58129
at	-.9746151	.1289613	-7.56	0.000	-1.227375	-.7218556
ta	-7.55e-14	2.38e-14	-3.17	0.002	-1.22e-13	-2.89e-14
tang	1.715514	.2985999	5.75	0.000	1.130269	2.300759
_cons	-1.527526	.3919354	-3.90	0.000	-2.295706	-.7593469
/lnsig2u	-.294023	.2231069			-.7313045	.1432586
sigma_u	.8632841	.0963023			.693744	1.074257
rho	.4270193	.0545884			.3249085	.5357535

LR test of rho=0: chibar2(01) = 139.29 Prob >= chibar2 = 0.000

Source: Author's team calculated on STATA 15 software

Forecast: Research using REM Probit1 and REM Probit2 models to make predictions on observations of data samples. The following table shows the forecast results and calculates statistics on the forecast results.

Table 7: Forecast results of REM Probit1 and REM Probit2 models

Classified	REM Probit 1			REM Probit 2		
	1	0	Total	1	0	Total
1	258	248	506	257	249	506
0	104	926	1030	104	926	1030
Total	362	1174	1536	361	1175	1536
Sensitivity	50.99%			50.79%		
Specificity	89.90%			89.90%		
Rate of type I error	10.10%			10.10%		
Rate of type II error	49.01%			49.21%		
Correct classification	77.08%			77.02%		

Source: Author's team calculated on STATA 15 software

From the table, it can be seen that for REM Probit1 model, the accuracy of classification is 77.08% while that of REM Probit1 model is 77.02%. Type I and II error violations are 10.1% and 49.08%, respectively, for the FEM Logit1 model, which is 10.1% and 49.21% for the FEM Logit2 model, respectively.

The forecasting results of the models show that the REM Logit model has the same type 1 violation error, but the type 2 violation error is lower than the result from the REM Probit model (the type 2 error represents the prediction error of the different types of data). the firm is at risk of bankruptcy, but the model estimates show no bankruptcy risk).

The forecasting results of the models show that the REM Probit 1 model gives the most accurate forecast results (Correct classification = 77.08%), and the error rate of type 1 (the percentage of companies

that do not bankruptcy risk, but the model's estimate of bankruptcy risk) is the lowest. However, the type 2 error is still quite high 49.01%.

Thus, for the purpose of the study, the team decided to choose the FEM Logit 2 model to predict bankruptcy risk in listed construction enterprises, even though the model's overall forecast ratio is not high but there is a type 2 error that is smaller in the build model.

5. Conclusion and recommendations

The results obtained from this study can provide evidence to conclude that factors including financial leverage, solvency, operational efficiency, size and growth have an impact on the bankruptcy risk of construction industry enterprises:

Financial leverage has an impact and is in the same direction as the risk of bankruptcy of the company. This result shows that in financial leverage if debt accounts for a large proportion, the bankruptcy risk of the company will increase and vice versa. This result is consistent with the results obtained from previous studies by Beaver (1966), Ohlson (1980), Sori (2004), Zhang (2007), Wang (2010), Hoang Tung (research on credit risk) or Nguyen Trong Hoa (research on credit rating), financial leverage (total debt/total assets) has an impact and has the same direction as the risk of company bankruptcy. The use of financial leverage within a certain level will reduce the average cost of capital of the enterprise, and the enterprise will have many advantages to maximize profits. However, this is only appropriate when using leverage in high and stable growth businesses with low-interest costs, which will bring significant effects. In addition, the risk of default will be very high and may lead to bankruptcy if the business uses large leverage but the profit is not enough to pay the debt and interest.

The liquidity ratio of the enterprise has a negative impact on the bankruptcy risk of the company. Research results show that the lower the liquidity ratio, the higher the risk of bankruptcy and vice versa. The analysis of the above indicator is of a momentary nature and does not reflect an entire period or stage of business operations. Therefore, the current ratio needs to be continuously reviewed along with the qualitative analysis of the current asset factors.

Performance ratios such as ROA have a negative effect on the bankruptcy risk. This result is also consistent with the study of Beaver (1966), the studies of Altman (1968, 1977, 2000), Ohlson (1980), and Zhang (2007). The regression results obtained from this study show that both these ratios have a negative effect on the bankruptcy risk. This means that the higher the profit, the lower the bankruptcy risk. Operational efficiency is one of the factors that greatly affect the probability of bankruptcy of a business. Operational efficiency shows the profitability of a business.

The size and growth rate has a negative impact on the bankruptcy risk of enterprises. The size and growth rate of market capitalization are also important metrics for evaluating the success or failure of a publicly listed business. A company that is growing strongly, with good financial status, and good industry prospects, the share price of that company will be high and vice versa. Thus, stock prices reflect the expectations of investors and the market. If the expectation is good, it can be understood that the company's health is good and the risk of bankruptcy will be low, otherwise, the risk of bankruptcy will be high.

From the results of the above research, the authors propose some recommendations:

First, enterprises need to strengthen asset management to increase the efficiency of asset use. Regarding the financing structure of assets, it is advisable to finance the assets of the enterprise with more stable capital, that is, to increase the net working capital of the enterprise. Construction industry enterprises listed on Vietnam's stock market need to focus on effective management of inventories and receivables, as well as current assets in general.

Second, enterprises should establish a reasonable capital structure to ensure financial safety and take advantage of the positive impact of financial leverage. Enterprises need to have the policy to exploit and create a reasonable fixed capital source and in order to have orientation in capital mobilization, in the long term, each enterprise needs to focus on building a reasonable target capital structure.

Third, enterprises should synchronously apply appropriate measures to improve the efficiency of using resources and materials in the business, and improve efficiency and operational efficiency, thereby achieving profitability. high benefit.

Fourth, enterprises need to increase investment in renewing machinery and equipment, modernizing technological lines to improve the efficiency of using fixed capital and increase the competitiveness of products and projects. In addition, enterprises should develop a roadmap to gradually reduce the production and processing methods, proceeding to invest in a closed cycle from exploitation, production of raw materials, processing of finished products, and consumption.

Fifth, enterprises need to diversify forms of capital mobilization of enterprises, actively develop business capital plans, promote consumption, and seek to expand domestic and international markets.

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THE IMPACT OF BUYING-ON-MARGIN SERVICE ON THE PERFORMANCE OF VIETNAMESE SECURITIES FIRMS

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ABSTRACT

The stock market of Vietnam after over 20 years of operation and development has gained remarkable achievements in aspects of the market size, the product diversity, positively rising market liquidity, the improving investor base and investor size. The brokerage firms are one of the market participant types significantly contributing to the general development of the stock market of Vietnam. Not only bridging the market supply and demand, providing investors with better market access and more portfolio diversification opportunities, brokerage firms also never cease to develop their products supporting investors' stock tradings, including buy-on-margin service, which indirectly contribute to higher market liquidity recently. Besides, developing BoM service could increase the profitability of brokerage firms, creating motivation and financial resource for their further development paths. In this regard, this paper, by deploying fixed effect models, investigates the impact of BoM service on the performance of Vietnamese brokerage firms. The findings show the positive influence of BoM service on those firms' profitability, grounding for some policy recommendations to promote this service at brokerage firms.

Keywords: Buying-on-margin service, Performance, Brokerage firms

1. Introduction

On the top leading and thriving stock markets throughout the world, Buy on Margin (BoM) service provided by securities firms has been established, introduced to the market, and developed for a long time. In Vietnam, buy-on-margin service was officially allowed to be implemented and offered by brokerage firms since 2011 according to Circular No. 74/2011/TT-BTC issued by the Ministry of Finance on June 1, 2011, 11 years after the opening of the Vietnamese stock market and trading exchanges.

In detail, margin trading or Buy-on-margin service is the term referring to a financial service for stock transactions of investors which is offered by brokerage firms. The definition of margin trading has been specified in Clause 10 Article 2 of Circular No. 120/2020/TT-BTC: "Margin trading is a transaction to buy stocks using borrowed money from a brokerage firm, in which the newly purchased stocks and other stocks that are allowed to be margined by the customer are used as collaterals for the deposit mentioned above". In other words, margin trading means the purchase of stocks by an investor using a line of credit provided by a brokerage firm, to purchase stocks that are licensed to perform BoM service; Afterwards, the money borrowed by investors to buy shares through this trading session is secured by money or stock of the investor or is mortgaged by the stocks purchased.

As for the investors, basically, BoM service brings particular benefits to investors, especially investors with relatively limited financial potential compared to the demand to trade (buy) stocks. Specifically, using financial leverage allows investors take advantages of borrowed capital, increase investment scale, enhance efficiency of capital use, thereby having the opportunity to increase their investment profits. In addition, with the financial support from the BoM service, investors could diversify their investment portfolio by pouring money into various investment classes. This could help investors enjoy a considerable reduction in investment risks which could be relatively difficult to achieve if the size of investment capital is limited. This positive aspect from BoM service is also particularly beneficial for investors in some other circumstances. For instance, the investor currently owns an existing portfolio that has high-quality profitability and has not

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yet intended to divest from this portfolio, if the investor decides to mortgage that portfolio to perform margin trading on new investments, they can take advantage of opportunities to amplify investment returns as well as diversify more effectively.

Nonetheless, it is essential to be noticed that the application of BoM service is the utilization of debt and financial leverage, and therefore, while margin trading could provide investors with an opportunity to magnify profits, it could also amplify the level of investment loss of investors in periods of unfavorable stock prices or stock market's distressed periods. Even in the worst circumstances, when the stock market experiences adverse shocks, a significant drop in stock price is likely to make the size of the equity or the size of the mortgage portfolio to carry out margin trading of investors is reduced dramatically, which is reflecting a serious decline in investors' ability to fulfil their financial obligations to their lenders (the ability to repay loans and interest), whereby brokerage firms will issue margin calls for trading accounts of investors and this execution generally brings disadvantage consequences for investors.

As for brokerage firms and the stock market, in addition to generate enormous revenue from service fees, BoM service with the main purpose of financially supporting investors' transactions could indirectly reinforce and promote the expansion and development of other business lines of the brokerage firms including brokerage service, and then intensify the competitiveness of brokerage firms coupled with improving the market shares and the position of the brokerage firms in the industry. Regarding these benefits, brokerage firms have actively deployed this service to their investors.

The main financial resources that the brokerage firms rely on to offer this service come from the equity of the brokerage firms, bank credit, and capital mobilization through the corporate bonds (Hanh Nguyen, 2021). Consequently, when investors' demand for BoM service increases, especially during periods of active stock market movements, brokerage firms are encouraged to raise a larger amount of capital from aforementioned sources of finance to provide their customers with the best support, which helps the firms to gain trusts, loyalty, and long-term relationship with the current investors as well as promising future investors. As a result, the expansion of margin trading is sustainably maintained (Hanh Nguyen, 2021).

Besides, thanks to the margin trading service, the trading size of investors has been amplified and the market liquidity has also enhanced accordingly. In the first quarter of 2021, the scale of new cash flow into Vietnam's stock market was only 85,000 billion VND while market liquidity reached a new record of 23,000 billion VND to 30,000 billion VND per trading session, an increase of 3 to 4 times higher than the previous periods, reflecting the attribute of margin trades (Hanh Nguyen, 2021). Specifically, the outstanding balance of BoM service provided to investors in the first quarter of 2021 reached VND 101,000 billion, an increase of 53% compared to the same period in 2020 and an increase of 25% compared to the fourth quarter of 2020 (Van Giap, 2021).

In brief, BoM service offers a mixture of benefits and risk for the entire stock market in general and different participants in the stock market in particular, especially the brokerage firms. Since the brokerage firms play a crucial role in providing products and services, sometimes with financial leverage, to support investors' transaction, market liquidity and market development, the sustainable development and the operational safety of brokerage firms is essential. While the profit from BoM is attractive to the brokerage firms, the failure of the BoM service with loose supervision could noticeably hurt not only securities firms but also the investors' investment and the stability of the market. Therefore, the assessment of the impact of running BoM service on the operational efficiency of the securities firms plays an important role for both brokerage firms and policymakers in producing appropriate strategies towards the BoM service, which is the main purpose of this paper.

With a limited number of previous studies scrutinizing the contribution of BoM service on the performance of the securities firms in both domestic and international scales discussed in the next section, our paper will considerably enrich the research field by providing empirical research approach with intensive dataset of Vietnamese securities firms. This will remarkable help us to extract reliable empirical findings about the importance of BoM service in the operation of securities firms in Vietnam, from which valuable

and feasible policy recommendations will be withdrawn and proposed. To reach that goal, this paper is designed to test two hypotheses:

Hypothesis 1: The scale of margin trading has an impact on the business performance of brokerage firms;

Hypothesis 2: There is the certain difference in the operational efficiency between brokerage firms with and without the BoM service

2. Literature review

There have been a limited number of interenational researches conducting studies related to securities firms and only a few of them scrutinized the impact of BoM service on investors as well as brokerage firms and stock markets.

Due to the limitation of the data source for the comparative analysis, some recent studies have merely employed qualitative analysis. Miransari (2016) conducted a research project on the performance of brokerage firms and at the same time, evaluated the role of brokerage firms in the implementation of customers' investments through examining the services that brokerage firms provide or investment orientation and advices offered to customers. A recent research project, Ratul (2019), analyzed the financial performance of the three leading brokerage firms in Bangladesh, also mainly based on the quanlitative analysis of factors such as liquidity, total assets, debt or profitability ratio.

A few studies focused on assessing the impact of margin trading volume on liquidity and volatility of the stock market. For instance, Yang and Wu (2011) researched "Impact of margin trading on liquidity and volatility of the stock market - empirical research in Shanghai stock market" and concluded that margin trading has an impact on the Shanghai stock market in aspects of actively promoting the stock market liquidity and inhibiting market volatility. Chen (2016) found a positive relationship between the size of the margin trading and the volatility of the stock market when the market is strongly growing. In the meantime, Wu & et al (2017) came to the relatively positive conclusion that margin trading in 2010 significantly reduced the volatility of the Chinese stock market due to the influence of the world economic crisis.

Disagree with Wu & et al (2017), Lv and Wu (2019) indicated the negative effects of margin trading to stock price volatility. The authors have concluded that the variation of margin trading can lead to the overvaluation of stocks and information about the stock's price limited, thereby leading to a greater vulnerability to future crashes.

In Vietnam, quantitative studies on the operational efficiency of brokerage firms are relatively limited, especially studies on BoM service. Most of the current research related to BoM service in Vietnam are qualitative and solely focus on:

Firstly, majority of studies have focused on analyzing the BoM service from the perspective of a business operation within a specific brokerage firm such as Saigon Securities Company (Le The Tai, 2015), Ho Chi Minh City Securities Company (Do Van Khiem, 2015), or in the system of Vietnam's industrial and commercial banks (Nguyen Hong Linh, 2008). Most of the aforementioned studies only went through in-depth quanlitative analysis of the influence of BoM service on each brokerage firm from different causes including the policies of margin interest rate, operating processes of the service along with regulations in the margin lending of each brokerage firm, which helped the authors to propose appropriate policies and solutions for developing the service further.

Huynh Thi Phuc Thuan (2011) analyzed the operation status of brokerage firms and the status of BoM service in brokerage firms, to enquire about the essential, benefits, and obstacles when performing this operation, offer solutions aimed at developing BoM service at brokerage firms more effectively, bringing benefits to both brokerage firms and the stock market.

Secondly, a few of the prior Vietnamese literature assess the risks of BoM service for the stock market in particular and the financial system in general, by considering the inter-sectoral relationship between brokerage firms and the commercial banking system in providing BoM service. Thanh Phuong Nguyen et al.

(2013) studied, analyzed and evaluated the impacts of BoM service on commercial banks, and at the same time, pointed out the role of lending and stock trading in commercial banks' operations, provided orientations and solutions to support the development of BoM service at Vietnamese commercial banks. Besides, Tran Hong Ha (2017) discussed problems in the mechanism for depositing stocks on the underlying market, provided conditions and recommended a roadmap for loosening margin requirements for trading on the underlying market.

Thus, these days, in Vietnam and also in the world, there has not been any empirical research specifically evaluating the operational efficiency of brokerage firms in the relation to the BoM service. Most of the previous studies only evaluated the efficiency in the operations of brokerage firms through the quantitative analysis of financial data. Some other studies on margin trading also only stopped at studying the impacts of the BoM service on a particular brokerage firm but did not provide an overview of the impacts of the BoM service on the brokerage firms in general. This state of previous literature opens room for further discussion, especially with reliable arguments and findings supported by empirical approaches, which will be tapped on in this paper.

3. Methodology

3.1. Research methodology

This research uses econometric models for panel data, including Pooled Ordinary Least Square - Pooled OLS, Fixed Effect Model (FEM), and Random Effect Model (REM) to determine the factors affecting the operational efficiency of brokerage firms, from which, conclude the influence of BoM service. Based on Ratul (2019), Miransari (2016), and Okay and Kose (2015), the authors built a model to evaluate the performance of brokerage firms (represented by ROA, or ROE) with different explanatory variables, including those related to margin trading (Table 1).

Table 1. Statistical table of variables of the research model

Variable Name	Ref. code	Measurements
Independent variables		
Margin trading	dmarg	Binary variable: value 1 – Margin operation; value 0 – None
Number of members of the Board of Directors	bd	Statistics of the number of members
Number of foreigners of the Board of Directors	fd	Statistics on the number of foreigners
Total assets	asset	Statistics from financial statement
Liabilities	debt	Statistics from financial statement
Equity	equity	Statistics from financial statement
Top 5 brokerage market share	mars	Binary variable: value 1 – Brokerage firm in Top 5; value 0 – Brokerage firm is not in the Top 5
Market capitalization	marc	Statistics from financial statement
Brokerage revenue/total assets	s_mg/ast	Brokerage revenue/total assets
Underwriting revenue/total assets	s_blph/ast	Underwriting revenue/total assets
Self-employment revenue/total assets	s_td/ast	Self-employment revenue/total assets
Depository revenue/total assets	s_lk/ast	Depository revenue/total assets
Consulting revenue/total assets	s_tv/ast	Consulting revenue/total assets
Margin balance/total assets	s_marg/ast	Margin balance/total assets
Revenue from stocks investment, capital contribution/total assets	s_dtgv/ast	Revenue from securities investment, capital contribution/total assets
Stock Exchange	se	Binary variable: value 1 – Brokerage firm listed on HOSE; value 0 – Not listed on HOSE
Profit after tax	ptr	Statistics from financial statement
Dependent variable		

Return on Assets	roa	Profit after tax/total assets
Return on Equity	roe	Profit after tax/equity

Source: Synthesized results of the research's authors

Pooled Ordinary Least Square (Pooled OLS) model

Pooled OLS model uses to determine the influence of the independent variables on the dependent variable. In which the coefficients of the independent variables are similar over time and each observation. Nevertheless, to make the model meaningful, many assumptions have been added, for example, constant variance, no autocorrelation, no multicollinearity, no crucial variables are omitted, and must follow a normal distribution. Therefore, there are very few models that can satisfy these conditions rigorously.

The regression equation is shown below:

$$ROA (ROE) = \beta_0 + \beta_1 * B_{director\ i,t} + \beta_2 * F_{director\ i,t} + \beta_3 * Asset_{i,t} + \beta_4 * Debt_{i,t} + \beta_5 * Equity_{i,t} + \beta_6 * S_mg / Ast_{i,t} + \beta_7 * S_blph / Ast_{i,t} + \beta_8 * S_lk / Ast_{i,t} + \beta_9 * S_tv / Ast_{i,t} + \beta_{10} * S_margin / Ast_{i,t} + \beta_{11} * S_td / Ast_{i,t} + \beta_{12} * S_dtgv / Ast_{i,t} + \beta_{13} * Ptr_{i,t} + \beta_{14} * SE_{i,t} + \epsilon_{i,t}$$

In which: β_0 : is the intercept coefficient

i: is the ith enterprise

$\beta_1 \dots \beta_{14}$: is the coefficient of the respective independent variables

ϵ : is the random error

Random Effects Model (REM)

When the FEM model is implemented, if the variability of individual observations is not correlated with the explanatory variable, then the author will use the REM model. Unlike the fixed effects model (FEM), the inter-subject variable is assumed to be random and does not correlate with the prediction or the independent variable contained in the model.

The regression equation of the random effects model is shown below:

$$ROA (ROE) = \beta_1 * B_{director\ i,t} + \beta_2 * F_{director\ i,t} + \beta_3 * Asset_{i,t} + \beta_4 * Debt_{i,t} + \beta_5 * Equity_{i,t} + \beta_6 * S_mg / Ast_{i,t} + \beta_7 * S_blph / Ast_{i,t} + \beta_8 * S_lk / Ast_{i,t} + \beta_9 * S_tv / Ast_{i,t} + \beta_{10} * S_margin / Ast_{i,t} + \beta_{11} * S_td / Ast_{i,t} + \beta_{12} * S_dtgv / Ast_{i,t} + \beta_{13} * Ptr_{i,t} + \beta_{14} * SE_{i,t} + \alpha_i + \epsilon_{i,t} + u_{i,t}$$

In which: $\beta_1 \dots \beta_{14}$: is the coefficient of the respective independent variables;

i: is the ith enterprise; $u_{i,t}$: white noise (error);

α_i : represents all unobservable factors that vary between subjects but do not change over time;

$\epsilon_{i,t}$: represents all unobservable factors that change between time objects

Fixed Effect Model (FEM)

FEM analyzes the correlation between the residuals of each observation and the explanatory variables, thereby controlling and separating the effects of the individual characteristics (which do not change over time) from the regressors to estimate the actual impacts of the explanatory variable on the dependent variable.

The regression equation of the fixed effects model is shown below:

$$ROA (ROE) = \beta_1 * B_{director\ i,t} + \beta_2 * F_{director\ i,t} + \beta_3 * Asset_{i,t} + \beta_4 * Debt_{i,t} + \beta_5 * Equity_{i,t} + \beta_6 * S_mg / Ast_{i,t} + \beta_7 * S_blph / Ast_{i,t} + \beta_8 * S_lk / Ast_{i,t} + \beta_9 * S_tv / Ast_{i,t} + \beta_{10} * S_margin / Ast_{i,t} + \beta_{11} * S_td / Ast_{i,t} + \beta_{12} * S_dtgv / Ast_{i,t} + \beta_{13} * Ptr_{i,t} + \beta_{14} * SE_{i,t} + \alpha_i + u_{i,t}$$

In which: $\beta_1 \dots \beta_{14}$: is the coefficient of the respective independent variables;

i: is the ith enterprise;

$u_{i,t}$: is white noise (error);

α_i : is the intercept coefficient by object (enterprise) i

Research data

The data used in the study is a panel dataset of 27 brokerage firms listed on the Hanoi Stock Exchange (HNX) and the Ho Chi Minh Stock Exchange (HSX/HOSE) collected from quarterly financial statements of brokerage firms in the period from 2007 to 2020 and is used to calculate the indicators representing the dependent variables - measuring the profitability of the business. (ROE - return on equity; ROA - return on total assets) and indicators representing independent variables - factors affecting the performance of the company. Detailed information on how to calculate and formulate data for variables in the research model is presented in detail in Table 1. In the process of estimating the parameters of the model, to ensure that the data running the model is symmetric panel data, the authors shortened the sample period from 14 years (from 2007 to 2020) to 7 years (from 2014 to 2020), due to the limitation of data provided by some brokerage firms and because several brokerage firms were established or started providing BoM service since 2014.

Table 2. Descriptive statistics of the research sample

Variable	Average	Standard Deviation	Minimum value	Maximum value
Dmarg	0.6414	0.4798	0	1
Bd	5.2986	1.2705	2	10
Fd	0.6811	1.3924	0	9
Asset	2.95e+12	4.31e+12	6.84e+08	3.58e+13
Debt	1.45e+12	2.60e+12	2.06e+08	2.59e+13
Equity	1.43e+12	1.68e+12	4.78e+08	9.87e+12
Mars	0.2549	0.4361	0	1
Marc	1.04e+12	2.60e+12	1761200	2.76e+13
S_mg/Ast	0.0506	0.5759	0	13.06814
S_blph/Ast	0.0006	0.0026	0	0.0305
S_lk/Ast	0.0008	0.0022	-0.0284	0.0290
S_tv/Ast	0.0017	0.1138	-2.8765	0.8627
S_marg/Ast	0.2384	0.4791	0	8.0319
S_td/Ast	0.0081	0.0559	0	0.5082
S_dtg/Ast	0.0039	0.0336	0	0.8773
ptr	4.25e+10	7.46e+10	-1.37e+11	5.22e+11
Se	0.3953	0.4893	0	1
ROE	0.0234	0.0358	-0.1802	0.3091
ROA	0.0211	0.0938	-0.1635	1.7277

Source: Synthesized results from Stata

4. Research results

Before performing the regression, the authors use the matrix Pearson Correlation Coefficient and Magnification Factor (VIF) to check the model's defects. The data in the correlation coefficient matrix (Figure 1) shows that the variables are all correlated with each other in the range (-0.8, 0.8), so there is no foundation to conclude that there is multicollinearity in the sample of the survey model.

Besides, the results of the correlation coefficient matrix also show that: with the dependent variable ROE, the variables Total Assets (Asset), Liabilities (Debt), Equity (Equity), Top 5 brokerage market share (Marketshare), Market capitalization (MarketCap), Underwriting revenue/Total assets (S_blph/Ast), Consulting revenue/Total assets (S_tv/Ast), Profit after tax (ptr), Stock Exchange (Se) has a positive and statistically significant correlation at 5% with ROE; Variables that are positively and statistically significant at 5% with the dependent variable ROA include Brokerage Revenue/Total Assets (S_mg/Ast), Depository Revenue/Total Assets (S_lk/Ast), Profit after tax (Ptr), Stock Exchange (Se); There are 4 variables that have a statistically significant correlation at 5% level with both ROE and ROA dependent variables: Margin trading (Dmargin), Margin balance/Total assets (S_marg/ast), Profit after tax (Ptr), Stock Exchange (Se).

Table 3. The magnification factor (VIF) of the variables in the research model

Variable	VIF	1/VIF
Dmarg	1.40	0.714883
Bd	1.83	0.545810
Fd	1.53	0.652027
Asset	51.44	0.019441
Debt	19.68	0.050808
Equity	14.38	0.069533
Mars	2.24	0.446857
Marc	1.51	0.660873
S_mg/Ast	1.03	0.967532
S_blph/Ast	1.02	0.984094
S_lk/Ast	1.64	0.611365
S_tv/Ast	1.49	0.671304
S_marg/Ast	1.26	0.795242
S_td/Ast	1.11	0.901826
S_dtgv/Ast	1.01	0.988201
ptr	2.72	0.367740
Se	1.55	0.646871

Source: Results from Stata

Continuing to check the phenomenon of multicollinearity with VIF, the results obtained from Table 3 show that most of the variance exaggeration coefficients VIF are less than 3, except for three variables with variance magnification coefficient VIF are more than 10 are Asset, Liabilities, Equity, so there is multicollinearity in the model. The authors chose to remove the independent variable to overcome the phenomenon of multicollinearity. However, the two variables Liabilities and Equity are both crucial variables, and theoretically as well as according to the results of the Pearson correlation coefficient matrix are two variables that are correlated with the ROE indicator. Therefore, the authors decided to replace these two variables with the financial leverage variable (Leverage) calculated by dividing the Debt variable by the Equity variable. And the results of the magnification coefficient with the substitution variable - Leverage - show that the model no longer has multicollinearity (Table 4).

From the estimated results in Table 5, to evaluate the performance of brokerage firms listed on the Vietnam Stock Exchange through the analysis of ROE and ROA indicators, the choice of ROA analysis would provide more accurate assessment results, because the variables used in the research model to better explain the fluctuations of the performance indicators of brokerage firms according to ROA. This selection is consistent with some previous studies such as Ratul (2019), Okay and Kose (2015), Sakinc (2015).

Based on R^2 , numerical models (8) & (9) were selected to conduct Hausman test with hypothesis pair: H0: Selection of random effects model (REM); H1: Choosing a fixed-effect model (FEM). Hausman test results for the two models above has shown that there was a basis for rejecting the hypothesis H0, that is, choosing the FEM model for the study with the variable profitability of the enterprise as ROA is more suitable than the REM model. Hence, the estimated results of model (8) are used for the following research conclusions.

Hypothesis 1: The scale of margin trading has an impact on the business performance of brokerage firms.

The estimated coefficient of margin balance (S_marg/ast) in the model (8) is positively and statistically significant with ROA. That is, for brokerage firms that provide BoM service to customers, an increase in the scale of margin lending (margin balance) will have a positive impact on the company's performance.

Figure 1. Pearson's Correlation Coefficient Matrix

	ROE	ROA	Dmarg	Bd	Fd	Asset	Debt	Equity	Mars	Marc	S_mg/Ast	S_b/Ast	S_lk/Ast	S_tv/Ast	S_ma/Ast	S_td/Ast	S_dt/Ast	ptr	Se
ROE	1.0000																		
ROA	0.2323 0.000*	1.0000																	
Dmarg	0.1058 0.0038*	0.0848 0.0204*	1.0000																
Bd	0.1453 0.0001*	-0.0166 0.6525	0.2512 0.000*	1.0000															
Fd	-0.0966 0.0086	-0.0242 0.5122	0.1228 0.0008*	0.1526 0.000*	1.0000														
Asset	0.1602 0.000*	-0.0383 0.2951	0.2296 0.000*	0.0947 0.01*	0.0799 0.0298*	1.0000													
Debt	0.1637 0.000*	-0.0278 0.4481	0.2397 0.000*	0.1006 0.0062*	0.0484 0.1885	0.3265 0.000*	1.0000												
Equity	0.1376 0.0002*	-0.0232 0.5259	0.1907 0.000*	0.1175 0.0014*	0.1331 0.0003*	0.8986 0.000*	0.8124 0.000*	1.0000											
Mars	0.2583 0.000*	-0.0204 0.6017	0.2449 0.000*	0.2190 0.000*	0.0231 0.5580	0.6173 0.000*	0.6193 0.000*	0.6129 0.000*	1.0000										
Marc	0.2199 0.000*	0.0030 0.9422	0.1314 0.0014*	0.2412 0.000*	0.0339 0.4141	0.3279 0.000*	0.2948 0.000*	0.3568 0.000*	0.4951 0.000*	1.0000									
S_mg/Ast	0.0143 0.6365	0.4503 0.000*	-0.0143 0.6947	0.0109 0.7683	-0.0347 0.3465	-0.0436 0.2322	-0.0318 0.3838	-0.0446 0.2218	-0.0382 0.3273	-0.0140 0.7347	1.0000								
S_b/Ast	0.0276 0.4507	-0.0182 0.6188	-0.0248 0.4969	-0.1350 0.0002*	0.0151 0.6826	-0.0455 0.2126	-0.0343 0.3483	-0.0559 0.1262	0.0002 0.9949	-0.0349 0.3963	-0.0170 0.6424	1.0000							
S_lk/Ast	0.0077 0.8333	0.6188 0.000*	0.0478 0.1907	-0.0074 0.8417	-0.0808 0.0281*	-0.0957 0.0087*	-0.0808 0.0267*	-0.0879 0.0159*	-0.1075 0.0058*	-0.0553 0.1807	0.1025 0.0049*	-0.0134 0.7131	1.0000						
S_tv/Ast	0.0279 0.4469	0.0072 0.8446	-0.0090 0.8064	0.0040 0.9144	-0.0037 0.9189	0.0033 0.3289	0.0045 0.9030	0.0046 0.8993	0.0066 0.8650	0.0035 0.9316	-0.0033 0.9286	0.0010 0.9786	0.5077 0.000*	1.0000					
S_ma/Ast	0.0652 0.0749	0.2504 0.000*	0.2535 0.000*	0.0928 0.0116*	0.1182 0.0013*	0.0500 0.1711	0.0301 0.4095	0.1118 0.0022*	0.0975 0.0124*	0.1304 0.0015*	0.0602 0.0991	-0.0139 0.7041	0.2023 0.000*	-0.0577 0.1140	1.0000				
S_td/Ast	-0.0771 0.035*	-0.0259 0.4785	0.1089 0.0028*	0.0811 0.0275*	-0.0716 0.0518	-0.0868 0.0174*	-0.0805 0.0273*	-0.0928 0.0109*	-0.0905 0.0203*	-0.0646 0.1175	-0.0113 0.7582	-0.0330 0.3665	-0.0534 0.1439	-0.0015 0.9683	-0.0566 0.1213	1.0000			
S_dt/Ast	0.0417 0.2548	0.0019 0.9586	-0.0607 0.0963	-0.0095 0.7960	-0.0340 0.3556	-0.0441 0.2271	-0.0352 0.3352	-0.0498 0.1730	-0.0135 0.7290	-0.0276 0.5047	0.0258 0.4798	0.0073 0.8417	-0.0277 0.4486	0.0194 0.5957	-0.0480 0.1892	-0.0173 0.6363	1.0000		
ptr	0.5356 0.000*	0.0742 0.0424*	0.1922 0.000*	0.1710 0.000*	0.0241 0.5126	0.7125 0.000*	0.6563 0.000*	0.7383 0.000*	0.5931 0.000*	0.4332 0.000*	-0.0244 0.5049	-0.0409 0.2633	-0.0671 0.0665	0.0081 0.8255	0.1149 0.0016*	-0.0790 0.0306*	-0.0106 0.7719	1.0000	
Se	0.1899 0.000*	0.1492 0.0004*	-0.0139 0.7448	0.2372 0.000*	-0.0287 0.5004	0.3760 0.000*	0.3238 0.000*	0.4261 0.000*	0.2031 0.000*	0.2988 0.000*	0.0958 0.0243*	-0.0078 0.8554	0.1056 0.0123*	-0.0059 0.8695	0.1522 *0.0003	-0.1371 0.0012*	-0.0323 0.4485	0.3558 0.000*	1.0000

Note: * Statistical significance at 5% significance level

Source: Results obtained from Stata

Table 4. VIF magnification coefficients of the variables in the research model (included the Leverage variable)

Variable	Sample 1		Sample 2	
	VIF	1/VIF	VIF	1/VIF
Dmarg	1.54	0.648269	1.38	0.725714
Bd	1.88	0.532429	1.82	0.549217
Fd	2.40	0.416437	1.53	0.651946
Asset	2.69	0.372060	2.95	0.338530
Leverage	1.04	0.965661	1.04	0.961133
Mars	1.75	0.572478	2.23	0.447724
Marc	1.38	0.723533	1.52	0.659776
S_mg/Ast	1.08	0.924252	1.03	0.969901
S_blph/Ast	1.03	0.972194	1.02	0.984127
S_lk/Ast	1.87	0.534601	1.63	0.614117
S_tv/Ast	1.58	0.633667	1.49	0.672568
S_marg/Ast	1.61	0.621065	1.24	0.804619
S_td/Ast	1.16	0.858865	1.11	0.901930
S_dtgv/Ast	1.03	0.972980	1.01	0.988840
ptr	2.38	0.420335	2.62	0.382038
Se	1.61	0.622310	1.52	0.659292

Source: Results from Stata

Table 5. Results using Pool OLS, FEM and REM models

Independent variable	ROE							ROA						
	FE (1)	RE (2)	FE (3)	RE (4)	FE (5)	RE (6)	PO (7)	FE (8)	RE (9)	FE (10)	RE (11)	FE (12)	RE (13)	PO (14)
Dmargin	-0.12 (0.908)	1.48 (0.140)	-1.51 (0.132)	-0.69 (0.491)			0.11*** (0.003)	0.53 (0.594)	1.73* (0.083)	-0.06 (0.952)	0.74 (0.460)	0.23 (0.816)	0.99 (0.322)	0.06* (0.084)
bd	-0.63 (0.531)	0.88 (0.378)					0.08** (0.044)	-0.20 (0.843)	-1.60 (0.109)					-0.07 (0.109)
fd	-1.84* (0.067)	-2.66*** (0.008)					-0.13*** (0.000)	-0.26 (0.793)	-0.06 (0.952)					-0.0025 (0.952)
Asset	-5.13*** (0.000)	-8.07*** (0.000)	-5.9*** (0.000)	-7.6*** (0.000)	-5.85*** (0.000)	-6.76*** (0.000)	-0.55*** (0.003)	-1.55 (0.121)	-2.46** (0.014)	-1.88* (0.060)	-2.92*** (0.003)	-2.01** (0.044)	-2.93*** (0.003)	-0.14** (0.014)
Leverage	-1.81* (0.071)	-2.14** (0.032)					-0.07** (0.018)	-0.39 (0.694)	-0.38 (0.708)					-0.01 (0.708)
Mars	-0.69 (0.492)	0.31 (0.753)					0.08* (0.059)	0.29 (0.775)	0.00 (0.999)					0.00 (0.999)
Mars	-0.97	-1.57					-0.09**	-0.39	-0.88***					-0.037

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	(0.335)	(0.117)					(0.015)	(0.696)	(0.000)					(0.378)
s_mg/ast	0.02 (0.985)	0.24 (0.811)					0.012 (0.688)	11.2*** (0.000)	11.7*** (0.000)			12.8*** (0.000)	13.4*** (0.000)	0.4*** (0.000)
s_blp/ast	1.37 (0.171)	1.75* (0.081)	0.85 (0.394)	0.98 (0.326)			0.07** (0.018)	0.24 (0.810)	-0.03 (0.972)	0.28 (0.776)	-0.27 (0.788)			-0.001 (0.972)
s_lk/ast	1.00 (0.316)	0.66 (0.512)	0.87 (0.383)	0.81 (0.418)			0.016 (0.677)	7.62*** (0.000)	8.55*** (0.000)	8.42*** (0.000)	9.97*** (0.000)	8.53*** (0.000)	9.5*** (0.000)	0.4*** (0.000)
s_tv/ast	0.04 (0.966)	0.30 (0.764)	0.02 (0.983)	0.09 (0.928)			0.01 (0.646)	-4.05*** (0.000)	-4.28*** (0.000)	-4.35*** (0.000)	-4.85*** (0.000)	-4.38*** (0.000)	-4.6*** (0.000)	-0.2*** (0.000)
s_marg/ast	0.966 (0.776)	-0.50 (0.615)	-0.85 (0.398)	-0.87 (0.386)			-0.029 (0.392)	2.59*** (0.010)	3.45*** (0.001)	2.78*** (0.006)	3.86*** (0.001)	3.01*** (0.002)	3.67*** (0.000)	0.1*** (0.001)
s_td/ast	0.09 (0.928)	-1.11 (0.268)	0.03 (0.978)	-0.43 (0.665)			-0.07** (0.031)	-0.13 (0.898)	0.43 (0.665)	-0.07 (0.944)	0.08 (0.940)			0.0156 (0.665)
s_dtgv/ast	-0.45 (0.652)	-0.17 (0.867)	0.70 (0.482)	0.84 (0.401)			-0.001 (0.955)	-0.83 (0.405)	-0.14 (0.885)	-0.70 (0.483)	0.63 (0.530)			-0.005 (0.886)
Ptr	20.0*** (0.000)	19.9*** (0.000)	19.6*** (0.000)	20.1*** (0.000)	19.5*** (0.000)	19.8*** (0.000)	0.96*** (0.003)	3.61*** (0.000)	3.44*** (0.001)	4.22*** (0.000)	3.82*** (0.000)	4.51*** (0.000)	4.30*** (0.000)	0.2*** (0.001)
se	-0.39 (0.695)	0.64 (0.520)			-3.38 (0.001)	-1.98 (0.048)	0.0588 (0.121)	1.08 (0.279)	1.65* (0.098)					0.069* (0.099)
n	534	534	748	748	552	552	534	534	534	748	748	748	748	534
R ²	0.4788	0.6530	0.4269	0.4761	0.4059	0.4979	0.5109	0.5760	0.7138	0.5159	0.4359	0.6377	0.6557	0.3930
F-test	0.0000***		0.0000***		0.0000***		0.000***	0.0167**		0.0001***		0.0001***		0.0000
Hausman(a)	0.0033***		0.7688		0.0024***			0.0033***		0.9999		0.0000***		

Note: *, **, *** are estimated to have statistical significance at the 10%, 5% and 1%, respectively, p_value presented in parentheses;

(a) Probability value of statistical value according to When squared test (Prob>chi2)

Source: Estimated results from Stata

The appearance of the BoM service has brought enormous benefits to brokerage firms. Along with the increase of profits in general, the revenue from brokerage operations is also growing significantly when the number of customer accounts and transaction proportion are improved. The BoM service has brought new development opportunities for brokerage firms, not only for the large brokerage firms which are listed on the stock exchange but also for the small, newly developed brokerage firms. The most recent proof given is the increase in the number of investors performing BoM service when the market is growing in an optimistic direction.

Hypothesis 2: There is the certain difference in the operational efficiency between brokerage firms with and without the BoM service.

This hypothesis is tested through the estimation results of the “Margin trading” (Dmargin) variable is a binary variable with the value 1 - if the brokerage firm allows margin trading, and the value 0 - if the brokerage firm does not provide margin trading to customers. According to the estimation results of model (8), it can be seen that the estimated value corresponds to the variable Dmargin not statistically significant at 5% or even 10% significance level. Therefore, it can be concluded that the provision of BoM service for customers does not contribute to the difference in performance between brokerage firms with and without this service. This result is also consistent with the actual operation of Vietnamese brokerage firms because:

First and foremost, BoM service has only developed and become ubiquitous in the last few years. Before that, the service that brought significant revenue for brokerage firms was generally brokerage, underwriting or investment consulting. Brokerage firms can still increase revenue, expand market share, and raise capital through providing the aforementioned services to customers. In addition, the capital source for BoM service mainly comes from brokerage firms, so the provision of margin for investors requires brokerage firms to reduce allocated capital and other business operations. Besides, if brokerage firms do not concentrate on developing BoM service, the financial potential will be transferred by brokerage firms to other business operations.

Secondly, the scale of the margin balance in brokerage firms does not account for a significant proportion of the total assets of brokerage firms that provide this service. Most brokerage firms still consider brokerage service as their top concern because as more and more customers open accounts and need advices for trading, the revenue of new brokerage firms increase dramatically. Moreover, the characteristic of BoM service is extreme risk. This issue is both affect investors and also brokerage firms. Although the interest rate applied for BoM service is often offered by brokerage firms at a high level, the risk is that investors whose making this transaction cannot afford to pay. In a pessimistic situation, although "Margin call" can be implemented by brokerage firms, the income of brokerage firms from this operation can be considered zero. Therefore, the impact of margin trading to generate the difference in performance between brokerage firms with and without this service may not be significant.

5. Conclusions and policy suggestions

The results and analysis of research demonstrate that if the risk management as well as policies for investors are clarified, constructed, and implemented appropriately, BoM service can generate enormous profits for brokerage firms. Furthermore, these days, the demand for margin trading of investors is increasing, which has an optimistic impact on the trading size, liquidity as well as promoting the growth and development of the stock market. Therefore, if securities firms desire to increase their revenue, they can consider providing this service to their clients, which at the same time could have to attract more investors to increase the number of securities trading accounts opened with the securities firms, thereby boosting brokerage revenue, and ultimately contributing to the development and ranking of the stock market in the regional and international markets.

To ensure that BoM service continues to be maintained and developed properly at brokerage firms, the authors would like to propose some solutions as follows:

Firstly, Vietnamese brokerage firms should consider reducing margin interest rates to a lower level to improve the percentage of customers using this service as well as to compete with foreign brokerage firms.

Secondly, brokerage firms need to concentrate on intensifying professional and effective staff, developing products to guarantee that they offer high-quality services to their customers. Besides, brokerage firms also need to pay attention to developing technology, accelerating the digital transformation process, creating a foundation for sustainable development in the future, bringing satisfaction to investors.

Thirdly, brokerage firms may take various fundraising measures to ensure the provision of the BoM service to customers.

Finally, it is necessary to enhance the risk management mechanism in brokerage firms for the BoM service through the establishment of a standard risk management system, framework, and risk policies in line with the policies and interest rates that each brokerage firm provides to the customers as well as consider creating a dedicated and professional risk management employees and department to be able to offer the fastest and most effective risk control, monitoring and treatment options.

6. Limitations of the study and directions for future research

Due to the limited data access, the research is carried out on a relatively limited scale of existing securities firms Vietnam, which covers only the securities firms listed on the Vietnam Stock Exchange. This could reduce the generalization of the empirical findings from this paper to the whole number of securities firm in Vietnam. In addition, the research has not gone deeply into investigating the contribution of policies and regulations issued by brokerage firms for customers on their performance since each brokerage firm has its unique policies going in line with its development orientations and goals, which is difficult to collect information at this stage of the paper with limited human and financial resources. Therefore, suggestions for further research on this topic are that following studies could consider to: expand the research sample; and accordingly use the Propensity Score Matching method to compare the performance between two groups of brokerage firms with and without BoM service which have similar business characteristics to provide more reliable results.

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THE IMPACT OF THE CRYPTOCURRENCY MARKET ON THE YIELDS ON THE STOCK MARKET IN THE ASEAN REGION

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ABSTRACT

The introduction and participation in the global financial system of cryptocurrencies has brought many significant benefits, overcoming limitations in the conventional banking system and in the stock market. In addition, cryptocurrencies are used by portfolio fund managers as an effective investment tool for hedging and speculative opportunities for profitability. The stock market is again emphasizing the importance of the efficiency of the operation process that affects both the economy and the process of creating material wealth for society by providing liquidity in the market, reducing the cost of mobilizing savings, improving corporate governance and promoting international risk sharing. Researching and evaluating the correlation between these two markets will help investors have an objective comprehensive view and help policymakers make appropriate adjustments in the future.

Keywords: ASEAN; stock market; cryptocurrency; correlation.

1. Introduction

The "Fintech Revolution" has radically transformed the global financial system with the biggest transformations throughout history with the goal of using technology in the design and delivery of financial services to make it easier for the public to access according to Gomber et al. (2018). Bohme et al. (2018) argue that the cryptocurrency market born after the Fintech revolution gave birth to a new type of trading or medium of exchange and has successfully gained attention in international financial markets, specifically with more than \$3 billion worth of trading volume on major bitcoin exchanges in January 2021 and The market cap has surpassed the \$1 trillion mark in February of the same year under blockchain (2021) since Bitcoin was first mentioned on October 31, 2008 and began to be put into use on January 3, 2009 with the genesis block under Wikipedia (2021). Those are very impressive numbers, there will definitely be a promising future for the cryptocurrency market.

According to Markowitz's modern portfolio theory (1952) investors aim to diversify their assets in portfolios to maximize portfolios and returns. U.S. Fire Pension Fund, people of Norway, Sweden, British police teachers Korea, Canada,... all invested or have assets tied to the cryptocurrency market under Partz (2021) and Langton (2021). Mercado (2020) argues that currently the majority of public to private pension funds that have been purchased or private equity funds are aiming for a 1-2% cryptocurrency ownership rate in the portfolio. Corbett et al. (2018) said that the cryptocurrency market presents an important opportunity for investors to diversify their portfolios or speculative purposes that are likely to affect the performance of the stock market.

There have been many studies or research groups conducted to understand every aspect of this new currency that highlights two research groups. The first group tends to conduct observational, analytical, and aggregated studies of cryptocurrencies themselves, thereby adding new knowledge and theoretical foundations such as Fry and Cheah (2016); Hileman and Rauchs (2017); Liu and Tsyvinski (2021). The second research group focuses on assessing the impact of cryptocurrencies on financial markets such as stocks, commodities, etc. and birch economy (2015); Kaminskaya and Petrova (2018); Ji et al. (2019); Nguyen et al. (2019); Colon et al. (2021).

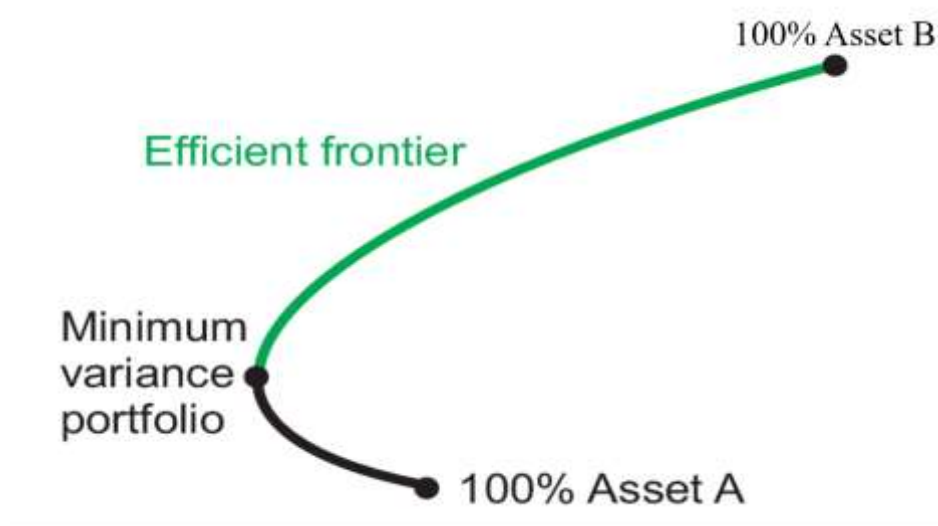
Despite the rapid development of cryptocurrencies and the role of the mainstay of the stock market's economy, studies focusing on their relationship with the stock market remain limited. More specifically,

some areas are completely left open, including ASEAN. According to Karim et al. (2021) there is a strong correlation between the cryptocurrency market and the stock market in the ASEAN region but the existing studies on the region are mainly related to the determinants of the stock market, ignoring the effects of cryptocurrencies as an important determinant of operations. Of the capital market. Therefore, conducting a new study to introduce cryptocurrency profitability as one of the determinants of stock market performance in the ASEAN region can promote new understanding of the importance of the cryptocurrency market; help the government take effective measures to regulate the stock market; help the public, businesses and banks, companies that have been and will be operating in the cryptocurrency market to make the right decisions and will be a valuable reference for students and researchers interested in this field.

2. Theoretical framework

Modern portfolio theory was introduced in the 1950s by Nobel laureate Harry Markowitz. Modern portfolio theory suggests that investors can minimize market risk for a given rate of return. expected return by building a diversified portfolio. Modern portfolio theory emphasizes portfolio diversification over the selection of individual securities. An oversimplification of modern portfolio theory is "don't put all your eggs in one basket". Modern portfolio theory has established the concept of the "efficient frontier". An efficient portfolio is one that, for a given expected rate of return, has the lowest risk. Higher risk comes with a higher expected return.

Figure 1.2: Efficient frontier



Source: Vietnambiz.com

It is theoretically possible to construct an "efficient frontier" for the optimal portfolio to yield the maximum possible expected return for a given level of risk. The correlation between all assets can be plotted on a chart, with the portfolio's risk on the X-axis and the expected return on the Y-axis. This plotting shows which portfolios are worth investing in. or have the highest expected return. Also according to (Marowitz), it is intended to eliminate specific risk, which is the risk inherent in a particular financial asset because of its own characteristics. Adding cryptocurrencies to the portfolio selection criteria will enhance the overall performance of the portfolio.

According to the theory of competition in internal trade and the theory of financial transaction competition. Competition has benefited buyers and expanded business for top sellers (Farrell and Klemperer, 2007; Cantillon and Yin, 2011). In fact, competition has always led stock market traders to differentiate options. Although such competition can negatively affect firms with low productivity and few comparative advantages in the market, it can also create a positive externality for firms with low productivity. high through spillover effects. Similarly, Foucault and Parlor emphasize that fierce competition in the stock market has led to the development of new innovations aimed at reducing transaction costs and developing

stock market differentiation. So, this theory of competition is also expected between the cryptocurrency market and the stock market. As the cryptocurrency market grows, the stock market will continuously improve, thereby reducing transaction costs. Similarly, the cryptocurrency market is expected to benefit from this spillover effect and will also grow, increasingly valued by countries and have more flexible policies towards this new market.

3. Research method

3.1. Data description and experimental model

Based on the research model assessing the impact of the cryptocurrency market on the operation of the stock market in the MENA region of Sami and Abdallah (2020).

$$(1) \text{ Stock Performance}_{it} = \alpha + \beta_1 \text{Real GDP} + \beta_2 \text{Oil Production} \\ + \beta_3 \text{Financial Transactions index} \\ + \lambda_1 \text{Cryptocurrency volume} \\ + \lambda_2 \text{Cryptocurrency returns} + \gamma_i + \eta_{it}$$

The team has modeled models corresponding to independent variables related to cryptocurrencies, re-selecting other variables to quantify and demonstrate the impact of the cryptocurrency market on stock markets in ASEAN regional countries between 2014 and 2020.

Table 1: Explain variables and state hypotheses

Variable	Meaning	Unit	The theories have been tested.	Expected results of Beta Coefficient
Stock return	Stock market yield	%	Dependency variable	
Crypto return	Profitability of the cryptocurrency market	%	<i>H1: The relationship between stock market yields and cryptocurrency market yields is in the same direction</i>	+,-
Volume	Annual growth rate of cryptocurrency market trading volume	%	<i>H2: The relationship between stock market yields and the annual growth rate of cryptocurrency market trading volume is in the same direction</i>	+
Trade GDP	Trade-to-GDP ratio	%	<i>H3: The relationship between stock market yields and the trade-to-GDP ratio is in the same direction</i>	+
CPI	Inflationary growth rate	%	<i>H4: The relationship between stock market yields and inflation growth rates is in the same direction</i>	+

m2	Money supply-to-GDP ratio	%	H5: The relationship between stock market yields and the money supply-to-GDP ratio is the opposite	-
Interest rate	Interest	%	H6: The relationship between stock market yields and interest rates is in the opposite direction	-
Oil	Oil price growth rate	%	H7: The relationship between stock market yields and oil price growth is the opposite	-
GDP per capita	GDP growth rate per capita	%	H8: The relationship between stock market yields and GDP growth rates per capita is in the same direction	+

With the main independent variable is Crypto Return team built 3 models:

S1: The impact of crypto return variables with stock return variables

$$\text{Stock returnit} = \beta_0 + \beta_1 \text{CryptoReturn}$$

S2: The impact of crypto return variables and other independent variables on Stock Return variables

$$\text{Stock returnit} = \beta_0 + \beta_1 \text{CryptoReturn} + \beta_2 \text{Trade GDP} + \beta_3 \text{cpi} + \beta_4 \text{m2} + \beta_5 \text{Interest rate} + \beta_6 \text{Oil} + \beta_7 \text{GDPpercapita}$$

S3: The impact of other independent variables on the Stock Return variable (excluding crypto return variables)

$$\text{Stock returnit} = \beta_0 + \beta_1 \text{Trade GDP} + \beta_2 \text{cpi} + \beta_3 \text{m2} + \beta_4 \text{Interest rate} + \beta_5 \text{Oil} + \beta_6 \text{GDPpercapita}$$

Similar to the main independent variable, the group volume also builds 3 models that affect the Stock Return dependency variable.

S1: The impact of volume variables with stock return variables

$$\text{Stock returnit} = \beta_0 + \beta_1 \text{Volume}$$

S2: The impact of volume variables and other independent variables on stock return variables

$$\text{Stock returnit} = \beta_0 + \beta_1 \text{Volume} + \beta_2 \text{Trade GDP} + \beta_3 \text{cpi} + \beta_4 \text{m2} + \beta_5 \text{Interest rate} + \beta_6 \text{Oil} + \beta_7 \text{GDPpercapita}$$

S3: The impact of other independent variables on the Stock Return variable (excluding volume variables)

$$\text{Stock returnit} = \beta_0 + \beta_1 \text{Trade GDP} + \beta_2 \text{cpi} + \beta_3 \text{m2} + \beta_4 \text{Interest rate} + \beta_5 \text{Oil} + \beta_6 \text{GDPpercapita}$$

3.2. Data statistical description

As shown on the table, the team made 49 observations in most variables (except trade%, m2 and interest rate). The average value of the stock return dependent variable is stopped at 0.0245% and the standard deviation is 11.3147% of the return on securities over the years of countries that do not have much difference. The statistics record the results show that the ratio of stock market yield recorded the largest value and the smallest value was 32.1613%, -20.5487%, respectively. For the annual growth rate of the price of gold, the smallest value is -16.6420%, the largest value is 27.0990%, the average value of this index is at 4.6456%. For the CryptoReturn variable or the yield growth rate of the cryptocurrency market reaching the smallest value of -0.4834, the largest value is 5.9128, the average value is 1.3935%. The largest difference

occurs in the GDPpercapita variable when the largest value is 61,173.9%, the smallest value is 1,975,079%. On the contrary, for the annual oil price growth variable the difference is relatively low when the largest value is 0.4476% and the smallest value is -0.4555%.

Table 2: Statistics describing variables in the model Results and discussion

	Stock return (%)	Crypto return (%)	Volume (%)	Trade (%GDP)	CPI(%)	m2	Interest rate(%)	Oil(%)	GDP per capita
Obs	49	49	49	45	49	41	41	49	49
Mean	0.0245	1.3935	14.8627	141.1404	2.0707	108.293	4.7164	0.0420	1,223.46
Std.Dev.	11.3147	1.9935	36.9386	94.1813	1.8318	40.258	2.2889	0.3277	19,096.350
Min	-20.5487	-0.4834	-0.7311	33.1906	-1.1387	38.7605	0.7989	-0.4555	1,975.079
Max	32.1613	5.9128	104.4075	360.467	6.3949	179.7305	10.0461	0.4476	61,173.9
Variance	128.0232	3.974	1,364.459	8,870.124	3.3556	1,620.707	5.239	0.1074	3.65E+08
Skewness	0.3492	1.5262	2.0405	0.9618	0.3388	-0.5319	0.4782	-0.3404	1.9673
Kurtosis	3.2346	4.0945	5.165	2.838	2.6122	2.1359	2.4026	1.544	5.0288

3.3. Results (Alt + 8)

3.3.1. Hausman Inspection

The team conducted a Hausman test to select the right model. The resulting p-value value is 0.8193 > 5% of us accept the H0 hypothesis and choose the REM model.

The team used a dependent variable "Stock return" and seven independent variables of "CryptoReturn", "Trade GDP", "CPI", "m2", "Interest rate", "Oil" and "GDP per capita" to assess the impact of the cryptocurrency market on the stock market in the ASEAN region as follows

3.3.2. Results of model scale recovery

Table 3: Model Scale Recovery Results with 2 Variables Crypto Return and Volume

	Model with Crypto Return			Model with Volume		
	S1	S2	S3	S1	S2	S3
Crypto Return	2.107 *** (0.488)	1.468*** (0.316)				
Volume				0.108*** (0.0222)	0.085*** (0.024)	
Trade% of GDP		0.091*** (0.024)	0.101*** (0.025)		0.091*** (0.024)	0.101*** (0.025)

CPI		-0.124 ^{0.847} (0.642)	0.335 ^{0.590} (0.622)		0.057 ^{0.926} (0.618)	0.335 ^{0.590} (0.622)
m2		-0.130** (0.051)	-0.151*** (0.058)		-0.128** (0.052)	-0.151*** (0.058)
Interest rate		-1.709* (0.945)	-2.377** (1.026)		-1.751* (0.986)	-2.377** (1.026)
Oil		-6.696** (3.004)	-4.921 ^{0.116} (3.134)		-7.329** (2.865)	-4.921 ^{0.116} (3.134)
GDP per capita		-8.655*** (1.478)	-8.974*** (1.603)		-8.536*** (1.390)	-8.974*** (1.603)
R-Squared	13.78	55.1	48.88	12.5	56.83	48.88
Number of Obs	49	40	40	49	40	40

The team conducted REM testing of two models containing Crypto Return and Volume, with 40 validly collected observation values (Number of obs = 40). The R-squared value of the model containing the Crypto Return = 0.551 variable demonstrates independent variables that explain 55.1% of the volatility of dependent variables. Meanwhile, the R-squared value of the model containing the Volume = 0.5683 variable demonstrates that independent variables explain 56.83% of the fluctuations of dependent variables. From there the team builds the equation of the model with Crypto Return and the model with Volume.

Stock return = 85.9199 + 1.4678CryptoReturn + 0.0906Trade GDP -0.1237cpi - 0.1299m2 -1.7088 InterestRate -6.6956Oil -8.655 GDPpercapita

Stock return = 85.297 + 0.085 Volume + 0.0906 Trade GDP + 0.0571 cpi -0.1285 m2 -1.7507 Interest rate -7.3289 Oil -8.5356 GDPpercapita

As a result of the models, the authors came to the conclusion that the two main independent variables, Crypto Return and Volume, have the same impact as the Stock Return variable. When the profitability of the cryptocurrency increases to 1%, the return of the stock market will fluctuate to increase to 1.4678%. The fact that the increase in cryptocurrency returns positively affects the returns of the stock market will help investors tend to diversify their portfolios to increase profits while providing less risk. In addition, when the volume of cryptocurrency trading increases to 1%, the yield of the stock market will also increase to 0.086%. In ASEAN countries, cryptocurrencies have not been legalized in their use as an official payment method, leading to a lack of impact on the stock market. Based on the S1 model with the independent variable cryptoreturn, the team concluded that without other independently controlled variables, the income of the cryptocurrency market increased by 1%, the return of the stock market increased by 2,107%. At the same time in the S1 model mentioned above, the CryptoReturn variable explains 13.78% of the volatility of stock market yields. Similar to the S1 model of volume variables, provided that there are no remaining independently controlled variables, when the trading volume in the cryptocurrency market increases by 1%, the stock market yield increases at 0.108% and the Volume variable explains 12.5% of the volatility of stock market yields.

In addition to the two main independent variables related to cryptocurrencies, the TRADE GDP variable also has the same effect on the Stock Return dependency variable. When the trade rate increased by 1%, the stock market yield also increased by 0.091%. For the model without the appearance of cryptocurrency-related variables, the impact of the trade-to-GDP ratio on stock market yields is more pronounced when trade%, gdp increases to 1%, stock return increases to 0.101%. The trade-to-GDP ratio is an indicator of the relative importance of international trade in a country's economy. So when this trade rate increases, it also assesses that the country's economy is growing. The sustainable development economy is a solid foundation for the development of other investment sectors in the region including the stock market.

The inflation rate also has an impact on stock market yields. The authors examined the inflation variables in the two models, the inflation rate has both the same and opposite effects on the yield of the stock market. In the crypto-containing model, when the inflation rate rises to 1%, the stock market yield will decrease by 0.124%. The reason is that when inflation rises, interest rates will be adjusted to stabilize the economy, which makes investors more inclined to deposit money with high interest rates and risk-free instead of investing in the stock market, where there is relative risk. However, for the Volume model, when the inflation rate rises to 1%, it will help the stock market's yield increase by 0.057%. Because rising inflation will help export companies to export more and optimize profits, this will help the share price of companies tend to increase so it will have a positive effect on the yield of the stock market. In the model without the appearance of two variables, Crypto Return and Volume, the impact of inflation on stock market yields is the same and the level of impact is more pronounced. When the CPI rises to 1%, stock return will also increase by 0.335%. This explains that this is the period when the government is providing money to stimulate production and business activities. Boosting production will help the country's economy grow and will positively affect the stock market.

In addition, the remaining variables in the model such as m2, Interest rate, Oil, GDP per capita all have the opposite effect on stock return dependent variables. As for the country's money supply ratio variable, when the money supply rate increased to 1%, the stock market yield decreased by 0.13% in both models examined by the group. The reason is that when the money supply increases too much will cause the market to fall into inflation and when inflation is higher the Government will implement a tightening policy to reduce the amount of money circulating outside society by issuing government bonds or raising interest rates. Raising interest rates helps investors not to risk investing in the stock market despite higher profits but also with a high risk ratio, they will deposit savings at the interest rate that the government offers and the risk ratio is not available. This also explains why the money supply and interest rates have the opposite effect compared to stock market yields. According to the test results when the interest rate increases by 1%, the yield of the stock market will decrease by 1.709% and 1.751% respectively, the two models containing crypto return and volume variables. In addition, the group also examined the impact of the m2 money supply ratio as well as interest rates on the yields of the stock market in the absence of cryptocurrency factors, the results showed that the impact of the money supply rate as well as interest rates had a more obvious impact. When the money supply rate increases to 1%, the stock market yield will decrease by 0.151%, while when the interest rate increases to 1%, the return of the stock market will decrease by 2.377%. The results showed that stock market yields were greatly affected by the country's money supply policy as well as the adjustment of market interest rates.

Stock market yields are also affected by the growth rate of oil prices. For the model containing the yield variable of the cryptocurrency market, when the growth rate of oil prices increased to 1%, the yield of the stock market decreased by 6,696%, while with the model containing variables the annual growth rate of the cryptocurrency market trading volume, the yield of the stock market decreased by 7,329%. Meanwhile, in the absence of cryptocurrency factors, the impact of oil price growth has a slighter impact than the yields of the stock market. When the oil price growth rate increases to 1%, the stock market yield will decrease by 4,921%. Despite the decline, the impact of oil prices on the stock market is very strong. This obvious negative influence is due to asean countries being oil importers. Therefore, when the price of oil increases, the price of oil imports will also increase, when the input price increases leading to the domestic selling price

will also tend to increase and increase more sharply than the import price. This directly affects the income of investors.

GDP per capita is also one of the factors affecting the return of the stock market. In the model with the independent variable crypto return, when GDP per capita increases by 1%, stock return's income will decrease by 8,655%, while with the independent variable model of Volume, when GDP per capita increases by 1%, the return of the stock market will decrease by 8,536%. For the model without the appearance of Crypto Return and Volume, GDP per capita has almost the same impact on Stock Return. The fact that GDP per capita has the opposite effect compared to the return of the stock market is because in the short term people will tend to spend on necessary items rather than investing. According to Jay R. Ritter, author of "Economic growth and equity returns," the inverse correlation between real stock yields and GDP growth per capita is due to markets tending to set P/E higher and multiples between prices-to-dividends when economic growth is expected to be high, this has the effect of reducing performance returns as investors must commit more capital to receive the same level of dividends.

3.3.3. Stability test

With the phenomenon of variance, the team proceeded to scale with the REM-Robust method to control this defect. So the result that the model after the test team is completely accurate and does not suffer from this defect does affect.

To test the stability in the group model, the team tested the hypothesis of dependence between cross-sectional dependence (CD Test) observations used to test whether the residues correlated between entities. Dependence can lead to deviations in test results (also known as simultaneous correlations). The invalid hypothesis is that the balance is not correlated. The authors conducted a defect test and obtained a Value $P = 0.2488 > 0.05$ in the model containing the Crypto Return variable and the value $P = 0.5614 > 0.05$ in the model containing the Volume variable so the model that the team sent did not depend on the cross section so the models that the team sent did not depend between cross-observations. in the data.

In addition, the chain correlation relationship makes the standard error of the coefficients smaller than the actual and the R-squared value higher. The team conducted lagram-multiplier testing for chain correlation. Null values have no serial correlation, after testing the group obtains the value $P = 0.4162 > 0.05$ for the model with the Crypto Return variable and the value $P = 0.3673 > 0.05$ in the model with volume variable so the authors do not refute the empty value and conclude that the data is not the most similar in the models proposed by the group.

3.3.4. Sustainability test

Besides stability, the team also conducted a solidity test in the model by examining endogenous problems in the model. The team used late variables of independent variables to control endogenous phenomena in the models. After examining the author group obtained the model result with the main independent variable crypto return with an R-squared of 39.19%. In addition, the impact of the cryptocurrency market's earnings on the stock market is clearer than it was before the endogenous test. With the above results, when the yield of the cryptocurrency market increases to 1%, the return of the stock market increases to more than 2.56% and vice versa. Meanwhile, the R-squared of the model containing the Volume variable is 29.47%. However, unlike the profit variable of the cryptocurrency market, when running the disability control model, although the impact of Volume on Stock return is still the same, the level of volume's impact on stock market yields decreased but did not decrease sharply. When the cryptocurrency exchange rate increased to 1%, the stock market's yield increased by only 0.08% and vice versa.

3.4. Discussion

The results obtained from the model demonstrated that the two crypto market variables both had an impact on stock market yields. Variable returns from the cryptocurrency market and the annual growth rate of cryptocurrency market trading volume have the right impact on the mark with theoretical as well as practical expectations. Accordingly, the income from the cryptocurrency market has the same impact on the

return from the stock market with a statistical significance of 5% according to the model. Similarly, the annual growth rate of cryptocurrency market trading volume also has the same impact on the return from the stock market with a statistically significant 5% according to the model. In the absence of other factors, the return of the cryptocurrency market as well as the annual growth rate of the cryptocurrency market trading volume have a more pronounced impact on the yields of the stock market. This shows that the cryptocurrency market and the stock market are both affected by external factors and specifically the factors that the group proposes.

3.4.1. Recommendations to the government

Based on the trend of developing cryptocurrencies in the future, the authors recommend several policies for the cryptocurrency market in Vietnam in the coming time as follows:

First, complete the legal corridor for cryptocurrencies. Through research, the group found that the trend of participating in the cryptocurrency market is increasingly strong with the reception of many countries around the world, creating a profitable playground for investors. Asean governments should build strict legal systems to stabilize financial markets, protect the rights of market participants, and limit risks and consequences for society. Specifically: For individuals and organizations that use and trade cryptocurrencies, it is necessary to register information with the authorities, confirm ownership of assets on exchanges and all activities will be stored in the transaction history; For individuals directly or indirectly involved in the transaction, it is necessary to fulfill their obligations, ensure compliance with the provisions of law, publicize transparent principles of accounting - auditing, tax obligations related to the ownership and use of cryptocurrencies.

Second, the issue of protecting the rights of participants. In the future, cryptocurrencies could replace traditional currencies, which are expected to be payment instruments with features that are superior to today's payment methods. Thanks to the blockchain tool, trading through cryptocurrencies saves consumers time, transaction costs, and not through intermediaries to support and coordinate. When the buyer has a need for investment products and the seller fully meets the quality standards as well as the guaranteed customer benefits, the transaction is successful. However, the risks of using cryptocurrencies are still very high, any transactions made will not be able to be re-executed or exchanged. Therefore, it is necessary to have a clear legal mechanism as the basis for protecting the rights of participants in this market. Japan, Singapore and the Philippines are among the countries that are considered crypto-friendly, but no country has issued specific laws on the issue. Giving a basic orientation to closely build a legal system is an important step to come up with an optimal solution to protect consumers, based on 5 main issues: protection of user information, protection of cryptocurrency assets, application using cryptocurrencies easy to implement, transparency of information and ensuring the stability of the value of cryptocurrencies.

Third, develop tax policies for activities related to cryptocurrency mining and trading. Cryptocurrencies are not recognized as a form of assets, so Vietnam does not apply a tax collection policy to cryptocurrency trading and business activities, which has reduced a large portion of revenue for the state budget. In the world today, most countries that allow the use of cryptocurrencies are taxed on cryptocurrencies such as Japan, the US, South Korea, the UK ... Tighten policies related to land use rights, environmental protection tax, electricity consumption tax to increase the cost of mining activities to put pressure on users. ASEAN countries should tax crypto-related activities such as corporate income tax, capital transfer tax, consumption tax or personal income tax from investors. Each country has appropriate policies for different types of currencies depending on specific economic and socio-political characteristics. Vietnam also needs to adjust in line with the general trend, setting out specific regulations on taxation and tax calculation for this potential asset class.

Fourth, invest in technical infrastructure, train a team of cryptocurrency management experts. There should be specialized agencies managing the amount of cryptocurrencies in the asean country's administrative apparatus to be able to regularly update, assess future risks and propose long-term recommendations. On the other hand, develop policies to improve information technology infrastructure with

modern digital 4.0 to meet the requirements of today's society; organize training and capacity building of financial experts, encryption and security experts. China has established a National Internet Financial Security Technical Expert Committee dedicated to controlling and managing technology finance activities. The U.S. Financial Crime Prevention Bureau makes regulations and legal guidelines for cryptocurrencies; at the same time, in conjunction with the Internal Revenue Service, it manages cryptocurrency transactions.

Fifth, raise people's awareness. The cryptocurrency market today contains many potential risks when the technical, financial and information security infrastructure is not high. Although in some ASEAN countries except Vietnam, cryptocurrencies function as a means of payment, attractive profit-making tools bring many expectations to investors. But according to statistics, there are countless scams to raise cryptocurrency investment capital or collapse large exchanges such as Tradesatoshi, FCoin, cyber attacks on Coincheck, ... It has caused severe psychological as well as monetary damage to the user.

Therefore, it is necessary to promote communication work so that people and businesses are wary of being invited to participate in crypto-related activities as well as promote international cooperation especially among ASEAN countries to strengthen regulatory measures, monitoring of transactions related to cross-border cryptocurrencies. Encourage people to thoroughly learn information before entering the cryptocurrency market, strengthening basic knowledge as well as awareness to stay away from virtual currency laundering scams affecting the national economy.

3.4.2. Recommendations for investors

In the context of macroeconomics and the difficult production and business situation due to the impact of the Covid-19 epidemic, the team made a few recommendations for individual investors to consider carefully when participating in the cryptocurrency and stock markets.

First, cryptocurrencies are accepted by a few countries as a valuable asset. Witnessing the rapid development of cryptocurrencies in the last 10 years has created a new wave of investors to participate in the cryptocurrency market. With attractive profitability, high return profitability and potential risks in which also the most, the boundaries of virtual currencies in the cryptocurrency market today are very fragile and unpredictable. To minimize the risks of entering this potential market, investors need to equip themselves with the basic knowledge of investing and fully comply with the provisions of the law on exchanges to protect their own interests. In 2018, the State Bank of Vietnam (SBV) also issued a document not recognizing virtual currencies circulating in Vietnam. Affirming that virtual currencies in the cryptocurrency market are not legal currencies and are not legal means of payment in Vietnam.

Next, the cryptocurrency market is now increasingly vibrant with product portfolio diversification and huge market capacity across many exchanges. Therefore, investors need to learn the information carefully before trading. Trading on crypto exchanges carries many risks such as information theft, change of hold or may be stopped from trading. On the other hand, investors themselves can also become tools for cybercriminals.

However, investors should also be aware of high market interest rates that mean high risks such as losing value, bursting financial bubbles. It is necessary to thoroughly learn about the characteristics and models of investment products in both markets, while being cautious with investment portfolios, meeting the regulations on financial safety targets as prescribed by law. Joining the cryptocurrency market in tandem with the stock market will help investors diversify assets in their financial portfolios, share risks as well as to maximize expected returns in their portfolios. In addition, investors must understand the development trends of sectors in the economy as well as the cryptocurrency market, cultivate investment experience, understanding, update the news every day to keep up with global market price fluctuations and comply with the provisions of the law in each market.

4. Conclusion

The topic: " Studying the impact of the cryptocurrency market on stock market yields in the ASEAN region " explores the impacts that the stock market can have with the rapid rise and development of the cryptocurrency market, a market that has been popular in recent years but shows a promising future thanks to

the rapid rise and development of the cryptocurrency market, a market that has been popular in recent years but shows a promising future thanks to the rapid rise and development of the cryptocurrency market, a market that has been popular in recent years but shows a promising future thanks to the rapid rise and development of the cryptocurrency market, a market that has been popular in recent years but shows a promising future thanks to the rapid rise and development of the cryptocurrency market, a market that has been popular in recent years but shows a promising future thanks to the rapid rise and development of the cryptocurrency market, a market that has been popular in recent years but shows a promising future thanks to the rapid rise and development of the cryptocurrency market, which has been popular in recent years but shows a promising future thanks to the rapid rise and development of the cryptocurrency market, a market that has been popular in recent years but shows a promising future thanks to the rapid rise and development of the cryptocurrency market, The characteristics of cryptocurrencies. At the same time, the topic also said that the role and benefits of cryptocurrencies are extremely necessary for the development of the economy. Especially in the era of the 4.0 revolution where countries aim to digitize all activities in life such as transactions, payments, etc. From there, the topic proposed a number of useful solutions for the governments of ASEAN countries in general and countries around the world in particular such as: perfecting the legal corridor to strictly control cryptocurrencies, not letting the situation of using cryptocurrencies as a commodity to carry out illegal business acts. In addition, it is necessary to strengthen cooperation among ASEAN countries to share experiences on mechanisms and policies in the management and control of the use and circulation of cryptocurrencies in ASEAN countries. The study of the impact of the cryptocurrency market on the stock market is one of the relatively new and little-received topics in Vietnam. Through this research paper, both theoretically and practically, the importance and influence of the topic has been demonstrated. The poorly performing cryptocurrency market will hold back the stock market's growth momentum thereby reducing the growth of the economy. However, the implementation of the study still exists some limitations in terms of data, the scale of research. Therefore, in the following research articles the group will overcome these limitations.

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RELATIONSHIP BETWEEN EARNINGS MANAGEMENT AND AUDIT OPINION OF LISTED COMPANY ON VIETNAM STOCK EXCHANGE

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ABSTRACT

This study was conducted to examine the relationship between earnings management behavior and audit opinion on the financial statements of 281 companies listed on the Ho Chi Minh City Stock Exchange. By quantitative research method, the model building includes 01 independent variable which is profit adjustment behavior, and 07 control variables which are: Net income divided by total assets, Audit tenure, Firm size, Audit size, Financial leverage, Loss of the previous year, Total sales divided by total assets. The research results show that there are 03 out of 08 variables that have a negative impact on the audit opinion with the scale in the period of 2015-2019. From the results of the study, we have given implications to increase the objectivity of the audit opinion on the financial statements of the companies listed on the Ho Chi Minh City Stock Exchange.

Keywords: Audit opinion, earnings management, listed firm, relationship, agency theory, role theory.

1. Introduction

Recently, Vietnam's stock market has achieved proud milestones, not only in terms of liquidity but also in significantly improved infrastructure. This is considered the investment channel that attracts the most cash flows from small capital flows today because it is protected by the Government and the State Securities Commission. Financial statements (FS) of listed companies, therefore, become more important than ever in helping investors in particular and stakeholders use information in general to access information specific to the business situation of the enterprise and contribute to support decision-making. We are considered as an independent third party in ensuring that the quality of the information in the FS is properly presented, thereby minimizing the risk of information discrepancies due to errors or frauds in the FS.

2. Theoretical basis and proposed research model

2.1. Theoretical Basis

The term "relationship between earning management and audit opinion" has been a matter of debate among researchers over the past time. Inheriting from previous studies, the topic chooses a perspective on the relationship between earnings management and audit opinion through accrual basis accounting. Hypotheses and models of 09 factors are built on the basis of agency theory, signaling theory, and role theory.

Hypothesis and model consisting of 9 factors are built on 3 bases:

Agency Theory

The agency theory was established by Holmstrom and Milgrom (1987) based on the previous work of Jensen and Meckling (1976) and is considered as the basic theory for unbiased behavior. This theory is concerned with the relationship between two parties to an employment contract, including the principal who is the owner, shareholders or investors, etc., and the authorized party is the representative, the person manage,

Research by Bin Srinidhi and Ferdinand Gul (2007) and Alzoubi (2018) shows that the tenure of auditors has a relationship with audit opinion. Specifically, the study of Do Quynh Chi (2021) also proved that audit opinion has a positive relationship with audit tenure.

We use agency theory to explain the research hypotheses in order to determine the research factors of audit tenure, auditor size.

Signaling Theory

According to the signaling theory drawn from the Spence test (1973), businesses need to signal to stakeholders to limit the influence of asymmetric information. However, research by Bini et al (2010) shows that companies that are losing money will limit providing information through disclosure and conversely, companies with high profitability will provide more information. more to signal to increase their competitiveness.

Accordingly, we consider that large-scale and audited companies with Big 4 are signals to forecast the audit opinion.

Role Theory

Razak et al (2016); Indahinwati et al. (2019) state that role theory is the interaction between people's social roles, norms, and identities in an organization. Role theory focuses on the influence of auditors on audit opinions.

Research by Dewey (1986) shows that the auditor's experience affects the auditor's errors, which means that the more experienced auditors are, the less likely they are to make mistakes. In addition, factors such as personality, characteristics, and attitudes of auditors in specific situations will affect decision-making according to research by Jaya et al., 2018.

Based on role theory, we predict that audit tenure has a positive relationship with audit opinion.

2.2. Experimental studies

Presenting an overview of research collected from home and abroad on factors affecting the relationship between earnings management behavior and audit opinion on financial statements. An overview of the research problem helps us shape the direction of development and detect research gaps; from which to choose an appropriate research direction. However, the results that have been studied before have not been consistent with each other:

Net income divided by total assets (ROA) received a negative result with the probability of receiving a qualified audit opinion: Omid (2015); Alhadab (2016); Tommasetti, Santos, Macedo, and Neto (2018); while the study of Abolverdi and Kheradmand (2017) suggested that net income divided by total assets has a positive effect on the probability of receiving a qualified audit opinion.

The audit tenure factor was positively related to the probability of obtaining a qualified audit opinion: Dopuch, King, and Schwartz (2001); Susanto, Pradipta and Esther (2021); while the study of Do Quynh Chi (2021) suggested that there is a negative relationship between audit tenure and audit opinion.

Similarly, research by Imen, and Anis (2020) showed that there was a negative correlation between audit firm size and earnings management. Tommasetti, Santos, Macedo, and Neto (2018) also concluded that Big4 audit firms have a higher ability to detect corporate governance behavior of the audited company and increase the number of reports with qualified audit opinion.

Factor results of Audit size had a negative impact on earnings management behavior: Tommasetti, Santos, Macedo, and Neto (2018); Imen and Anis (2020). Both of the above studies suggested that Big4 audit firms have a higher ability to detect earnings management behavior of audited companies than non big companies.

According to Tommasetti, Santos, Macedo, and Neto (2018), financial leverage had a negative effect on audit opinion, that was, the higher the debt ratio, the more likely it was to receive a qualified audit opinion. On the other hand, Imen, and Anis (2020) demonstrated that there is a positive correlation between

financial leverage and audit opinion. Besides, the study of Susanto, Pradipta, and Esther (2021) showed that leverage ratio has no impact on auditors' decision making.

According to research by Sundvik (2019), Loss of the previous year factor had a positive impact on the relationship between discretionary accruals or earnings management. Along with that point, the study of Omid (2015) in Iran also gave similar results, a unqualified audit opinion in the previous year and loss in the last year had a positive effect on the ability to receive an unqualified audit opinion of auditor about material misstatement of the FS or because of an inability to obtain sufficient appropriate audit evidence. And with the study of Susanto, Pradipta, and Esther (2021), losses had an influence on the audit decision.

Research by Abolverdi and Kheradmand (2017) showed that there was a negative correlation between Total sales divided by total assets and audit opinion, Omid (2015) also concluded that there was a negative relationship with profitability ability to obtain an opinion on the FS that was free from material misstatement. The above studies all have the same result that the larger the asset turnover ratio of the company, the lower the possibility that the enterprise will receive an exception.

2.3. Proposed research model

According to the background theories and previous studies, the research team mainly inherits the work of Omid (2015) and Abolverdil and Kheradmand (2017) to model the factors that affect the relationship between audit opinion and earnings management

Regression model inherited by the author for research:

$$AO_{it} = \beta_0 + \beta_1 * DA_{it} + \beta_2 * ROA_{it} + \beta_3 * TENURE + \beta_4 * SIZE_{it} * \beta_5 * BIG4_{it} + \beta_6 * LEV_{it} + \beta_7 * LOSS_{it} - 1 + \beta_8 * TURN_{it}$$

Table 1. Scale and expectations of research variable

Impact factor	Symbol	The scale	Refer to previous studies	Background theory reference	Expected
Dependent variable					
This year's audit opinion	AO	Dummy	Alhadab (2016); Tommasetti, Santos, Macedo and Neto (2018); Abolverdi and Kheradmand (2017)		+
Independent variables					
Discretionary accruals	DA	Modified Jones model	Alhadab (2016); Tommasetti, Santos, Macedo and Neto (2018); Ali Kheradmand (2017)		-
Control variable					
Net income divided by total assets	ROA	Profit after tax/Total assets	Omid (2015); Alhadab (2016); Abolverdi and Kheradmand (2017) and Tommasetti,		-

			Santos, Macedo and Neto (2018)		
Audit Tenure	TENURE	Number of consecutive years that the enterprise is audited by the same auditor.	Susanto, Pradipta and Esther (2021); Do Quynh Chi (2021); Susanto, Pradipta and Djashan (2017); Dopuch, King and Schwartz (2001)	Agency theory	+
Firm size	SIZE	Logarithm of total assets	Alhadab (2016) and Tommasetti, Santos, Macedo and Neto (2018)	Signal theory	+
Audit size	BIG4	Dummy	Tommasetti, Santos, Macedo and Neto (2018); Imen and Anis (2020)		-
Financial leverage	LEVIT	Total debt/Total assets	Alhadab (2016); Tommasetti, Santos, Macedo and Neto (2018); Abid, Shaique and Anwar ul Haq (2018); Imen and Anis (2020); Susanto, Pradipta and Esther (2021)		-
Loss of the previous year	LOSS	Dummy	Omid (2015); Dennis Sundvik (2019); Susanto, Pradipta and Esther (2021)		+
Total sales divided by total assets	TURN		Abolverdi and Kheradmand (2017); Omid (2015)		-

3. Methodology

3.1. Research hypothesis

After referencing domestic and foreign research papers, we have built theoretical research models and hypotheses about 8 factors affecting the ability to receive audit opinions of listed companies on HOSE include:

3.1.1. Dependence variable

Audit opinion (AO)

This year's dependent variable AO is measured by a dummy variable, in which if this variable has a value of 1, the enterprise receives an unqualified audit opinion and vice versa (Omid (2015); Alhadab (2016); Tommasetti, Santos, Macedo and Neto (2018); Abolverdi and Kheradmand (2017)). Research by Alhadab (2016) suggests that the level of internal control has a positive effect on the receipt of unqualified audit reports. Or the study of Abolverdi and Kheradmand (2017) asserts that auditors by observing higher discretionary accruals may be more sensitive in releasing reports with unqualified opinions to the public.

3.1.2. Independence variables

Discretionary Accruals (DA) is an independent variable used to measure the quality control behavior of managers in enterprises. Discretionary accruals are measured using the modified Jones Model of Dechow, Sloan and Sweeney (1995); used in the studies (Omid (2015); Alhadab (2016); Tommasetti, Santos, Macedo and Neto (2018); Abolverdi and Kheradmand (2017),...) through the formula:

$$\frac{TA_{it}}{Assets_{i,t-1}} = k_{11} \frac{1}{Assets_{i,t-1}} + k_{12} \frac{(\Delta REV_{it} - \Delta AR_{it})}{Assets_{i,t-1}} + k_{13} \frac{PPE_{it}}{Assets_{i,t-1}} + \varepsilon_{it}$$

Currently, the research results are still different due to many factors. The study of Imen and Anis (2020) and Abid, Shaique and Anwar ul Haq (2018) shows that there exists a relationship between FSW behavior and AO but there are many studies that have also proved the opposite such as: Susanto, Pradipta and Esther (2021), Tommasetti, Santos, Macedo and Neto (2018). However, the study of Giap Thi Lien (2014) with the data of listed companies in Vietnam's stock market has shown very close results that the relationship between earnings management and AO exists, therefore, we hypothesized the following:

Hypothesis H1: There is a relationship between the earnings management and the audit opinion.

3.1.3. Control variables

a) Return On Asset (ROA)

Net income divided by total assets is one of the basic indicators to measure the performance of enterprises, measured by the ratio between profit after tax to total assets (Omid (2015); Alhadab (2016); Abolverdi and Kheradmand (2017); Tommasetti, Santos, Macedo and Neto (2018))

Firms with lower the profitability ratio, the higher the probability of receiving an exception due to insufficient appropriate audit evidence (Omid (2015)). Other studies also suggested that net income divided has a negative relationship with audit opinion (Alhadab (2016); Tommasetti, Santos, Macedo and Neto (2018)). On the other hand, Abolverdi and Kheradmand (2017) showed a positive relationship between net income divided and audit opinion. Therefore, based on previous studies, we expect that net income divided by total assets has a negative relationship with audit opinion.

b) Audit Tenure (TENURE)

Audit Tenure is measured by the number of years that the enterprise is audited by the same auditor (Susanto, Pradipta and Esther (2021); Do Quynh Chi (2021)).

Agency theory predicts a negative relationship between audit tenure and AO because the auditor mediates an adverse interest relationship and helps to reduce agency costs arising from the individual's own purposes. representative (Do Quynh Chi (2021)). Susanto, Pradipta and Esther (2021) emphasize that the audit tenure has an influence on the auditor's decisions. The longer the client is, the more likely the auditor is to give a low-quality opinion. This outcome is possible because the auditor will have an emotional relationship with the client that leads to a feeling of loyalty with the client, so the auditor's skepticism and independence will be replaced by loyalty. Earlier studies also showed similar positive results as firms as long-term customers can receive qualified opinions (Susanto and Pradipta (2017)) and auditors are less likely to produce an audit result that is more favorable to their clients if the audit tenure is short (Dopuch, King and

Schwartz (2001)). Therefore, based on agency theory and the above studies, the research team expects that audit tenure has a positive relationship with AO.

c) Firm Size (SIZE)

Firm size is the most mentioned factor that affects the earnings management, which is measured by the logarithm of total assets. The larger the company, the more pressure is on the managers from investors and creditors, in addition, asymmetric information appears, creating opportunities for the managers to use the quality control to send incorrect signals to the investors according to the signal theory.

Research from Lopes, AP (2018) shows that firm size has a negative impact on AO. However, according to the study of Alhadab (2016) and Tommasetti, Santos, Macedo and Neto(2018) gave the opposite result that firm size has a positive effect to AO, which means that the larger the enterprise, the higher the percentage of receiving unqualified audit opinion. Accordingly, we based on the number of studies that could be found and expected company size to have a positive effect on AO.

d) Audit Size (BIG 4)

Audit firm size is one of the main control variables used to measure the influence of Big4 companies on the audited company's corporate governance behavior. Audit firm size is measured by the dummy variable, which takes the value 1 if the firm is audited by Big4 (Tommasetti, Santos, Macedo, and Neto (2018); Imen and Anis (2020)).

Auditing firms have the ability to require their clients to adjust their FS detecting the conduct of quality assurance before the audit report is approved, which helps to limit the acts of quality assurance. Research by Imen and Anis (2020) shows that there is a negative correlation between audit firm size and quality assurance behavior. Tommasetti, Santos, Macedo and Neto (2018) also concluded that Big4 audit firms have a higher ability to detect corporate governance behavior of the audited company and do increase the number of reports with AO except. Therefore, based on previous studies, we expect audit size to have a negative relationship with AO.

e) Financial Leverage (LEVIT)

Financial leverage is a technique that involves using debt instead of equity to purchase assets, with the expectation that the after-tax return to equity holders from the transaction will exceed the cost of borrowing. Companies wishing to grow quickly with limited capital will use financial leverage as a tool to increase profit after tax and growth rate of profit after tax.

According to Tommasetti, Santos, Macedo and Neto (2018), financial leverage has a negative effect on audit opinion, meaning that a higher debt ratio is likely to receive the higher the exception opinion. On the other hand, Imen and Anis (2020) demonstrate that there is a positive correlation between Financial Leverage and audit opinion.

Besides, the study of Susanto, Pradipta, and Esther (2021) shows that Financial Leverage has no impact on the auditor's decision making. Based on the doubt about the impact of financial leverage on the audit opinion and according to a few previous studies, we set the expectation for Financial Leverage to have a negative relationship with the audit opinion.

f) The Previous Year's Loss (LOSS)

The previous year's loss is a dummy variable, specifically, if the company has a loss in the previous year, then the LOSS is 1 and the company has no loss, the LOSS is 0 (Omid (2015); Alhadab (2016); Abolverdi1 and Kheradmand (2017); Sundvik (2019); Susanto, Pradipta and Esther (2021).

According to the study, Sundvik (2019) has found that the loss variable (LOSS) will have a positive effect on the relationship between discretionary accruals or earnings management. Along with that, the research paper of Omid (2015) in Iran region also gives similar results, unqualified AO in the previous year and the loss in the last year has a positive effect on the ability to receive the auditor's unqualified opinion on material misstatement of the financial statements or the failure to obtain sufficient appropriate audit evidence. And with the study of Susanto, Pradipta, and Esther (2021), losses have an influence on the audit

decision. Losing businesses may be more noticeable to auditors because they need to know how the business is likely to suffer losses. Therefore, we set the loss expectation of the previous year to have a positive relationship with AO.

g) Asset Turnover Ratio (TURN)

Asset turnover ratio is one of the main control variables used to evaluate the efficiency in using assets of enterprises. Asset turnover ratio is measured as the ratio of net revenue to total assets (Abolverdi and Kheradmand (2017); Omid (2015)).

The study of Abolverdi and Kheradmand (2017) showed that there is a negative correlation between the TS and AO rotation coefficients, Omid (2015) also concluded that there is a relationship inversely related to the likelihood of an adverse opinion on the financial statements that contain material misstatement. This means that the higher the company's asset turnover ratio, the lower the probability that the enterprise will receive a qualified audit opinion. Therefore, based on previous studies, we expect that the asset turnover ratio has a negative relationship with AO.

3.2. Data Analysis

To estimate the impact of the factors affecting the research object on the topic - the relationship between audit opinion and earnings management, the research team selected listed firms with high levels of information disclosure on the Ho Chi Minh City Stock Exchange during the period 2015 - 2019.

The research uses data collected from audited financial statements. Accordingly, the selected businesses are:

Listed firms have full financial statements...

The sample does not include businesses in the financial-related fields such as Banks, securities companies, insurance companies, or funds/financial investment companies... – because these companies have different business characteristics in terms of assets and capital sources compared to other businesses.

Besides, to conduct research, the research team uses quantitative methods for the variables in the model in 3 steps:

Step 1: Review the documents and build a theoretical research model

Searching for documents related to earnings management and audit opinions, overview and inheritance of research results, and scientific articles. From there, build a model to determine the between audit opinions and earnings management of the listed firm on the Ho Chi Minh City Stock Exchange.

Step 2: Collect data

Collect data related to listed companies on the Ho Chi Minh City Stock Exchange in 2019 from financial statements.

Step 3: Processing statistical data

Using descriptive statistical analysis to describe the basic characteristics of the collected data.

Performing Pearson correlation coefficient test to test the linear relationship between control variables, independent and dependent variables used.

Using the test of multicollinearity to a test of variance to evaluate and find out defects of the model and based on that result choose to argue the appropriate model.

4. Results of research and discussion

4.1. Descriptive statistics of study variables

Table 2. Variables descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
BIG4	281	.2384342	.4268862	0	1
ROA	281	.0602917	.0799172	-.4180711	.4678961
LEV	281	.2217888	.1710658	0	.6452947
TURN	281	.9891063	.9788104	.002886	8.157407
LOSS	281	.0533808	.2251927	0	1
SIZE	281	12.28418	.5738954	11.13391	14.295
AO_2019	281	.7259786	.4468155	0	1
TENURE	281	.227758	.4201339	0	1
DA	281	-8.52e+10	1.91e+12	-3.02e+13	5.83e+12

4.2. The Pearson correlation coefficient of study variables

Table 3. Pearson correlation coefficient

	AO_2019	BIG4	ROA	LEV	TURN	LOSS	SIZE	TENURE
AO_2019	1.0000							
BIG4	0.0442	1.0000						
ROA	0.2533	0.0582	1.0000					
LEV	0.0601	-0.0619	-0.3362	1.0000				
TURN	0.1291	0.0381	0.1187	0.0577	1.0000			
LOSS	-0.1736	0.0900	-0.4331	0.0846	-0.0488	1.0000		
SIZE	-0.0368	0.3458	-0.1304	0.2439	-0.2382	0.0246	1.0000	
TENURE	-0.1230	-0.1247	0.0338	0.0565	0.1035	-0.0912	-0.0698	1.0000
DA	-0.0378	0.0601	-0.0103	0.0315	0.0322	-0.0171	-0.1544	0.0283

As shown in table, dependent variable (AO_2019) has positive correlation with listed variables: BIG 4, ROA, LEV and TURN; and negative correlation with LOSS, SIZE, TENURE and DA.

With a coefficient of determination is 0.0442, companies audited by Big 4 have a higher possibility of receiving unqualified audit opinion.

In contrast, TENURE's coefficient of determination is -0.123, means that companies using their familiar audit service for a longer time have higher possibility of getting qualified audit opinion.

High coefficient of determination between independent variables requires consideration in the table:

BIG 4 has a positive correlation with SIZE, with a correlation coefficient of 0.3458, which is considered to be large. This means that the larger the company, the more likely it is to hire audit services from Big 4 companies.

ROA is negatively correlated with LEV and LOSS, with correlation coefficients of -0.3362 and -0.4331, respectively. Therefore, companies with losses in the previous year and high debt ratios would have low profitability ratios.

The larger the firm's size, the higher the debt ratio, as shown by the correlation coefficient between SIZE and LEV of 0.2439.

4.3. Collinearity Statistics

Table 4. Collinearity Statistics

Variable	VIF	1/VIF
ROA	1.43	0.699856
SIZE	1.43	0.700596
LOSS	1.27	0.785752
BIG4	1.26	0.791761
LEV	1.26	0.794561
TURN	1.13	0.882659
DA	1.05	0.948918
TENURE	1.04	0.963508
Mean VIF	1.23	

Because the values of all variables are under 10, multicollinearity is not existed.

4.4. Logistic Regression Results

Table 5. Logistic Regression Results

Logistic regression	Number of obs	=	281
	LR chi2(7)	=	41.63
	Prob > chi2	=	0.0000
Log likelihood = -144.19247	Pseudo R2	=	0.1261

AO_2019	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
DA_1	-1.60e-13	2.07e-13	-0.77	0.440	-5.67e-13 2.46e-13
ROA	12.84823	3.614895	3.55	0.000	5.763163 19.93329
LEV	2.759655	.9740396	2.83	0.005	.850572 4.668737
TURN	.2121686	.1834104	1.16	0.247	-.1473092 .5716463
LOSS	-.3636574	.6941895	-0.52	0.600	-1.724244 .9969291
SIZE	-.2700965	.3040726	-0.89	0.374	-.866068 .3258749
TENURE	-.9874427	.3361353	-2.94	0.003	-1.646256 -.3286295
BIG4	.2794836	.4028297	0.69	0.488	-.5100482 1.069015
_cons	3.072545	3.71546	0.83	0.408	-4.209623 10.35471

The effect of the independent variables on the dependent variable:

The negative relationship between AO and DA_1 with regression coefficient is $-1.60e^{-13}$, shows that when nothing changes, if discretionary accruals decrease $-1.60e^{-13}$ then ability to receive qualified audit opinion increases 1%. But statistical significance is 0.44, hypothesis, the relationship between earning management and audit opinion is exist, is rejected.

The effect of the control variables on the dependent variable:

At 1% significance level, statistically significant variables include Return On Assets (ROA), Financial Leverage (LEV) and Audit Tenure (TENURE). In which, ROA and LEV have a positive relationship with Audit Opinion (AO_2019); TENURE has a negative relationship with AO_2019.

ROA has a regression coefficient of 12.848, which means that with the same condition, the probability of getting an unqualified audit opinion increases by 1%, the return on total assets increases by 12.848%.

The variable LEV has a regression coefficient of 2.759, which means that with constant conditions, a 1% increase in the probability of receiving an unqualified audit opinion increases the debt ratio of the company by 2.759%.

With a regression coefficient of -0.987, it shows that under constant conditions, the longer a company hires the same auditing firm, the more likely it is to receive an unqualified audit opinion with the ratio: TENURE increases 0.987%, AO decreases 1%.

4.5. Coefficient of determination

Table 6. Coefficient of determination

Measures of Fit for logit of A0_2019			
Log-Lik Intercept Only:	-165.008	Log-Lik Full Model:	-144.192
D(272):	288.385	LR(7):	41.631
		Prob > LR:	0.000
McFadden's R2:	0.126	McFadden's Adj R2:	0.072
Maximum Likelihood R2:	0.138	Cragg & Uhler's R2:	0.199
McKelvey and Zavoina's R2:	0.292	Efron's R2:	0.153
Variance of y*:	4.650	Variance of error:	3.290
Count R2:	0.765	Adj Count R2:	0.143
AIC:	1.090	AIC*n:	306.385
BIC:	-1245.248	BIC':	-2.163

The research team conducted an F-test to confirm whether the model is statistically significant or not. Prob index > Chi2: 0.0000 < .000, from which the team concludes, the model of the study is statistically significant, which means that the model can predict the likelihood of companies receiving unqualified audit opinion based on the data of the variables used in the model.

5. Conclusion and implication

5.1. Main conclusion

Summary of data processing results shows that the following factors: net income divided by total assets, audit tenure and financial leverage have an impact on the independent audit opinion on the financial statements; The relationship between the variables is described as follows:

$$AO_{it} = 3.072545 + 12.84823 * ROA_{it} - 0.9874427 * TENURE + 2.759655 * LEV_{it}$$

With the research results, we answered the question in chapter 1 that there is no relationship between earnings management and audit opinion, which is consistent with the results of a number of research projects. This study also reinforces that in Vietnam, extraordinary accruals do not affect the auditor's decision to make an opinion. The research team's conclusion also showed that extraordinary accruals are not a factor affecting the auditor's opinion.

5.2. Implications

With the research results, we conclude that there is no relationship between earning management and audit opinion, which is consistent with the research results of Anis (2020) and Abid, Shaique, and Anwar ul Haq (2018)) especially by Nguyen Thi Huong Lien (2016) as well as reinforcing the previous research that in Vietnam extraordinary accruals do not affect the opinion decision of auditors. However, this is different from the conclusions of Susanto, Pradipta and Esther (2021) and Tommasetti, Santos, Macedo and Neto (2018), which, according to the research team, can be explained by differences in accounting systems as well as other factors. Time and geographical factors affect the collected data leading to inconsistent research results, so these studies are for reference only.

The team's conclusions also showed that discretionary accruals were not a factor influencing the opinion of auditors.

In terms of theory, the study has found that the factors: net income divided by total assets, audit tenure, and leverage in finance have an impact on audit opinions on financial statements of listed firms on the Ho Chi Minh City Stock Exchange. Firstly, during the audit, the auditors will consider income divided by total assets. Firms with lower profitability ratios are more likely to receive qualified audit opinions due to limitations in synthesizing relevant audit evidence. Moreover, other studies also show that net income divided by total assets has a negative impact on audit opinion. Second, the financial leverage variable has a

negative impact on the audit opinion. The risk when using leverage in finance is that the business may lose control of the liquidity of debts, leading to bankruptcy. This means that the higher the debt ratio, the more likely it is to receive qualified audit opinions. Third, the audit tenure variable has a negative impact on the audit opinion. This is predicted by agency theory since the auditor mediates in an adverse relationship and helps reduce agency costs that arise from the agent's purposes. The older the client, the more likely the auditor is to give unqualified opinions. This outcome is possible because the auditor will have an emotional relationship with the client that leads to a feeling of loyalty to the client, so the auditor's skepticism and independence will be replaced by loyalty.

In terms of practice, the results of the study indicate a number of implications for different target groups to improve. On the side of the Ministry of Finance, it is necessary to continue supplementing policies and perfecting the accounting apparatus and standard system in the direction of attaching importance to the consistency in accounting estimates to prepare FS in order to create difficulties for business managers. businesses in taking advantage of loopholes to implement profit-adjusting behavior. On the other hand, businesses need to understand the serious consequences of adjusting profits, not for short-term benefits to attract. In addition, enterprises need to raise awareness about the issuance of more honest and reasonable FS, especially improving the internal control system in order to promptly detect errors and unreasonableness in the FS of enterprises. Karma. As for investors, they need to equip themselves with knowledge in the fields of economics, accounting and finance, and need to carefully analyze the profit indicators on the FS to be able to make decisions properly and minimize the risks in investing capital in the business. For the last group of subjects, the independent auditors must have sufficient expertise and professional ethics, focus on the truthfulness of the information in the financial statements, especially the indicators related to profit, which need to be combined flexibly with many measures in the audit process to detect timely behavior of enterprises' profit adjustment.

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FACTORS AFFECTING THE STUDENT'S CHOICE OF INTERNATIONAL PROFESSIONAL ACCOUNTING CERTIFICATES OF STUDENTS IN HA NOI

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ABSTRACT

Accounting has always been a major that attracts a large number of students up to now. According to the general assessment, how high-quality and skilled human resources can be able to meet the requirements of international integration? In addition to theory and practice, accounting human resources with international quality by studying or possessing international professional certificates in accounting is a new direction for students. This article will identify factors affecting the decision to study international professional certifications in the accounting of students in Hanoi's universities. The methodology of the paper bases on surveying accounting students at some universities in Hanoi over the past time. Base on the result of the research, the author will give these students and training institutions have the right and appropriate choices, contributing to improving the efficiency of learning international professional certificates in accounting.

Keywords: international professional certificate, accounting, students, affecting factor

1. Introduction

Up to now, accounting has always been the industry that attracts a large number of students. However, in recent years, accounting has become one of the redundant industries. According to a survey in 2019 by the Ministry of Labor, Invalids and Social Affairs, this industry group has a supply gap 12 times larger than society's demand. Although, the accounting industry currently has excess human resources, but businesses are still not satisfied in the process of recruiting workers, the problem has been posed and the bottleneck raised by businesses is quality human resources, skilled, meet the requirements of international integration.

Facing the current situation of extensive economic integration, accounting students have been opening up many job opportunities, but there are also many difficulties and challenges. To be able to effectively solve these problems and especially help accounting students have promising careers in the future, the importance of international professional certificates in the field of accounting is important. Recognizing that problem, in recent years, the selection of these certificates has increased, as evidenced by the number of students who have been and are studying gradually over the years.

International professional certificates are understood as documents issued by international professional associations and organizations to the learner. These certificates are carried high value and can be applied in many countries. Possessing international professional certificates will bring significant benefits to practitioners, both in terms of economy and job opportunities, in addition to factors such as professional skills and qualifications, etc.

Some popular international professional certifications in the field of accounting, including: The Association of Chartered Certified Accountants (ACCA) is the British certificate of a certified public accountant, issued by the Association of Chartered Certified Accountants; the Institute of Chartered Accountants (ICAEW) is the British Chartered Accountant certificate is issued by the Institute of Chartered Accountants UK and Wales; Certified Public Accountant (CPA) Australia is Australia's certificate of accounting practice; chartered Institute of Management Accountants (CIMA) is the British Chartered Management Accountant certificate, issued by the British Association of Chartered Management

Accountants; certified Management Accountant (CMA) is American certificate of Management Accountant (Dluhopolskyi et al., 2020).

Each international professional certificate in accounting will have different roles in both characteristics and course of study, but they all bring certain benefits to their holders, as follows:

Certificates help learners open up opportunities for career advancement: Nowadays, anyone who aspires to a stable career in accounting and achieves senior management positions requires knowledge of accounting and finance. Possessing these certificates means that students have been trained according to the international accounting standard framework. Employers will highly appreciate them because it ensures employers in terms of professional knowledge and experience in handling business. And of course, they received a higher salary and the accompanying benefits will not be small.

International professional certificates in the field of accounting are "powerful passports" that help to open global career doors: When students possess certificates such as ACCA, ICAEW, CPA, etc., domestic and international employers will believe that these candidates have deeply understood the regulations, accounting methods, international accounting standards, and legal framework. These certificates are trusted by employers worldwide, bringing wider opportunities for members to work around the world ("Beyond the CPA: Student Awareness of Accounting Certifications," 2017).

International professional certificates in the field of accounting have many connection values: Holders of these certificates can connect with many global accounting experts or other members of international professional associations in the field of accounting to exchange, learn, experience, grasp opportunities at work (McGee, 2005).

It is impossible not to mention the professional knowledge, understanding of accounting rules and laws both domestically and internationally, skills in handling operations, and of the learners more in-depth and knowledgeable. Thus, the importance of international accounting certificates can be seen, it helps learners to improve their knowledge and find more suitable jobs in the future. However, choosing to study or not is another matter. This study will analyze the factors affecting the students' choice to study international accounting certificates of universities in VietNam.

2. Theoretical framework

2.1. Theory 1

There are some researches have been done in this field. Hutaibat (2012) surveyed university students' participation in studying international professional certificates in accounting in Jordan. He pointed out that higher education should contribute a perfect amount of labor to society by educating students to be creative and work at maximum capacity with maximum quality. To achieve this goal, universities should encourage students to participate in vocational certifications to improve their knowledge and career opportunities. In particular, providing students with sufficient knowledge about the benefits will help them become a labor factor. Research has shown that factors such as interests, individuals, and families influence selecting to study international professional certificates. The influence of job opportunities and income are the two most important factors.

2.2. Theory 2

Bradley and Nguyen (2014) point out that the index of certificate quality has a much larger effect than academic performance on the transition of school-to-labor in England. However, Zhou (2013) uses a survey that covers 30 colleges in 6 provinces, including available college samples of 18,722 graduates in China and finds that the reputation and quality of the colleges have only a small effect on whether the graduates find jobs. The contribution of coefficient is 1.4% which means that a reputation increase of 1 will cause an increase of 1.4% on the probability of choosing accounting certificate choice if it is changed from the ordinary colleges to the reputed universities.

2.3. Theory 3

Arleta Szadziewska et al (2015) presented research results on students' perception of ACCA brand and other professional organizations at national and international perspectives. Specifically, the study presented the results in the first phase of determining the ACCA brand knowledge of good students majoring in finance and accounting with a centralized training program at the University of Gdansk, Poland. The objective of the study is to clarify the reality of students' choice with the ACCA brand. The research method is applied by direct questionnaire survey. Questions were asked to a group of 30 students enrolled in the ACCA Accounting program, the authors pointed out the importance of the accounting profession, as well as international professional certification in the field of accounting and Factors affecting the decision to study one of these certificates of accounting students. In particular, the research team investigated the influence of factors such as salary, cost, personal factors, opportunities for promotion and career development as well as job satisfaction.

2.4. Theory 4

Szadziewska & Kujawski (2017) presented research results on students' awareness of the ACCA brand (The Association of Chartered Certified Accountants) and other professional organizations from national and international perspectives. The research presented the results in the first phase of determining the ACCA brand knowledge of graduates in finance and accounting with a centralized training program at the University of Gdansk, Poland. The purpose of the study is to clarify the reality of students' choice with the ACCA brand. A direct questionnaire survey applies the research method. Questions were asked to a group of 30 students enrolled in the ACCA program. The authors pointed out the importance of the accounting profession and international professional certificates in accounting and finance. Factors affecting the decision to study are one of these certificates of accounting students. In particular, the research team explored factors such as salary, cost, personal factors, promotion opportunities, and career development.

2.5. Theory 5

Kien Phuc (2018) has shown that the occupational system in society has a wealthy and diverse number of occupations and specialties. According to the research survey, today, there are more than 2,000 occupations with tens of thousands of specialties in the world. Careers are born because of the needs of life, so when society develops, careers also develop and vice versa. The profession can be taken and lost according to the survival and death of the socio-economic development needs of each locality, region, region, country. Through the quantitative research method, Vu Kien Phuc pointed out six factors that affect career choice: appearance, health, ability to acquire knowledge, reaction tendency, specific personality, and competitiveness.

2.6. Theory 6

Tran Thi Nhung (2019) explored the factors affecting the decision to choose accounting major of new students at the University of Economics and Business Administration in HaNoi. The method used is qualitative research through sample interviews with 212 first-year students of the university. Research results from collected data show that: there are 4 factors affecting the decision to choose accounting major of new students including: Quality of accounting major of the school; Your own abilities and passions; Counseling and orientation; Career opportunities. However, like other studies, the limitation of this study is that the number of observed samples is small (212 answers), so the accuracy of the results is not really high. The author has only focused on survey and assessment, but has not yet reflected the influence of factors on different fields of study of accounting students within the scope of the research.

2.7. Theory 7

Do et al. (2020) identified and measured the factors affecting students' choice to study accounting through a quantitative research method with a sample of 580 observations collected from students of 4 universities, including Van Lang University, Binh Duong University of Economics and Technology, University of Food Industry and Ho Chi Minh City Opened University. Research has shown that there are four groups of factors affecting the decision to study accounting in Vietnam, which are: University characteristics; Learner characteristics (personality, interests, and gender of learners); Career prospects;

Professional and social nature. Reference objects (family, teachers, friends, and relatives) have no impact on studying accounting in Vietnam. In addition, based on the research results, the authors also make some recommendations for training institutions: It is necessary to focus on communication activities, enrollment promotion, and career counseling for learners to have complete information when deciding to choose a major.

From the literature review related to the topic, the author found that there has not been any research about factors affecting the choice of studying international accounting professional certificates of students. Many different essential factors influence the student's choice to study international accounting professional certifications, such as: individual characteristics of learners; career opportunities; career outlook; future income levels; university; family; advice, orientation and costs... The relationship between learners and influencing factors has not been clarified. Therefore, it is necessary to continue to research and verify to identify each specific factor, to help guide and support the effective improvement of the quality of human resources in the field of accounting.

2.8. Factors affecting students' choice to study international professional certificates in the field of accounting.

Choosing to study an international professional certificate in accounting to suit each learner is not a simple matter because it depends on many factors both inside and outside. The factors affecting the choice of studying for an international professional certificate in accounting are a prerequisite to the effectiveness of learners' learning these certificates today. Based on the literature review presented in Section 2, allowing the author to systematically and selectively inherit the factors affecting the decision to study international professional certificates in the field of accounting are as follows:

2.8.1. Personal characteristics of learners

Many studies have confirmed that learners' characteristics are necessary for determining careers and directions for the future (Worthington & Higgs, 2003). Some factors belong to the characteristics of the learners themselves, such as gender, financial ability, personality, capacity, interests, forte, even the learners' expectations about the field of study. Not only that, Michael Borchert (2002) said that in three main groups of factors affecting career choice: environment, opportunities, and personal characteristics, the group of individual elements has an important influence on the student's career choice. Therefore, personal factors are an important factor when deciding on choosing a major or career for the future.

2.8.2. Family

Family is also one of the factors that significantly influence the decision of students to study these international professional certificates. Because each student still depends a lot on their family, both financially and spiritually, while learning. Therefore, every important decision, especially related to career development, is consulted by the family, both for reference and to receive support, consent, and support from the family. In a study by Myburgh (2005) on factors affecting the choice of becoming an accountant of first-year students at the University of Pretoria, it was found that in addition to aptitude, parents' advice, and guidance, teachers have a significant influence on students' choice decisions or "advice from family members, relatives, influence students' intention to choose accounting profession" (Tan & Laswad, 2006).

2.8.3. Benefits of international certifications

In the context that many bachelors cannot find jobs, possessing professional certificates and international skills is a new direction that opens up career opportunities in Vietnam and worldwide. That's why more and more students are aiming to get these international professional and skill certificates. In addition to supplementing skills and necessary knowledge, these courses also provide a prestigious certification, which is a solid basis to affirm learners' competence with employers. These certificates are like a passport to help the owner take the first steps on the career path, a standard to measure the knowledge, capacity, enthusiasm of learners with each specific field. This quantification is also a convincing demonstration to the employer about the potential values of the candidate (Dick & Rallis, 2020).

2.8.4. Trademark and reputation of certificates

Currently, there are more than 6 international professional certificates in accounting for students to choose. Besides the similarities, certifications still have their characteristics and benefits. Because the brand and reputation of the certificates are different, depending on the history of formation and development, job positions, professional qualifications. After owning that certificate or maybe a partnership relationship, the organization or association issues that certificate with employers. Dick & Rallis (2020) argued that branding is extremely important because it represents the manufacturer's responsibility to the consumer. Therefore, when deciding to choose which certificate to study, the brand and reputation factors of the certificate itself or the organization, professional association that issues the certificate, university students will inevitably concerns and concerns before making a decision.

2.8.5. Cost of studying for a certificate

International professional organizations and associations issue international professional certificates by calculating the tuition fee according to the currency value of those countries. Furthermore, due to its international nature, tuition fees are often payable in the equivalent foreign currency value, so there will be exchange rate differences in terms of currency between countries (Jalil & Feridun, 2011). Because there are many other reasons why Vietnamese money has a low denomination, when converting the tuition fees to be paid into Vietnamese currency will be relatively high. This fact leads to the confusion and hesitation of learners when registering, fearing that they may not be able to follow, leading to the consequences of dropping out or having given up their intention. Or many of you are passionate and want to study, but your financial ability does not allow you to give up your studies temporarily. Therefore, the cost is also a factor that has specific influences on the decision of students to study these international professional certificates

2.8.6. University

In his research, Murisal (2019) concluded that “universities and families can both provide information and guidance that directly or indirectly influence young people's career choices.”

The university is a place to train specialized knowledge for students and a place where many lecturers with many years of experience and seniority will give advice and further orientation for students. There are also many opportunities for students to learn about international professional certifications that improve their skills and professional skills, helping develop their careers after graduation. The evidence is that press conferences, orientation and development seminars, academic clubs, skill clubs are organized, and more importantly, the cooperation of the faculty, the university with international professional organizations, businesses. That has more or less influenced the decision of students to pursue international professional certificates after graduation.

Table 1: Factors affecting students' choice to study international professional certificates in the field of accounting

H1	Individual characteristics of learners are factors that affect the decision to study international professional certificates in the field of accounting of students in Hanoi city.
H2	Family is a factor that affects the decision to choose to study international professional certificates in the field of accounting of students in Hanoi city.
H3	The benefits of these certificates are the factors that affect the decision to study international professional certificates in the field of accounting of students in Hanoi city.
H4	The brand and reputation of these certificates are factors that influence the decision to study international professional certificates in the field of accounting of students in Hanoi city.
H5	The cost to study for these certificates is a factor that affects the decision to study international professional certificates in the field of accounting of university students in Hanoi city.
H6	The university is an influential factor in the decision of students to choose to study international professional certificates in the field of accounting of university students in Hanoi city.

3. Research method

The qualitative research method is conducted through theoretical research and previous studies related to factors affecting the decision to study international professional certificates of students studying at universities in Hanoi. Simultaneously, combined with the survey and consultation of several experts who are lecturers - teaching accounting at some universities and training institutions for international professional certificates in accounting to identify influencing factors (Table 1)

The authors has synthesized and inherited previous studies on the factors affecting the choice of accounting majors, university selection, combined with consulting experts to set up interview questionnaires based on interviewing and constructing questionnaires. By sending online surveys (google.docs), the author uses quantitative research methods to synthesize the obtained results related to the actual situation of studying for international professional certificates in accounting. The author proposes to have six independent variables with 26 observed variables; the expected research sample size is about 280. After the pilot investigation and the correction of the questionnaire, the official survey was conducted on a large scale for accounting students in Hanoi via google.doc and email; within three months from December 2020 to February 2021, 273 answers sheets were obtained (represented 100%). Through screening and analyzing, the author used 252 valid answer sheets (92.3%). All responses with missing data were excluded from the analysis. The data collected from the questionnaires are processed by two softwares:

- Microsoft Excel software is used to synthesize and describe the survey subjects and contents.
- SPSS 20.0 software to check the reliability of the scale, research hypotheses, create regression equations.

The results of the sample classification are shown in Table 2.

Table 2: Information of survey subjects

Standard	Frequency	Percentage	Cumulative %
Gender			
- Male	94	34.4%	34.4%
- Female	179	65.6%	100%
Student group			
- First year	38	13.9%	100%
- Second year	87	31.9%	31.9%
- Third year	95	34.8%	66.7%
- Final year	53	19.4%	86.1%
University attended			
- University of Industry	13	4.8%	4.8%
- University of Electricity	4	1.5%	6.3%
- National Economic University	32	11.8%	18.1%
- Foreign Trade University	31	11.4%	29.5%
- Thang Long University	11	4%	33.5%
- Thuongmai University	93	34.1%	67.6%
- Institute of Finance	23	8.5%	76.1%
- Economic University	27	9.9%	86%

- Trade Union University	2	0.7%	86.7%
- Banking Academy	32	11.8%	98.5%
- Institute of Post and Telecommunications Technology	5	1.5%	100%

(Source: authors's survey)

4. Results

4.1. The results of testing the reliability of the variables

The results of Cronbach's Alpha analysis of the components of the observed variables are presented in Table 3.

Table 3: Test results of Cronbach's Alpha coefficient

Observed variables	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Factors of individual characteristics of learners (IC) Cronbach's Alpha = 0.746				
IC1	21.49	5.794	0.55	0.689
IC2	21.48	6.322	0.538	0.695
IC3	21.35	6.337	0.486	0.709
IC4	21.19	6.799	0.440	0.721
IC5	21.15	6.923	0.398	0.731
IC6	21.52	5.873	0.499	0.707
Factors of Beneficial for learners (BL) Cronbach's Alpha = 0.795				
BL1	13.24	2.968	0.594	0.751
BL2	13.41	2.927	0.562	0.770
BL3	13.11	3.122	0.626	0.737
BL4	13.12	3.018	0.654	0.722
Factors of Brand and reputation of professional certifications (BR) Cronbach's Alpha = 0.882				
BR1	16.81	6.313	0.654	0.775
BR2	16.92	6.679	0.600	0.791
BR3	16.76	6.427	0.632	0.782
BR4	16.73	6.645	0.571	0.800
BR5	16.56	6.744	0.620	0.786
Factors of the family (FF) Cronbach's Alpha = 0.729				
FF1	12.23	3.927	0.613	0.609
FF2	12.16	4.776	0.528	0.668
FF3	12.43	3.923	0.498	0.696
FF4	11.88	5.144	0.483	0.695

Factors of University (FU) Cronbach's Alpha = 0.839				
FU1	12.42	3.983	0.610	0.823
FU2	12.51	4.061	0.635	0.814
FU3	12.44	3.544	0.726	0.772
FU4	12.57	3.344	0.729	0.772
Factors of cost (FC) Cronbach's Alpha = 0.745				
FC1	8.37	1.604	0.566	0.682
FC2	8.30	2.045	0.560	0.680
FC3	8.12	1.836	0.607	0.621
Factors of Satisfaction (FS) Cronbach's Alpha = 0.777				
FS1	8.32	1.518	0.652	0.656
FS2	8.44	1.688	0.563	0.753
FS3	8.32	1.550	0.628	0.684

(Source: authors's survey)

4.2. Factors exploratory analysis

After three times analyzing the EFA exploratory factor, the observed variables upload in both factors and do not guarantee the difference in loading factor from 0.3 are variables: IC5 AND IC2. The author has removed the above two variables and perform the 4th exploratory factor analysis (table 4).

Table 4: EFA factor analysis table

Rotated Component Matrix^a

	Component		
	1	2	3
BL2	0,754		
BL4	0,752		
BL1	0,719		
IC4	0,706		
IC3	0,698		
FC2		0,758	
FF2		0,740	
FC3		0,691	
FF4		0,687	
IC3			0,744
IC1		0,376	0,729
IC6			0,727

(Source: Authors's survey)

Table 4 shows that although there are still cases where the observed variables are uploaded in both factors, the distance between the two variables is more significant than 0.3. In this case, the observed variable IC1 is accepted. After analyzing EFA exploratory factors, the author eliminated 14 observed variables (table 5) and obtained those variables: BL1, BL2, BL3, BL4, IC1, IC3, IC4, IC6, FC2, FC3, FF2, FF4.

Table 5: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,849
Bartlett's Test of Sphericity	Approx. Chi-Square	979,058
	df	66
	Sig.	,000
Total Variance Explained		60,484

The KMO coefficient is 0.849 (> 0.5), which is very high, and sig = 0.000 < 0.5. The observed variables are correlated with each other, and the EFA factor analysis is appropriate. The total variance used to explain the factors is 60.484% > 50%, so it satisfies the conditions of factor analysis.

4.3. Regression analysis and testing of research hypotheses

Regression results show that the model fits the research data with an adjusted R² of 0.499, which shows that the independent variables explain approximately 50% of the variation of the dependent variable (Table 6).

Table 6: Model Summary^b

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	,711 ^a	,505	,499	,42254	1,916

(Source: authors's survey)

Regression analysis will determine the degree of impact of the independent variables on the dependent variable. The research model on factors affecting the choice of studying international professional certificates in the field of accounting of students in Hanoi is expected as follows: $FS = \beta_0 + \beta_1 IC + \beta_2 FC + \beta_3 BL + \epsilon$

Table 7: Results of regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	,179	,255		,702	,483		
1 BL	,313	,058	,279	5,356	,000	,728	1,374
FC	,375	,056	,357	6,671	,000	,686	1,457
IC	,250	,047	,263	5,272	,000	,792	1,263

The results of regression analysis on the factors affecting the students' choice to study international professional certificates in accounting in Hanoi are shown in Table 7.

The analysis results in the table above show that all factors have Sig < 0.05, all variables have correlation and statistical significance in the research model. VIF variance magnification coefficients are < 2, so it can be concluded that there is no multi- collinearity between these three factors. The linear regression equation showing the factors affecting the students' choice to study international professional certificates in the field of accounting in Hanoi is built as follows:

$$FS = 0.179 + 0.313BL + 0.375FC + 0.250IC$$

Based on the size of the normalized regression coefficient Beta, the order of impact from the strongest to the weakest of the independent variables to the dependent variable FS is as follows: (1) FC: 0.375; (2) BL: 0.313; (3) Sun: 0.250. In which: FS: Satisfaction; BL: Influence of the benefit factor; FC: Effect of cost factor; IC: The influence of personal factors.

5. Conclusion

Through the implementation process, the results of both qualitative and quantitative research provide relatively similar information, and both methods show that four main factors are affecting the choice of international careers certificates of students in Hanoi are personal, benefits, family, and costs. However, the quantitative research results show more precisely and accurately the impact of factors on the research. This impact is all positive, and the effect of the factors is in the order of Cost (FC2, FC3, FF2, FF4), Benefit (BL1, BL2, BL3, BL4, IC4) and Individual Characteristic (IC1, IC3, IC6).

Personal characteristics are the factors that directly affect students' decision to study international professional certificates in the field of accounting. Each student should boldly pursue their passion, maintain a positive mental attitude to study, be consistent with the goals you set yourself, try your best to complete it and hone the necessary skills. Learners themselves need to change their thinking when choosing a career, need to give up the habit of passive learning, have a clear career goal and need to pay more attention to their profession, set a goal for themselves. to orient and develop more career in the future.

Furthermore, because they are aware of the value of benefits received if they own these certificates, in order to be able to find themselves a good job with a stable working environment and desired income, the first thing is in the change, awareness and grasp of the learners themselves. Especially in the context that Vietnam joins the AEC and is on the way of development, there are more investments and cooperation with multinational companies... plus the AEC's recognition of freedom of movement. Accounting staff who meet international requirements, plus the commitment of international professional associations and organizations, these certificates are indispensable luggage. Therefore, accounting students need to accelerate their study of these certifications more than ever.

Finally, training institutions need to study training programs suitable to practice, actively exchange and absorb experiences from students in countries with developed accounting systems as well as issuing international standards. For learners to feel that the costs they spend are commensurate with the quality of training and the benefits they receive.

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RESEARCH ON FACTORS AFFECTING DIGITAL TRANSFORMATION ACTIVITIES OF SMES IN HANOI

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ABSTRACT

Digital transformation is a process to improve business operations and processes through the support of information technology, computers, communication and connectivity. The authors have summarized the digital transformation stages in small and medium enterprises as "doing digital", "becoming digital" and "being digital". These three phases belong to three levels of digital transformation: strategic orientation, business model digital transformation and management capacity digital transformation. With 7 levels of readiness for digital transformation of small and medium enterprises and 14 factors affecting digital transformation activities of small and medium enterprises in Hanoi. These 14 factors are divided into 3 main groups: internal factors, external factors and management capacity. The research team conducted interviews and surveys of 120 experts divided by 8 professions to evaluate the influence of these 14 factors through rounds by Delphi method and AHP method. The experts in question are researchers and managers who are working in agencies from central to local levels, and business administrators with digital transformation activities at their work places. The obtained results show that the scales of digital transformation strategy, corporate financial management capacity, and customer acceptance of change have the highest influence.

Keywords: Digital transformation, Small and medium enterprises, Delphi method, AHP method.

1. Introduction

The 4th industrial revolution has changed the world economy in which, digital transformation plays a very important role. Digital transformation as the new driving force to boost the economy in the digital era. Digital transformation is the use of technology to change business models to create new opportunities, revenue and value (Mohamed-Iliasse Mahraz, 2019) [17]). Digital transformation brings many benefits to all types of businesses, different industries and economies. Digital transformation allows businesses to innovate, improve competitive efficiency and save costs. In Vietnam, the number of small and medium enterprises (SMEs) accounts for 96.8% of the total number of enterprises (according to VASS, in 2020) [3]. Most Vietnamese SMEs do not have a methodical digital transformation strategy. The reason is because they lack direction and have no roadmap or limited resources.

In research, Digital Transformation is attracting the attention of many domestic and foreign scholars. Articles about Digital Transformation are increasing in many fields. However, studies on digital transformation of SMEs in Vietnam, especially articles on factors affecting SME digital transformation activities in Hanoi. The objective of this paper is to identify the factors affecting the digital transformation activities of SMEs in Hanoi. The paper is structured into 6 parts to answer the following three research questions:

- (1) - What is digital conversion? What is the roadmap and strategy for Digital Transformation with SMEs?
- (2) - What factors are affected by the digital transformation activities of SMEs in Hanoi?
- (3) - How is the influence of each factor?

2. Research overview and theoretical basis of digital transformation in SMEs

Digital transformation is a process aimed at improving business operations and processes through the support of information technology, computing, communication and connectivity (Vial Gregory, 2019 [8]).

After searching for documents by keyword “Digital transformation” and (“factors” or “dimensions” or variables” or “model” or framework”)*, the authors determined the level of readiness and stages.

According to USAID [1] there are 7 levels of readiness for SME Digital Transformation. Specifically, (1)-Strategic orientation and degree of integration of Digital Transformation into the overall strategy of enterprises; (2)-The degree of digital technology application in marketing, distribution and sales channels to improve customer experience and forecast business performance; (3)-Ability to apply technology to connect the needs of customers with suppliers and the extent to which it is applicable to data analysis of core business processes and activities; (4)-The ability to integrate technology with other systems to upgrade and update processes and policies related to data governance; (5)-The degree of application of technology and tools to assess risks in enterprises; (6)-The degree of application of digital technology to support management, finance, accounting, planning, legal, and human resource operations in the enterprise; (7)-The degree of flexibility of the enterprise to changes in the business environment, the level of technology application to connect between departments in the enterprise. The assessment of readiness for Digital Transformation helps SME's Digital Transformation activities to be easier and more efficient.

Regarding the stages of Digital Transformation, according to Li L (2018) [13] and Vu Thi Thuy Hang (2022) [23] there are 3 stages: (1)-The “Doing Digital” phase: this is the stage where Digital transformation activities of enterprises are deployed individually, not yet connected. The “doing digital” phase belongs to level 1-Strategic orientation. At this stage, businesses need to take advantage of technology solutions, improve customer experience to achieve goals. Enterprises often use available resources or easily accessible resources at a reasonable cost and in accordance with the enterprise's ability to deploy. (2) The “Becoming Digital” stage: the “becoming digital” stage of level 2 - Digital transformation of business models. Enterprises focus on applying digital technology on a large scale, with the connection between functions. This stage often focuses on the business model to change the management model to bring optimal efficiency for business operation and maintain growth. The continued growth in this phase allows businesses to transform organizations in the next phase of digital transformation (3) “Being Digital” stage: “being digital” stage of level 3 - Digital transformation of governance capacity. This is the phase of complete Digital Transformation, focusing on connecting and synchronously integrating business and management systems of enterprises. Information will be shared across departments and in real time. Solutions to connect the entire enterprise should be deployed at this stage, taking into consideration the enterprise structure and existing systems as well as the capacity of the administrator.

3. Research model and hypothesis of factors affecting transformation activities of SMEs in Hanoi

* Research model: Based on the reviewed studies, the research team proposes a hypothetical model of the factors affecting the Digital Transformation activities of SMEs in Hanoi as shown in Figure 1:

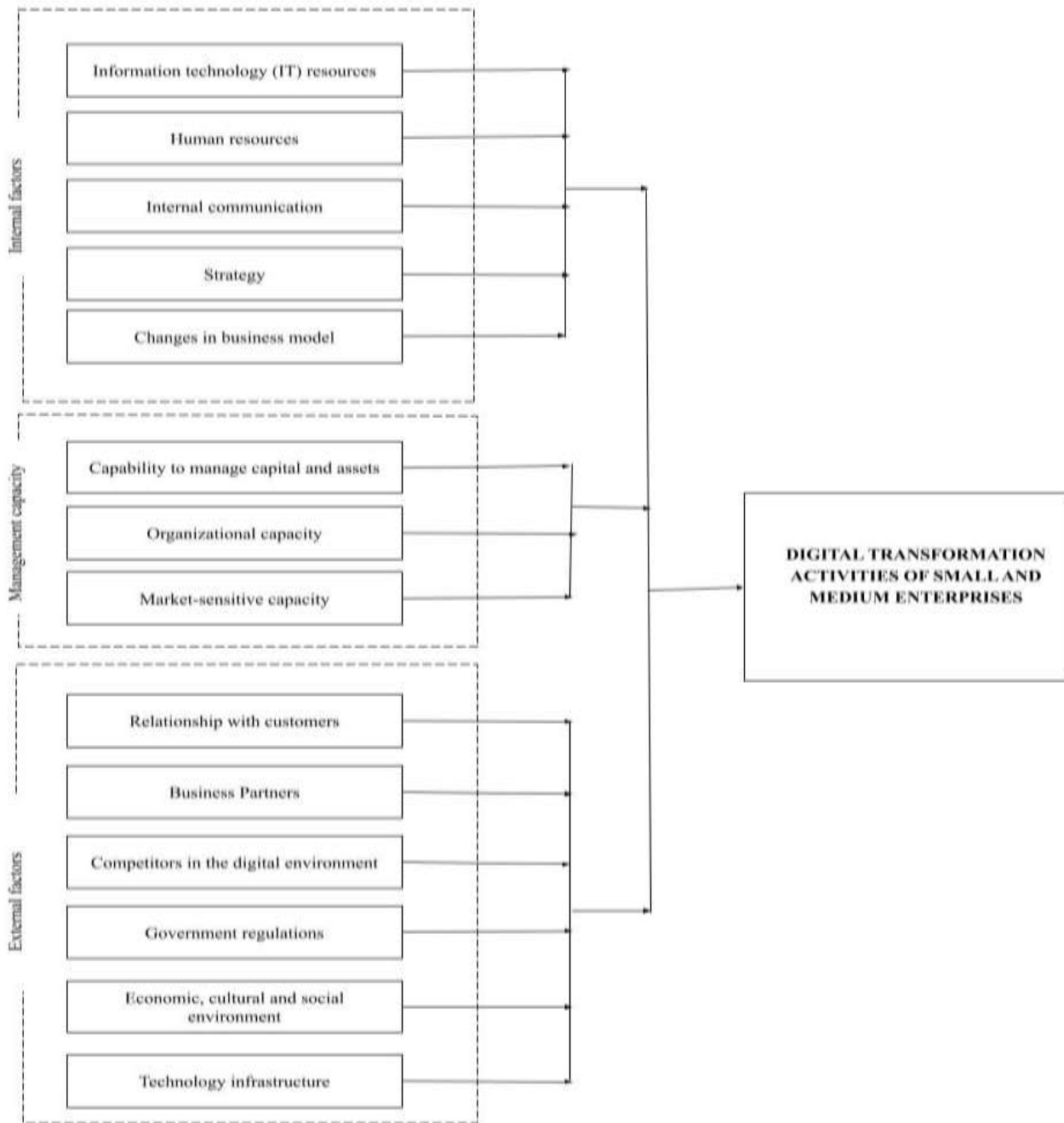


Figure 1. Proposed research model

Source: Research team

* Hypotheses:

- Internal factors:

+ Information technology (IT) resources: Eller et al (2020) [6] believe that the factor of IT resources is a decisive factor to the digital transformation activities of enterprises. IT resources include networks, transmissions, mobile technology, multimedia, infrastructure, and equipment.

+ Human resources: According to Taruté (2018) [22] the human resource factor is the number, qualifications, skills and experience of the employees of the enterprise.

+ Internal communication: Internal communication in an enterprise creates a breakthrough change in operations, business processes, corporate culture and creates value for that business (Nwankpa and Roumani, 2016, [19]).

+ Digital Transformation Strategy: According to Yeow et al. (2017) [24] Digital transformation strategy is a detailed plan to help businesses manage arising when integrating technology into business activities.

+ Changes in business model: According to Tarutè, A et al. (2018) [22] and Ruly Wiliandri et al (2020) [21], the nature of the business model is related to the price proposition value and relationships with customers. Through shaped value propositions and improved relationships, the business model will be tailored to the acquisition process.

- Management capacity:

+ Management capacity: according to Li, Su, Zhang, Mao & Ji-Ye (2017) [13] external and internal factors affecting Digital Transformation can be seen from the perspective of capacity, including: Asset management capacity, organizational capacity and market acumen.

+ Capability to manage capital and assets: Helfat & Martin (2015) [9] argue that the ability to manage capital and assets and perception will affect strategic changes and firm performance.

+ Organizational capacity: organizational capacity refers to the ability to use platforms to carry out Digital Transformation activities. SMEs use existing digital platforms to respond to changes in business and marketing plans, develop customer relationships, and optimize operational efficiency.

+ Market-sensitive capacity: Market acumen is understood as the ability of business managers to build, integrate, and reconfigure resources within an organization (Adner & Helfat, 2003 [4]).

- External factors:

+ Relationship with customers: According to Nguyen et al. (2015) [18] is a factor that directly affects the digital transformation activities of SMEs. Behavior, psychology, and the relationship between customers and businesses have changed with technology.

+ Business partners: According to Lee, Chen and Chou (2011) [12], the relationship between businesses is to promote Digital Transformation activities in SMEs. The factors mentioned are product or service differentiation, market demand, cohesion, trust and reliability among organizations.

+ Competitors in the digital environment: Ruly Wiliandri et al. (2020) [21] Competition is the driving force for enterprises' business activities to be more effective than expected. At that time, enterprises have the ability to produce and provide more quality products and services, increasing the supply capacity in the market.

+ Government regulations: Government regulations directly affect digital transformation activities of businesses. Krüger & Teuteberg (2016) [11] argue that in any country, opportunities or challenges arise from government regulations. Vietnam is a socialist-oriented developed country, government regulation is the main reason to create motivation or barriers to business innovation.

+ Economic, cultural and social environment: Each country has different socio-cultural environment. This directly affects economic activities, the behavior of the citizens of that country or the customers of the business (Ruly Wiliandri et al.) [21]. Therefore, this factor will affect business activities in general and digital transformation activities in particular, and especially SMEs in Vietnam.

+ Technology infrastructure: According to Parker, Van Alstyne, & Jiang (2016) [20] said that the technological infrastructure of the region, the country, the city or the technological development in the industry, profession, field will directly affect the digital transformation activities of enterprises.²

4. Research process and methods

To answer the research questions, the research team uses an expert-based qualitative research method or Delphi method for short. Combined with that is the method of quantitative analysis hierarchical analysis (AHP). The reason why the research team used a combination of the two methods is because Delphi is a method that uses the knowledge and experience of experts in the field of survey to find and evaluate research hypotheses. The Delphi method has been widely used as an effective method to find consensus opinions to solve a certain problem or build and test a model (Ludwig, B, 1975 [15]; Lipschitz and McDonald, 1991

[14]; Hsu and Sandford, 2007 [10]). In essence, the Delphi method is exploratory and predictive (Miller, 2006 [16]). Meanwhile, the AHP method is a method of arranging multi-objective decision-making options. According to Saaty and Vargas [26] introduced the application of AHP very effectively to solve economic, political and social problems and especially to analyze new problems.

The combination of using Delphi method and AHP method in research has been applied effectively in a number of research papers but has not been widely and commonly used. While the Delphi method was used at the beginning of the study to provide results on the scale and observed variables of each scale, thereby testing the hypothetical model proposed by the authors through the analysis. expert interview data. Then, AHP was used as the next stage to determine the weights of the selected variables and develop the necessary decision-making model (Da Cruz et al., 2013; Chung & Her, 2013). The research process is shown in Figure 2.

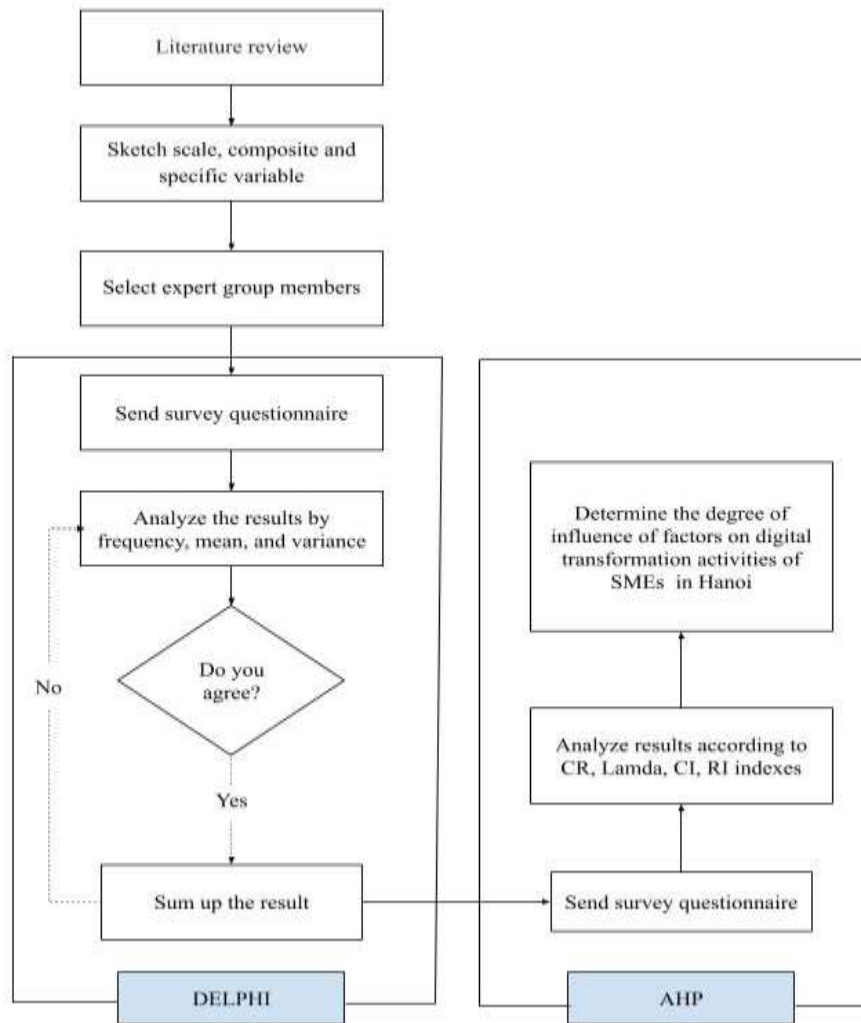


Figure 2. Research process

Source: Research team

The research team conducted interviews and surveys with 120 experts. Experts are researchers and managers who are working in agencies and departments from central to local levels, and business administrators who have collegial activities at their units. The number of experts participating in the survey is calculated quota based on the overall number and divided by 8 occupations. Specifically, as in Table 1.

Table 1: Statistical table of experts participating in the survey

Field of business activity	Overall quantity	Overall percentage	Actual number of enterprises investigated	Actual number of surveyed enterprises rounded
	(1)	(2)= (120/7772*100)	(3)= (1)*(2)	
Agriculture forestry and fisheries.	51	1,54%	0,79	1
Services, accommodation, meals	818	1,54%	12,63	13
Logistic	342	1,54%	5,28	5
Education, medical	396	1,54%	6,11	6
Industry, processing, manufacturing, construction	1574	1,54%	24,3	24
Finance, banking, insurance	129	1,54%	1,99	2
Trade, wholesale, retail	2973	1,54%	45,9	46
Information and Communication, Marketing	1490	1,54%	23,01	23
Total	7773	1,54%	120,02	120

Source: Research team

4.1. Delphi method

The authors interview and investigate experts online through Google Meet, Zoom and Google Forms. Collected data is aggregated and analyzed by descriptive statistics to assess the agreement of experts (according to Likert 5 scale) with each variable.

The results after the interview were analyzed based on the following indicators:

- One-variable variance to compare opinions between groups of experts. Standard deviation (SD) is a measurement used to assess variability within a population. To assess the level of consensus, according to Grobbelaar (2006) [7] can evaluate through the significance level of standard deviation as follows:

Table 2. Significance level of standard deviation (SD)

Standard Deviation (SD)	Significance level
$0 \leq SD \leq 1$	High level of consensus
$1,01 \leq SD \leq 1,49$	Reasonable level
$1,5 \leq SD \leq 2$	Low level of consensus
$2,01 \leq SD$	No consensus

Source: Grobbelaar (2006) [7]

The coefficient of variation (CV) is a basic descriptive statistical quantity. This coefficient is used to measure the relative volatility of data sets with different mean values. Unlike standard deviation, which must always be considered in the context of the mean of data, the coefficient of variation provides a relatively

simple and fast tool for comparing different data series. In this article, the coefficient of variation CV is used to measure the degree of disagreement of experts when assessing the factors affecting the community activities of SMEs in Hanoi (if any). In essence, the coefficient of variation is the ratio between the standard deviation and the mean. Therefore, one calculates CV by dividing the standard deviation by the mean by the formula:

$$CV = \frac{\sigma}{\mu}$$

In there:

- σ is the standard deviation of the set of documents.
- μ is the mean of the set of documents

When comparing two sets of data, the set with the larger coefficient of variation means that the set has a greater degree of variability. Thus, CV can be assessed as a useful statistic in comparing the variability of one data series with another, even though the mean values of the data series are very different. According to Yang (2003) [25] for comparative analysis to assess the homogeneity of experts using single variable variance combined with variance index > 3.5 . In addition, according to the study of Le Thi Ngoc Anh (2017) [12] to ensure the level of agreement among experts, the combined use of CV and variance index for data processing is effective.

According to English & Kernan (1976) [5], CV coefficient of variation $\leq 50\%$ of experts have a high consensus, only need to interview 1 round, no need for additional round. In which $CV \leq 20\%$, has important significance. If $CV \leq 80\%$ has disagreement among experts, consider one more round of interview to get opinions on disagreeing factors. If $CV > 80\%$, then the consensus level is poor. At least one additional interview is required.

Table 3. Significance level of Coefficient of Variation (CV)

Coefficient of Variation (CV)	Significance level
$0 \leq CV \leq 50\%$	High consensus, no need for additional rounds
$50\% < CV \leq 80\%$	There is disagreement, consider adding another round
$CV > 80\%$	Consensus is poor, need at least one more round

Source: English & Kernan (1976) [5]

Besides, when comparing two factors A and B, if the coefficient of variation CV of B (CVB) is larger than that of A (CVA), it means that A will bear less risk than B. Thus, enterprises/ Should researchers advise, choose investment or development for A.

4.2. The AHP method

AHP method has been widely applied to many fields such as natural, economic, social, medical, etc. It is used as a flexible tool for decision analysis with many criteria, allowing one to clearly see the evaluation criteria and decide many attributes, which refers to a quantitative technique. Saaty and Vargas introduce the application of AHP to solve economic, political, social and engineering design problems, architectural pattern selection, pricing strategy, technology selection, planning, problem solving conflict, cost/benefit analysis and resource allocation, etc. To evaluate the reasonableness of the values of the importance of the criteria.

According to Satty using the consistency index of data CR (Consistency Ratio)

$$CR = \frac{CI}{RI}$$

In there:

- CI is consistence index:

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

Where λ_{max} is the eigenvalue of the comparison matrix (eigenvalue), calculated as follows

$$\lambda_{max} = \sum_{i=1}^n w_i * \sum_{j=1}^n a_{ij}$$

For each n-level comparison matrix, Saaty experimented to generate random matrices and calculate the RI (random index) corresponding to the matrix levels as shown in the table below:

Table 4: Random index for the number of selection criteria viewed

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RI	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.54	1.56	1.57	1.59

Source: M. Berrittella (2007)

- In all cases, CR should not be greater than 10%. For 3x3 matrices, CR needs to be no larger than 5%, and the corresponding value for 4x4 matrices is 9%. If the CR is greater than the above mentioned levels, there is an inconsistency in the expert judgment and it is necessary to re-evaluate and recalculate.

5. Research results

5.1. Research results using Delphi method

Research results show that experts believe that all 3 groups of internal and external factors and management capacity with 14 factors affect the digital transformation activities of SMEs. The coefficient of variation CV is in the range $[12.14\% - 27.9\%] \leq 50\%$. This reflects the high consensus of experts' opinions on the factors proposed by the authors. Out of a total of 44 scales of 14 factors affecting Digital Transformation activities, only the scale that experts think is not really important is the factor "Competitors in the digital environment make it difficult for them to do so." than "Competitors in the traditional environment" and "National culture affects the progress of enterprises' college".

The first group is "Internal factors" with 5 factors with 15 scales all having the mean value greater than 4.0 $[4.0 - 4.74]$, and the coefficient of variation $CV < 20\%$ $[12\% , 14\% - 23.27\%]$. The scale "IOT devices, Blockchain, ERP..." has the lowest average value (3.77) and coefficient of variation $CV = 27.96 > 20\%$. Experts say that for SMEs, these technologies are still quite new, not really important in the conversion process.

Table 5: Results of analysis of internal factors group by Delphi method

	Factors	Standard deviation (SD)	Median (Median)	Coefficient of variation (CV) (%)	Level of Consensus
Information technology (IT) resources.	IOT, Blockchain, ERP devices, etc.	1.06	3.77	28.12	Fair point.
	Technological infrastructure of machinery in the enterprise	0.67	4.39	15.26	High
	The business channels that the business currently uses	0.85	4.45	19.10	High
Human resources	Skills in using technology in employee digital transformation	0.72	4.45	16.18	High

	Number of human resources teams implementing digital transformation of the enterprise	0.93	4.00	23.25	High
	Education level of the digital transformation team	0.94	4.32	21.76	High
Internal communications	Intra-enterprise solidarity	0.80	4.35	18.39	High
	Corporate culture	0.68	4.45	15.28	High
	Channels, tools to connect people with the business	0.62	4.55	13.63	High
Strategy	Orientation for enterprise development	0.58	4.74	12.24	High
	Staff Skills Development Strategy	0.62	4.55	13.63	High
	The goal of digital transformation in business	0.62	4.55	13.63	High
Changes in the business model	Changing how customers are approached	0.72	4.45	16.18	High
	Changing product development direction	0.74	4.29	17.25	High
	Changing approach to the market	0.72	4.52	15.93	High

Source: Research team

The second group is “Management capacity” with 3 factors with 9 scales all having the mean value greater than 4.0 [4.58 – 4.68] and the coefficient of variation CV < 20% [10, 16% - 14.46%]. The scales are all assessed as important by the expert group, the level between the scales is even, no scale is excluded. The average value of the scales in this group is greater than 4.5.

Table 6. Results of Delphi management competency group analysis

	Factors	Standard deviation (SD)	Median (Median)	Coefficient of variation (CV) (%)	Level of Consensus
Capability to manage capital and assets	Capital management capacity of the enterprise	0.50	4.58	10.92	High
	Capacity to mobilize capital for enterprises	0.67	4.61	14.53	High
	Corporate financial management capacity	0.48	4.68	10.26	High
Organizational capacity	Ability to organize the business	0.50	4.61	10.85	High
	Ability to organize enterprise development	0.55	4.65	11.83	High
	Ability to control internally within the enterprise	0.51	4.55	11.21	High

Market-sensitive capacity	Capacity to assess market changes and fluctuations	0.55	4.65	11.83	High
	The capacity to recognize market developments year by year.	0.62	4.55	13.63	High
	Observation capacity to assess the appropriate time for digital transformation	0.66	4.65	14.19	High

Source: Research team

The third group is “External factors” with 6 factors with 17 scales, all of which have the mean value greater than 4.0 [4.19 – 4.71] and the coefficient of variation $CV < 20\%$ [11, 5]. 23% - 17.3%], minus 2 scales "Competitors in the digital environment make it more difficult than competitors in the traditional environment" has the lowest average coefficient in 44 scales of 14 factors is 3.35, coefficient of variation $CV = 23.78 > 20\%$, the scale "National culture affects the progress of enterprises' digital transformation" has an average value of 3.48, coefficient of variation is 3.35. bias $CV = 20.79 > 20\%$.

Table 7. Results of external factor pool analysis using Delphi method

	Factors	Standard deviation (SD)	Median (Median)	Coefficient of variation (CV) (%)	Level of Consensus
Relationship with customers	The change in customer's product usage behavior	0.62	4.58	13.54	High
	Reviews, customer feedback	0.62	4.58	13.54	High
	Customer acceptance of change	0.53	4.71	11.25	High
Business Partners	Connectivity with enterprises providing technology and services	0.62	4.58	13.54	High
	The change of the collaborating side	0.67	4.39	15.26	High
	Compatibility between the parties	0.63	4.52	13.94	High
Competitors in the digital environment	Enterprises with the same products and services have different actions	0.67	4.39	15.26	High
	Large enterprises with business capital, seniority in the market	0.67	4.42	15.16	High
	Competitors in the digital environment make it harder than competitors in the traditional environment	0.80	3.35	23.88	High
Government regulations	The Government has a direct impact on the development process.	0.71	4.35	16.32	High

	Government Supported Policies	0.74	4.29	17.25	High
	Government policy specific to the type of enterprise	0.75	4.32	17.36	High
Economic, cultural and social environment	National culture influences the progress of survey of enterprises	0.72	3.48	20.69	High
	The change of the social environment	0.62	4.45	13.93	High
	Differential development between industries in the economy	0.70	4.19	16.71	High
Technological infrastructure	Technology evolves too quickly	0.62	4.45	13.93	High
	The separation of technological levels	0.63	4.48	14.06	High

Source: Research team

The research results in Tables 4, 5 and 6 above can be seen that the CV coefficient of the following scales is the lowest: Corporate financial management capacity (10.16%), Business organization ability (10.73%), Customer acceptance of change products (11.23%), business development orientation (12.14%). Thus, it can be concluded that these are the most important scales (English & Kernan, 1976 [5]). SMEs in Hanoi should focus on investing and developing these factors in order to improve the efficiency of their trade union activities in the coming time.

5.2. Research results by AHP method

With each expert's priority matrix for factor variables, all CR indexes must meet the requirements <10%. According to T.Saaty et al. show that a consistency ratio (CR) less than or equal to 10% is an acceptable level. In other words, there is a 10% chance that the experts answer the questions completely at random. If the CR is greater than 10%, it indicates an inconsistency in the assessment and needs to be re-evaluated and recalculated.

The results are aggregated from the experts with the weight of the criteria that the experts evaluate as the table:

Table 8. Matrix table of weights

	CG1	CG2	CG3	CG4	CG5	CG6	CG7	CG8	CG9	CG10	CG11	CG12	CG13	CG14	CG15
P1. Information technology (IT) resources.	0,051	0,051	0,06	0,034	0,065	0,064	0,053	0,04	0,07	0,074	0,062	0,035	0,059	0,062	0,145
P2. Human Resources	0,032	0,084	0,05	0,041	0,075	0,055	0,062	0,04	0,07	0,044	0,042	0,043	0,422	0,014	0,096
P3. Internal Communications	0,034	0,024	0,05	0,011	0,013	0,042	0,117	0,06	0,05	0,063	0,011	0,045	0,052	0,036	0,073
P4. Strategy	0,112	0,054	0,09	0,097	0,067	0,089	0,147	0,04	0,13	0,112	0,078	0,094	0,073	0,094	0,134
P5. Changes in business model	0,052	0,024	0,57	0,088	0,043	0,044	0,094	0,09	0,05	0,063	0,083	0,089	0,072	0,072	0,045
P6. Relationship with customers	0,063	0,074	0,06	0,044	0,056	0,055	0,152	0,04	0,04	0,062	0,043	0,095	0,068	0,052	0,024
P7. Business Partners	0,053	0,084	0,06	0,035	0,042	0,123	0,122	0,01	0,13	0,056	0,022	0,156	0,186	0,017	0,046
P8. Competitors in the digital environment	0,112	0,124	0,05	0,043	0,056	0,025	0,052	0,05	0,08	0,012	0,089	0,053	0,056	0,086	0,063
P9. Government regulations	0,034	0,094	0,06	0,055	0,032	0,023	0,052	0,06	0,06	0,126	0,094	0,032	0,056	0,084	0,051
P10. Economic, cultural and social environment	0,071	0,024	0,05	0,043	0,023	0,085	0,093	0,13	0,05	0,063	0,081	0,091	0,041	0,022	0,042
P11. Technological infrastructure	0,046	0,024	0,06	0,078	0,084	0,096	0,065	0,02	0,04	0,088	0,035	0,068	0,045	0,065	0,016
P12. Capability to manage capital and assets	0,163	0,124	0,07	0,058	0,055	0,123	0,092	0,15	0,07	0,115	0,033	0,052	0,045	0,093	0,115
P13. Organizational capacity	0,082	0,124	0,08	0,041	0,09	0,135	0,074	0,07	0,12	0,145	0,076	0,083	0,093	0,146	0,072
P.14 Market-sensitive capacity	0,045	0,024	0,06	0,052	0,077	0,068	0,067	0,04	0,65	0,077	0,078	0,047	0,088	0,093	0,078

	CG15	CG16	CG18	CG19	CG 20	CG21	CG22	CG23	CG24	CG25	CG26	CG27	CG27	CG29	CG30	CG31
P1. Information technology (IT) resources.	0,145	0,073	0,09	0,093	0,075	0,045	0,056	0,053	0,049	0,063	0,063	0,074	0,083	0,083	0,076	0,085
P2. Human Resources	0,096	0,067	0,06	0,053	0,035	0,052	0,072	0,056	0,072	0,054	0,081	0,051	0,061	0,063	0,044	0,053
P3. Internal Communications	0,073	0,503	0,04	0,063	0,043	0,056	0,044	0,042	0,053	0,084	0,066	0,055	0,045	0,084	0,052	0,045
P4. Strategy	0,134	0,075	0,07	0,113	0,074	0,104	0,094	0,135	0,078	0,069	0,118	0,097	0,098	0,134	0,116	0,088
P5. Changes in business model	0,045	0,053	0,04	0,063	0,121	0,045	0,044	0,092	0,053	0,063	0,045	0,044	0,082	0,024	0,063	0,059
P6. Relationship with customers	0,024	0,032	0,02	0,083	0,076	0,054	0,046	0,053	0,053	0,067	0,062	0,113	0,095	0,111	0,045	0,134
P7. Business Partners	0,046	0,052	0,05	0,045	0,084	0,087	0,047	0,075	0,084	0,064	0,255	0,053	0,052	0,056	0,073	0,024
P8. Competitors in the digital environment	0,063	0,053	0,18	0,066	0,022	0,065	0,072	0,082	0,045	0,035	0,154	0,064	0,073	0,056	0,115	0,094
P9. Government regulations	0,051	0,025	0,04	0,073	0,175	0,025	0,095	0,064	0,122	0,083	0,042	0,133	0,032	0,065	0,053	0,089
P10. Economic, cultural and social environment	0,042	0,052	0,07	0,116	0,094	0,055	0,056	0,054	0,032	0,095	0,034	0,055	0,114	0,031	0,034	0,093
P11. Technological infrastructure	0,016	0,166	0,15	0,099	0,034	0,062	0,063	0,035	0,054	0,043	0,042	0,063	0,056	0,072	0,095	0,116
P12. Capability to manage capital and assets	0,115	0,082	0,09	0,065	0,052	0,093	0,043	0,073	0,153	0,092	0,055	0,081	0,074	0,093	0,063	0,062
P13. Organizational capacity	0,072	0,082	0,08	0,045	0,056	0,096	0,045	0,056	0,097	0,094	0,055	0,055	0,054	0,024	0,143	0,114
P.14 Market-sensitive capacity	0,078	0,068	0,08	0,043	0,085	0,078	0,03	0,065	0,047	0,066	0,054	0,037	0,116	0,046	0,056	0,045

Source: Research team

We have: $\lambda_{max} = 14.676 \rightarrow CI = (14.675 - 14) / 13 = 0.052$

RI: Random index, looked up as the 14th index according to the random index table corresponding to the number of selection criteria considered:

So the consistency ratio $CR = 0.052 / 1.57 = 0.033 (< 10\%)$

Because the consistency index $CR < 10\%$, the weights of the criteria for evaluating the options are presented in Table 8.

Table 9. Research results of hierarchical analysis (AHP)

Impact Variables	Weightage
P4. Strategy	0.093
P12. Capability to manage capital and assets	0.082
P13. Organizational capacity	0.082
P14. Market-sensitive capacity	0.079
P5. Changes in business model	0.077
P7. Business Partners	0.072
P8. Competitors in the digital environment	0.069
P2. Human Resources	0.066
P9. Government regulations	0.066
P1. Information technology (IT) resources.	0.064
P6. Relationship with customers	0.064
P11. Technological infrastructure	0.063
P3. Internal Communications	0,062
P10. Economic, cultural and social environment	0.061

Source: Research team

Thus, of the 14 factors affecting Digital Transformation activities in SMEs in Hanoi, "Digital Transformation Strategy" has the greatest influence, followed by 3 factors of the group of governance capacity factors. The evaluated factors have a rather large difference with the index of the most influential factor difference being 0.032.

6. Research limitations and conclusions

The study uses the Delphi expert interview method to assess the factors affecting the Digital Transformation activities of SMEs in Hanoi. The Delphi method has a high advantage because it is evaluated by researchers and businesses with expertise and experience in Digital Transformation. From the survey of experts related to the fields of Digital Transformation, it can be seen that the factors proposed by the authors are evaluated fairly evenly. However, the paper also has some limitations as follows:

Firstly, Delphi and AHP methods often take a long time, so the actual number of samples is not high compared to other methods. Sometimes there are differences and disagreements between opinions. Despite their high level of expertise, not all experts fully understand all of the issues examined in this article's research scope.

Second, the research uses the method of reviewing research documents, leading to the omission and limitation of journal publications, seminars, books, etc. to serve the research. The number of articles on the topic of digital transformation for SMEs in Vietnam is still small, so the author has not yet assessed the appropriateness of the factors in the Vietnamese market.

Third, the research topic of the research team is still narrow within the city of Hanoi, so the research results have not yet evaluated the collegial activities of SMEs in other cities or nationwide.

Despite its shortcomings, the article has partly clarified the research, modeling and evaluation of the factors affecting the digital transformation activities of SMEs in Hanoi. Through this, the authors hope that the topic of Digital Transformation will receive more attention, especially research for SMEs in the future.

7. Appendix

A. APPENDIX 1

INTERVIEW QUESTIONNAIRE

FACTORS AFFECTING DIGITAL TRANSFORMATION ACTIVITIES IN SMALL AND SMALL ENTERPRISES IN HANOI BY EXPERT METHOD (DELPHI)

Dear brothers and sisters, teachers!

Digital transformation is a new topic and also a future development trend. This study aims to better understand the digital transformation activities of small and medium enterprises in Hanoi. A group of scientific research students from the University of Commerce conducts a survey to get expert opinions on digital transformation activities related to small and medium enterprises in Hanoi.

Our research team would like to receive the comments and sharing of experts through this survey. Looking forward to everyone's enthusiastic cooperation.

QUESTION THE IMPORTANCE OF FACTORS TO smes's AGM (1-Not important 2- Not important 3- Normal 4- Very important 5- Extremely important)						
STT	Question	LEVELS OF AGREEMENT				
		1	2	3	4	5
Inner element _						
IT resources	IoT devices, Blockchain, ERP...	1	2	3	4	5
	Technological infrastructure of machines in the enterprise	1	2	3	4	5
	Business channels that the business is currently using	1	2	3	4	5
Human Resources	Skills in using technology in digital transformation of employees	1	2	3	4	5
	Number of staffs performing digital transformation of the enterprise	1	2	3	4	5
	Education level of the digital transformation team	1	2	3	4	5
Internal communications	Solidarity within the enterprise	1	2	3	4	5
	Corporate culture	1	2	3	4	5
	Channels to connect enterprise personnel	1	2	3	4	5
College strategy	Business development orientation	1	2	3	4	5
	Employee Skills Development Strategy	1	2	3	4	5
	The goal of digital transformation in businesses	1	2	3	4	5

Change in business model	Changing the way customers approach	1	2	3	4	5
	Change the direction of product development	1	2	3	4	5
	Changing approach to market	1	2	3	4	5
External factors						
Relationship with customers	Changing behavior of customers using products	1	2	3	4	5
	Reviews, customer feedback	1	2	3	4	5
	Customer acceptance of change	1	2	3	4	5
Business Partners	The ability to connect with businesses providing technology and services	1	2	3	4	5
	The change of the collaborator	1	2	3	4	5
	Compatibility between parties	1	2	3	4	5
Competitors in the digital environment	SMEs with products and services have a collective action	1	2	3	4	5
	Large enterprises with business capital, seniority in the market	1	2	3	4	5
	Competitors in the digital environment make it more difficult than competitors in the traditional environment	1	2	3	4	5
Government regulations for college students	The government has a direct impact on the college process	1	2	3	4	5
	Supportive government policies	1	2	3	4	5
	Government policies for specific types of businesses	1	2	3	4	5
Economic, cultural and social environment	National culture affects the college's progress of enterprises	1	2	3	4	5
	The change of social environment	1	2	3	4	5
	The development disparity between industries in the economy	1	2	3	4	5
Technology infrastructure	Technology develops too fast	1	2	3	4	5
	Technological gap	1	2	3	4	5
Management capacity of leaders						

Ability to manage capital and assets	Capital management capacity of the enterprise	1	2	3	4	5
	Ability to raise capital for businesses	1	2	3	4	5
	Corporate financial management capabilities	1	2	3	4	5
Organizational capacity	The ability to organize a business	1	2	3	4	5
	Ability to organize business development	1	2	3	4	5
	The ability to control internal enterprises	1	2	3	4	5
Ability to be sensitive to the market	Ability to assess changes in market volatility	1	2	3	4	5
	Ability to recognize market development year by year.	1	2	3	4	5
	Observation capacity to assess the appropriate time for digital transformation	1	2	3	4	5

B. APPENDIX 2

SURVEY

FACTORS AFFECTING DIGITAL TRANSFORMATION ACTIVITIES IN SMALL AND MEDIUM ENTERPRISES IN HANOI BY EXPERT METHOD BY ANALYSIS METHOD HIGHLIGHTS (AHP)

Dear brothers and sisters, teachers!

In order to clarify the impact of the group of factors in the previous survey on digital transformation activities in small and medium enterprises. of brothers and sisters, teachers through this survey. Looking forward to everyone's enthusiastic cooperation.

1. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Human Resources**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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2. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Internal Communication**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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3. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Digital Transformation Strategy**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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4. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Changes in business model**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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5. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Relationship with customers**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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6. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Business Partners**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Competitors in the digital environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
-----	-----	-----	-----	-------	---	---	---	---

In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Government regulations for digital transformation**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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In your opinion, the factor "**Information technology resources**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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10. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Technology Infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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11. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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12. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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13. In your opinion, the factor "**Information Technology Resources**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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14. In your opinion, the factor "**Human resources**" is more important than the factor "**Internal communication**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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15. In your opinion, the factor "**Human resources**" is more important than the factor "**Digital transformation strategy**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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16. In your opinion, the factor "**Human resources**" is more important than the factor "**Changes in business model**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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17. In your opinion, the factor "**Human resources**" is more important than the factor "**Relationship with customers**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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18. In your opinion, the factor "**Human resources**" is more important than the factor "**Business partners**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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19. In your opinion, the factor "**Human resources**" is more important than the factor "**Competitives in the digital environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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20. In your opinion, the factor "**Human resources**" is more important than the factor "**Government regulations for digital transformation**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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21. In your opinion, the factor "**Human resources**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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22. In your opinion, the factor "**Human resources**" is more important than the factor "**Technology infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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23. In your opinion, the factor "**Human resources**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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24. In your opinion, the factor "**Human resources**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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25. In your opinion, the factor "**Human resources**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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26. In your opinion, the factor "**Internal communication**" is more important than the factor "**Digital transformation strategy**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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27. In your opinion, the factor "**Internal communication**" is more important than the factor "**Changes in business model**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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28. In your opinion, the factor "**Internal communication**" is more important than the factor "**Relationship with customers**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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29. In your opinion, the factor "**Internal communication**" is more important than the factor "**Business partners**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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30. In your opinion, the factor "**Internal communication**" is more important than the factor "**Competitors in the digital environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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31. In your opinion, the factor "**Internal communication**" is more important than the factor "**Government regulation for digital transformation**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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32. In your opinion, the factor "**Internal communication**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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33. In your opinion, the factor "**Internal communication**" is more important than the factor "**Technology infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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34. In your opinion, the factor "**Internal communication**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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35. In your opinion, the factor "**Internal communication**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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36. In your opinion, the factor "**Internal communication**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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37. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Changes in business model**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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38. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Relationship with customers**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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39. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Business partners**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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40. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Competitors in the digital environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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41. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Government regulation for digital transformation**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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42. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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43. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Technology infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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44. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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45. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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46. In your opinion, the factor "**Digital transformation strategy**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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47. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Relationship with customers**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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48. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Business partners**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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49. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Competitors in the digital environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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50. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Government regulation for digital transformation**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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51. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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52. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Technology infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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53. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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54. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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55. In your opinion, the factor "**Changes in business model**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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56. In your opinion, the factor "**Relationship with customers**" is more important than the factor "**Business partners**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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57. In your opinion, the factor "**Relationship with customers**" is more important than the factor "**Competitors in the digital environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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58. In your opinion, the factor "**Relationship with customers**" is more important than the factor "**Government regulation for digital transformation**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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59. In your opinion, the factor "**Relationship with customers**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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60. In your opinion, the factor "**Relationship with customers**" is more important than the factor "**Technology infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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61. In your opinion, the factor "**Relationship with customers**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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62. In your opinion, the factor "**Relationship with customers**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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63. In your opinion, the factor "**Relationship with customers**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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64. In your opinion, the factor "**Business partners**" is more important than the factor "**Competitives in the digital environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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65. In your opinion, the factor "**Business partners**" is more important than the factor "**Government regulations for digital transformation**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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66. In your opinion, the factor "**Business partners**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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67. In your opinion, the factor "**Business partners**" is more important than the factor "**Technology infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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68. In your opinion, the factor "**Business partners**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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69. In your opinion, the factor "**Business partners**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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70. In your opinion, the factor "**Business partners**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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71. In your opinion, the factor "**Competitors in the digital environment**" is more important than the factor "**Government regulations for digital transformation**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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72. In your opinion, the factor "**Competitors in the digital environment**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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73. In your opinion, the factor "**Competitors in the digital environment**" is more important than the factor "**Technology infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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74. In your opinion, the factor "**Competitors in the digital environment**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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75. In your opinion, the factor "**Competitors in the digital environment**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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76. In your opinion, the factor "**Competitors in the digital environment**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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77. In your opinion, the factor "**Government regulation for digital transformation**" is more important than the factor "**Economic, cultural and social environment**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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78. In your opinion, the factor "**Government regulation for digital transformation**" is more important than the factor "**Technology infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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79. In your opinion, the factor "**Government regulations for digital transformation**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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80. In your opinion, the factor "**Government regulation for digital transformation**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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81. In your opinion, the factor "**Government regulation for digital transformation**" is more important than the factor "**Ability to adapt to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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82. In your opinion, the factor "**Economic, cultural and social environment**" is more important than the factor "**Technological infrastructure**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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83. In your opinion, the factor "**Economic, cultural and social environment**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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84. In your opinion, the factor "**Economic, cultural and social environment**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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85. In your opinion, the factor "**Economic, cultural and social environment**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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86. In your opinion, the factor "**Technology infrastructure**" is more important than the factor "**Capability to manage capital and assets**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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87. In your opinion, the factor "**Technology infrastructure**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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88. In your opinion, the factor "**Technological infrastructure**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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89. In your opinion, the factor "**Capability to manage capital and assets**" is more important than the factor "**Organizational capacity**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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90. In your opinion, the factor "**Capability to manage capital and assets**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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91. In your opinion, the factor "**Organizational capacity**" is more important than the factor "**Ability to be sensitive to the market**" How many times?

1/9	1/7	1/5	1/3	first	3	5	7	9
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Sincerely thank you!

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EFFECTS OF PERFORMANCE EXPECTANCY AND EFFORT EXPECTANCY ON THE MOBILE COMMERCE INTENTION OF HANOI CONSUMER

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ABSTRACT

The research is conducted to introduce the influence scale of Performance Expectancy and Effort Expectancy on the Mobile Commerce on mobile commerce usage intention through Personal Innovativeness among consumers according to user context. Research data is collected from 306 consumers living and working in Hanoi. Methods of testing the scale's reliability by Cronbach's Alpha coefficient, exploratory factor analysis (EFA), and the partial least squares structural equation model (PLS-SEM) by SmartPLS software were used in the study. The research results show that the intention to use mobile commerce is inspired by the performance expectancy and effort through the personal innovation of Hanoi consumers. The study aims to increase the number of customers using mobile commerce, providing some implications for telecommunications network businesses and mobile commerce service providers.

Keywords: M-Commerce, Performance Expectancy, Effort Expectancy, Delphi, PLS-SEM.

1. Introduction

Covid-19 pandemic has significantly changed the behavior and habits of Vietnamese consumers. According to the Digital panorama report in 2022, the number of downloaded mobile applications was 3.37 million, up 21% year-on-year. Accordingly, the annual average total spending of Vietnamese people on mobile applications is 416 million USD, a sharp increase of 44% compared to the same period in 2021. The report also records the total population of Vietnam as of February, 2022 is 98.56 million people, up from 97.96 million people (in 2021). There are 72.10 million Internet users, corresponding to a penetration rate of 73.2% - an increase of 4.9% over the same period in 2021 (WeareSocial, 2022) [5]. According to the 2021 Mobile Application Usage Trends Report (Q&Me, 2021) [8], the average time per day using smartphones increased from 4 hours/day to 5.1 hours/day, an increase of 25 % compared to 2019; App usage for the week also increased by 31%, from 16.8 apps on average to 22.1 apps. The groups of mobile applications most used by Vietnamese users in 2020 are: messaging, chatting (94.7%), entertainment and video watching (83.4%), listening to music (58%), playing games (57.2%), shopping (68.5%), finance and banking (40.1%). Research from BCG and Google (2021) [6] has shown that mobile devices influence over 40% of B2B companies' revenue, and half of the product queries are made on smartphones. With the above market potential, besides the development of e-commerce, mobile commerce is increasingly booming and plays a strategic role in the success of businesses. Mobile commerce (m-commerce) refers to any transaction conducted via wireless telecommunications networks directly or indirectly linked to monetary value (Kleijnen et al., 2007) [33]. Examples include banking, investing, auctions, shopping, and mobile phone services.

Hanoi is one of Vietnam's two major economic centers, which is considered a very potential and vibrant market with more than 9 million people. According to the Department of Telecommunications (Ministry of Information and Communications) [7], by March 2022, the percentage of adults using smartphones in Hanoi will reach 74.5%. E-commerce development plan in 2021 [9], Hanoi targets about 45% of the population to participate in online shopping; 30% of businesses participate in e-commerce activities on mobile applications, and B2C e-commerce sales account for 8% of the total retail sales of consumer goods and services in the area. In the central task of the city, it is mentioned to focus on developing management policies, developing activities, and continuing to update and perfect the features, content, and form of applications on the mobile platform. Therefore, it is necessary to study the intention to use e-commerce in general and mobile commerce in particular Hanoi consumers.

The study enriches the literature on mobile commerce; the influence of performance expectancy and effort expectancy on Hanoi consumers' intention to use mobile commerce (m-commerce) was carried out. It is really necessary to help administrators understand customers' intentions and from the intention to the behavior of using mobile commerce. From there, the study makes suggestions to improve the usability of mobile commerce and attract mobile commerce users, implying solutions to help businesses operating in telecommunications networks and providing mobile commerce services develop stronger.

2. Literature review

2.1. Mobile - Commerce

2.1.1. Concept

Mobile Commerce (M-Commerce) is any transactional activity or business related to purchasing, selling, and exchanging goods and services using mobile devices. mobile electronic devices or personal digital assistants (PDAs) via wireless networks (Nguyen Van Minh & Nguyen Tran Hung, 2014) [41]. In mobile commerce, services are consumed on mobile devices through wireless and telecommunications network connections (Zhang et al., 2003 [63]; UNCTAD, 2002 [54]); Kleijnen et al., 2007 [33]; Sadi and Noordin, 2011 [50]; Yang, 2015[61]).

According to Rajnish Tiwari & Stephen Buse (2007) [44], there is a difference between mobile business and mobile commerce. Mobile commerce is an integral subset of the mobile business, as all aspects of mobile commerce also occur in the mobile business. However, mobile business has a larger scope than mobile commerce. In essence, mobile commerce is a natural extension of e-commerce. The difference between mobile commerce is that mobile commerce provides location-based services, which depend on context conditions, which are not feasible in e-commerce, e.g. searching for a specific nearest ATM while on the go move.

2.1.2. Mobile Commerce Services

M-Commerce services in the telecommunications industry can be thought of as mobile value-added services - special air traffic services offered to customers in addition to telephony services common (P. S Aithal, 2016) [17]. Value-added services provide healthcare, education, administration, and banking. According to Nguyen Van Minh and Nguyen Tran Hung (2014) [41], mobile commerce has five applications: mobile banking, mobile entertainment, mobile the information services, mobile entertainment, mobile advertising, retail, mobile ticketing, and telecommunications services. In which: (1) -Mobile banking is the application of mobile commerce in the banking sector provided on the mobile technology platform. There are three types of mobile banking services: mobile accounts, mobile brokers, and mobile financial information; (2)-*Mobile entertainment* means service provision activities performed on mobile devices for entertainment at the request of users, such as downloading music, pictures, videos, television, and games; (3)-*Mobile information service* refers to mobile-based on-demand services such as financial, political, sports, travel, access to search engines and mobile office, location system service, remote diagnostics; (4)-*Mobile marketing* is the use of wireless devices to deliver content and receive a direct response in integrated marketing communications programs, or other words, the use of digital channels. mobile information as a means of serving marketing activities; (5)-*Mobile retail* is applications that allow online shopping via mobile phones or personal digital devices of users.

2.2. Behavioral intention

The Theory of Reasoned Action (TRA) developed by Ajzen and Fishbein (1975) [19] indicates that behavioral intention is the most important factor in predicting consumer behavior. Attitudes and subjective norms influence behavioral intentions. Then, Ajzen (1985) [11] developed the theory of planned behavior (TPB) to overcome the limitation of the Theory of Reasoned Action (TRA), according to which three factors will influence behavioral intention: such as attitude influencing behavior, subjective norm, and perceived control behavior. The technology acceptance model (TAM) was developed by Davis et al. (1989) [16] to explain the factors affecting technology acceptance and technology user behavior. Venkatesh et al. (2003) [58], based on eight previous theories, propose a new theory called The Unified Theory of Acceptance and Use of

Technology (UTAUT) to explain the intention and behavior of using technology. The UTAUT model identifies the relationship between performance expectancy, effort expectancy, social influence, and favorable conditions. In addition, the model is also affected by other factors such as gender, age, experience, and voluntary use. Thereby, Venkatesh et al. (2003) [58] prove that this model is optimal in explaining behavioral intention to use technology. Therefore, within the scope of the paper, the research team uses UTAUT as the foundation theory.

2.3. Research model and Hypothesis Research

2.3.1. Research model

There are many studies on the intention to use mobile commerce. Intention to use is influenced by many different factors, including performance expectancy, effort expectancy, and personal innovativeness (Shrafat Ali Sair, Rizwan Qaiser Danish, et al. 2018) [51]. In the study of S. Gao et al. (2011) [48], inheriting the TAM theory, research on the relationship between the context affects the performance expectancy, effort expectancy, and intention to use mobile commerce.

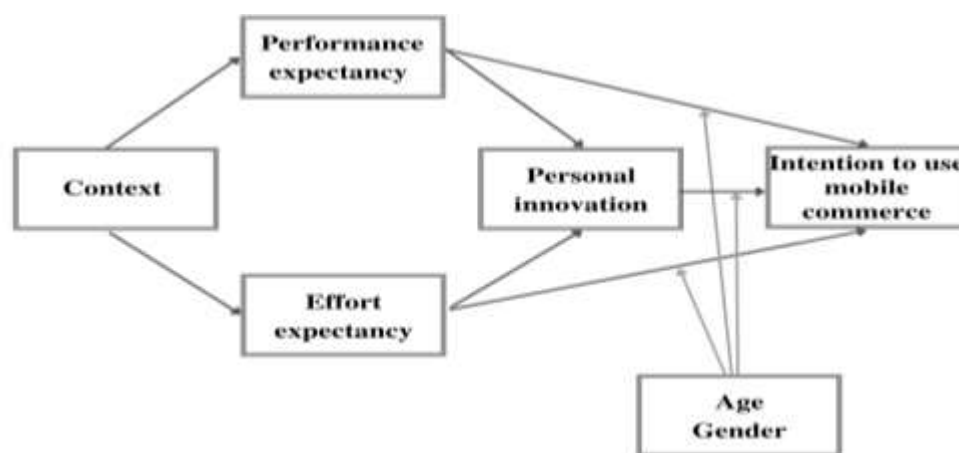


Figure 1. Study Model

Source: Research team

The study results show that all the scales in the research model have reached the confidence level above the acceptable level set by the target and can be used as a criterion to evaluate mobile services. Inheriting the Unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) [58], the study inherits two factors performance expectancy and effort expectancy in the hypothetical model. research Venkatesh et al. (2003) [58] demonstrate that this model is optimal in explaining behavioral intention to use technology. In addition, this study agrees with Venkatesh that the performance expectancy and effort expectancy on behavioral intention to use will be moderated by demographic factors, including age and gender. (Figure 1).

2.3.2. Hypothesis Discussion

Based on the literature review and theoretical basis of mobile commerce, the research team proposes a research model with the following hypotheses:

(1) Performance Expectancy (PE)

Performance expectancy is defined as the degree to which an individual believes that using the system will help them gain benefits in job performance (Venkatesh et al., 2003) [58]. Mobile commerce brings convenience with flexible access and easy connection, so users can connect to the Internet and conduct commercial transactions anywhere. The application of the benefits of mobile commerce has enabled consumers to complete work, save time and achieve work productivity (Venkatesh, Thong, and Xu, 2012) [56]. Various studies describe that performance expectancy significantly influences consumers' intention to use Mobile Commerce. Previously in a Pakistani user study, Shrafat Ali Sair; Rizwan Qaiser Danish et al. (2018) [51] found that performance expectancy strongly and positively promotes consumers' intention to use mobile commerce. Performance expectancy is a positive predictor of intention to use online technology (Ampol

Chayomchai et al., 2020 [13]; Mohammed-Issa Riad Jaradat and Mamoun S. Al Rababaa, 2013 [43]); Turan, Tunc & Zehir, 2015 [53]). The positive relationship between performance expectancy and intention to use identified in these studies is consistent with results found in different countries. Therefore, performance expectancy can be positively related to the intention to use mobile commerce.

H1: Performance expectancy positively affects the intention to use mobile commerce.

(2) Effort Expectancy (EE)

Effort expectancy is a factor in the theoretical model of technology adoption and use (UTAUT) by Venkatesh et al. (2003) [58], “Effort expectancy” is defined as the level of ease associated with the use of information technology systems and products that users perceive. In previous studies, effort expectancy was found to influence intention to use significantly. The research results of Mohammed et al. (2013) [43] assessed that effort expectancy is an important factor affecting the intention to accept and use mobile commerce (Baptista & Oliveira, 2016) [14]. There is a relationship between effort expectancy and intention to accept mobile payments - mobile commerce applications (Alalwan et al., 2018) [12]. In Vietnam, many people are inexperienced with the Internet; they are afraid of complications, especially the elderly, who are just starting to use mobile commerce. Therefore, the study hypothesized that the expectancy of effort is a factor that directly affects the intention to use mobile commerce.

H2: Effort expectancy positively affects the intention to use mobile commerce.

(3) Personal Innovativeness (PI)

Personal Innovativeness is identified in this study as the level of willingness to innovate to accept the use of mobile commerce. According to June Lu (2014) [32], personal innovativeness strongly influences consumers' attitudes and perceptions when using mobile commerce. Sair and Danish (2018) state that individual innovation is a psychological variable related to user behavior in accepting or adopting new technology. The study of Hepola, Karjaluoto, and Shaikh (2016) [28] shows that personal innovativeness is one of the main factors affecting the intention to use Mobile-banking applications. As such, people with a high level of personal innovativeness will be able to adapt and adopt technology more quickly forming the assumption that people with high personal innovativeness are more likely to develop an expected positive attitude towards the intention to use m-commerce. Personal innovativeness in the study was included in the analysis as a mediating factor controlling the performance expectancy and effort expectancy on intention to use mobile commerce.

H3: Personal innovativeness will mediate the relationship between performance expectancy, effort expectancy, and intention to use mobile commerce.

H3a: Personal innovativeness will mediate the relationship between performance expectancy and intention to use mobile commerce.

H3b: Personal innovativeness will mediate the relationship between effort expectancy and intention to use mobile commerce.

(4) Context

S. Figge (2004) [47] stated that users' interests and needs change according to the context in which they use the service. Services that can meet the user's needs in a particular context will provide the best value to the user. Since a service needs to be accessed immediately regardless of the time and place, the usefulness of the mobile service is considered the highest, so it will implicitly affect the intention to use the service. use. Research by S. Taylor and P. Todd (1995) [49] shows that experienced users have a stronger intention to use technology/service. Research by S. Gao et al. (2011) [48] confirms that context plays an important role in accepting mobile services. Based on context, users can judge whether mobile services are useful or easy to use. Based on previous studies, we propose a context study on a research model of the influence of performance expectancy and effort expectancy on the intention to use mobile commerce.

H4a: Context impacts the effect of performance expectancy on intention to use mobile commerce.

H4b: Context impacts the effect of effort expectancy on intention to use mobile commerce.

H4c: Context impacts the effect of performance expectancy on intention to use mobile commerce through personal innovativeness.

H4d: Context impacts the effect of effort expectancy on intention to use mobile commerce through personal innovativeness.

(5) Consumer intention to use mobile commerce.

Intention to use is a familiar research topic in marketing, but there is no consensus on definition among researchers. Intention to use can be found in the oldest study of the theory of Planned Behavior (TPB) developed by Ajzen (1991) [10]. Intention to use is considered the best predictor of the actual behavior of using any new technology (Liebana Cabanillas et al., 2015) [34] and has been supported in previous studies focusing on adopting and using new technology (Venkatesh & Davis, 2000 [57]; Hung et al., 2003 [31]; Yaseen & Zayed, 2010 [62]). For this study, “intention to use mobile commerce” is defined as the willingness of consumers to accept mobile commerce and is chosen as the dependent variable.

(6) Moderator Variables: Gender, Age.

Venkatesh et al. (2003) [58] suggested that demographic factors, including age and gender, will moderate the performance expectancy and effort expectancy on intention to use behavior. They believe that new information systems such as mobile commerce will be more difficult and less useful for older consumers. In contrast, they will be easier to adopt for male, experienced or qualified users. experience with the system. Therefore, the study proposes that age and gender are the moderating factors influencing the intention to use mobile commerce.

3. Research Methodology

3.1. Delphi Methodology

Delphi methodology is an iterative process used to collect and distill expert assessments using a series of questionnaires interspersed with responses (Ludwig, 1977 [37]; Lipschitz & McDonald, 1991 [35]; Hsu & Sandford, 2007 [30]). The authors interviewed and investigated experts through interviews through Zalo and Facebook and conducted online surveys through Google Form. Collected data is aggregated and analyzed by descriptive statistics to evaluate the agreement of experts (according to Likert 7) scale with each variable. One-variable variance is intended to compare opinions between groups of experts. Standard deviation (SD) is used to assess the variation in a population for a normal distribution. To assess the level of consensus, according to Grobbelaar (2006) [20]: $0 \leq SD \leq 1$ is high consensus, $1.01 \leq SD \leq 1.49$ is reasonable, $1.5 \leq SD \leq 2$ and $2.01 \leq SD$ is low and no consensus, respectively. The coefficient of variation (CV) is a basic descriptive statistical quantity used to measure the relative variability of data sets with different mean values. The coefficient of variation CV in this article measures the degree of disagreement of experts when assessing the factors affecting consumers' intention to use mobile commerce.

$$\text{Formula: CV} = \frac{\text{Standard deviation}}{\text{Mean value}} \times 100$$

According to English & Kernan (1976) [18], the coefficient of variation $CV \leq 50\%$ of experts have a high consensus, only need to interview 1 round, no need for additional round. In which $CV \leq 20\%$ has important significance.

3.2. Data Processing Method

3.2.1. Evaluation of scale reliability with Cronbach's Alpha and Exploratory Factor Analysis (EFA)

To measure and evaluate data validity, the research team used SPSS software version 20 (Statistical Package for the Social Sciences) for data processing. To evaluate the reliability of the scale, the author used the research results of Nunnally and Bernstein (1994) [42] as follows: a scale has good reliability when Cronbach's Alpha coefficient (CA) varies in the range [0.70-0.80]. If $CA \geq 0.60$ is an acceptable scale in terms of reliability and observed variables have a variable-total correlation coefficient greater than or equal to 0.3 (Nguyen Dinh Tho, 2011) [40].

In exploratory factor analysis (EFA), the researchers used KMO and Bartlett's Test coefficients. KMO coefficient ≥ 0.5 and the significance level of Bartlett's Test $< 5\%$ are acceptable. When analyzing exploratory factors, pay attention to factor loadings: types of observed variables with factor loading coefficients < 0.5 ; The scale is accepted when the total variance extracted (TVE) $\geq 50\%$. The eigenvalue criterion to determine the number of factors in the EFA analysis is ≥ 1 (Nguyen Dinh Tho, 2011) [40].

3.2.2. Structural Equation Modeling (SEM)

According to Haenlein & Kaplan (2004) [21], *Structural Equation Modeling (SEM) is a second-generation statistical analysis technique developed for the analysis of multidimensional relationships between many variables in a model.* Linear structural modeling (SEM) is considered a modern and popular data analysis method many researchers use to test research models in many different fields. The study uses the partial least squares structural equation model (PLS-SEM) to test the hypothesis because PLS-SEM has outstanding advantages: (1) avoids problems related to scale, small sample size, and data not normally distributed; (2) can estimate complex research model with many intermediate, latent and observed variables, especially structural model; (3) Suitable for exploratory research, research with undeveloped theoretical background (Henseler et al, 2009 [25]; Hair et al, 2016 [22]; Hair et al, 2019 [23]).

4. Results and Discussion

4.1. Results of testing the scale by the Delphi method

The research team conducted interviews and surveys with 26 experts. Experts are managers, employees working in corporate agencies, and teachers with research and teaching activities in e-commerce and mobile commerce. The coefficient of variation (CV) is in the range [15.99 % - 44.49 %] $< 50\%$, reflecting five factors: performance expectancy, effort expectancy, personal innovativeness, context, and intention to use mobile commerce, with 26 observed variables all suitable for inclusion in the questionnaire Consumers' intention to use mobile commerce.

Table 1. Result of factor analysis by Delphi method

Factor	Scales	SD	Mean	CV (%)	Level
1. Performance expectancy (PE)	PE1	1.3	5.1	24.87	High
	PE2	1.0	5.3	18.28	High
	PE3	1.0	5.7	18.17	High
	PE4	1.0	5.4	18.93	High
	PE5	1, 0	5.6	18.21	High
2. Effort expectancy (EE)	EE1	1.1	5.9	17.82	High
	EE2	1.1	5.6	19.09	High
	EE3	1.0	5.7	17.29	High
	EE4	0,9	5.6	16.18	High
	EE5	0.9	5.6	15.99	High
3. Personal Innovativeness (PI)	PI1	1.1	5.5	19.54	High
	PI2	1.4	5.1	27.81	High
	PI3	1.2	5.2	23.76	High
	PI4	1.8	4.2	44.49	High

4. Context (CT)	CT1	1.7	4.7	36.05	High
	CT2	1.0	5.3	19.02	High
	CT3	1.1	5.4	20.97	High
	CT4	1.0	5.4	18.25	High
	CT5	1.0	5.7	17.05	High
	CT6	1.6	4.7	33.59	High
	CT7	1.2	5.5	21.97	High
5. Intention to use M-Commerce (ATT)	ATT1	1.1	5.5	19.27	High
	ATT2	1.1	5.7	19.73	High
	ATT3	1.0	5.7	18.17	High
	ATT4	1.0	5.8	17.90	High
	ATT5	1.4	5.4	26.17	High

Source: Data processing results

4.2. Data Processing Results

This sample size is calculated according to the sample calculation formula proposed by Yamane (1973) [60]: $n = \frac{N}{1+Ne^2}$. Where n is the sample size, N is the total number of surveys and e^2 , is the allowable error. According to the World Population Review website, as of July 2021, Hanoi's population: is 8,418,883 people. Therefore, $n = \frac{8,418,883}{1+8,418,883 \times 0.05^2} = \text{NTD } 399.98$, $e = 5\%$ (95% correct). So, the expected sample size for the survey is 400 consumers. The number of votes distributed was more than 400 votes. However, during the actual investigation, the author team only obtained 354 valid votes, of which 306 were people who were/are using M-Commerce, and 48 votes were not used.

4.2.1. Evaluation of the scale's reliability in the research model

*Crombach's alpha (CA)

The reliability test results by Cronbach's Alpha coefficient show that the scale's components are presented in Table 2. Results testing the components of the scale all have Cronbach's Alpha > 0.6 and no measurement variable correlates less than 0.3 (except for the variable PI4). Therefore, the variable PI4 is considered a garbage variable and is excluded from the model. So, the remaining 25 observed variables continue to be included in the exploratory factor analysis (EFA).

Table 2. Reliability's test results

Scale	CA	Number of observed variables remains
1. Performance expectancy	0.757	5
2. Effort expectancy	0.862	5
3. Personal innovation	0.828	3 (Type of PI4)
4. Context	0.810	7
5. Intention to use m-commerce	0.885	5

Source: Data processing results

***Exploratory factor analysis (EFA)**

The EFA analysis stopped at the fourth rotation with the KMO index equal to 0.856, and the value of Bartlett's test is significant with Sig. = 0.000 shows that the observed variables are correlated with each other in terms of the total number of observations. However, the factor loading coefficient of variables CT5 (0.305), CT3 (0.446) in the first time; CT4 (0.471) in the second and PE3 (0.465), PE5 (0.293) in the third time are all less than 0.5, so they are removed from the model, according to Nunnally and Bernstein (1994) [42].

Table 3. Results of EFA factor analysis

Observable variables	Factors				
	1	2	3	4	5
ATT1	.850				
ATT2	.817				
ATT4	.734				
ATT3	.678				
ATT5	.637				
EE3		.886			
EE2		.699			
EE1		.691			
EE4		.608			
EE5		.575			
PI2			.986		
PI3			.696		
PI1			.558		
CT2				.706	
CT1				.705	
CT6				.611	
CT7				.586	
PE2					.757
PE4					.626
PE1					.501
Eigenvalue	7.402	1.950	1.906	1.283	1.256
Average Variance Extracted	35.107	7.783	7.284	4.618	4.041
KMO = 0.856 Sig. = 0,000					
Total variances extracted = 58.832%					

Source: Data processing results

The Eigenvalues of all factors are high (>1) and the 5th factor has the smallest Eigenvalues of 1,256 >1. Acceptance criteria for extracted variance are when Total Variance Explained is > 50%. The cumulative variance of the factors (Total variances extracted) was 58.832% > 50% met the criteria. Conclusion: 58.832% of the change in the factors is explained by the observed variables.

4.2.2. Results of analysis of the partial least squares structural equation model (PLS-SEM)

According to Henseler & Chin (2010) [24], the research model is evaluated through the measurement model and the structural model.

***Evaluate the measurement model on Smart-PLS**

To evaluate the measurement model, the research evaluates it through:

Outer loadings

The outer loading coefficient must be greater than 0.4 to achieve reliability with exploratory research. A study with external factor loading >0.6 was accepted according to Moorees and Chang (2006) [39]. This study adds a factor that “context” to form a new scale, so the research can be called exploratory research. Hair et al. (2016) [22] believe that the outer loading factor needs to be greater than or equal to 0.7 if the observed variable is quality. The results show that all observed variables have a high outer loading coefficient [0.695 – 0.891], and the lowest outer loading coefficient is 0.695 > 0.6. The quality of observed variables is guaranteed.

Table 4. Outer loadings

Scale	Content	Outer loadings
1. Performance expectancys (PE)	PE1. I believe that using m-commerce helps me improve my personal capacity.	0.740
	PE2. I believe using m-commerce increases my chances of getting the important things out of my job.	0.864
	PE4. I believe that using m-commerce helps me increase my daily work productivity.	0.773
2. Effort expectancy (EE)	EE1. I believe it's easy to acquire the skill using the m-commerce.	0.747
	EE2. I feel the functions in m-commerce are easy to understand and clear.	0.813
	EE3. Learning to use a mobile commerce service is easy for me.	0.812
	EE4. It's easy for me to get started and take the next step to use the mobile commerce service.	0.845
	EE5. Overall, using mobile commerce is easy and fast.	0.788
3. Personal innovativeness (PI)	PI1. When I hear about mobile commerce, I will quickly look for an opportunity to give it a try.	0.883
	PI2. I am usually the first to try new technology products and services such as Mobile – Commerce.	0.881
	PI3. I enjoy experimenting with Mobile Commerce.	0.824
4. Context (CT)	CT1. If I'm on the street.	0.800
	CT2. If people around me use.	0.695
	CT6. If I don't have a computer equipment, a laptop next.	0.728
	CT7. If the service system is easy to download and install.	0.785
5. Behavioral Intentions	ATT1. When there are suitable conditions (financial ability, service price, job requirements), I will use mobile commerce services.	0.891
	ATT2. I use mobile commerce services to increase convenience.	0.876
	ATT3. I will learn how to use M-commerce services.	0.799
	ATT4. I will use more mobile commerce services in the future.	0.838
	ATT5. I will recommend to friends and relatives about Mobile Commerce services.	0.761

Source: Data processing results

Reliability

In addition to reliability, Cronbach's Alpha must reach the threshold greater than or equal to 0.7, the study refers to the assessment of the reliability of the scale according to the composite reliability (CR). According to Chin (1998) [59], in exploratory research, Composite Reliability (CR) must be from 0.6 or more. With confirmatory studies, the threshold of 0.7 is the appropriate level of the CR index (Henseler & Sarstedt, 2013) [26]. Many other researchers also agree that 0.7 is an appropriate threshold for most cases (Hair et al. (2016) [22].

Convergence Validity by Average Variance Extracted (AVE)

Based on the Average Variance Extracted (AVE) index to evaluate the convergence of the scale. According to Hock, Ringle et al (2010) [29], if the AVE is 0.5 or higher, a scale has a convergent value. The AVE of the scales are presented in Table 5, respectively ATT = 0.696; CT= 0.567; EE= 0.643; PE=0.630; PI= 0.746. The results conclude that the scales ensure convergence, with the AVE index reaching the standard (>0.5).

Table 5. Reliability and Convergence Assessment Table

	CA	CR	AVE
ATT	0.890	0.919	0.696
CT	0.751	0.840	0.567
EE	0.861	0.900	0.643
PE	0.705	0.836	0.630
PI	0.898	0.746	0.832

Table 6. Discriminant (HTMT)

	ATT	CT	EE	PE	PI
ATT					
CT	0.482				
EE	0.640	0.435			
PE	0.523	0.326	0.668		
PI	0.648	0.289	0.528	0.406	

Source: Data processing results

Discriminant Validity (HTMT)

To assess the discriminant of the scale, the study uses the Heterotrait-monotrait ratio (HTMT). Research results in Table 6 show that the scale's discriminant is very good, which means that all HTMT values are much smaller than the threshold of 0.85 (Henseler et al., 2015) [27]. So, the factors all meet the requirements of discriminant value.

***Evaluate Structural Model on SmartPLS**

Before evaluating the structural model, in order to be able to generalize the research results to the whole, the model needs to be tested for reliability. The study used the bootstrapping technique with a repeated sample size of 1000 observations (n=1000) with an initial sample size of 306 observations. Estimation results from 1000 observations show that the original weights are significant with the mean weights of bootstrapping because all weights are within the 95% confidence interval. Therefore, the estimates in the model can be concluded to be reliable.

Evaluation of the structural model to consider: multicollinearity assessment through the Variance inflation factor (VIF) coefficient, the impact factor and the significance of the impact levels, the R Square adjusted coefficient, and effect size values (F-Square).

Evaluation of multicollinearity

According to Hair et al. (2019) [23], if the VIF is from 5 onwards, the model has a very high probability of multicollinearity. The structures in the PLS-SEM model in Table have VIF coefficients [1,000 - 1.602], all less than 2, so there is no multicollinearity in the model.

Table 7. Variance inflation factor (VIF)

	ATT	CT	EE	PE	PI
ATT					
CT			1,000	1,000	
EE	1,602				1,367
PE	1,380				1,367
PI	1,304				

Table 8. R-Square adjusted Values

	R Square	R Square Adjusted
ATT	0.453	0.448
EE	0.137	0.134
PE	0.063	0.060
PI	0.233	0.228

Source: Data processing results

Explanatory level of the independent variable for dependency variable (R2-Square Adjusted)

For the evaluation results, we pay attention to the R squared adjusted, this index reflects the explanatory level of the independent and dependent variables in the study model. Specifically, the R-squared adjusted of ATT is 0.448, so the independent variables explained 44.8% of the variation (variance), and the remaining 56.2% was from systematic error and other factors outside the model.

Table 9. F-Square coefficient

	ATT	CT	EE	PE	PI
ATT					
CT			0.159	0.067	
EE	0.129				0.172
PE	0.024				0.009
PI	0.181				

Source: Data processing results

Effect size (F-Square)

The f-Square coefficient measures the strength and weak effect of the independent variable on the dependent variable. Cohen (1988) [15] proposed the f Square index to evaluate the importance of the independent variables as follows: f Square < 0.02, the level of impact is extremely small or no effect; $0.02 \leq$ f Square < 0.15 is small impact; $0.15 \leq$ f Square < 0.35 medium impact; f Square \geq 0.35 is high impact. According to the obtained data, the impact of the PI variable on ATT is average with an f Square value of 0.181; the impact of EE on the dependent variable is small (0.129); the impact of PE on the dependent variable is small (0.024).

Assessment of impact relationship

The results in Table 8 show that most of the effects have P-Values equal to $0.000 < 0.05$, so these effects are statistically significant. Particularly, the variable affecting ATT is PE, with P-Values of $0.017 < 0.05$, so this effect is still guaranteed; The variable affecting PI is PE with P-Values of $0.151 > 0.05$, the relationship is not statistically significant or significant, but there are cases of noise from data or errors in the sampling process.

Table 10. Table of value coefficients of impact relationships

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
CT -> EE	0.370	0.379	0.060	6.201	0.000
CT -> PE	0.250	0.257	0.059	4.212	0.000
EE -> ATT	0.336	0.338	0.051	6.623	0.000
EE -> PI	0.424	0.427	0.068	6.253	0.000
PE -> ATT	0.136	0.140	0.057	2.383	0.017
PE -> PI	0.098	0.100	0.068	1.436	0.151
PI -> ATT	0.360	0.355	0.051	7.038	0.000

Source: Result processing data

4.2.3 Hypothesis Testing

Structural model analysis results are shown in the following figure:

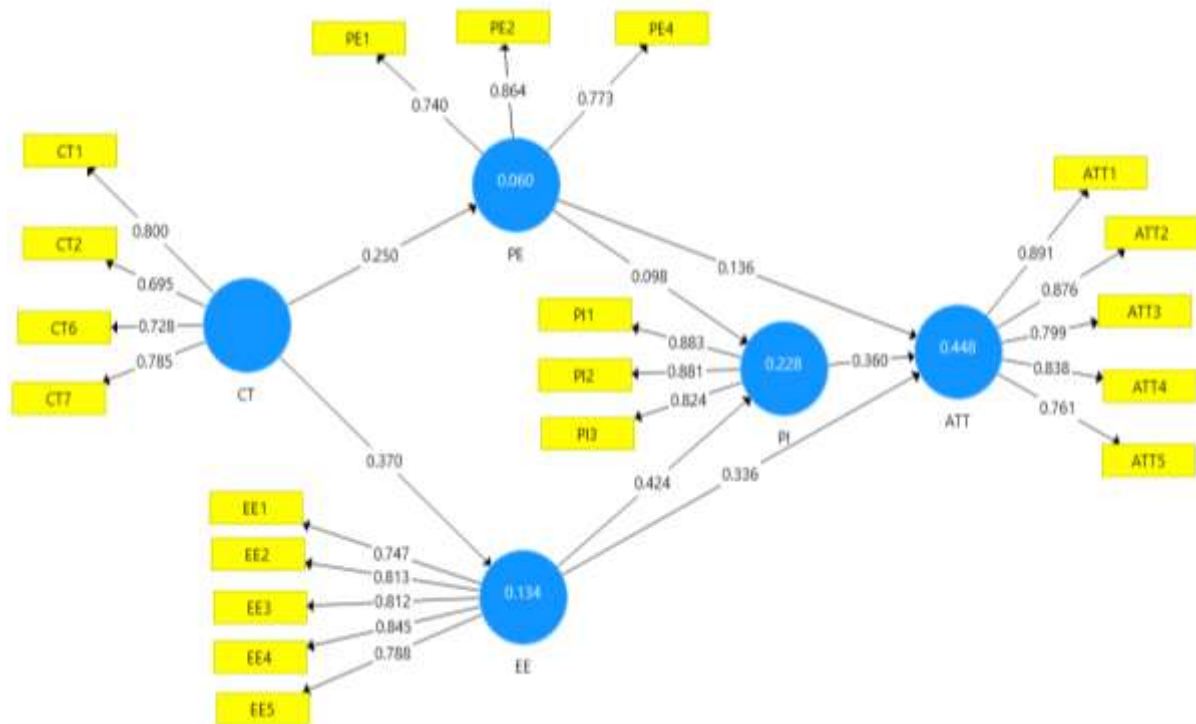


Figure 2. Structural model analysis results

Source: Data processing results

Hypothesis H1 that performance expectancy positively affects the intention to use M-Commerce. Performance expectancy with an initial scale of 5 observed variables. The remaining scale was obtained with three observed variables after testing the reliability by Cronbach's Alpha coefficient and exploratory factor analysis (EFA) to remove unsuitable variables (types PE3, PE5). The PLS-SEM estimation results show that the performance expectancy factor has a positive relationship with the intention to use expressed through the F-Square = 0.024; t-value = 2.383 > 1.96, and this estimate reached statistical significance at P-Value = 0.017, which means performance expectancy influence that intention to use mobile commerce.

Hypothesis H2 assumes that effort expectancy positively affects the intention to use Mobile Commerce. Effort expectancy with an initial scale of 5 observed variables. The PLS-SEM estimation results show that the effort expectancy factor has a positive relationship with the intention to use expressed through the coefficient

F-Square = 0.129; t-value = 6.623 > 1.96, and this estimate reached statistical significance at P-Value = 0.000, which means “Effort expectancy” affects consumers' intention to use M-Commerce.

Hypothesis H3 suggests that personal innovativeness will mediate the relationship between performance expectancy, effort expectancy, and intention to use mobile commerce. After testing the reliability by Cronbach's Alpha coefficient to remove the unsuitable variable (type PI4), the remaining scale with 3 observed variables was obtained. The results of hypothesis testing are as follows: (H3a) The PLS-SEM estimation results show that personal innovativeness does not have a relationship between performance expectancy expressed through the coefficient t-value = 1.436 < 1.96 and the estimate at P-Value = 0.151, which is not significant. Reject hypothesis H3a. (H3b) The SEM estimation results show that the personal innovativeness factor has a relationship with the expectancy of effort expressed through the coefficient F-Square = 0.172; t-value = 6.253 > 1.96. This estimate reached statistical significance at P-Value = 0.000. The PLS-SEM estimation results show a relationship between the expected effort factor through personal innovativeness and the intention to use mobile commerce. The coefficient t-value = 7.038 > 1.96 and estimated, reached statistical significance at P-Value = 0.000. So, the relationship between effort expectancy and intention to use mobile commerce is mediated by personal innovativeness.

Hypothesis H4: Context with the initial scale of 7 observed variables. The remaining scale with four observed variables was obtained after testing reliability by Cronbach's Alpha coefficient and exploratory factor analysis EFA to remove unsuitable variables (types CT3, CT4, CT5). The results show that the context influences the performance expectancy factor, as shown by the coefficient t-value = 4.212 > 1.96, and this estimate reaches statistical significance at P-Value = 0.000. The results show that the effort expectancy factor is influenced by the context expressed by the coefficient t-value = 6.201 > 1.96, and this estimate reaches statistical significance at P-Value = 0.000. Thus, Hypothesis H4a, H4b, and H4d are recognised. Hypothesis H4c was rejected because the test of hypothesis H3a did not reach statistical significance, or personal innovativeness was not mediate the relationship between performance expectancy and intention to use mobile commerce.

5. Conclusion

5.1. Limitations

Besides the obtained results, the study still has some limitations:

Firstly, this study only studies the factors affecting the intention to use Mobile commerce of individual customers. Second, the study of intention to use mobile commerce expands the UTAUT model with the following factors: performance expectancy, effort expectancy, personal innovation, and context. In the actual, mobile commerce services customers' use of mobile commerce may also be affected by other factors such as social influence and security. Third, the research sample includes 306 current customers, but the sample is not very large. At the same time, the research is limited in terms of time and funding, so the research has not been comprehensive. In addition, the search for documents, especially foreign documents, is limited due to language limitations. Fourth, some consumers do not have the skills to answer questions and do not understand or understand incorrectly about mobile commerce applications, so they have emotional answers and internal influencing factors, external impact on brand loyalty only manifests at a relative level partly affects the outcome of the investigation process. Finally, the proposed solutions are only specific to the extent appropriate to the actual situation at present in order to promote the factors affecting the intention to use mobile commerce of consumers in Hanoi.

5.2. Recommendations for some solutions

Based on research conclusions, the study proposes several recommendations to increase consumers' intention to use mobile commerce and recommends some solutions for enterprises providing mobile commerce services.

****Recommendations to increase consumers' intention to use mobile commerce***

Firstly, to develop the quality and convenience of mobile commerce services: The key point here is to change the shopping habits of customers to realize that mobile commerce is very convenient, saving costs and time. Enterprises must build online systems or websites to guide and introduce customers to mobile commerce services and the convenience of services.

Secondly, improve the legal framework, aiming to build a "level playing field" in the future for service providers. Also, to reduce other risks is to monitor transaction flows to warn service providers about suspicious transaction patterns and take timely action.

Thirdly, strengthen propaganda and create habits for users: it is necessary to have a national strategy for universalization, raising people's awareness about finance, enhancing confidence when using services, training on how to use the service, security, and creating payment habits thereby promoting the needs of users.

Fourth, improve infrastructure for mobile commerce services: the right infrastructure will reduce business costs and improve competition among businesses. Technically mature networks are essential for adopting m-commerce services, so telecommunications infrastructure is considered an important determinant.

Fifth, focus on investment and development of human resources for e-commerce in general and mobile commerce in particular. Because people are the most important factor, playing a decisive role in developing technology industries in every country, so attracting, training, and supporting technology experts and talents is very important. Knowledge of digital technology and the financial-banking sector should be given adequate attention.

Sixth, strengthen the cooperation of service providers, including carriers, service providers, and consumers. This coordination will create many new products and services, reduce costs, stimulate consumer demand and create close supervision between parties, limiting possible risks.

Seventh, improve performance expectancy: Businesses need to promote outstanding features of mobile commerce services to consumers, such as helping customers increase productivity, improve efficiency, improve work quality and easily perform daily tasks their day over. Leverage social media, social media, and viral marketing to raise consumer expectancy for the performance of the mobile commerce service it provides.

Eighth, improve effort expectancy: It is necessary to design the interface with easy-to-understand and clear functions, and arrange the functions on the mobile commerce interface appropriately to create ease and convenience when using, even non-technological users. Provide sufficient information for users, build registration procedures, and make simple transactions easy to understand for consumers...

Ninth, improve personal innovativeness: Enterprises can implement new and attractive promotional strategies with messages that excite the curiosity and curiosity of consumers and, at the same time, attract them to learn and use the service. Provide free trial experiences and attractive incentives for the first people to use the service...

****Recommending some solutions for businesses providing mobile commerce services:***

Firstly, it is necessary to keep abreast of the latest mobile commerce trends to maintain a competitive advantage in business. Understand consumer behavior, apply new mobile technology to increase marketing, advertise to the right audience, and sell effectively.

Secondly, increase investment in a technology platform for mobile business: Artificial Intelligence (AI) technology plays an important role in modern supply chain optimization. Thirdly, building a sound business model and process of developing a mobile commerce application service: Over time, aggregated blockchain ledger information can reveal weaknesses in the supply chain and help businesses continuously optimize operations. Thus, changing the business models to meet modern consumer needs is the most effective solution to maintain and develop in the new global situation.

Fourth, ensure safety and security for transactions and mobile commerce application systems: Ensuring information security for customers gives customers confidence and changes their lifestyles, work, and

consumers shopping habits, and is the driving force behind retailers' transition to online platforms to reach more customers seizing new growth opportunities.

Fifth, increase customer awareness about the benefits of mobile commerce: This helps consumers maximize time, increase flexibility, and ease of use of products and services through access from home. In the context of the current "new normal", "convenience" has become one of the consumption criteria in society. Businesses need to understand this mentality to promote business activities on mobile platforms.

Finally, businesses need to create more smooth and secure shopping experiences to attract customers to visit and increase consumption value. Covid-19 has affected almost every aspect of consumers' personal lives, forcing businesses to be creative and react quickly to adapt to new trends and ways of consuming people. Accordingly, changing the business model, from production to distribution, transportation, and consumption, is the best solution to help businesses develop in the new situation.

5.3. Associated Opportunities for Future Research

From the limitations of the study, the authors identify possible research directions in the future as follows: Firstly, it is possible to conduct further studies to develop the model research with appropriate expansion variables and research in a wider range, with a larger sample size. Second, study the use of mobile commerce with corporate customers. In addition, the individual's intention to use is also affected by many other factors, such as the influence of the social environment and security. Therefore, the following studies can add more influencing factors to consumers' intention to use to supplement and improve research theory.

6. Appendix

APPENDIX A. SURVEY QUESTIONS

EFFECTS OF PERFORMANCE EXPECTANCY AND EFFORT EXPECTANCY ON THE MOBILE COMMERCE INTENTION OF HANOI CONSUMERS

A.1. Gender: Male Female

A.2. Age:

- Under 15 years
- From 15 to 18 years old
- From 19 to 22 years old
- From 23 to 25 years old
- From 26 to 29 years old
- From 30 to 34 years old
- From 35 to 39 years old
- From 40 to 49 years old
- From 50 to 59 years old
- Over 60 years old

A.4. Education level:

- Junior high school
- High school.
- University/ College

A.3. Address:

- Ba Dinh District, Tay Ho
- Hoan Kiem District, Hai Ba Trung
- Dong Da District, Thanh Xuan District, Cau Giay.
- Hoang Mai District, Long Bien
- District Bac Tu Liem, Nam Tu Liem
- Gia Lam District, Thanh Tri
- Dan Phuong District, Hoai Duc District
- Dong Anh District, Soc Son District, Me Linh
- Phuc Tho District, Ba Vi District, Son Tay Town.
- Thach That District, Quoc Oai
- Ha Dong District, Chuong My District, Thanh Oai
- Thuong Tin District, Phu Xuyen
- Ung Hoa District, My Duc District

A.5. Occupation

Master's degree

A.6. Average monthly income:

No income

Less than 4 million VND

4-9 million

From 4 million to less than 9 million

From 9 million to less than 14 million

From 14 million to under 19 million

From 19 million to less than 40 million

7. From VND 40 million or more

Workers, public employees

Office workers (enterprises, companies,...)

Freelance workers (traders, housewives, ..)

Students

Others

A.7. Have you ever worked? Have you used the Mobile Commerce service yet?

Yes

No

A.8. If not, please tell us the reason why you haven't used the Mobile Commerce service yet?

More convenient in-store shopping

Concerned about personal information being revealed

Difficult to verify service quality

Distrust of providers

Insufficient flexible services/applications

No payment cards

Not enough information to make decisions

Complicated procedures Inexperienced in using the software technology

No need to use

Cost/price unclear

Others:

A.9. Assessment information

The scoring scale increases from 1 (strongly disagree) to 7 (strongly agree).

Scale	Content	Satisfaction						
		1	2	3	4	5	6	7
1. Performance expectancys (PE)	PE1. I believe that using m-commerce helps me improve my personal capacity.							
	PE2. I believe using m-commerce increases my chances of getting the important things out of my job.							
	PE3. I believe using mobile commerce helps me to complete work faster and more conveniently.							
	PE4. I believe that using m-commerce helps me increase my daily work productivity.							
	PE5. Overall, I believe that using mobile commerce is useful.							

2. Effort expectancy (EE)	EE1. I believe it's easy to acquire the skill using the m-commerce.								
	EE2. I feel the functions in m-commerce are easy to understand and clear.								
	EE3. Learning to use a mobile commerce service is easy for me.								
	EE4. It's easy for me to get started and take the next step to use the mobile commerce service.								
	EE5. Overall, using mobile commerce is easy and fast.								
3. Personal innovativeness (PI)	PI1. When I hear about mobile commerce, I will quickly look for an opportunity to give it a try.								
	PI2. I am usually the first to try new technology products and services such as m-Commerce.								
	PI3. I enjoy experimenting with Mobile Commerce.								
	PI4. I am not willing to try the m-commerce service.								
4. Context (CT) (I will use the service if):	CT1. If I'm on the street.								
	CT2. If people around me use.								
	CT3. If I have a positive experience with m-commerce.								
	CT4. If the working unit encourages the use of mobile service.								
	CT5. If the service is related to my daily work								
	CT6. If I don't have a computer equipment, a laptop next.								
	CT7. If the service system is easy to download and install.								
5. Intention to use mobile commerce	ATT1. When there are suitable conditions (financial ability, service price, job requirements), I will use mobile commerce services.								
	ATT2. I use mobile commerce services to increase convenience.								
	ATT3. I will learn how to use M-commerce services.								
	ATT4. I will use more mobile commerce services in the future.								
	ATT5. I will recommend to friends and relatives about Mobile Commerce services.								

Full name:

Email:.....

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IMPACT ANALYSIS OF DIGITALIZATION AND EDUCATION ON VIETNAM'S ECONOMIC GROWTH

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ABSTRACT

This paper analyzes the impact of digitalization and education on economic growth at the provincial level in Vietnam. Based on data from 63 provinces/cities within the period 2010-2018, the authors apply the Panel Data Analysis approach, including Pooled OLS, FEM, and REM model to examine the effects of digitalization and education on economic growth. Its findings demonstrate that regarding the education effects, whereas the public expenditure on education and the primary enrollment rate has a positive influence, the higher levels of enrollment rate shows no impact on the economic growth. On the other hand, in terms of the digitalization effect, while a rise in mobile phone usage and broadband subscription rate has a positive impact, there is an inverse relationship between fixed telephone usage rate and economic growth. Moreover, the results also show that there is no relation between internet usage rate and economic growth. Based on results from data analysis, this research promotes some interventions and macro policies to assist economic planners in providing solutions that are focused and suitable to the specific situation in each region, paving the way for synchronous and effective economic development among economic regions in Vietnam in years to come.

Keywords: Economic growth, Education, Digitalization, Provincial level, Vietnam.

1. Introduction

Technological progress has increasingly affirmed its important role in the country's economic growth in recent years. Seeing that opportunity, Vietnam is actively implementing digital transformation to take advantage of the Industrial Revolution 4.0 to promote the process of comprehensive digital transformation and innovation. The advent of new technologies such as Artificial Intelligence, Cloud computing, Automation technology, and data analysis can change the way people socialize, which creates a substantial impact on many fields, from economic to political and social. Digitalization makes accessing information, data, and knowledge more accessible than ever, helping to improve labor productivity and enhance the competitiveness of businesses in particular and Vietnam in general. It can be seen that digitalization plays an increasingly important role in economic growth. However, there are few studies examining the impact of digitalization on promoting economic growth, especially at the provincial/city level.

Besides, human resources can be considered an essential factor affecting the prosperity of a country. Therefore, investment in education is significant and necessary. Thanks to the education system, the quality of human resources in the labor market is increasingly improving. In particular, the current period of industrialization and modernization requires workers to have a much higher level of skills, knowledge, and attitudes than in the past. International integration also requires employees to constantly improve their self-worth and knowledge to create value for the labor market.

Many studies in Vietnam and the world have proven that digitization and education substantially impact economic growth, promoting the economy to develop sustainably and stably. Although many studies have been carried out, such as Kwack & Lee (2006), Tran (2011), Bui & Phan (2016), Dinh & Tu (2016), Hanif & Arshed (2016), Kravchenko et al. (2019), Nguyen & Le (2020), Maneejuk & Yamaka (2021), and Cheng et al. (2021), they mainly focused on understanding the correlation of one or two factors of

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digitalization, education to economic growth. Although several studies combine the two factors simultaneously, conducted in the Middle East and OECD countries, they are still rare or have not been analyzed deeply for each factor.

Therefore, the research team decided to carry out the project: "Impact analysis of digitalization and education on Vietnam's economic growth" with a new research scope at 63 provinces/cities level for both education and digitalization factors. In the scope of the study, the concept of "digitalization" is used to describe "the increasing application of ICT in the economy", which is reflected in the following factors: growth in the number of subscribers using communications (landline, mobile); increase the number of Internet connections, and rise of broadband users. The study's objective is to understand the actual situation of the localities, thereby contributing to support policymakers in providing solutions that are focused and appropriate to the specific situation in each province/city or each economic region. In addition, this study will also be a reference for subsequent researchers when exploring other perspectives on the same topic.

2. Theoretical framework

2.1. Literature review

2.1.1. Economic growth theory

The endogenous growth theory was developed to compensate for the shortcomings of the neoclassical growth model Solow (1956). The endogenous growth model suggests that an increase in human capital - as measured by education, innovation, research, and development - stimulates economic growth. Among these factors, education is a key factor, contributing to improving productivity, and thereby making a positive contribution to economic growth. Samuelson & Nordhaus (1985) pointed out four common origins for economic growth, including human resources (labor supply, education, discipline, and incentives), natural resources (minerals, fuel, land), capital (machinery, factories, infrastructure), and technology (science, technology, and management). Romer's growth model (1986) continues to lay the foundation for endogenous growth theory. He argues that technical progress is an endogenous factor in the growth model, which is formed based on the investment rate, and capital scale.

The above theories are the basis for many studies on the relationship of education and digitalization with economic growth widely used in Vietnam and foreign countries. The study by Myovella et al. (2020) used the model foundation of Solow (1956) to evaluate the contribution of digitalization to the economic growth of Sub-Saharan Africa (SSA) compared to other economies belonging to Organization for Economic Cooperation and Development (OECD) for 11 years from 2006 to 2016. In Vietnam, Tran (2011) studied the role of human capital from the perspective of education to the economic growth model in provinces/cities in Vietnam during the time from 2000 to 2007 relying on the foundation of Solow's (1956) model and theory. Huynh et al. (2021) conducted a study on the impact of digital transformation on economic growth in the southern key economic region from 2009 to 2017, which applied the economic growth theories of Solow (1956), and Romer (1986), Samuelson & Nordhaus (1985) as the basis for the study.

2.1.2. The relationship between digitalization and economic growth

Digitalization plays an important role in economic growth. The development trend of 4.0 technology, cloud computing, automation, and AI has profoundly affected economic, political, and social growth. The popularity of ICT has significantly reduced production costs, improved the efficiency of resource allocation, boosted demand, and attracted investment in many economic sectors (Grimes, Ren & Stevens, 2012). Pradhan, Arvin & Norman (2015) acknowledged a positive relationship between ICT and economic growth. Therein, Bahrini & Qaffas (2019) demonstrated that ICT infrastructure factors including mobile phones usage rate, Internet usage rate, and broadband subscription are the main motivations to enhance economic growth in some developing countries in the Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA) regions. However, Jayakar & Park (2013) pointed out that ICT has a negative impact on the economy. Huynh et al. (2021) conducted a study on the impact of digital transformation on the economic growth of the Southern key economic region's provinces in the period 2009 to 2017. Research shows that if the ICT

infrastructure index increases by 1%, the gross domestic product of the southern key economic regions will also increase by 0.7%.

2.1.3. The relationship between education and economic growth

Besides digitalization, the education factor also contributes to increasing the human capital of the workforce, improving labor productivity and economic growth. McMahon (2002) found that education has positive effects on income growth directly and indirectly, through improved health, environment, investment in physical capital, reduction in crime rates, and political instability. Most of the endogenous, extended neoclassical growth models or models applying the endogenous growth theory of Barro, Mankiw & Sala-i-Martin (1992) also give the same results. An increase in government expenditure on education, with the condition that all other variables are constant, will also help increase a country's gross domestic product. In particular, Petrakis & Stamatakis (2002) pointed out that the growth impact of education depends on the level of development. Low-income countries benefit from primary and secondary education while high-income countries benefit from higher education. In Vietnam, research on the impact of human capital on economic growth in the Mekong Delta conducted by Dinh & Tu (2016) shows that there exists a positive relationship between public expenditure on education and economic growth. Specifically, when the state budget expenditure rate for education increases by 1%, GDP will increase by 0.1382%.

2.2. An overview of previous studies and research hypotheses

2.2.1. Digitalization affects economic growth

Technology is one of the four factors considered pillars in the economic growth theory of Samuelson & Nordhaus (1985). Technology is a factor that has an important impact on a country's economic growth (Ha, 2021). ICT development is measured by the percentage of fixed telephone usage rate and mobile phone usage rate that have a positive contribution to the economic growth of countries (Andrianaivo & Kpodar, 2011). However, the level impact of ICT factors is different between groups of countries. The research shows that the mobile phone usage rate in developing and underdeveloped countries is much higher than in developed countries (Myovella, Karacuka & Haucap, 2020). Besides, research in Sub-Saharan African countries shows that increasing the fixed telephone usage rate by 10% reduces productivity growth in the next 3 years by about 3.17% – 3.42% per year (Wamboye, Tochkov & Sergi, 2015). Research on the effects of ICT diffusion on three regions of Vietnam also shows that the fixed telephone usage rate has a negative impact on economic growth (Ha, 2021).

Hypothesis H1: The number of fixed telephone subscribers per 100 people has a negative impact on economic growth.

Hypothesis H2: The number of mobile phone subscribers per 100 people has a positive impact on economic growth.

The ICT infrastructure variables (broadband and internet users) have a positive impact on national economic growth in developed countries (Pradhan, Mallik & Bagchi, 2018). Research in developing and underdeveloped countries shows that the Internet usage rate contributes significantly to the economic growth of countries (Myovella, Karacuka & Haucap, 2020). The number of Internet users also boosts economic growth for high-income countries but has no obvious effect on countries with low-middle income. (Cheng, Chien & Lee, 2021).

Hypothesis H3: The number of Internet users per 100 people positively affects economic growth.

Hypothesis H4: The number of broadband subscriptions per 100 people positively affects economic growth.

2.2.2. Education affects economic growth

Romer (1986) pointed out that knowledge capital is a special capital type in the endogenous economic growth model. Applying this model, Barro et al. (1992) demonstrate a positive relationship between education and economic growth, therein increasing government expenditure on education will help to increase the gross domestic product of a country. Economic growth studies by Musila & Belassi (2004)

carried out in Uganda, Su & Doan (2015) conducted in 26 developing countries, Dinh & Tu (2016) carried out in 13 provinces of the Mekong River Delta, Bui & Phan (2016) conducted in ASEAN-6 countries all show a positive correlation between public expenditure on education and economic growth. Therefore, national policymakers should focus on policies aimed at creating human capital for the country, therein public expenditure on education has a positive impact and plays an important role in the process of forming human capital.

Hypothesis H5: Public expenditure on education (VND billion) in total budget expenditure has a positive impact on economic growth.

Besides, the minimum educational level is also a necessary condition for education to have measurable effects on economic growth (Rebelo, 1991). Self & Grabowski (2003) with research data from India; research by Burja & Burja (2013) conducted in Romania found a positive connection between primary and secondary school enrollment rates and economic growth. Hanif & Arshed (2016) with research conducted in SAARC countries indicates that the economy will directly benefit from an increase in the high education enrollment rate in the manufacturing field. Research by Kyophilavong et al. (2018) conducted in Laos also shows that there exists a long-term connection between economic growth and education levels, which includes primary and secondary school enrollment rates. In addition, Maneejuk & Yamaka (2021) also shows that the high school and higher education enrollment rates contribute to the economic growth of ASEAN-5 (both at the national and regional level).

Hypothesis H6: The number of students attending primary school out of the total population of primary school age in a province/city has a positive impact on economic growth.

Hypothesis H7: The number of students attending secondary school out of the total population of secondary school age in a province/city has a positive impact on economic growth.

Hypothesis H8: The number of students attending high school out of the total population of high school age in a province/city has a positive impact on economic growth.

Higher education has a strong positive impact on economic growth, and higher education participation rates are an important factor explaining differences in labor productivity and growth rates across economic areas.

Participation in higher education will help workers improve their skills combined with the developing and creative changes in the economy, contributing to stimulating long-term economic growth in the OECD country (Griffith, Redding & Reenen, 2004). University enrollment rates positively impact short-term economic growth in Nigeria (Augustine & Ujunwa, 2009). In addition, the participation of workers in university training will help improve their labor productivity, and the labor productivity of low-skilled colleagues as well (Shaw & Holland, 2014). Research by Hanif and Arshed (2016) on the relationship between school education and economic growth in SAARC countries shows that increasing the higher education rate will be able to contribute to economic growth through searching for jobs in the manufacturing sector. Research by Kyophilavong et al (2018) conducted in Laos also shows that there exists a long-term relationship between educational levels and economic growth, therein university is one of the factors that have an active impact that helps promote economic development. Research by Agasisti & Bertolotti (2020) conducted in European countries indicates that the increase in the number and concentration of universities in a region also promotes economic growth in that area. In addition, research by Maneejuk & Yamaka (2021) conducted in ASEAN-5 countries states that investment in higher education is the key to sustainable growth and development for these countries in the future.

Hypothesis H9: The number of people going to university out of the total population in the province/city has a positive impact on economic growth.

3. Research method

3.1. Research model

Based on the endogenous growth model's basis in the literature review along with relevant empirical studies, the authors propose a research model including dependent variables, education variables, digitalization variables, and control variables as follows:

$$\ln GRDP_{it} = \beta_0 + \beta_1 \ln EDU_{it} + \beta_2 PRI_{it} + \beta_3 SEC_{it} + \beta_4 HIG_{it} + \beta_5 TER_{it} + \beta_6 TEL_{it} + \beta_7 MOB_{it} + \beta_8 INT_{it} + \beta_9 BBS_{it} + \beta_{10} \ln CAP_{it} + \beta_{11} OPEN_{it} + \beta_{12} INF_{it} + \beta_{13} \ln LAB_{it} + \varepsilon_{it}$$

Therein, *i* represents the province/city *i*, *t* represents the year *t*, ε_{it} : random error, combined by province/city and time.

Table 1. Description of variables used in the model

Variable	Explain	Previous authors	Expectation sign
Dependent variable			
lnGRDP	Natural logarithm of the Gross Regional Domestic Product at constant 2010 prices	Hanif & Arshed (2016), Pham & Luong (2018), Huynh et al. (2021), Maneejuk & Yamaka (2021).	
Explanatory variables			
EDUCATION			
lnEDU	Natural logarithm of public expenditure for education, training, and vocational training in the province/city.	Dinh & Tu (2016), Bui & Phan (2016), Pham & Luong (2018), Liao et al (2019), Nguyen & Le (2020), Maneejuk & Yamaka (2021)	+
PRI	The primary school enrolment rate	Self & Grabowski (2003), Sala-i-Martin et al (2004), Burja & Burja (2013)	+
SEC	The secondary school enrolment rate	Self & Grabowski (2003), Sala-i-Martin et al (2004), Burja & Burja (2013)	+
HIG	The high school enrolment rate	Self & Grabowski (2003), Sala-i-Martin et al (2004), Burja & Burja (2013)	+
TER	University students to population rate	De Meulemeester & Rochat (1995), Griffith et al (2004), Pham & Luong (2018), Maneejuk & Yamaka (2021)	+
DIGITALIZATION			
TEL	Fixed telephone usage rate	Papaioannou & Dimelis (2007), Andrianaivo & Kpodar (2011), Lee et al (2012), Albiman & Sulong (2016).	-
MOB	Mobile phone usage rate	Andrianaivo & Kpodar (2011), Albiman & Sulong (2016), Myovella et al. (2020).	+
INT	Internet usage rate	Albiman & Sulong (2016), Bertschek & Niebel (2016), Pradhan et al. (2018), Godwin Myovella et al. (2020).	+
BBS	Broadband subscription rate	Kvochko (2013), Bertschek & Niebel (2016), Pradhan et al (2018), Ha (2021).	+
Control variable			
lnCAP	Natural logarithm of investment at constant 2010 prices	Hanif & Arshed (2016), Myovella et al. (2019)	+
OPEN	The foreign direct investment (FDI) in the total investment	Romer (1986), Lucas (1988), Sassi & Goaid (2013), Su & Doan (2015), Dinh &	+

	rate at current prices	Tu,(2016), Albiman & Sulong (2016), Ha (2021), Cheng et al (2021), Maneejuk & Yamaka (2021)	
INF	Inflation rate compared to the previous year	Andrianaivo & Kpodar (2011), Sassi & Goaid (2013), Su & Doan (2015), Hanif & Arshed (2016), Ha (2021), Cheng et al. (2021), Maneejuk & Yamaka (2021)	-
lnLAB	Natural logarithm of the local labor force (15 years and older)	Hanif & Arshed (2016), Phan et al. (2018), Aly (2020)	+

Source: Author's compilation

3.2. Research data

The research uses secondary data from 63 provinces and cities in Vietnam for the period 2010 to 2018. The data about GRDP, education, investment, trade openness, inflation rate, and labor force are extracted directly from the Statistical Yearbooks of 63 provinces/cities released annually. Data on indicators representing digitalization are collected through the Vietnam ICT Development Index Report issued by the Ministry of Information and Communications.

3.3. Estimation method

The research uses estimation methods: OLS (Ordinary Least Squares), FEM (Fixed Effects Model), and REM (Random Effects Model). OLS often ignores space and time factors, so it leads to unreliable results. Therefore, FEM and REM are the two more optimal models. The authors use the Hausman test to choose the most appropriate model between FEM and REM with the proposed hypothesis:

H₀: There is no difference in the regression coefficients of the two models.

H₁: There is a difference in the regression coefficients of the two models.

Table 2. Hausman test result

	---- Coefficients ----			
	(b) FEM	(B) REM	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lnEDU	0,237081	0,1734057	0,0636753	0,011586
PRI	0,0045558	0,0040497	0,0005061	0,0003206
SEC	0,00122	0,0014244	-0,0002043	0,0003114
HIG	-0,0003625	-0,0000436	-0,0003189	0,0001832
TER	-0,0335443	-0,007618	-0,0259263	0,0069586
TEL	-0,0056196	-0,0048032	-0,0008164	0,0002562
MOB	0,0004863	0,0007624	-0,0002761	0,0000455
INT	0,0001837	0,0003411	-0,0001574	0,0000611
BBS	0,0011629	0,0013182	-0,0001553	0,0000807
lnCAP	0,1522858	0,2101576	-0,0578718	0,0100302
OPEN	0,0005596	0,001491	-0,0009314	0,0002749
INF	0,0001917	-0,0002707	0,0004623	0,0001633
lnLAB	0,7266304	0,9191403	-0,1925099	0,1512543

b = consistent under H₀ and H_a; obtained from xtreg
 B = inconsistent under H_a, efficient under H₀; obtained from xtreg

Test: H₀: difference in coefficients not systematic
 $\chi^2(12) = (b-B)[(V_b-V_B)^{-1}](b-B)$
 = 99,48
 Prob>chi2 = 0,0000

Source: Author's compilation from Stata 15 software

The test result shows that Prob < 0.05, which means the FEM model is more appropriate than the REM model. The authors test the FEM model's defects such as multicollinearity, heteroskedasticity, and autocorrelation. The model does not suffer from multicollinearity but has violated the heteroskedasticity and autocorrelation phenomenon, so the authors use a Robust standard error estimate to solve the model's defects.

4. Results and discussion

4.1. Regression results

Table 3. FEM robust's estimate result

Biến	Mô hình FEM robust
lnEDU	0,237*** (4,19)
PRI	0,005*** (2,82)
SEC	0,001 (0,63)
HIG	-0,0004 (-0,30)
TER	-0,034 (-1,30)
TEL	-0,006** (-2,64)
MOB	0,0005* (1,89)
INT	0,0002 (0,22)
BBS	0,001* (1,91)
lnCAP	0,152*** (3,71)
OPEN	0,0006 (0,49)
INF	0,0002 (0,09)
lnLAB	0,727** (2,38)
Hệ số chặn	1,853 (0,93)
Prob > F	0,00

Source: Author's compilation from Stata 15 software

4.2. Discussion of the research result

Robust test results have the coefficient of determination R^2 equal to 0.7991, showing that the given independent variables explain 79.91% of the dependent variable's change and also show that the public expenditure on education and training, primary school enrollment rate, fixed telephone usage rate, and investment have correlated with economic growth at 1% significance level, the labor force has a statistical significance at 5% level while broadband subscription rate, mobile phone usage rate have an impact at 10% significance level. The variables of secondary school enrollment rate, high school enrollment rate, university student to population rate, Internet usage rate, trade openness, and inflation rate have no impact on economic growth.

In particular, considering the case of expenditure on education and training, when increasing 1% of expenditure on education and training, economic growth will increase by 0.237%. The finding of expenditure on education and training in this study is consistent with previous studies by Su & Doan (2015), and Maneejuk & Yamaka (2021). The increase in expenditures has created a better learning environment, step by step closer to the universalization of education at all levels, and contributed to creating positive externalities for economic growth. Besides, primary school enrollment has a positive impact on economic growth at a 1% significance level. Accordingly, a 1% increase in primary school enrollment will also lead to a 0.005% increase in GRDP. These results are consistent with the hypothesis set by the authors and previous studies.

Secondary school and high school enrolment rates have no impact on economic growth. The research results are also consistent with the conclusions of Benhabib et al (1994). His research shows that the high school enrollment rate has no impact on economic growth in the short term. Lawal (2011) explained that the enrollment rate at these levels is not high. Based on descriptive statistics, we find that the average rate of students going to secondary school is 89.83% and the average rate of students going to high school is only 67.797%. Thereby, we see that the percentage of students enrolling in these two levels is still low and the consequences have been reflected in the research results.

The university students to the population rate are not statistically significant, which is contrary to the research's expectations, but consistent with the research results of Pham & Luong (2018). Students are the potential labor force of the economy. However, it takes a long time for this high-quality human resource to replace the existing unskilled labor force. Given the 10 years, it is still not possible to assess the impact of the student force on economic growth. Moreover, research by Hanushek (2016) pointed out that for developing countries, increasing the number of school years after high school does not promote economic growth because of negligible increases in knowledge capital. The process and tools for assessing the quality of university students still have many shortcomings, so the contribution of university students to economic growth is insignificant in developing countries. For the above reasons, the university students to population rate have no impact on economic growth.

In the ICT variables group, the fixed telephone usage rate has a negative impact while the mobile phone usage rate has a positive impact on economic growth. This result completely meets the authors's expectations and is consistent with previous studies by Ha (2021), and Sassi & Goaid (2013). According to Ha (2021), technology is developing more and more, and fixed telephones are no longer able to meet the increasing needs of people, so this rate tends to decrease over the years and mobile phone usage rate increases gradually.

Contrary to the fixed telephone usage rate, a 1% increase in mobile phone usage rate makes economic growth increase by 0.0005%, with condition that other factors are unchanged. This result is also compatible with previous studies by Papaioannou et al (2007), Andrianaivo & Kpodar (2011). Lee et al. (2012). Lee et al. (2012) pointed out that the expansion of mobile phones is a determinant of economic growth in these countries. In Vietnam, mobile phones have become the driving force behind economic growth (Ha, 2021). With higher mobile penetration rates, commerce, services, and payments will be made easier and faster. Accessing financial transactions easily such as money transfers and bill payments through mobile applications brings users good experiences and contributes to economic growth.

Research results show that the Internet usage rate has not statistically significant and does not affect economic growth. Internet usage rates have a positive effect only on developed countries and not on developing countries (Papaioannou et al., 2007). According to the Labor and Employment Report in 2018, workers with professional and technical qualifications accounted for only 21.9% of the total number of employed workers in Vietnam. Besides, based on the Global Competitiveness Report 2018, the digital skills index of the workforce in Vietnam ranks 97 out of 141 countries. In general, highly qualified human resources with the ability to apply the development of the Internet to work are still not high, leading to the Internet usage rate has not contributed to economic growth.

The broadband subscription rate is statistically significant and has a positive impact on Vietnam's economic growth. When the broadband subscription rate increases by 1%, economic growth also increases by 0.0012%. Pradhan et al. (2018) have shown that the development of broadband systems helps to reduce unemployment and increase economic growth in developed countries. In Vietnam, broadband is one of the important factors contributing to Vietnam's economic growth (Ha, 2021).

For control variables, investment and labor force have a significant impact at a 1% level on economic growth. This is suitable for classical and modern theories, the two above factors are one of the important driving forces for economic development. Inflation is not statistically significant. This is similar to Vinayagathan's conclusion (2013) when studying 32 Asian countries in the period 1980 to 2009. Research results show that inflation only begins to have a negative effect on growth when it exceeds 5.43%. There is no relationship between inflation and economic growth below this level while in Vietnam, the inflation rate in recent years has fluctuated only below 4% per year.

Trade openness also has no impact on economic growth. Although this does not meet the author's expectations, the research results are similar to some empirical studies. Su (2014) also shows that there is different empirical evidence on the impact of FDI on economic growth. Karikari (1992) indicated that trade openness does not affect economic growth, but economic growth slightly reduces FDI inflows.

5. Conclusion

5.1. Conclusion

The paper has studied "Impact analysis of digitalization and education on Vietnam's economic growth" based on empirical data from 63 provinces/cities in Vietnam in the period 2010 to 2018. The results show that, in the education variables group, public expenditure on education and primary school enrollment rate has a positive impact on economic growth; the secondary school enrollment rate, the high school enrollment rate, and the university students to population rate are not statistically significant and have no impact on economic growth. Increasing public expenditure on education helps create a better learning environment, contributes to the universalization of education at all levels, and promotes economic development. Secondary school, high school, or university enrollment rates have no impact on economic growth because the main role of students is learning. Therefore, in the short term, these forces cannot create value for economic growth. Besides, in the ICT variables group, the mobile phone usage rate and the broadband subscriptions rate have a positive impact on growth, whereas, the fixed telephone usage rate has a negative impact on growth and the Internet usage rate has no impact on Vietnam's economic growth. Investment in fixed telephone infrastructure has resulted in poor economic performance in localities. The tendency to invest in mobile phone infrastructure is due to the use of mobile phones as well as its applications and utilities are becoming more popular. The lack of highly qualified human resources with the ability to apply the development of ICT in work has made the Internet usage rate not have much impact on economic growth. Meanwhile, broadband is one of the important factors promoting Vietnam's economic growth.

5.2. Policy implications

5.2.1. Digitalization policies

Firstly, the government should establish policies to upgrade ICT infrastructure in mountainous areas such as the Northern Midlands and Mountains and the Central Highlands. It is necessary to improve the

quality and speed of internet infrastructure and ensure that the entire population can access 4G networks, especially in remote areas. These are areas with difficult terrain, and people's living conditions are still difficult, causing many limitations in accessing ICT infrastructure. Therefore, the government should encourage these localities to develop and provide adequate telecommunications services to the people.

Secondly, the government needs to propagate, popularize and raise awareness of ICT applications for ethnic minorities in mountainous and highland areas. It is vital to develop mechanisms and policies to encourage and support people in these regions to use mobile phones because of their convenience in payment transactions, money transfers, administrative procedures, and commercial activities. Thereby, narrowing the gap in technology access and economic development among regions in the country.

Thirdly, businesses should invest in training programs to improve the skills of employees to apply the development of ICT at work. Workers need skills to take advantage of the digital age's strengths, such as the ability to communicate and collaborate, think critically, use information, solve problems, and make decisions. In terms of universities, it is necessary to design curricula to help students hone these necessary skills so that learners have enough knowledge and skills to meet the requirements of the job after graduation in the digital age.

Fourthly, it is necessary to have policies to manage and encourage telecommunications service providers to focus on improving broadband quality, modem device capacity, and expanding domestic and international bandwidth. For mobile broadband, telecommunications service providers need to add more bands to the 4G network. Telecommunications businesses need to apply new technologies, scale-up testing, and accelerate the commercialization of 5G. In addition, ensuring the safety of telecommunications networks and creating a healthy Internet space is also an issue that requires attention and development in parallel.

5.2.2. Education policies

Firstly, improve the efficiency of regular public expenditure for education and training. Public spending on education in Vietnam in the 2010-2018 period is not uniform, there are differences between regions, partly because localities have different ways of understanding and operating the state budget allocation for education and training. Therefore, it is necessary to develop guiding documents and budget management mechanisms in a specific, clear, public and transparent manner; strengthen supervision of public expenditure on education in localities to ensure that localities allocate enough funds, use them effectively, and follow the annual education development goals and plans.

Secondly, increase the level of access to higher education. The current rate of public expenditure on higher education is quite small - only 0.33% of GDP, making schools highly dependent on tuition fees. This results in the rate of access to higher education are not high, especially for people with poverty and disadvantaged socioeconomic backgrounds. Therefore, Vietnam needs to invest more and earlier in the higher education system. It is necessary to mobilize all resources to invest in education to improve the quality of education and raise opportunities to access higher education for all citizens.

Thirdly, solve the shortage of teachers in remote areas. The lack of teachers in both quality and quantity is also a serious problem affecting the quality of teaching and the number of classes opened for students. In addition, it is essential to develop the teachers and administrators force, attract good students to the pedagogy industry, abolish the lifelong labor regime of teachers, and implement a contract system to create competition to contribute to improving the quality of teaching.

Fourthly, increase enrollment rates at all levels, especially in the Central Highlands. The research data has proved that the enrollment rate in this region is still low compared to the general average. Therefore, it is necessary to have a policy to invest in building facilities at all levels to ensure the quality of teaching and learning, and at the same time, the locality needs to support tuition fees and learning costs for children in difficult terrain regions to increase enrollment rates at all levels.

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RESEARCH OF FACTORS AFFECTING THE ACCEPTANCE OF USING MOBILE HEALTH SERVICES (MHEALTH) OF USERS IN HANOI CITY

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ABSTRACT

The development of information technology applications has brought great benefits in many fields, from production, business to education. In the time of COVID-19, it has been applied to healthcare and public health. Not only in the world has the strong development of remote health care applications, but in Vietnam, in the 2 years since the spread of the COVID-19 pandemic, there has also been a rapid development of medical and monitoring services for remote healthcare. Connecting with doctors and medical staff remotely is also considered a solution to limit the spread of the COVID-19 pandemic and make users more secure. The combination of medical knowledge with technology applications has brought a lot of benefits to people as well as reduced the load on medical and healthcare centers. Mobile medical services are a necessary and convenient solution in remote healthcare applications. It will be a growing trend in the near future. The research is divided into 3 main parts, including a theoretical basis, research results, and suggested implications.

Keywords: mobile devices, mobile health care, telehealth, mHealth.

1. Introduction

The development of information technology applications has brought great benefits in many fields, from production, business to education. During the COVID-19 pandemic, it has been applied to the healthcare public. Not only in the world has the strong development of remote health care applications, but in Vietnam in the 2 years of the COVID-19 pandemic, there has also been a rapid development of medical and remote monitoring services and healthcare. Connecting with doctors and medical staff remotely is also considered a solution to limit the spread of the COVID-19 pandemic and make the community more secure. The combination of medical knowledge with technology applications has brought a lot of benefits to people as well as reduced the load on medical and healthcare centers. In remote healthcare applications, mobile medical services are considered a necessary and convenient solution and a growing trend in the near future.

The global mHealth app market size was valued at \$38.2 billion in 2021 and is expected to expand at a compound annual growth rate (CAGR) of 11.8% from 2022 to 2030. North America dominates the mHealth market and accounts for the largest revenue share of 38.2% in 2021 based on a number of factors, including growing healthcare spending, the rising prevalence of chronic diseases, the increasing geriatric population, and the highly developing network infrastructure. Additionally, favorable government initiatives and increasing adoption of mobile healthcare apps are driving demand for mHealth services in the region.

The Asia Pacific region has been expected to enjoy lucrative growth during the forecast period due to increasing smartphone penetration in the region's consumer market. In addition, increasing government programs to digitize the healthcare system in various emerging economies such as India and China are expected to drive the market growth in the projected year forecast.

In January 2021, Vietnam had a population of 97.8 million, of which there were 154.4 million mobile connections and 68.72 million Internet users through different platforms, with an average length of time (6 hours 47 minutes). Our country's internet technical infrastructure is developing strongly, which is the premise for the application and promotion of mobile healthcare in the coming years, in line with the general

trend in the world. On February 5, 2016, the Ministry of Health issued Decision No. 445/QĐ-BYT approving the "Plan for information technology application and development for the period 2016-2020." In Decision No.445/QĐ-BYT, goals and action plans on electronic health (eHealth) have been quite specific. However, it can be seen that the goals of mobile health (mHealth) are not very clear. Certainly, in the plan of application and development of information technology in the health sector in the coming years, especially in the decade 2021–2030, attention should be paid not only to the development of eHealth but also to the development of mobile health (mHealth) to effectively exploit the potential of the existing internet infrastructure and match the trend of mobile health development in the world.

Therefore, the research team conducted a study on factors affecting the acceptance of using mobile health services (mHealth) of Hanoi users in order to determine the factors affecting the acceptance of using mobile health services (mHealth) of people in Hanoi city and provide some implications for people as well as medical and healthcare units in the process of applying this service. The article is divided into 3 main parts, including: notations and definitions, research results and suggested implications.

2. Notations and Definitions

2.1. Mobile devices

According to Ph.D. Nguyen Van Minh and Dr. Nguyen Tran Hung (2015), mobile devices have five basic characteristics: simultaneousness, convenience, accessibility, personalization, and localization. Firstly, it is simultaneousness. At any place and at any time, a device such as a mobile phone can easily access information in real time and allow the connection, communication, and performance of transactions regardless of the location or distance of the user. Secondly, it is convenience. It is easy to carry on the move, easy to make connections immediately, and is always in an active state so that you can communicate or conduct transactions while moving. Thirdly, it is accessibility. It enables users to connect to the Internet, intranet, other mobile devices, and online databases quickly and easily. Fourthly, it is personalization. It is always owned and controlled by an individual. Finally, it is localization. Knowing the location of the mobile phone user at any given time is always the key to providing the right services.

2.2. Digital transformation and digital transformation in healthcare

According to the Information Technology Department EHA - NEWS, digital transformation in healthcare is the application of information technology in a comprehensive way, with special attention to modern digital technologies, creating positive changes to all medical activities, from administration, medical examination, and treatment, and people's health care. According to IDC's 2018 survey, digital transformation is becoming a strategy in businesses and organizations in the fourth industrial revolution. Digital transformation not only helps work to be operated smoothly and accurately but also brings many conveniences to businesses and consumers. In the COVID-19 pandemic, along with the support of technology developments in the fourth industrial revolution, digital transformation in healthcare is also a necessity, promising to be a big step forward in the diagnosis, examination, and treatment of diseases in the future.

Another trend of digital transformation in healthcare is that we can proactively monitor and collect our own health data from mobile medical devices, including wearable technology or devices. Therefore, healthcare companies are actively investing in wearable technology devices that users can conveniently carry around. Hence, it helps patients update information about their health or potential risks that affect their health. According to a recent report, the wearable (mobile) medical device market is expected to reach over \$27 million by 2023, a spectacular jump from nearly \$8 million in 2017.

2.3. Mobile Health (mHealth)

The World Health Organization (WHO) has stated that "there is no standard definition of mHealth". However, according to the survey conducted in 2009 by the global observation group on electronic health, mHealth is defined as "medical and public health operations supported by mobile devices, such as telephones, patient monitors, personal digital assistants (PDAs), and other wireless devices." Examples of

mobile medical services include Access or provide health services such as free emergency calls, appointment reminders, and doctor's consultations via mobile devices; Access or provide health information: community advocacy, access to information, databases and tools, patient records, knowledge provision, and so on; health information collection: patient management, health surveys, patient supervision, and so on. EHR/MHR integration in health records costs the most. A medical mobile app must include the following features: Login and Security, Users and Accounts, Special Healthcare Functions, Device Hardware Usage, Location and Dates (calendar integration, maps), User Engagement (email, SMS, forums), Billing and Invoicing, APIs and Integration, Interface and Feel, Administration and other features.

2.4. eHealth and Telehealth

eHealth: According to the World Health Organization, eHealth is the application of information and communication technology in health care in five strategic areas, including treatment, research, training, disease monitoring, and public health surveillance. In other words, eHealth is the application of information technology (IT) in the planning, management, and implementation of health services. According to Statista 2021, more than 21 billion USD has been invested in the development of digital tools for the healthcare sector in 2020, more than 20 times higher than in 2010. However, COVID-19 was like a push to make this market explode. The global eHealth market was worth approximately \$175 billion in 2019 and according to the compound annual growth rate (CAGR) calculation, it is expected that by 2025, this market price will reach nearly \$660 billion Statista's forecast.

In the past, in Vietnam, the Ministry of Health has developed a platform to help deploy the remote medical examination and treatment system, including remote medical consultation; remote consultation; remote imaging consultation; remote pathology consultation; remote surgical consultation; remote medical technology transfer training. Telehealth services have become especially important in countries since the outbreak of the pandemic. It allows people to consult a doctor without leaving the house during the lockdown, avoiding the risk of virus infection, etc.

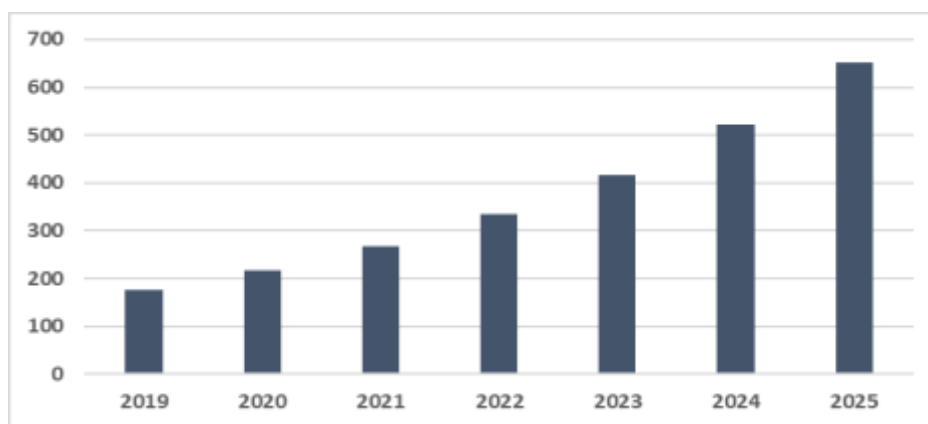


Figure 1. Global eHealth industry market forecast 2019 - 2025 (Unit: USD)

Source: Statista.com

Telehealth

According to NYC Health, Telehealth is when you get healthcare services by phone or video instead of in person. Many health care services can be provided using Telehealth. You can use Telehealth services such as assessment of your health and needs, screening, and therapy.

2.5. Benefits of mHealth

The benefits of mHealth are most evident in three areas: treatment adherence, improved monitoring, and paperless information. Firstly, it is adherence. One of the major challenges facing physicians today is ensuring that their patients take the correct medications as prescribed. Secondly, it is improved monitoring. Many mHealth apps can connect patients with their healthcare providers for faster and easier communication. Thirdly, it is paperless information. The growing popularity of electronic communication

devices, such as laptops, mobile phones, tablets, and PDAs, is also beneficial for the environment. It reduces filing and paper documents.

The development of eHealth brings benefits to the health system, to users, and to the whole society, especially in the COVID-19 pandemic, such as increasing efficiency in health care and reducing costs; improving the quality of healthcare; empowering consumers or patients (by providing a medical knowledge base and encouraging the use of personal electronic records); and encouraging new relationships between patients and health professionals, towards a true partnership where decisions are made in a shared manner. Through regular online methods, eHealth contributes to training and improving the professional qualifications of doctors and nurses, as well as educating consumers about health and appropriate prevention information; eHealth facilitates and standardizes the exchange of information between medical examination and treatment facilities; and eHealth contributes to expanding the scope of healthcare beyond the conventional boundaries of the industry of traditional medicine, both in terms of geographical scope as well as an area of expertise.

2.6. Proposed research model

On the basis of The Hedonic Motivation model (HM), Innovation Diffusion Theory (IDT), the Social Cognitive Theory (SCT), Technology Acceptance Model (TAM), the theory of intended behavior (TPB), Theory of Reasonable Action (TRA), Unified Theory of Acceptance and Use of Technology (UTAUT, UTAUT2) and some of the studies presented in section 2.2, the research proposes the factors affecting the acceptance of Hanoi users to the mHealth mobile medical service as follows:

Table 1: Proposed table of influencing factors

	Sign	Element name	References	Model author
H1	PU	Perceived Usefulness	Technology Acceptance Model (TAM)	Davis (1989)
H2	PEU	Perceived Easy to use	Technology Acceptance Model (TAM) Combined model C - TAM – TPB	Davis (1989) Taylor, Todd (1995)
H3	HM	Hedonic Motivation	The motivation hedonic model (HM)	Brown & Venkatesh, 2005
H4	PP	Perceived Price	Unified theory of acceptance and use of technology (UTAUT2)	Venkatesh et al., 2012
H5	FC	Facilitating condition	Unified theory of acceptance and use of technology (UTAUT2)	Venkatesh et al., 2003
H6	SI	Social impact	Unified theory of acceptance and use of technology (UTAUT2)	Venkatesh et al., 2003
H7	PR	Perceived Reliability	Theory of Reasonable Action (TRA)	Ajzen và Fishbein (1975)

Research questions according to the recommendation model include: Does perceived usefulness (PU) have a positive impact with the use of mHealth services of Hanoi users? Does perceived ease of use (PEU) have a positive effect on Hanoi users' use of mHealth services? Does the Hedonic Motivation (HM) have a positive impact with the use of mHealth services of Hanoi users? Does Perceived Price (PP) affect Hanoi users' use of mHealth services? Does the Facilitating condition (FC) have a positive impact on the use of mHealth services of Hanoi users? Does social impact (SI) have a positive impact on the acceptance of using mHealth services of Hanoi users? Does perceived Reliability (PR) have a positive effect on the use of mHealth services by Hanoi users?

Therefore, our team proposes the following research model hypotheses:

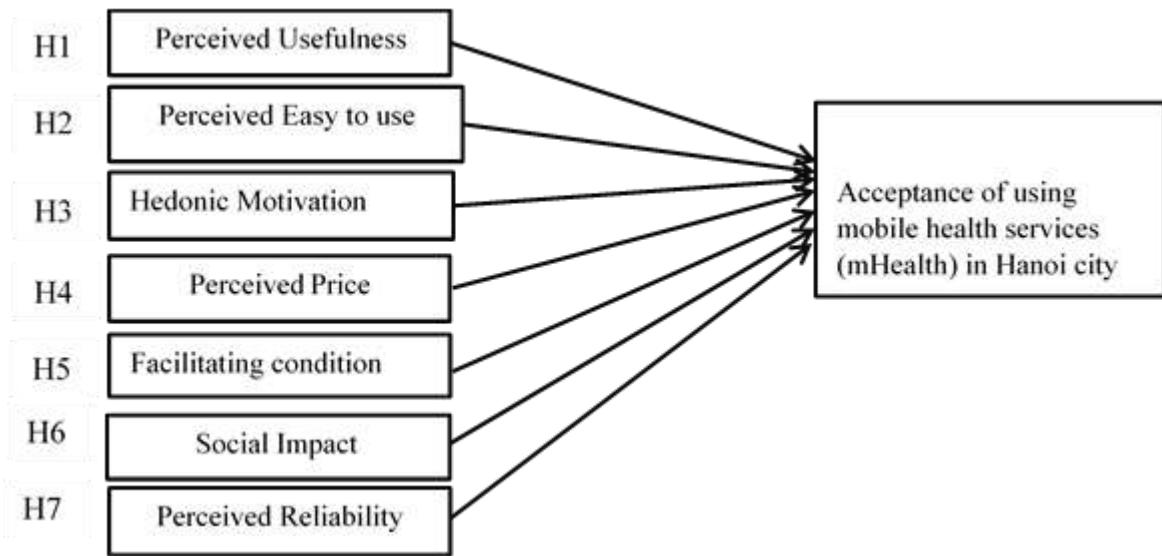


Figure 2: Proposed research model

3. Research method

Methods of data collection: The study was carried out through data collection of live survey questionnaires and online questionnaires with questions on a Likert scale (with 05 points and the agreeing level increases from 1 to 5). We used the conditional sampling method to survey the subjects, who are citizens of Hanoi. The main research method was the quantitative research method. We carried out quantitative research by collecting data from survey questionnaires and processing it by SPSS software to analyze the data by the following techniques: descriptive analysis, Cronbach's Alpha test, EFA exploratory analysis, and multiple regression analysis.

4. Research and Discussion

4.1. Descriptive statistics

The study conducted data statistics based on the online questionnaire in the form of a Google form to the survey audiences and asked directly and then filled in the survey form. The results obtained include 1169 survey forms, of which 840 are valid. Classification of survey forms through distinguishing signs shows:

Table 2: Description of the study sample

Classification criteria		Frequency	Percentage (%)
Are you familiar with mobile medical services?	Unknown and have no need to use	70	5,99%
	Unknown and have a need to use	259	22,16%
	Already know and have no need to use	32	2,74%
	Already know and intend to use	343	29,34%
	Using	367	31,39%
	Have used	98	8,38%
What is your current residence?	Ha Noi	840	83,35%
	Others	166	16,65%

What is your age?	Under 18	0	0%
	From 18 to 25	773	92,02%
	From 25 to 45	67	7,78%
	From 45 to 60	0	0%
What is your gender?	Male	381	45,35%
	Female	459	54,64%
What is your personal average monthly income? (including all income for the month)	Under 3 million	584	69,52%
	From 3 to 10 million	179	21,31%
	From 10 to 25 million	57	6,79%
	From 25 to 50 million	14	1,67%
	Over 50 million	6	0,71%
Who pays for the costs of mobile health services?	Myself	350	41,67%
	Relatives (Parents, children, guardians)	451	53,69%
	Insurance company	39	4,64%

4.2. Test execution results

4.2.1. Cronbach's alpha reliability test

Before factor analysis, we tested the scale using Cronbach's Alpha tool of SPSS software program version 20.0 to check the reliability of the scale of service quality components and the correlation between the observed variables. After testing Cronbach's Alpha using SPSS, the results were summarized in the statistical table of the final test results of each group of variables as follows:

Table 3: Statistical results of Cronbach's Alpha test

No.	Factors	Sign	The first observation variable	The remaining observed variable	Cronbach's Alpha	Discarded variable
1	Perceived Usefulness	PU	4	4	0,857	0
2	Perceived Easy to use	PEU	3	3	0,884	0
3	Hedonic Motivation	HM	4	4	0,846	0
4	Perceived Price	PP	3	3	0,805	0
5	Facilitating condition	FC	4	4	0,831	0
6	Social impact	SI	5	5	0,827	0
7	Perceived Reliability	PR	5	5	0,918	0
8	User Acceptance	UA	4	4	0,905	0

All variables had a Cronbach's Alpha coefficient higher than 0.800, so they were put in the EFA Factor Analysis.

4.2.2. Exploratory Factor Analysis (EFA)

Table 4: Rotated Component Matrix results

	Component					
	1	2	3	4	5	6
PR3	,791					
PR2	,774					
PR5	,732					
PR1	,731					
PR4	,708					
SI2		,811				
SI1		,732				
SI4		,688				
SI3		,579				
SI5		,524				
PU1			,782			
PU2			,767			
PU3			,735			
PU4			,639			
HM3				,789		
HM1				,721		
HM2				,721		
HM4				,668		
PEU3					,805	
PEU1					,761	
PEU2					,735	
FC1						,795
FC4						,603
FC3						,515
FC2						,504

Source: Analysis results of questionnaires using SPSS

Above is the rotation matrix table of the observed variables. The results showed that all variables ensured the standard load factor, so they were accepted. No variable was loaded onto two different factors at the same time, and no observable variable was on a single factor. In order to measure the variables with statistical value, the groups were classified as follows:

Group 1 included variables: PR1, PR2, PR3, PR4, PR5

Group 2 included variables: SI1, SI2, SI3, SI4, SI5

Group 3 included variables: PU1, PU2, PU3, PU4

Group 4 included variables: HM1, HM2, HM3, HM4

Group 5 included variables: PEU1, PEU2, PEU3

Group 6 included variables: FC1, FC2, FC3, FC4

EFA analysis for the independent variable

Table 5: EFA analysis results for independent variable

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	,847
Bartlett's Test of Sphericity	2145,294
df	6
Sig.	,000

Source: Analysis results of questionnaires using SPSS

KMO index=0.847>0.5 and Sig. = 0.000 should be accepted. The indexes in the Communalities table are all greater than 0.4, so they are satisfactory.

4.3. Correlation analysis

After completing the exploratory factor analysis, we moved on to the next step. In this step, it is necessary to create representative variables from the final factor rotation results. Its aim is to conduct Pearson correlation analysis and then regression. The Pearson correlation test is a prerequisite for multivariable regression analysis. It tests the close linear correlation between the dependent variable and the independent variables, as the condition for regression is the first to be correlated. In addition, there is also multicollinearity, which occurs when the independent variables are strongly correlated. The suspicious sign is based on the Sig value; the correlation between the independent variables is less than 0.05 and the Pearson correlation value is greater than 0.3.

Table 6. Correlations

Correlations

	UA	PR	SI	FC	PU	HM	PEU
UA Pearson Correlation	1	,707**	,626**	,648**	,655**	,587**	,537**
Sig.(2-tailed)		,000	,000	,000	,000	,000	,000
N	840	840	840	840	840	840	840
PR Pearson Correlation	,707**	1	,650**	,631**	,556	,549**	,558**
Sig.(2-tailed)	,000		,000	,000	,000	,000	,000
N	840	840	840	840	840	840	840
SI Pearson Correlation	,626**	,650**	1	,591**	,436**	,447**	,498**
Sig.(2-tailed)	,000	,000		,000	,000	,000	,000
N	840	840	840	840	840	840	840
FC Pearson Correlation	,648**	,631**	,591**	1	,581**	,525**	,627**
Sig.(2-tailed)	,000	,000	,000		,000	,000	,000
N	840	840	840	840	840	840	840
PU Pearson Correlation	,655**	,556**	,436**	,581**	1	,610	,565**
Sig.(2-tailed)	,000	,000	,000	,000		,000	,000
N	840	840	840	840	840	840	840

HM Pearson Correlation	,587**	,549**	,447**	,525**	,610**	1	,544**
Sig.(2-tailed)	,000	,000	,000	,000	,000		,000
N	840	840	840	840	840	840	840
PEU Pearson Correlation	,537**	,558**	,498**	,627**	,565**	,544**	1
Sig.(2-tailed)	,000	,000	,000	,000	,000	,000	
N	840	840	840	840	840	840	840

Source: Analysis results of questionnaires using SPSS

The values of the observed variables PR, SI, FC, PE, HM, and PEU all had a Sig. <0.05 (=0.000), which meant that all the independent variables were correlated with the dependent variable.

4.4. Regression analysis

Table 7: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std.Error	Beta			Tolerance	VIF
(contant)	-,035	,109		-320	,749		
SI	,311	,028	,297	10,936	,000	,623	1,606
FC	,227	,032	,213	7,062	,000	,506	1,975
PU	,308	,029	,307	10,450	,000	,532	1,880
HM	,162	,029	,155	5,455	,000	,570	1,754

Dependent Variable: UA

Predictors: (Contant), HM, SI, PU, FC

Source: Analysis results of questionnaires using SPSS

In this table we pay attention to the following 3 columns:

The first is the Sig column, which tests each independent variable. All Sig values are less than 0.05, which means that these variables are significant in the model and all are maintained. The second is the VIF column, which checks for multicollinearity. Theoretically, VIF < 10 does not occur in multicollinearity. However, in fact, VIF < 2 does not occur in multicollinearity between the independent variables, according to study models utilizing the Likert scale. There is no multicollinearity because there are no variables with VIF >= 2; the third is Beta, which is the normalized regression coefficient. The variable with the largest Beta coefficient has the most influence on the change of the dependent variable out of all the acceptance variables. PU and SI are the most important factors in this case.

In Table 7 as follows: $UA = 0.307*PU + 0.297*SI + 0.213*FC + 0.155*HM$

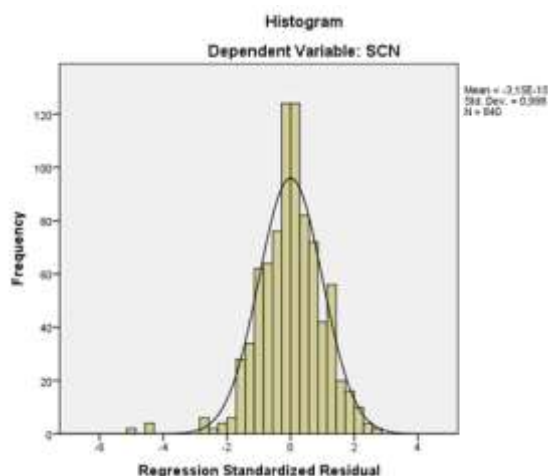
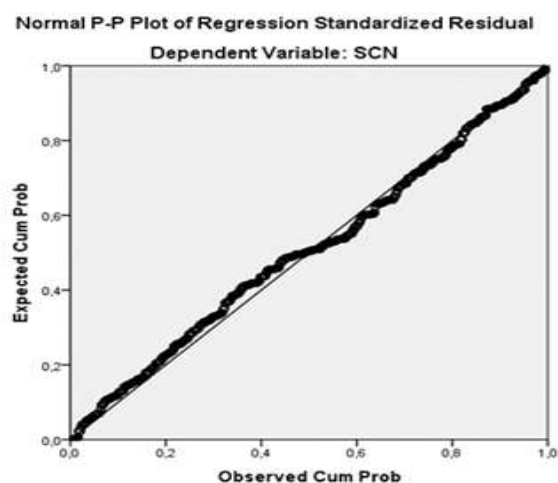


Chart 3: Histogram

Source: Analysis results of questionnaires using SPSS



Scatterplot
Dependent Variable: SCN

Chart 2: Normal P-P Plot of Regression Standardized Residual

Source: Analysis results of questionnaires using SPSS

We obtain the normalized residual frequency histogram and the Normal P-P Plot:

In the graph above, a normal distribution curve is superimposed on the bars. This curve is bell-shaped, corresponding to the normal distribution graph. The mean is close to 0, and the standard deviation is 0.998, which is close to 1. Thus, the distribution is almost normal. As a result, the residual distribution assumption does not appear to be violated.

The percentiles in the distribution of the residuals will cluster into a diagonal using the P-P Plot. As a result, the regression assumption regarding the residual normal distribution is not violated. The scatter plot chart tests the linear connection assumption.

5. Conclusions and Policy implications

5.1. Conclusion of the experiment

Through the results obtained from the SPSS, the study has shown that:

Firstly, Perceived Usefulness (PU), Social Impact (SI), Facilitating Condition (FC), Hedonic Motivation (HM), and User Acceptance (UA) positively affected the acceptance of using mobile health services (mHealth) by Hanoi users. According to the preliminary assessment of the scale of the variables in the proposed research model, the variables PU, SI, FC, HM, PR, PEU, and UA all have a Cronbach's Alpha coefficient greater than 0.7, indicating that they all meet the reliability requirements; The findings of EFA factor analysis demonstrate that with 5 groups of factors, the basis of this division or reduction is based on the linear relationship of the factors with the original variables (observed variables). The total value of variance extracted is 72.003%. After identifying five representative factors, we conduct a Pearson correlation test to see whether the dependent variable UA and the independent variables have a linear connection. The independent variables SN, PP, PR, PU, and PEU have Sig values less than 0.05 and are correlated with the dependent variable. The final phase of the data analysis process is the construction of a simple linear regression model. After completing the sig test of each independent variable, we keep the variables SI, FC, PU, and HM. PU's normalized regression coefficient Beta is 0.307, the highest of all four variables, implying that PU has the greatest effect on UA. Thus, the results of data analysis have shown that: usefulness, social influence, facilitating conditions, and hedonic motivation have a direct influence on Hanoi users' acceptance of mobile health services (mHealth), but to various levels. The Perceived Usefulness factor has the most

influence, while the Hedonic motivation factor has the least influence on Hanoi users' acceptance decisions for mobile health services (mHealth).

Secondly, in terms of the mHealth's benefit. Through the process of research and data analysis, it has shown that mHealth brings many benefits to users. It helps users save time compared to using routine medical services in hospitals and clinics; makes it easy for users to keep track of some of their health problems; keeps the user's health records; helps users update medical and health information more quickly. However, this is only the benefit drawn based on the size of the study. There is no solid evidence that these benefits will hold true on a large scale. As a result, it is critical to conduct larger-scale studies in order to make more precise claims.

Thirdly, in terms of the ongoing practical issues: Apart from the benefits of mHealth, there are certain drawbacks, such as no application or website providing the full mobile medical services function; many complicated tasks for users in mHealth; and, ultimately, price problems. There is still a large disparity between different mobile health services.

5.2. Policy implications

During a prolonged pandemic, mHealth is an effective solution for reducing the burden of health checkups and monitoring at hospitals and medical units as well as reducing the spread of the COVID-19 disease. Thanks to the rapid development of the Internet and mobile devices, mHealth is being considered a trend in mobile services. Based on the research findings, the team proposes a number of implications for mHealth users, hospitals, and medical units in the mHealth application as a community service support channel.

In terms of the implications for individual users: Firstly, users need to learn how to use mobile health services proficiently. According to the research, most of the survey participants are easy to learn to use. However, there are still users who do not know how to use this service; second, users need to update information more quickly. According to research, there is a group of users who do not know about mobile health services; third, users need to pay more attention to their own health. The study has discovered that there is a group of users who do not have a need to use mobile medical services. This may be because they are unconcerned about their health issues; fourth, users need to mobilize relatives and friends to register to use mobile health services. The study also offers a number of benefits that users can consider, use, and recommend to friends and relatives; fifth, users should comply with the Ministry of Health's instructions. The 5K regulations amid the latest COVID outbreak have proved to be effective. Mobile health services will also help people avoid crowds and keep their distance from others.

In terms of hospitals, medical organizations, and community health care: Firstly, businesses need to promote the promotion of mobile health services on a large scale as there is still a group of people who do not know about mobile health services; Secondly, businesses should invest more in mobile health services activities. The current mobile health services are still incomplete, so businesses should invest more to provide a better user experience; Thirdly, businesses need to simplify their services to make them easier for users to use; Fourthly, businesses should participate actively in support programs of the state and other relevant associations. These sources of funding can contribute to the capital of the business.

Contribution and Applicability

For the socio-economic aspects: The study's findings are applicable in learning, as a reference for studying the user acceptability of mobile health services (mHealth) in Hanoi, thereby helping individuals, business organizations, and medical organizations have an overview.

For the related fields of science and technology aspects: The report is a reference not only for students majoring in economic information system administration and e-commerce management but also a reference for medical professionals who want to apply information technology to collect and analyze economic data, such as applied problems in eHealth business and business planning in the mHealth field.

For socio-economic development: The research plays a significant role in the Fourth Industrial Revolution and the development of the Internet today. Digital transformation is increasingly becoming the trend and the future of society. The health sector is also on the way to adapting to changes in the world.

The mHealth mobile health services are gradually becoming popular and meeting many special needs during the COVID-19 pandemic. The research has high practical application when it comes to identifying factors that directly affect users' decisions to use mobile health services. As a result, the research report is a useful resource for organizations and businesses when conducting business and investing in this field.

For the lead organization and the institutions applying the research results: The report is a good reference for lecturers and students majoring in information systems administration, e-commerce administration, and online marketing; useful documents for medical organizations, lecturers, and students majoring in medicine, and pharmacy.

6. Suggested solutions

Based on experiments, the research team would like to propose some solutions as follows:

A, Suggested solutions for mHealth users in Hanoi

Firstly, users need to learn how to use mHealth proficiently as there are still users who do not know how to use it.

Secondly, users need to update information faster. Through research, there is also a group of users who do not know about mHealth.

Thirdly, users need to pay more attention to their health.

Fourthly, users need to mobilize relatives and friends to register to use mHealth.

Fifth, users should comply with the regulations of the Ministry of Health. The 5K rules launched in the Covid-19 pandemic have been quite effective. mHealth will also assist in reducing mass gatherings and keeping distance from others.

B, Suggested solutions for mHealth businesses

Firstly, businesses need to promote mHealth on a large scale to cover all users in the area.

Secondly, businesses need to update the functions of mHealth. Currently, mobile health services are still incomplete so businesses should invest in improving to supply a better experience for users.

Thirdly, businesses need to simplify their services. They should simplify operations and have specific instructions for users.

Fourthly, businesses should participate in the support programs of the officials and other relevant associations. These sources of funding are also part of the enterprise's capital contribution.

C, Solutions in Government and Relevant Associations

Firstly, officials need more investment and support for mHealth businesses. In addition to enterprises, they can also contribute to dissemination through investment activities and support for enterprises. This also helps businesses have more funds to improve their systems.

Secondly, the officials need to create a legal environment for investors, which must be clear for businesses with the right orientation to contribute to the development of the economy.

D, Proposed solutions on experimental observation

Based on experiments, the research team proposes some of the following solutions:

Firstly, perceived usefulness has a positive effect on the adoption of mHealth in Hanoi. The reasons why people use mHealth are COVID-19 and the benefits of mHealth. Therefore, companies need to invest in research and update systems to meet the needs of users.

Secondly, Social Impact (SI) has an effect on the adoption of mHealth in Hanoi. According to this study, social influence makes up 29.7% of users' decisions. Businesses should create a facilitated

environment and use promotion strategies to promote the user experience as well as raise awareness about mHealth.

Thirdly, Facilitating Condition (FC) has an effect on the adoption of mHealth in Hanoi, accounting for 21,3%. It is a fundamental factor in the decision to use mHealth. Without knowledge and a PDA, users cannot access mHealth. Therefore, officials and businesses need to pay more attention to raising awareness, creating more job opportunities, and improving living standards. When raising the standard of life, the need to use mHealth is increasing.

Fourthly, Hedonic Motivation (HM) has an effect on the adoption of mHealth in Hanoi. Users' experiences determine the decision to use mHealth. Therefore, companies should improve service quality, simplify steps, improve the user interface, and add more functions for users to gain the best experience.

In addition, price value, and perceived reliability affect the adoption of mHealth in Hanoi. According to the experimental results, these factors can have a partial impact, and businesses should also improve these issues to make it easier for users to make decisions.

As a result, mHealth is beneficial; however, companies must provide comprehensive services to ensure that users are confident in using it.

Directions for Further Research

Due to the limited scope of the surveyed subjects in Hanoi, the authors propose further research to more comprehensively evaluate the aspects of mHealth acceptance in Vietnam.

Due to the limitation of factors in the proposed model, further studies should be conducted with a large sample size to establish a rating system for mHealth acceptance factors in Vietnam.

Directions for further research can be seen in giving multi-component scales affecting more objects to examine the adoption of mHealth in Vietnam.

7. Appendix

Appendix A. Survey sheet

(V/V Research Of Factors Affecting The Acceptance Of Using Mobile Health Services (Mhealth) Of Users In Hanoi City)

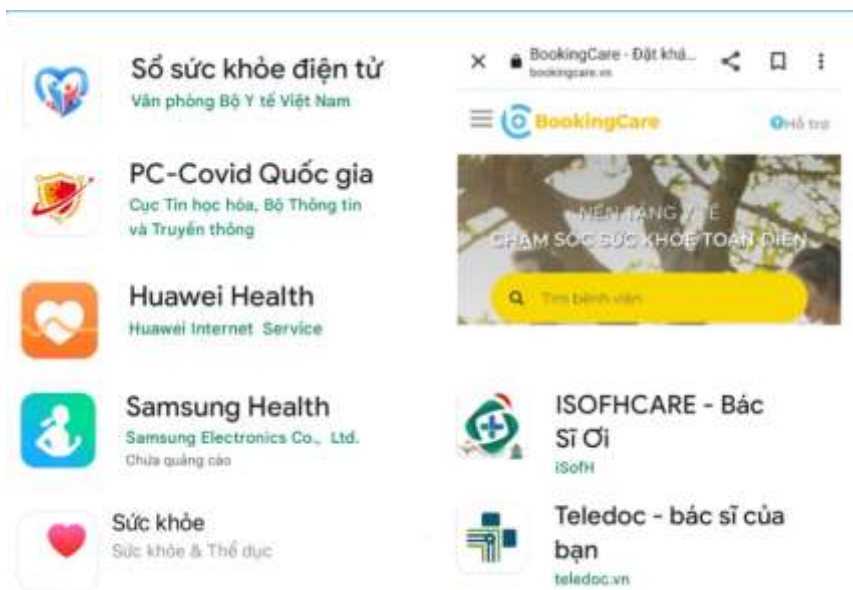
Our research team is researching of factors affecting the acceptance of using mobile health service (mHealth). We look forward to receiving everyone's support to complete this study.

We commit that the information collected is used only for the research. We are responsible for this information.

The team would like to thank you for your cooperation!

The definition of mHealth

The Global Observatory for eHealth of the World Health Organization defines mHealth as “medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices”



Part I: Basic information

1. Are you familiar with mobile medical services?

- Unknown and have no need to use
- Unknown and have a need to use
- Already know and have no need to use
- Already know and intend to use
- Using
- Have used

2. What is your current residence?

Part II: Opinions about Factors Affecting The Acceptance Of Using Mobile Health Services (mHealth) Of Users In Hanoi City

The level of the acceptance of using mobile health services (mHealth) of users in Hanoi city

1. Completely disagree 2. Disagree 3. Neutral 4. Agree 5. Completely agree

Factors	Parameter	QUESTIONS	Levels of agreement				
<i>I</i>		<i>PERCEIVED USEFULNESS</i>	1	2	3	4	5
1	PU1	I find mobile health service useful in my daily life					
2	PU2	Using mobile health service helps me accomplish things more quickly					
3	PU3	Using mobile health service helps me track my health					
4	PU4	Using mobile health service helps me update information quickly					
<i>II</i>		<i>PERCEIVED EASY TO USE</i>					
1	PEU1	Learning how to use mobile health service is easy for me					
2	PEU2	I find the display easy to use					
3	PEU3	It is easy for me to become skillful at using mobile health service					
<i>III</i>		<i>HEDONIC MOTIVATION</i>					
1	HM1	Using mobile health service is exciting					
2	HM2	Using mobile health service brings fun					
3	HM3	Using health service brings new experience					
4	HM4	Using mobile health service helps me access to new technology					
<i>IV</i>		<i>PERCIVED PRICE</i>					
1	PP1	Mobile health service is reasonably priced					
2	PP2	Mobile health service is a good value for money					
3	PP3	Mobile health service price is lower than in hospital					
<i>V</i>		<i>FACILITATING CONDITION</i>					

1	FC1	I have mobile phone to use mobile health service					
2	FC2	I have knowledge necessary to use mobile health service					
3	FC3	I can get help from others when I have difficulties using mobile health					
	FC4	Mobile health is compatible with other technologies I use					
VI		<i>SOCIAL IMPACT</i>					
1	SI1	I find many people use mobile health service					
2	SI2	My friends, my relatives use mobile health service					
3	SI3	Specialists suggest using mobile health service					
4	SI4	I must use mobile health service					
5	SI5	Community encourage me to use mobile health service					
VII		<i>PERCEIVED RELIABILITY</i>					
1	PR1	My personal information is safely secured					
2	PR2	My payment information is safely secured					
3	PR3	My health information is safely secured					
4	PR4	Technology of mobile health service helps me get appropriate result.					
5	PR5	I believe that Doctors have specific qualifications					
VIII		<i>USER ACCEPTANCE</i>					
1	UA1	I will use mobile health service in the future					
2	UA2	Mobile health service is a pleasant experience					
3	UA3	I use mobile health service more frequently					

4	UA4	I will recommend mobile health service for people					
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Part III: Personal information

1. Name:.....
2. What is your age?
 - Under 18
 - From 18 to 25
 - From 25 to 45
 - From 45 to 60
3. What is your gender?
 - Male
 - Female
4. What is your personal average monthly income?
 - Under 3 million
 - From 3 to 10 million
 - From 10 to 25 million
 - From 25 to 50 million
 - Over 50 million
5. Who pays for the costs of mobile health service?
 - Myself
 - Relatives (Parents, children, etc.)
 - Insurance company

Appendix B. Cronbach’s Alpha

1. Perceived usefulness

Case Processing Summary

	N	%
Cases Valid	840	100,0
Excluded ^a	0	,0
Total	840	100,0

Listwise deletion based on all variables in the procedure

Reliability Statistics

Cronbach’s Alpha	N of items
,857	4

Item – Total Statistics

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach’s Alpha if item deleted
PU1	12,2071	5,094	,736	,803
PU2	12,2190	5,249	,698	,819
PU3	12,0857	5,313	,728	,807
PU4	12,1452	5,292	,644	,842

2. Perceived easy to use

Case Processing Summary

	N	%
Cases Valid	840	100,0
Excluded ^a	0	,0
Total	840	100,0

Listwise deletion based on all variables in the procedure

Reliability Statistics

Cronbach's Alpha	N of items
,884	3

Item – Total Statistics

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach's Alpha if item deleted
PEU2	7,7929	2,496	,839	,716
PEU3	7,8381	2,543	,833	,627
PEU1	7,8119	2,422	,833	,637

3. Hedonic Motivation

Case Processing Summary

	N	%
Cases Valid	840	100,0
Excluded ^a	0	,0
Total	840	100,0

Listwise deletion based on all variables in the procedure

Reliability Statistics

Cronbach's Alpha	N of items
,846	4

Item – Total Statistics

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach's Alpha if item deleted
HM1	10,9738	4,936	,715	,792
HM2	11,2024	4,967	,638	,823
HM3	10,7819	4,553	,752	,773
HM4	10,5500	4,949	,630	,827

4. Perceived Price

Case Processing Summary

	N	%
Cases Valid	840	100,0
Excluded ^a	0	,0
Total	840	100,0

Listwise detetion based on all variables in the procedure

Reliability Statistics

Cronbach's Alpha	N of items
,850	3

Item – Total Statistics

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach's Alpha if item deleted
PP1	7,2976	2,197	,715	,665
PP2	7,2881	2,556	,618	,769
PP3	7,2571	2,475	,628	,759

5. Facilitating condition

Case Processing Summary

	N	%
Cases Valid	840	100,0
Excluded ^a	0	,0
Total	840	100,0

Listwise detetion based on all variables in the procedure

Reliability Statistics

Cronbach's Alpha	N of items
,831	4

Item – Total Statistics

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach's Alpha if item deleted
FC1	11,9833	4,765	,627	,801
FC2	12,3548	4,606	,632	,800
FC3	12,3905	4,906	,632	,799
FC4	12,2929	4,341	,752	,744

6. Social Impact

Case Processing Summary

	N	%
Cases Valid	840	100,0
Excluded ^a	0	,0
Total	840	100,0

Listwise deletion based on all variables in the procedure

Reliability Statistics

Cronbach's Alpha	N of items
,827	5

Item – Total Statistics

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach's Alpha if item deleted
SI1	14,6286	8,258	,680	,776
SI2	14,8167	7,778	,740	,757
SI3	14,5619	8,771	,646	,788
SI4	15,2190	8,691	,471	,843
SI5	14,5929	9,028	,620	,796

7. Perceived reliability

Case Processing Summary

	N	%
Cases Valid	840	100,0
Excluded ^a	0	,0
Total	840	100,0

Listwise deletion based on all variables in the procedure

Reliability Statistics

Cronbach's Alpha	N of items
,918	5

Item – Total Statistics

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach's Alpha if item deleted
PR1	14,8881	8,233	,811	,894
PR2	14,9048	8,420	,796	,897
PR3	14,8190	8,492	,794	,898
PR4	14,8381	8,231	,771	,903

PR5	14,8833	8,384	,770	,903
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8. User acceptance

Case Processing Summary

		N	%
Cases	Valid	840	100,0
	Excluded ^a	0	,0
Total		840	100,0

Listwise detetion based on all variables in the procedure

Reliability Statistics

Cronbach's Alpha	N of items
,905	4

Item – Total Statistics

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach's Alpha if item deleted
UA1	11,4690	5,289	,765	,884
UA2	11,7143	5,334	,763	,885
UA3	11,7238	4,939	,833	,860
UA4	11,6143	5,172	,784	,878

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RESEARCH OF FACTORS AFFECTING THE ACCEPTANCE OF PAYMENTS WITH E-WALLETS BY YOUNG PEOPLE AT TRADITIONAL LOCATIONS IN HANOI CITY

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ABSTRACT

With the objective to reconfirm the impact factors and confirm the importance of each factor as well as the mutual influence between them to the act of accepting to use the e-wallet platform in payment activities in the traditional markets in Hanoi city in the specific situation of the epidemic and the specific characteristics of small payments. Through the quantitative method, there are 06 factors: subjective standards, perceived usefulness, epidemic context, ease of use, transaction costs, and reliability that directly affect the acceptance of payments by electronic wallets of young people in traditional markets in Hanoi. The most powerful influencing factors are DSD (Perceptual Ease of Use), CCQ (Subjective Standard) factors with the lowest influence and PGD (Transaction Cost) factors with the opposite impact to the dependent variable. In addition, the CDB factor has also demonstrated the importance of influencing the acceptance of payments by electronic wallets. The article is divided into 05 main sections, including: problem-setting, theoretical basis, research methods, research results, conclusions and policy implications.m.

Keywords: E - wallet payment, traditional market payment, E-wallet, small payment.

1. Introduction

The Covid-19 pandemic has lasted too long and the development is extremely complicated and has been seriously affecting the production, business and daily life of people all over the world in general as well as the People of Vietnam in particular. People are struggling every day to cope with the possibility of infection, financial depletion, increasing amount of plastic waste ... Whenever we talk about Covid-19, our first thought will always be the harm and pain it brings. However, for some industries and sectors, this century's pandemic is an extremely important step, contributing to accelerating the overall development of society. One of them that we can't help but talk about is the field of information technology.

The information technology industry has made its mark with many practical achievements that help serve people's lives, as well as solve many inadequacies brought about by the pandemic. This impressive development also creates a turning point for the e-commerce industry to develop accordingly. This new mode of shopping has gradually become very popular and is getting deeper and deeper into the daily life of Vietnamese people, especially the group from 18-25 years old. Along with the development of Vietnam's e-commerce is a series of modern electronic payment methods. In particular, it is impossible not to mention the e-wallet market, in fact, in recent years, in the Vietnamese market, fintech companies have competed fiercely in the e-payment market when launching a series of branded e-wallets such as Momo, Samsung Pay, VTC Pay, Bankplus, Payoo, ZaloPay,... Specifically, according to data of the State Bank of Vietnam (SBV), as of June 30, 2021, in Vietnam, ...

Along with the development of Vietnam's e-commerce is a series of modern electronic payment methods. In particular, it is impossible not to mention the e-wallet market, in fact, in recent years, in the Vietnamese market, fintech companies have competed fiercely in the e-payment market when launching a series of branded e-wallets such as Momo, Samsung Pay, VTC Pay, Bankplus, Payoo, ZaloPay,... Specifically, according to data of the State Bank of Vietnam (SBV), as of June 30, 2021, in Vietnam, there are 43 non-banking organizations that have been granted licenses by the SBV to provide payment

intermediary services. In particular, active e-wallets are understood to be wallets with at least one transaction incurred monetary value within 12 months of the reporting date. Based on another survey by Visa also showed that in the context of the Covid-19 epidemic, Vietnamese consumers are gradually prioritizing the choice of using e-wallets as well as contactless payments and QR code payments. Especially in the group between the ages of 18-25, e-wallets are no longer a vague and difficult to access concept. In contrast, the trend of using e-wallets in payments has become very variable for them, not only in online transactions but even, e-wallets are considered a modern payment method favored by many young people in direct purchases because of its ease of use and convenience.

Traditional market, sometimes referred to as the people's market, is a place to provide essential items and daily household appliances, especially, the traditional market is a place to provide fresh food (usually during the day) for generations of Vietnamese people. In the past, many long-time stall owners at traditional markets were used to the form of "money to give porridge" so they were quite hesitant to receive money into bank accounts or via e-wallets. Many older merchants are afraid to use electronic payment applications on their phones or find it difficult to master these applications, they can not get used to the fact that their whole "fortune" lies in the account balance displayed in a phone application. But in the face of the fact that the number of visitors to the traditional market is decreasing day by day, the epidemic has made the traditional market empty, many stall owners have gradually changed their minds, approaching modern payment methods - using e-wallets in payment of goods to minimize the risk of the disease spreading through cash contact, at the same time get closer to modern customer files with electronic payment preferences. However, whenever it comes to paying by e-wallet at traditional markets, there are many people who are still very concerned about the practicality of the market.

From the above fact, the team decided to choose the topic "Studying the factors affecting the acceptance of e-wallets in payment of young people at traditional markets in Hanoi" to reaffirm the factors affecting the use of e-wallets in traditional markets of people (namely, in Hanoi city), at the same time, thereby confirming the extent of the influence of such factors on the acceptance of the use of e-wallets of people at traditional markets in Hanoi city. Finally, based on the research results, the team wishes to give implications for users of e-wallets to pay when shopping at traditional markets in Hanoi city and organizations and businesses that provide payment applications directly on mobile devices for orders with small amounts of money (e-wallets).

2. Theoretical framework

2.1. TRA rational action theory

Rational action theory is a model established to forecast behavioral intent (Fishbein & Ajzen, 1975), which has two main elements in the model: attitudes toward behavior and subjective norms.

The rational pattern of action theory holds that behavioral intent leads to behavior and behavioral intent is determined by individual attitudes toward behavior, and the influence of subjective norms around the implementation of such behaviors (Fishbein and Ajzen, 1975). Based on figure 1 shows that in the TRA model, the determinant to the final behavior is not the attitude towards the behavior but the intent to the behavior. Behavioral intent is influenced by attitudes toward behavior and subjective norms. This model predicts and explains trends to implement behavior with a better attitude toward consumer behavior than consumer attitudes toward a product or service (Mitra Karami, 2006).

The components in the TRA model include:

- Attitude: The attitude towards a behavior depends on the positive or negative perceptions of the individual about performing a behavior.
- Subjective norm: is how the people around an individual feel when that individual performs the behavior, these people can be important references of the individual such as family, friends, brothers, colleagues.
- Behavior: are observable actions of the subject that are determined by behavioral intent.

- Behavioral intent: measuring the subject's subjective ability to perform an act and can be viewed as a special case of beliefs determined by an individual's attitude toward subjective behaviors and norms.

2.2. TPB Intended Behavior Theory

TPB Intended Behavior Theory (Ajzen, 1991) is the development and improvement of the TRA Rational Action Theory. The TPB model overcomes the disadvantages of TRA by adding another variable is sensory control behavior, which is the necessary resources of a person to perform any behavior. The TPB model is seen as more optimal for TRA in predicting and interpreting consumer behavior in the same research content and circumstances. According to Ajzen (1991), the birth of the Theory of Planned Behavior (TPB) comes from the limits of behavior that humans have little control over. The third factor that Ajzen says affects human intentions is perceived behavioral control. Cognitive behavioral control reflects how easy or difficult it is to perform the behavior and whether the performance of such behavior is controlled or restricted (Ajzen, 1991).

2.3. Tam Technology Adoption Theory

Based on the Theory of Rational Action (TRA), Davis (1986) developed the Technology Acceptance Model (TAM Model) that is more specifically related to the prediction of the acceptability of an information system. The purpose of this model is to predict the adoption of a tool and to identify modifications that must be included in the system to make it acceptable to the user. This model shows that the acceptability of an information system is determined by two main factors: perceived usefulness and perceived ease of use. TAM is specifically designed for users to adopt the modeling of information systems, it focuses on unique attitudes by ignoring subjective rules due to theoretical and psychological uncertainty (Davis in 1989; Davis et al, 1989). TAM is an adaptation of rational action theory (TRA) to the fields of IS (Information systems). TAM acknowledges that recognizing the usefulness and ease of use determines an individual's intention to use a system with the intention of using it as an intermediary to the actual system, useful perceptuality is also seen as directly affected by the perception of use. The researchers simplified TAM by eliminating the attitudes used formed in TRA over current specification (Venkatesh et al., 2003).

2.4. Theory of Perceived Risk

Bauer, R.A. (1960) argues that risk perception in the online shopping process consists of two factors: Perceived Risk with Product Service (PRP) Researchers previously defined risk perception for the product/service (PRP) as the general sum of the uncertainties or concerns perceived by a consumer. Used for a product/service. Product risks in online shopping can be expected to a high degree due to buyers being unable to test and test product quality and also having no alternatives (Garbarino & Strahilevitz, 2004).

Bauer (1960) mentions that belief in risk perception as a major factor in consumer behavior can be a major factor influencing a web browser's transfer to real shoppers.

Cox and Rich (1964) refers to risk perception as the sum of the perception of uncertainty by consumers in a particular buying situation.

Cunningham (1967) is aware of risks from poor performance outcomes, dangers, health risks, and costs.

Roselius (1971) identifies four types of losses associated with various types of risks: time, chance, ego, and money.

Taylor (1974) suggests that uncertainty and risk perception can breed concerns about the effects of consumer decision-making processes.

Murphy and Enis (1986) define risk perception as a consumer's subjective assessment of the outcome that makes a purchase mistake.

When we are unable to see or touch the product/service directly in the electronic market (i.e., intangible characteristics), consumers may feel anxious or unsure when they have deals with online sellers. For example, products/services delivered to consumers may not perform as expected.

Furthermore, consumers may be required to bear costs such as shipping and unloading, when returning or exchanging products/services. The authors identify functional loss and financial loss as product/service-related risks that limit consumers from making online transactions. Moreover, when the purchase of a product/service fails, we may lose time, convenience, and effort to get the product/service adjusted or replaced. Although time is a moneyless endeavor and fluctuates between individuals, the authors point to time as a cost that consumers pay for products/services. Therefore, the authors identify time loss as an additional risk to the product/service. After purchasing a product/service over the Internet, consumers can find a product/service of equal or higher quality at a lower price.

Therefore, the authors suggest that another type of risk, opportunity loss, is the risk of taking an action that consumers will miss doing something else they really want to do. Therefore, the authors define product/service risk perception (PRP) as the general sum of uncertainty or concern perceived by a consumer in a particular product/service when making an online purchase. The authors identify five types of PRP as follows: loss of function, loss of finance, time-consuming, opportunity loss, opportunity loss, opportunity loss, and overall perceived risk with product/service.

Perceived Risk in the Context of Online Transaction

The researchers previously perceived risk in the online trading range (PRT) as a possible transaction risk for consumers. Bhimani (1996) points to the threat to the acceptance of technological services that can manifest itself from illegal actions such as password disclosure, data editing, deception, and insolvency of debts on time. Therefore, when trading online, customers may be exposed to the following risks: Financial risk Financial risk is the possibility of losing money when making online purchases due to credit card fraud (Sweeney & Johnson, 1999). In addition, consumers can lose money if the product purchased online does not meet the expectations or due to costs.

Ratnasingham (1998) recommends that the basic requirements for e-commerce satisfy the following: authentication, authorization, availability, confidentiality, data integrity, nonrepudiation, and selective application services.

Swaminathan et al. (1999) asserts that consumers evaluate online sellers before they make an online transaction and therefore the characteristics of the seller play an important role in the promotion of transactions.

Therefore, the authors define risk perception in the online trading range (PRT) as a possible transactional risk that consumers can confront when exposing the electronic means of commercial execution. Four types of PRT are defined as follows: privacy, security-authentication, nonrepudiation, and overall perceived risk on online transactions.

2.5. E-Commerce Adoption Theory Model (E-CAM)

Authors Joongho Ahn, Jinsoo Park, and Dongwon Lee (2001) built the E-CAM e - Commerce adoption model by integrating the TAM model with risk perception theory. This study has provided knowledge of the factors that influence the transformation of internet users into potential customers. Awareness of ease of use and awareness of usefulness must be enhanced, while product/service risk awareness and risk awareness associated with online trading must be reduced.

Thus, it can be concluded that: The risk perception model associated with e-commerce transactions to come to purchasing behavior consists of 3 (three) components: risk awareness related to online transactions (PRT), product/service-related risk perception (PRP) and purchasing behavior (PB). Re-examining the theoretical link of the components affecting e-commerce, the buying behavior is affected by two factors, namely the risk awareness associated with online transactions and the perception of risks associated with the product / service and this impact is favorable. This means that the ability to be aware of the types of risks associated with e-commerce increases or decreases, causing the desire to lead to purchasing behavior also increases or decreases.

2.6. C-TAM-TPB combination theory model

The TAM-TPB (C-TAM-TPB) combination theory model was collected by Taylor and Todd (1995) from 800 students who used computers in the school library to point out the strengths and weaknesses of the TAM and TPB models. From there, Taylor and Todd (1995) showed that the TAM model was better at studying behavioral intent using technology and the possibilities of real behavior. Meanwhile the expanded TPB model provides a more comprehensive understanding of behavioral decisions. Therefore, Taylor and Todd (1995) proposed combining the TAM model and the TPB model into the C-TAM-TPB model. This model has an advantage over the TAM model and the separate TPB model in that it identifies specific beliefs that can affect the use of information technology, as the ability to interpret behavior decisions and an accurate understanding of behavioral events. In addition, compared to the TAM and TPB models, Taylor and Todd (1995) added two influencing factors to the TAM model: Ease of Use Awareness and Usefulness Perception. Thus, in the C-TAM-TPB model the factor that directly affects the real behavior of consumers is "behavioral decisions". "Behavioral decisions" are in turn defined by: Attitudes, social influences (subjective standards) and behavioral control. In which attitudes are determined by the perception of usefulness and easy-to-use perception.

Recognizing the advantages and suitability of the C-TAM-TPB combination model through the analysis above, the team decided to use the C-TAM-TPB combination model as the basis theory to build and develop a formal research model for this research topic.

3. Research method

The research team used quantitative research method. The experimental set of samples is collected through an online survey questionnaire using the Google Form tool, the collected results will be processed and analyzed using SPSS software to test the scale through the reliability coefficient. Cronbach's Alpha and exploratory factor analysis EFA, Pearson correlation and linear function. Then the factors extracted from the data set will be put into regression analysis to evaluate the proposed model and test the hypotheses.

3.1. Data collection methods

The research was conducted through data collection through survey questionnaires built on a Likert scale with 05 points and the level of agreement gradually increased from 1 to 5.

3.2. Data Analysis Methods

Step 1: Prepare information

The questionnaire was sent to 300 subjects. After that, collect the answers, clean the information, encode the necessary information in the answer sheet, enter the data into SPSS, then analyze and process the data.

Step 2: Sample descriptive statistics

Step 3: Preliminary assessment of the scale

Step 4: Exploratory Factor Analysis - EFA

Step 5: Pearson correlation test

Step 6: Linear Regression Analysis

4. Research results

4.1. Descriptive sample statistics

The study performed statistical data based on the Survey which was sent online in the form of an online question on Google form to the survey subjects. The results obtained include 230 envelopes, of which 200 are valid. Classification of survey forms through distinguishing signs shows:

Table 1. Description of the study sample

Classification criteria		Number of people (over 200)	Ratio (%)
Frequency of payment by e-wallet	1 - 5 times/week	108	54.0
	5-10 times/week	50	25.0
	10-15 times/week	29	14.5
	More than 15 times/week	13	6.5
Have you paid at the traditional market yet?	Never	135	67.5
	Used to	65	32.5
Frequency of payment by e-wallets at traditional markets	Not used at the traditional market	135	67.5
	1 - 5 times/week	43	21.5
	5-10 times/week	15	7.5
	10-15 times/week	3	1.5
	More than 15 times/week	4	2.0
Sex	Female	126	63.0
	Male	64	32.0
	Don't want to be specific	10	5.0

Source: From the experimental run of SPSS data

4.2. Test execution results

4.2.1. Cronbach alpha. reliability test

Before entering into exploratory factor analysis - EFA, the study will test the scale using the Cronbach

Alpha tool of the SPSS software program version 20.0 to check the reliability of the scale of service quality components. and the correlation between the observed variables. After testing Cronbach's Alpha using SPSS software, the results are summarized in the statistical table of the final test results of each group of variables as follows:

Table 2: Statistical results of Cronbach's Alpha test

Numerical order	Factor	Symbol	The first observation variable	The remaining observed variable	Cronbach's Alpha	Discarded variable
1	Chuan chu quan	CCQ	4	4	0.886	0
2	Su huu ich cam nhan	SHI	4	4	0.762	0
3	Boi canh dich benh	CDB	5	5	0.911	0
4	Cam nhan de su dung	DSD	4	4	0.731	0
5	Chi phi giao dich	PGD	5	5	0.872	0
6	Cam nhan do tin cay	ĐTC	4	4	0.807	0
7	Su chap nhan	SCN	4	4	0.853	0

All variables have Cronbach's Alpha coefficient higher than 0.730. Therefore, the variables are included in the EFA Factor Analysis.

Source: From the experimental run of SPSS data

4.2.2. Exploratory Factor Analysis (EFA)

Table 3: Rotated Component Matrixa (Rotated Component Matrixa)

	Component					
	1	2	3	4	5	6
CDB2	.890					
CDB1	.887					
CDB3	.855					
CDB4	.845					
CDB5	.809					
PGD2		.856				
PGD1		.834				
PGD3		.828				
PGD4		.766				
PGD5		.714				
CCQ1			.877			
CCQ2			.874			
CCQ3			.861			
CCQ4			.828			
ĐTC2				.817		
ĐTC1				.808		
ĐTC3				.795		
ĐTC4				.598		
SHI1					.822	
SHI2					.791	
SHI3					.728	
SHI4					.702	
DSD1						.823
DSD2						.757
DSD3						.718
DSD4						.655

Source: From the experimental run of SPSS data

Above is the rotation matrix table of the observed variables. The results show that all variables ensure the standard load factor, so they are accepted. No variable loads up to two different factors at the same time, and no observable variable is on a single factor. For the scale of variables to have statistical value, the groups are classified as follows:

Group 1 includes variables: CDB1, CDB2, CDB3, CDB4, CDB5

Group 2 includes variables: PGD1, PGD2, PGD3, PGD4, PGD5

Group 3 includes variables: CCQ1, CCQ2, CCQ3, CCQ4

Group 4 includes variables: CTC1, CTC2, CTC3, CTC4

Group 5 includes variables: SHI1, SHI2, SHI3, SHI4

Group 6 includes variables: DSD1, DSD2, DSD3, DSD4

EFA analysis for the independent variable

Table 4: EFA analysis results for independent variable

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.785
Bartlett's Test of Sphericity	Approx. Chi-Square	352.609
	df	6
	Sig.	.000

Source: From the experimental run of SPSS data

Index KMO=0.785>0.5 and Sig. = 0.000 should be accepted. The indexes in the Communalities table are all greater than 0.4, so they are satisfactory.

4.2.3. Correlation analysis

After performing exploratory factor analysis. In order to conduct Pearson correlation analysis and furthermore regression, coming to this fourth step it is necessary to create representative variables from the final factor rotation results. Pearson correlation test is a prerequisite for multivariable regression analysis. The purpose of running Pearson correlation is to check the close linear correlation between the dependent variable and the independent variables, because the condition for regression is first to be correlated. In addition, the problem of multicollinearity when the independent variables are also strongly correlated with each other. The suspicious sign is based on the Sig value, the correlation between the independent variables is less than 0.05 and the Pearson correlation value is greater than 0.3.

Table 5: Pearson correlation test results (Correlations)

	SCN	CCQ	SHI	CDB	DSD	PGD	ĐTC
SCN Pearson Correlation	1	.415**	.577**	.667**	.333**	.747**	.659**
Sig.(2-tailed)		.000	.000	.000	.000	.000	.000
N	200	200	200	200	200	200	200
CCQ Pearson Correlation	.415**	1	.590**	.373**	.567**	.384**	.528**
Sig.(2-tailed)	.000		.000	.000	.000	.000	.000
N	200	200	200	200	200	200	200
SHI Pearson Correlation	.577**	.590**	1	.510**	.612**	.563**	.642**
Sig.(2-tailed)	.000	.000		.000	.000	.000	.000
N	200	200	200	200	200	200	200
CDB Pearson Correlation	.667**	.373**	.510**	1	.319**	.664**	.602**
Sig.(2-tailed)	.000	.000	.000		.000	.000	.000
N	200	200	200	200	200	200	200
DSD Pearson Correlation	.333**	.567**	.612**	.319**	1	.408**	.499**
Sig.(2-tailed)	.000	.000	.000	.000		.000	.000
N	200	200	200	200	200	200	200
PGD Pearson Correlation	.747**	.384**	.563**	.664**	.408**	1	.643**
Sig.(2-tailed)	.000	.000	.000	.000	.000		.000
N	200	200	200	200	200	200	200
ĐTC Pearson Correlation	.659**	.528**	.642**	.602**	.499**	.643**	1
Sig.(2-tailed)	.000	.000	.000	.000	.000	.000	
N	200	200	200	200	200	200	200

Source: From the experimental run of SPSS data

The values of the observed variables CCQ, SHI, CDB, DSD, PGD, and CTC all have Sig. <0.05 (=0.000) means that all the independent variables are above correlated with the dependent variable.

4.2.4. Regression analysis

Table 6: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std.Error	Beta			Tolerance	VIF
1 (contant)	-.093	.293		-.318	.751		
CCQ	.135	.049	.124	2.786	.006	.967	1.034
SHI	.184	.063	.180	2.926	.004	.501	1.994
CDB	.187	.056	.192	3.320	.001	.569	1.759
DSD	.369	.063	.363	5.905	.000	.503	1.988
PGD	-.124	.056	-.123	-2.223	.027	.617	1.620
ĐTC	.290	.057	.302	5.062	.000	.536	1.866

Dependent Variable: SCN

Predictors: (Contant), CCQ, SHI, CDB, DSD, PGD, ĐTC

Source: From the experimental run of SPSS data

In this table we need to pay attention to the following 3 columns: The first is the Sig column. test each independent variable. All Sig values. are all less than 0.05 means that these variables are all significant in the model and all are kept; The second column Beta is the normalized regression coefficient. Of all the accepted variables, the variable with the largest Beta coefficient has the most influence on the change of the dependent variable. Here the most influential variables are DSD and DP. The third is the VIF column used to check for multicollinearity. Theoretically, $VIF < 10$ will not have multicollinearity. However, in fact, research models using Likert scale have shown that $VIF < 2$ will not have multicollinearity between the independent variables. Here, there is no variable with $VIF \geq 2$, so there is no multicollinearity;

As follows:

$$SCN = 0.124*CCQ + 0.180*SHI + 0.192*CDB + 0.363*DSD + (- 0.123)*PGD + 0.302*TDC$$

We obtain the normalized residual frequency histogram and the Normal P-P Plot as follows:

<p>Figure 1: Histogram Normalized Residual Frequency Source: From the experimental run of SPSS data</p>	<p>Figure 2: Normalized graph Normal P-P Plot Source: From the experimental run of SPSS data</p>	<p>Figure 3: Scatter Plot chart tests the assumption of linear relationship Source: From the experimental run of SPSS data</p>

From the graph above we see a normal distribution curve superimposed on the histogram. This curve is bell-shaped, which is consistent with the graph of the normal distribution. Mean mean is close to 0, standard deviation is 0.985 which is close to 1. Thus, it can be said that the distribution is almost normal. Therefore, it can be concluded that: The residual distribution assumption is not violated.

With the P-P Plot, the percentiles in the distribution of the residuals will cluster into a diagonal. Thus, it does not violate the regression assumption about the residual normal distribution.

With the Scatter Plot chart testing the assumption of linear relationship, the normalized residuals are distributed centered around the zero line, so the assumption of linearity is not violated.

5. Conclusion

Firstly, through the results obtained from the SPSS data processing and analysis software, the study shows that: The acceptance of payments by e-wallets of young people (those aged 18 to 25) in Traditional markets in Hanoi city are affected by the following factors: Chuan chu quan (CCQ), Su huu ich cam nhan (SHI), Boi canh dich benh (CDB), Cam nhan de su dung (DSD), Chi phi giao dich (PGD), Cam nhan do tin cay (ĐTC) are independent variables and include a dependent variable Acceptance (SCN). For the evaluation of scale reliability by Cronbach's Alpha coefficient, the variables CCQ, SHI, CDB, DSD, PGD, ĐTC, SCN all have Cronbach's Alpha coefficient greater than 0.7 and all variables have Cronbach's Alpha if Item Deleted is smaller than Cronbach's Alpha coefficient and Corrected Item-Total Correlation value is greater than 0.3, so it meets the requirements of reliability and no variables are excluded. With exploratory factor analysis - EFA, the obtained results show the linear correlation of factors with observed variables, there are 6 groups of observed variables for 6 independent variables located in 6 separate columns. At the same time, we see that the total variance extracted is 67.411%. The group determined 6 groups of representative factors to test Pearson correlation in order to test the linear correlation between the dependent variable SCN and the independent variables. The results show that all variables CCQ, SHI, CDB, DSD, PGD, ĐTC have Sig

values. is less than 0.05, so the correlation coefficient “r” is significant, so these independent variables are correlated with the dependent variable SCN. The final data analysis process is multiple linear regression analysis. After conducting the Sig test. of each independent variable, we can keep all 6 variables including CCQ, SHI, CDB, DSD, PGD, and ĐTC. The obtained results show that the variable with the largest beta-normalized regression coefficient, which has the most influence on the change of the dependent variable is DSD and then the variable ĐTC. In addition, the variable PGD has Sig. The t-test is less than 0.05 and the regression coefficient is negative, meaning that the independent variable PGD has a negative effect on the dependent variable SCN, that is, the higher the "Chi phi giao dich" of the e-wallet increases, the more "Su chap nhan thanh toan bang vi dien tu" will be decreases. Thus, the results of data analysis show that: “Chuan chu quan, su huu ich cam nhan, boi canh dich benh, cam nhan de su dung, chi phi giao dich, cam nhan do tin cay” have an influence on acceptance payment by electronic wallets of young people at traditional markets in Hanoi city. In particular, the most influential factor is DSD (Cam nhan de su dung), CCQ factor (Chuan chu quan) has the lowest influence on young people's acceptance of payment by e-wallets and PGD factor (Chi phi giao dich) has a negative effect on the dependent variable. In addition, the factor CDB (Boi canh dich benh) is a new factor that has also proven to be important in influencing the acceptance of payments by e-wallets. The evidence is that the normalized regression coefficient Beta of this factor has the third highest value, only after the factor DSD and ĐTC.

Secondly, about the benefits of e-wallets, especially during the time when the Covid 19 epidemic is developing very complicatedly. Through the process of research, data collection and analysis, it shows that: E-wallets bring many benefits to both consumers and sellers such as: consumers and sellers do not have to be in close contact or exchange. cash in purchases - sales, control spending more effectively because transactions are saved in the transaction history, preferential policies for users are well met, information security policies User information is increasingly focused by e-wallet providers, so users are always assured of their rights and information security. E-wallet easy to use proficiently.

Third, current practical problems: Besides the utilities, e-wallets also have limitations such as: The security system has not really made users trust; where accepting payment by e-wallet is still not much; Public Internet spots are not yet widely available. In addition to application providers needing solutions to minimize the risks of e-wallets, e-wallet users also need to check the security of the transaction website, change the wallet password when need, create a password different from email or other social accounts, the size of the market is still quite modest.

6. Appendix

Appendix A. Official survey questions

Appendix B. Spss run experiment

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THE FACTORS AFFECTING THE DECISION TO USE PODCASTS IN THE KNOWLEDGE ACQUISITION AND SHARING ACTIVITIES OF STUDENTS AT UNIVERSITIES IN HANOI

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ABSTRACT

The research determines the factors which affect the decision to use podcasts in the knowledge acquisition and sharing activities of students at universities in Hanoi. Research data was collected from 200 students. The research methods used are qualitative and quantitative. The theoretical model was tested through: Descriptive statistics analysis, Cronbach's Alpha reliability analysis; Exploratory factor analysis (EFA); Correlation analysis; Regression analysis.

The results show that there are 6 factors affecting the decision to use podcasts in the knowledge acquisition and sharing activities of students at universities in Ha Noi, in which "Perceived Enjoyment" factor has the strongest impact. Thereby, the authors proposed solutions to promote the use of podcasts in students' knowledge acquisition and sharing activities in the near future.

Keywords: students, podcast, decision to use, knowledge acquisition, knowledge sharing.

1. Introduction

Nowadays, Podcast is becoming a preferable method for sharing content instead of other traditional platforms. Podcast has shown explosive growth year after year. According to Edison Research statistics, 78% of Americans are familiar with the term "podcasting" and more than 5 out of 10 people have listened to podcast themselves. Besides, the Covid-19 pandemic is still complicated globally. Students in Vietnam still unable to go to school and have to switch to online learning. This has also become an opportunity for students to approach a variety of learning methods.

In the world, the application of podcasts in educational activities has become a new trend. At Northumbria University, UK, podcasts are produced and published regularly (about every two weeks) and for a maximum of 20 minutes. At RMIT University, Australia, the course where this approach was piloted included two formal lectures per week in addition to practicals and tutorials. Podcasting was used to capture standard face-to-face lectures for students to use on later occasions. Each lecture was recorded using a portable MP3 player attached to the lecturer's lap. In Vietnam, the trend of using podcasts in educational activities has not yet become popular, but it has a lot of potential. However, there has not been any official research on the influence of podcasts on students' knowledge acquisition and sharing activities in Hanoi. Therefore, the authors have chosen the above topic to find out the factors affecting students' decision to use podcasts in knowledge acquisition and sharing activities, thereby making some suggestions to develop the use of podcasts as a learning tool in the future.

2. Theoretical framework

2.1. Literature Review

According to the literature review of related research, many studies demonstrated the positive effects, as well as the importance of podcasts in education. Chris Evans (2007) asserted that students regard podcasts as an effective, receptive learning tool to revise and improve their studies. Another research of Andrea Chester et al. (2011) indicated that students who listened to lectures via podcasts performed better academically than others. The main and most frequent motivation for using podcasts throughout the semester for these students is to revise. Michele Gribbins (2007) argued that podcasts have the potential to provide many benefits to educators as a low-cost method for delivering timely, seamless audio content to students. Mark J. W. Lee et

al. (2008) also showed that podcasting has great potential in allowing students to present their knowledge, while sharing results with peers. In Vietnam, there has not been much research on the use of podcasts. Teaching listening with podcasts improves students' listening comprehension skills because this technology provides a diverse repository of materials, arousing students' interest (Nguyen Thi Nguyet Minh, 2019).

Some other related studies also provide a greater understanding of the factors that influence the decision to use podcasts, especially for educational purposes. Merhi (2011) identified and experimentally evaluated the intrinsic and extrinsic factors that motivate users to adopt podcasts. This study has shown that "Mobility" is influential and is the premise for other motivating factors. "Perceived enjoyment" has the strongest influence on use intention for podcasts. Furthermore, Mun-Young Chung (2015) demonstrates that "Education/Information" is an important motivation that clearly reflects the main function of podcasts for students. Hyeong-Yeol Kim, Tae-Sung Kim (2016) investigated the factors that influence podcast use based on the UTAUT theory model. The results showed that effort expectancy, media credibility, facilitating condition, and hedonic motivation had a significant influence on intent to use.

2.2. Related theoretical model

2.2.1. Technology Acceptance Model (TAM)

Davis (1986) developed the Technology Acceptance Model (TAM) to evaluate and forecast user acceptance of technology (Davis, 1989; Venkatesh and Davis, 2000). This model shows the ability to accept a technology system defined by two primary factors: Perceived Usefulness and Perceived Ease of Use. Essentially, the TAM framework makes the assumption that user adoption is more likely if they find the technology to be useful and easy to use (Davis, 1989).

2.2.2. The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (2003) was developed by Venkatesh et al. (2003) with the purpose of assessing technology adoption and using a more unified approach. UTAUT argues that "Performance Expectancy," "Effort Expectancy", "Social Influence," and "Facilitating Conditions" are factors that stimulate a user's behavioral intention or technology use behavior. Besides, the factors "Gender", "Age", "Experience" and "Voluntariness of Use" have a regulatory impact in the adoption of information technology (Ho et al., 2015).

2.3. Basic concepts

Podcasts are a series of files that are offered in audio format (MP3) or digital videos and can be played on a variety of devices. Through the use of podcasts, students can acquire diverse knowledge, while also having the opportunity to share them or create their own podcasts to distribute to those around them (Robinson. Sherry, Ritzko. Jacqueline, 2009).

Knowledge is a highly abstract concept with many different approaches. "Knowledge is a mixture of experience, values, contextual information, deep expertise, and basic intuition that provides the environment and framework for evaluating and combining new experiences and information" (Do Thi Ngoc, 2020).

Knowledge acquisition is the process of learning, reviewing, remembering, receiving knowledge from many different sources. **Knowledge sharing** is the process of giving and receiving knowledge, in which creativity and knowledge sharing depend on the conscious effort of the individual (Nonaka & Takeuchi, 1995). Knowledge sharing is a voluntary act in which an individual shares his or her knowledge with others (Helmstadter, 2003) and the process causes the information and knowledge received by the sender and recipient to increase exponentially (Quinn & ctg, 1996).

2.4. Research model and hypothesis

To provide a broader view and better explanation of the decision to use the podcast in the knowledge acquisition and sharing of students at universities in Ha Noi, the authors suggest the research model is based on the combined theory of the TAM model (Davis, 1986) and the UTAUT model (Venkatesh et al., 2003),

while also modifying by adding the driving factors that influence the student's podcast use as "Mobility" and "Perceived Enjoyment," "Credibility".

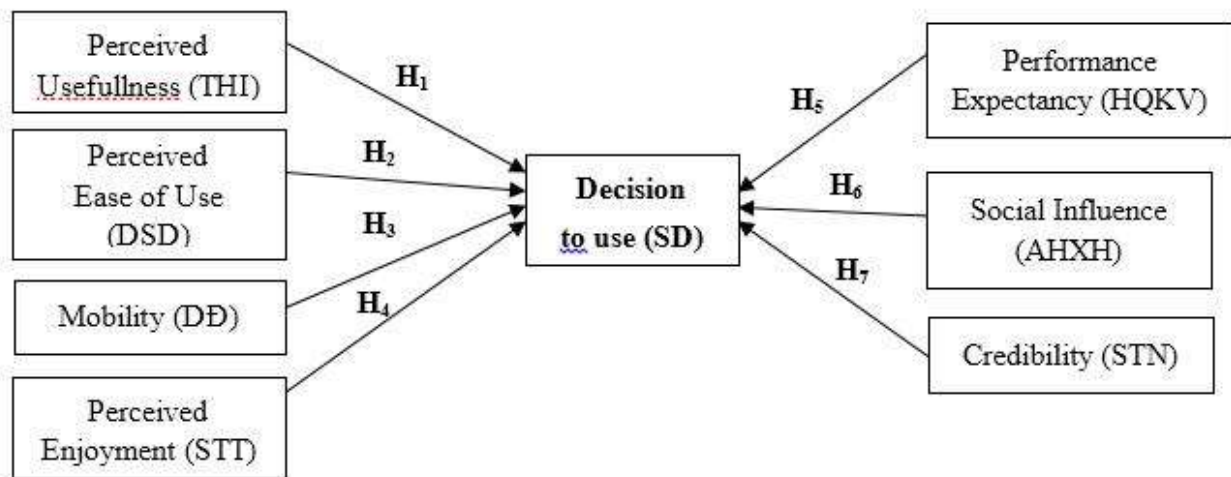


Figure 1. Research Model

Source: Authors

Perceived Usefulness (THI): One of the TAM model's major factors that refers to "the extent to which a person believes that the use of a particular technological system will improve their performance" (Davis, 1989). Copley (2007) pointed out podcasts are rated as very useful by the majority of students through a number of previous researches. Besides, in other studies by Chan and Lee (2005); Cruz and Carvalho (2006); Miller and Piller (2005) found podcasts to be highly effective when used by students to tackle the problems such as improving academic result, reducing revision anxiety, and raising their fulfillment.

H1 hypothesis: *Perceived Usefulness (THI) has a positive influence (in the same direction) on the decision to use podcasts in the knowledge acquisition and sharing of students at universities in Ha Noi.*

Perceived Ease of Use (DSD): This refers to the extent to which a person believes that using a particular system would be simple, effortless (Davis, 1989). In the TAM model, this factor along with Perceived Usefulness has a significant impact on the decision to use a new technology. Cooper (1997) argues that "Perceived Ease of Use" is an important factor for users to consider when they use a new technology system. In reality, easy and simple technologies can lead to an increase in user acceptance. According to researchers of Evans (2008); Ractham & Zhang (2006), producing podcasts relatively easy for educators because podcasts don't need much experience and don't have complex systems.

H2 hypothesis: *Perceived Ease of Use (DSD) has a positive influence (in the same direction) on the decision to use podcasts in the knowledge acquisition and sharing of students at universities in Ha Noi.*

Mobility (DD): This variable refers to the extent of flexibility that users can access podcasts anytime and anywhere without restrictions. Bolliger et al. (2010); Donnelly & Berge (2006); Harris & Park (2008); Shim et al. (2006) assert that the purpose behind the invention of podcasts is to help people get the data and information they need easily and conveniently whenever they want. In a previous study, Walls et al. (2010) suggested that students were no longer required to stay in a particular place to study and prepare for their classes when using podcasts. Evans (2008) also points out that podcasts facilitate "timely" learning, meaning that we can take advantage of our free time to learn through podcasts on any of our personal smart devices.

H3 hypothesis: *Mobility (DD) has a positive influence (in the same direction) on the decision to use podcasts in the knowledge acquisition and sharing of students at universities in Ha Noi.*

Perceived Enjoyment (STT): This factor refers to the extent to which the use of podcasts is considered enjoyable to users outweigh the consequences. Previous studies of Davis et al. (1992); Bruner & Kumar (2005); Pikkarainen et al. (2004) has shown that perceived enjoyment is an important factor driving technology

adoption. Ordinarily, the greater the enjoyment of a technology, the less users will consider its ease stimulating intention to use. In fact, users, especially adults, tend to try a technology they enjoy even if it's complicated.

H4 Hypothesis: *Perceived Enjoyment (STT) has a positive influence (in the same direction) on the decision to use podcasts in the knowledge acquisition and sharing of students at universities in Ha Noi.*

Performance Expectancy (HQKV): In the UTAUT model, this variable indicates the technology's ability to deliver benefits and improve performance to users in accordance with their expectations (Venkatesh et al. 2003). Specifically, in this research, Performance Expectancy is understood as the extend of student expectations into podcasts' ability to improve the efficiency of their knowledge acquisition and sharing. In a previous study, Anna Grett and Ronja Jakobs (2021) suggested that podcast usage would increase if users expected that when taking it, they would speed up the productivity.

H5 Hypothesis: *Performance Expectancy (HQKV) has a positive influence (in the same direction) on the decision to use podcasts in the knowledge acquisition and sharing of students at universities in Ha Noi...*

Social influence (AHXH): According to the UTAUT model, this is one of the factors that has a direct impact on the user's acceptance and use of technology behavior. In this case, social influence indicates the extent to which students assume that important people around them believe they should use podcasts. Podcast users may be influenced by the favorable attitudes and recommendations of those. Their decision to download the podcast was also influenced by friends (Wachiraporn Srimahalap, 2020). Hong and Cho (2013) also confirmed that social norms for podcast use have a significant effect on motivation to utilize podcast.

H6 hypothesis: *Social influence (AHXH) has a positive influence (in the same direction) on the decision to use podcasts in the knowledge acquisition and sharing of students at universities in Ha Noi.*

Credibility (STN): This variable refers to the extent to which students trust and believe in the quality of podcasts in the knowledge acquisition and sharing. Credibility can influence user attitudes, intentions, and behaviors, as well as playing an important role in user motivation in various respects (Eisend, 2006). According to Wachiraporn Srimahalap (2020), one of the main motivating factors that listeners expect to receive from podcasts is the credibility of the podcast, namely the podcast host and producer.

H7 Hypothesis: *Credibility (STN) has a positive influence (in the same direction) on the decision to use podcasts in the knowledge acquisition and sharing of students at universities in Ha Noi.*

3. Research method

This research uses a combination of two research methods: qualitative and quantitative.

3.1. Qualitative research

Qualitative research is conducted through the in-depth interview method to gather more detailed information about the factors that influenced the decision to use podcasts of students, thereby providing the basis to revise the proposed research model and modify observation variables to the scales.

Students at universities in Hanoi are *subjects for these in-depth interviews*. The group consisted of 6 students who knew and used podcasts randomly selected through the relationships of the authors at: Thuong Mai University (1 person); Hanoi University (1 person); University of Foreign Languages - Hanoi National University (1 person); Hanoi University of Culture (1 person); Banking Academy (1 person); Academy of Finance (1 person).

3.2. Quantitative research

Quantitative research was conducted with the aim of evaluating the model and scale of factors affecting the decision to use podcasts in the knowledge acquisition and sharing of students at universities in Hanoi. The data collected for quantitative research is through surveys designed to investigate students studying at universities in Hanoi.

The sampling method used in this research is non-probability. According to the formula of Hair & Associates (1998), the sample size is determined using the formula $N = 5 * m$, where m is the number of observed variables. In this study, there are 32 observed variables, and based on the aforementioned method,

the minimum sample size to be collected is 160. However, in order to increase sample representation and avoid problems in the data entering and filtering processes, the authors surveyed 250 students at universities in Hanoi to collect data for quantitative research purposes. After the data filtering process, the number of valid survey votes to be included in the analysis is 200 (80%). The survey period was conducted from January 2022 to February 2022.

Processing and analyzing data via SPSS 22 software with the following steps: Reliability analysis by the Cronbach's Alpha reliability coefficient; Exploratory factor analysis (EFA); Correlation analysis; Regression analysis.

4. Results and discussion

4.1. Results

4.1.1. Sample Description

After conducting a survey for research purposes, the author's team collected 200 valid answer sheets. In which, the number of survey participants is female, accounting for 72% with 144 people, the number of survey participants is male, with 56 people, equivalent to 28%. Regarding the university process, out of 200 research samples, 26 samples were freshmen students (accounting for 13%). Samples of second-year and fourth-year students were 18 (accounting for 9%) and 19 (accounting for 10%) respectively. In which, third-year students have the sample number accounted for 68%, equivalent to 137 people.

Regarding the frequency of using Podcasts, the number of survey participants with the frequency of rarely (Less than 2 times/week) accounted for 42.5% (85 samples), the occasional frequency (2-4 times/week) accounted for 42.5% (85 samples), regular frequency (more than 5 times/week) has 30 samples (accounting for 15%).

According to the time spent listening to Podcasts in a day, the number of students who listen to Podcasts for less than 30 minutes a day accounts for 39%, the number of students who listen to Podcasts from 30 minutes to 1 hour a day accounts for 38%. The number of samples listening to Podcasts is from 1 hour to 2 hours a day (accounting for 18%, the rest is listening to Podcasts over 2 hours a day, accounting for 5%).

For the topic of interest in Podcast, there were 137 samples interested in content about life, society, and experiences (accounting for 29%), and 102 samples interested in content about foreign languages (accounting for 22%). Followed by content about work and orientation, there are 89 interest samples (accounting for 19%). Finally, content topics about academic majors and entertainment content had the sample of interest at 65 (accounting for 14%) and 76 (accounting for 16%) respectively.

4.1.2. Cronbach's Alpha reliability analysis

The analyzed results show that all Cronbach's Alpha coefficient are > 0.6 (from 0.692 to 0.817) and correlation coefficients are > 0.3 , so all observed variables are used in the next step: Exploratory factor analysis (EFA).

Table 1. Reliability analysis results by the Cronbach's Alpha coefficient

Ordinal number	Scale	Cronbach's Alpha
1	Perceived Usefulness (THI)	0.738
2	Perceived Ease of Use (DSD)	0.817
3	Mobility (DĐ)	0.741
4	Perceived Enjoyment (STT)	0.860
5	Performance Expectancy (HQKV)	0.756
6	Social influence (AHXH)	0.800
7	Credibility (STN)	0.692
8	Decision to use (SD)	0.774

Source: The author's analysis results

4.1.3. Exploratory factor analysis (EFA)

a) Exploratory factor analysis for independent variables

The analyzed results show that the coefficient $KMO = 0.911 > 0.5$, Bartlett's test with the significance level $sig = 0.000 < 0.05$ can conclude that the observed variables are correlated in the population, thus proving that the data used in the analysis multiplier is appropriate. Eigenvalue = 1,006 > 1 and 7 factors were extracted with the best information summary meaning. Total value of product variance = 65.477% > 50%, satisfactory. Thus, 7 factors are extracted to explain 65.477% data variation of 27 observed variables participating in EFA.

Table 2. EFA results on the scale of influencing factors

Rotated Component Matrix^a

	Component						
	1	2	3	4	5	6	7
STT2	,733						
STT1	,718						
STT5	,693						
STT3	,641						
STT4	,516						
AHXH4		,748					
AHXH2		,739					
AHXH1		,681					
AHXH3		,641					
DSD4			,774				
DSD3			,736				
DSD2			,711				
DSD1			,650				
HQKV1				,671			
HQKV2				,660			
HQKV3				,623			
HQKV4				,539			
THI3					,661		
THI1					,587		
THI2					,577		
THI4					,555		
DĐ2						,787	
DĐ1						,728	
DĐ3						,506	
STN2							,685
STN3							,643
STN1							,512

Source: The author's analysis results

The results of the rotation matrix show that 27 observed variables are grouped into 7 factors. All observed variables have Factor Loading coefficients greater than 0.5 and no longer have bad variables.

b) Exploratory factor analysis for dependent variables

The results show that the coefficient $KMO = 0.822 > 0.05$, the Bartlett test is statistically significant (Sig. = 0.000 < 0.05). Therefore, the observed variables are correlated with each other, so the above factor analysis is completely appropriate.

The results of the decision scale analysis, extracted EFA are grouped into one factor. Multiply the extracted coefficient with Eigenvalue = 2,639 and the total variance extracted is 52.771% > 50%. Factor Loadings coefficients have a value greater than 0.5, so the dependent variable "Decision to use" (SD) still retains 5 observed variables. The EFA analysis was complete because it was statistically reliable.

4.1.4. Regression analysis

Adjusted R Square analysis results

Table 3. Adjusted R Square analysis results

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,878 ^a	,770	,762	,25760	2,072

Source: The author's analysis results

From the Model Summary table, it is shown that $R^2 = 0.770$, Adjusted R Square = 0.762. The Adjusted R^2 value shows that the goodness of fit of the model is high: 77.0%, the variation of the dependent variable is expressed and explained largely by the variation of the independent variables, while the remaining 23% is due to out-of-model variables and random error.

The obtained Durbin - Watson coefficient is 2,072, in the range of 1.5 - 2.5, so no sequence autocorrelation occurs. The multiple regression model satisfies the evaluation and suitability test conditions to draw research results.

ANOVA results on the fit of the regression analysis

Table 4. ANOVA analysis results

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42,754	7	6,108	92,042	,000 ^b
	Residual	12,741	192	,066		
	Total	55,494	199			

Source: The author's analysis results

The result of the ANOVA test with Sig of the F test equal to $0.00 < 0.05$. Therefore, we can conclude that the multiple linear regression model is suitable for both the sample and the study population.

Regression results and multicollinearity statistics

Table 5. Regression analysis results

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,140	,162		,861	,390		
	THI	,096	,047	,101	2,041	,043	,492	2,035
	DSD	,057	,038	,068	1,501	,135	,581	1,720
	DE	,099	,040	,116	2,462	,015	,535	1,868
	STT	,325	,045	,381	7,195	,000	,426	2,347
	HQKV	,155	,051	,155	3,065	,002	,469	2,134
	AHXH	,075	,032	,103	2,332	,021	,612	1,634
	STN	,150	,043	,168	3,489	,001	,513	1,949

a. Dependent Variable: SD

Source: The author's analysis results

Through the Coefficients table, it shows that the Sig value of the t-test of the regression coefficient of the independent variable “DSD” (Perceived Ease of Use) is $0.135 > 0.05$, so this variable is excluded from the model. The remaining independent variables including: Perceived Usefulness (THI); Mobility (DĐ); Perceived Enjoyment (STT); Performance Expectancy (HQKV); Social influence (AHXH); Credibility (STN) are statistically significant (Sig < 0.05) explaining the dependent variable and are not excluded from the model.

Perceived Ease of Use (DSD) was a factor that had no impact on students' decisions to use Podcasts. This result is different from previous studies from Merhi (2015), Robi Darwis (2016). However, the root cause can be explained by the increasing popularity of technology as well as smart devices around the world as well as in Vietnam. Moreover, students are young, dynamic and trend-oriented, so using technology applications or specifically Podcasts is very easy.

Besides, independent variables meet the acceptance criteria with Tolerance value > 0.0001 . The coefficient VIF (Variance Inflation Factors) of the variables in the model are all less than 3, showing that multicollinearity of the independent variables is impossible, or it can be said that the data does not violate the assumption of multicollinearity.

From the above analysis, the results of the regression model are obtained with the normalization coefficients as follows:

$$SD = 0.101 * THI + 0.116 * DĐ + 0.381 * STT + 0.155 * HQKV + 0.103 * AHXH + 0.168 * STN$$

4.2. Discussion

4.2.1. Interpretations and Implications

According to the analyzed results, there are 6 factors that influence the decision to use podcasts in the knowledge acquisition and sharing activities of students at universities in Hanoi: Perceived Usefulness (THI); Mobility (DĐ); Perceived Enjoyment (STT); Performance Expectancy (HQKV); Social influence (AHXH); Credibility (STN).

Perceived Enjoyment (STT) has a positive influence and the strongest impact on the decision to use podcasts in the knowledge acquisition and sharing activities of students at universities in Hanoi (regression coefficient $\beta_4 = 0.381$). This result is in line with the research of Merhi (2011), Lizy Alfi Rahmatia, Hesty Widiastuty (2018), and Robi Darwis (2016).

Credibility (STN); Performance Expectancy (HQKV); Mobility (DD); Perceived Usefulness (THI) all have positive influence with the regression coefficient is $\beta_7 = 0.168$; $\beta_5 = 0.168$; $\beta_3 = 0.116$; $\beta_1 = 0.101$ respectively.

The Social Impact Factor (AHXH) has a positive influence with the lowest impact on the decision to use podcasts in the knowledge acquisition and sharing activities of students at universities in Ha Noi (regression coefficient $\beta_6 = 0.103$). This result is consistent with the study of Wachiraporn Srimahalap. (2020); Alex Sandro Rodrigues Martins, Alexandre Costa Quintana, Debora Gomes de Gomes. (2020); Ifedayo, Ziden & Ismail (2020).

4.2.2. Contributions

The results of this study have contributed to clarifying the factors and extent of their impact on the decision to use podcasts in the knowledge acquisition and sharing activities of students at universities in Ha Noi. From this basis, universities or educational institutions can refer to and have orientations and solutions to apply podcasts in education and in the knowledge acquisition and sharing activities of students.

4.2.3. Limitations

The study's results were analysed based on data with a limited number of samples (200 samples) collected in a short time, which may lead to the results not being highly inclusive for students of all universities in Hanoi.

4.2.4. Recommendations to promote the effective use of podcasts in the knowledge acquisition and sharing of students at universities.

a) Orientation for universities and educational institutions

Promoting digital transformation in education by applying podcasts as a tool for teaching - learning, research, as well as other related activities. In order to utilise the use of podcasts for knowledge sharing to students, universities and educational institutions need to conduct research, equip enough information, and invest in infrastructure platforms.

Podcasts can be distributed through student accounts as an online academic system available at universities or through third-party apps such as Spotify, Google Podcast, Soundcloud, etc. This helps facilitate the development of podcasts in the university environment to help students have more opportunities to access lectures depending on the time suitable for low investment budget, technology platform available.

b) Orientation for students in use of podcasts to improve the ability to acquire and share knowledge

Students need to create their own interest and motivation in using podcasts in following ways:

Listen to their favorite topics: Students tend to focus more on the things they find enjoyable. As a result, they should begin acquiring knowledge through podcasts by listening to their favorite topics.

Actively create daily routines: Students should spend 20 to 30 minutes per day listening to podcasts. Setting daily goals will help students control their habits; they will not be left unfinished halfway through.

Create own podcasts: If students are interested in podcasts and want to make and share them with others, they can enjoy the freedom to be creative about topics and content, as well as how to lead in order to appeal to listeners.

c) Solutions for universities to effectively promote the use of podcasts in knowledge acquisition and sharing activities of students.

Improve podcast quality (content, audio...) to make students enjoy and decide to listen to the podcast.

It is necessary to focus and invest in useful content, coherent composition, and at the same time, look for a good voice, clearly, that can convey emotions through content in order to create sympathy and increase the audience's interest in the podcast.

Universities need to invest in facilities to support the production of quality podcasts, such as studios, microphones, headphones, recording, and audio editing software.

It is necessary to research and grasp the trend of interest of young people to produce more attractive podcasts. The same content but with a novel way of expressing or catching up with new trends (such as language or some "viral" activities ...) will make students more interested in listening to podcasts.

Promote the use of podcasts through competitions, extracurricular activities...

It is necessary to have more creative playgrounds for students, such as programs or competitions about podcasts, thereby creating opportunities for them to learn and enjoy podcasts. Podcasts produced by students can be used for discussion, presentation, or used as a source of reference for dissertations, projects...

Combine the use of podcasts in teaching activities.

It is necessary to raise students' expectations of the benefits that podcasts bring. Universities can let students listen to some lessons through podcasts to experience and form expectations about the effectiveness of podcasts.

Use podcasts as an online, applied source of learning at the school library. This will increase the usefulness of podcasts for students when facilitating the acquisition of knowledge in an easier and more proactive way.

Lecturers can record lectures using devices in the classroom and upload them to the school's digital learning platform. From there, students can easily access them through their personal accounts.

Step up media activities and bring podcasts closer to students.

Promoting more about podcasts through social media channels such as the Facebook page of the university, on the website... This will improve credibility, making a good impression on students' podcasts in knowledge acquisition and sharing activities.

Universities can partner with kols that appeal to students in the fields of education to produce good and interesting podcasts, making students more excited and thereby using podcasts in knowledge acquisition and sharing activities.

5. Conclusion

Contextually in Vietnam, specifically universities in Ha Noi, the study delves into the factors affecting the decision to use podcasts in the knowledge acquisition and sharing activities of students in many fields. Through the process of research and analysis, the results show that, among the influencing factors, the "Perceived Enjoyment" factor has the strongest impact on the decision to use podcasts in the knowledge acquisition and sharing activities of students. Since then, universities as well as students have specific orientations to help promote the knowledge acquisition and sharing activities through podcasts and at the same time improve students' effectiveness in using podcasts.

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THE EFFECT OF HUMAN RESOURCE MANAGEMENT ON INNOVATION AT VIETTEL GROUP IN THE NEW CONTEXT

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ABSTRACT

This study aims to analyze the impact of human resource management on innovation in Vietnamese telecommunications enterprises. Data from 635 questionnaires from Vietnamese telecommunications enterprises were processed through SPSS & AMOS 21 software, then descriptive statistics, EFA analysis, CFA analysis, SEM analysis, and Bootstrap test were performed. The research results show that the factors of human resource management that affect innovation in Vietnamese telecommunications enterprises include: Human resource recruitment, human resource training, and development, and job performance evaluation, the level of workers. In which the factor of training and developing human resources is the factor that has the strongest impact on the innovation and creativity of Viettel Military Telecommunications Group. At the same time, the study also proposes some policy implications for managers at Viettel Military Telecommunications Group to promote human resource management and innovation to improve the operational efficiency of enterprises.

Keywords: Human resource management, innovation, creativity, Telecommunications, Vietnam.

1. Introduction

According to the Prime Minister's Decision 844 on "Supporting the national innovative start-up ecosystem until 2025", the Prime Minister clearly stated that it is necessary to promote innovation in businesses to help them grow rapidly based on exploiting intellectual property, technology, and new business models. This is a solid premise for the development of a modern economy with smart production, and fast and sustainable growth; is the driving force to realize strategic breakthroughs, innovation, digital transformation, modernization of the country, development of the digital economy; Telecommunications enterprises in Vietnam have gradually pioneered innovation, specifically Viettel Military Telecommunications Group, which is also the only company in the world that both owns a network and researches and develops equipment. telecommunication. The successful testing of video calls on self-researched and manufactured gNodeB 5G transceivers in early 2021 has put Vietnam on the list of 6 countries possessing 5G technology. Viettel has innovated solutions such as VOCs real-time billing system, IMS high-quality video and voice calling service system, EPC packet-switched core network system, Site Router... Besides, according to research by WEF within the framework of the "Digital Transformation Initiative - DTI", technologies that are and will change the world's production include Artificial Intelligence; Big data analytics, and cloud computing. These technologies are currently being researched by enterprises and started to be applied in Vietnamese telecommunications enterprises. However, in the new context of developing the digital economy, Industry 4.0, and the Covid 19 pandemic, Viettel Military Telecommunications Group needs to be a pioneer and take the lead in innovating technology products to become a leader in innovation the most important "salvation" methods or the "golden opportunity" in perfecting the automatic system, increasing the application of the Internet of Things and connected devices and social networks, online payment, mobile money... promoting human resource management in order to effectively influence high-quality human resources to meet the rigorous requirements of innovation is extremely necessary to establish a state of readiness to receive changes. changing and absorbing new scientific and technological techniques in Industry 4.0 of telecommunications enterprises. With that, Viettel Military Telecommunications Group "races" with the growing and more modern market. From the above facts, the article was selected to study the impact of human resource management on innovation and creativity at Viettel Military Telecommunications Group. Thereby implying a number of policies for Viettel

Military Telecommunications Group to be autonomous in technology to research, improve and innovate to improve production and business efficiency.

2. Theoretical basis, hypothesis and research model

2.1. Human resource management, innovation

➤ Human Resource Management

According to McGuire and Jorgensen (2011), human resource management has 03 main functional groups: Administration: activities that create the foundation of tools and systems to attract, maintain and ensure the results of the use of human resources; Development: activities aimed at developing the quality of human resources and their sustainable cohesion in the organization; Support: activities that support employers and employees maintain the foundation for governance and development

According to Tran Kim Dung (2018), human resource management is a system of philosophies, policies, and functional activities for attracting, training, developing, and retaining people of an organization in order to achieve optimal results. benefits both the organization and its employees. The functions of human resource management include 03 groups: Attracting human resources (job analysis, human resource planning, recruitment, and selection); Training and developing human resources; Retention of human resources (remuneration, evaluation, labor relations). Thus, human resource management is a combination of administrative activities related to the creation, maintenance, development, and effective use of human factors in the organization to achieve the common goals of the organization. enterprise.

According to Samma Faiz Rasool et al (2019), the human resource management practice model includes recruitment and selection of human resources, training, and development of human resources, assessment of human resources, remuneration, and benefits. Human resource management functions are being implemented on a larger scale in smarter ways, providing more comprehensive, intuitive, and timely information for management and human resource management levels to help develop Organizational development and maintenance of human resources, internal communication, and communication with society used social networking tools and qualitative analysis of information to provide useful information for the building develop human resource policies faster and more appropriate.

➤ Innovation, creativity

Katz (2007) defines innovation as “the creation, development, and successful implementation of new and original ideas including the introduction of new products, processes, and growth strategies for companies that lead to business success and market leadership, create value for stakeholders, drive economic growth, and raise living standards.”

In this study, we use the standard definition of innovation by the Organization for Economic Co-operation and Development (OECD, 2005): “Innovation is the implementation of a product (goods/services) service) or a new or significantly improved process, a new marketing method, or a new organizational measure in operating practice, in the organization of work or in external relations”.

In the OECD Oslo Manual (2005), innovation is classified into four types: (i) product innovation, (ii) process innovation, and (iii) innovation. management system creation, and (iv) innovation in marketing activities.

2.2. Research hypothesis

Human resource recruitment has a strong impact on innovation in organizations, and enterprises (Delery & Doty, 1996). Schuler (1989) gave evidence in his research that recruitment and selection affect the values of the organization/enterprise because they choose a suitable and competent candidate according to the needs of the organization. organization/business. In that sense, various types of enterprises employ highly qualified, high-quality human resources to bring about innovation in the organization (Jiang et al., 2012). Therefore, recruitment and selection is a very important segment of human resource management that helps to overcome creativity in the organization. Human resource recruitment and innovation and creativity are closely related (Samma Faiz Rasool et al., 2019), thus proposing hypothesis H1:

Hypothesis 1 (H1): Human resource recruitment has a positive impact on innovation and creativity in enterprises.

Businesses often have investments in employee training and development, so these investments produce workers to unleash their full potential, talent, and creative ideas in the process. work at the enterprise. Firms provide employees with a variety of training and development programs to enhance their competencies, and improve skills, new knowledge, and innovation capabilities required for innovation (Chen & Huang, 2009). Boselie et al (2005), and Samma Faiz Rasool et al (2019) describe that training and development have a positive relationship with innovation in organizations. On that basis, the authors propose the following hypothesis:

Hypothesis 2 (H2): Human resource training and development have a positive impact on innovation and creativity in enterprises.

The relationship of human resource assessment with employee innovation and creativity is very important. Several researchers have shown that human resource assessment increases employee motivation and organizational creativity (Asif et al., 2019; Egan, 2005). In the process of evaluating the process and evaluating the performance of the human resources department, the HR department must give feedback to employees. In that case, feedback will increase employee motivation, creative work, and innovation within the organization (Shipton et al., 2006). In addition, by getting feedback from the HR department for employees regarding job improvement, they can then creatively apply and develop approaches to their activities. Employees will start a new way of performing the organization's mission (Jiang et al., 2012). Human resource recruitment and innovation and creativity are closely related, therefore, hypothesis H3 is proposed:

Hypothesis 3 (H3): Human resource assessment has a positive impact on innovation and creativity in enterprises.

Compensation and benefits are important activities of human resource management, and it affects employee motivation and behavior. A good incentive system will improve the work motivation of the employees, bring about a positive attitude at work, and innovation and creativity in working at the organization. Enterprises need to design attractive compensation and benefits packages to attract skilled employees. Employees with these skills create strong competitiveness in organizations (Lepak et al., 2006). Thus, salary and benefits are affecting the motivation of employees, so it increases the participation and contribution of employees in the process of innovation and creativity for the organization (Farooq et al., 2016), Samma Faiz Rasool et al (2019). Therefore, the authors propose the hypothesis:

Hypothesis 4 (H4): Human compensation has a positive impact on innovation and creativity in enterprises.

2.3. Research models

From 4 hypotheses, the research model studies the impact of human resource management on innovation and creativity at Viettel Military Telecommunications Group, the proposed research model has 4 independent variables, namely human recruitment, training, and development. human resource development, human resource assessment, and human compensation, one dependent variable is innovation and creativity; Besides, through expert interviews and actual research at Viettel Military Telecom Group, the authors propose a control variable which is the level of employees (see Figure 1). The scales of 5 variables in the model are inherited and developed from the studies of Boselie et al. (2005), Farooq et al. (2016), Van Dierendonck et al. (2016), Ali et al. (2017), Samma Faiz Rasool et al (2019), Asif et al (2019) ... 5-point Likert scale: 1 completely disagrees and 5 completely agrees. In there:

The human resource recruitment scale is coded from HRR1 → HRR4 with 4 observed variables: HRR1- Determining the right number and type of human resources to meet job requirements; HRR2- Attracting a diverse source of candidates through recruitment announcements; HRR3- Fast and convenient application collection; HRR4- Selecting the best human resources through recruitment and selection exams

The green human resource training and development scale is coded from HRT1→HRT5 with 5 observed variables: HRT1- Training and development in professional, technical, HRT2- Training and development in politics, theory, HRT3- Training and development on working methods, HRT4- Training and development on corporate culture; HRT5- Training and development are invested effectively.

The human resource assessment scale HRA is coded from HRA1→HRA6 with 6 observed variables: HRA1- Provide feedback to employees about how well they are performing against model standards and with other employees; HRA2- Adjusting and correcting mistakes in the working process of employees; HRA3- Stimulating and motivating employees through evaluation, recognition and support provisions; HRA4- Provide information as a basis for issues of training, salary, reward, employee transfer, organizational structure improvement; HRA5- Develop business understanding through a conversation about opportunities and career planning; HRA6-Strengthening good relations between superiors and subordinates.

The human remuneration scale is coded from HRP1 → HRP5 with 5 observed variables: HRP1- Compensation motivates and stimulates employees to work with the highest efficiency, HRP2- Improves quality and operational efficiency business activities of enterprises, HRP3- Contributing to maintaining stable, high-quality and creative human resources for enterprises, HRP4- Helps improve the efficiency of other human resource management functions in enterprises, HRP4- Maintain stable and quality human resources for society.

The scale of innovation and creativity coded from IB1→IB5 with 5 observed variables: IB1- Improvement in the process towards digitization; IB2-Improvement in the production of quality products, IB3- Improvements in the production of products in order to save energy and reduce pollution; IB4- Innovating in providing quality products that are environmentally friendly; IB5- Innovating the flexible and pioneering way of organizing activities.

Thus, the research model has a total of 25 observed variables, of which there are 4 independent variables, human resource recruitment (HRR), human resource training and development (HRT), human resource assessment (HRA), and remuneration. human resources (HRP), 1 dependent variable is innovation and creativity in enterprises (IB), 1 dependent variable is the level of workers (LW).

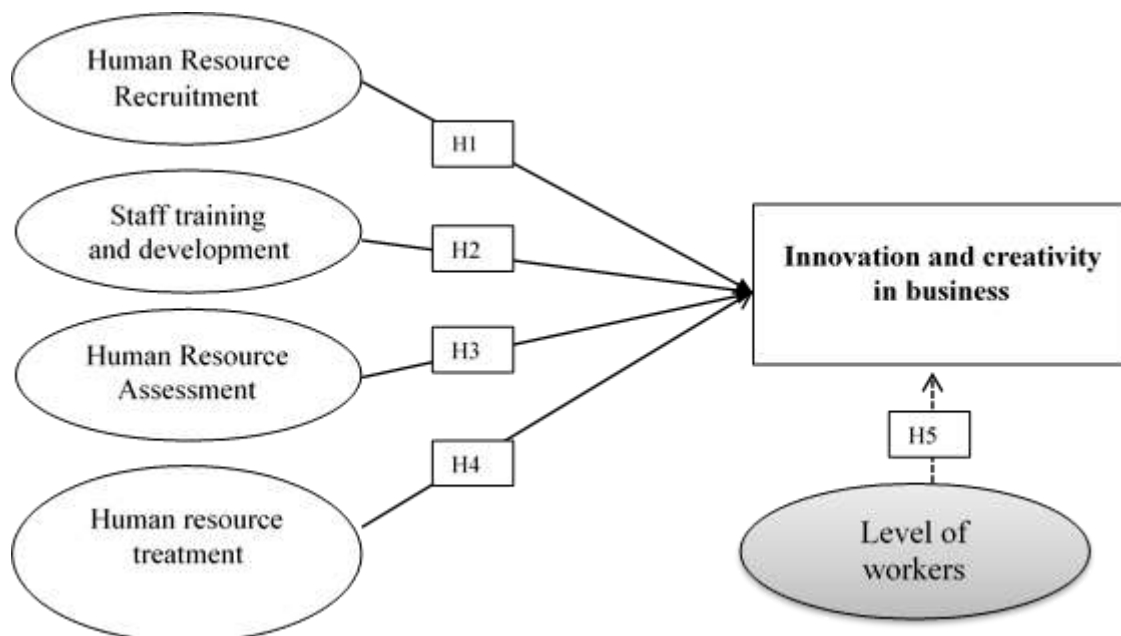


Figure 1: Proposed research model

3. Research Methods

The study was carried out through two qualitative and quantitative steps with two different groups of survey subjects. Survey subjects for qualitative research are experts and managers at some units of Viettel Military Telecommunications Group. Survey subjects of quantitative research are managers and employees, these are the people who implement human resource management and innovation where they are working.

From the synthesized theoretical basis, the observed variables are built on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) reflecting 5 complete research concepts. Qualitative research through in-depth interviews with 8 experts knowledgeable about human resource management and innovation at units of Viettel Military Telecommunications Group in order to supplement and adjust the above observed variables for easy to understand and suitable to the context of Vietnamese telecommunications enterprises. The qualitative research results help form a quantitative questionnaire consisting of 25 observed variables that reflect 4 independent variables: human resource recruitment, human resource training and development, human resource assessment and human compensation, 1 The dependent variable is the innovation of Viettel Military Telecommunications Group, the controlling variable is the level of employees

According to Hair et al. (1998), as a rule of thumb, the sample size should be greater than or equal to 100 and the smallest sample should have the desired ratio and $n = 5*k$. In the study, there are 25 observations, so the minimum sample is $25 * 5 = 125$. To ensure representativeness, the sample size is 770 from employees and managers working at Military Telecommunications Group. team. The author's sampling method is non-probability random sampling. The sample size for the study was divided equally into the norm for each manufacturing enterprise. Approach the survey object in 2 ways: (i) Send the designed survey on Google doc to the email address of employees, managers at manufacturing enterprises; (ii) Send surveys directly to employees and managers at Viettel Military Telecommunications Group. The results collected 673 questionnaires, after screening the answer sheets, removed due to incomplete information, the remaining 635 valid questionnaires were used by the authors to enter and process data. Collected data is imported into Excel file, then analyzed using SPSS and AMOS software version 21. Specifically, SPSS software is used to analyze descriptive statistics and analyze reliability of data. Cronbach's Alpha scale, AMOS software used for factor analysis EFA, CFA, SEM linear structure analysis, Bootstrap test.

4. Research results

4.1. Descriptive statistics of the study sample

Research results obtained 635 survey questionnaires from Viettel Military Telecommunications Group with the characteristics of the research sample:

Regarding gender, there are 77.59% male employees, the remaining 22.41% female employees. Because the specificity of these enterprises is the technology environment.

In terms of age, the survey subjects were mainly aged 35-45 years old, accounting for 55.03%, while the age group 23-35 years old achieved the remaining 36.28% and over 45 years old. Thus, the main subjects of the investigation are managers and employees who have working experience and are quite knowledgeable about innovation trends of Vietnamese telecommunications enterprises.

In terms of qualifications, of the subjects surveyed in the research on the impact of human resource management on innovation at Viettel Military Telecommunications Group, mainly university and graduate students, was 83.11%. The results show that most of the surveyed subjects are qualified to understand the innovation of Viettel Military Telecommunications Group.

Regarding the working position, the survey results show that 20.97% of respondents are managers and 79.03% of respondents are employees. In which, employees will be the main object of innovation of Viettel Military Telecommunications Group, along with that, managers can also assess the impact of human resource management on innovation at Viettel Group. Viettel Military Telecommunications Group.

4.2. Check the reliability of the scale

The reliability of the scale is assessed by the internal consistency method through Cronbach's Alpha coefficient. The criteria used when assessing the reliability of the scale are as follows:

- The type of observed variables with variable correlation coefficient - small sum (less than 0.3); criteria for choosing a scale when the reliability of Cronbach's Alpha is greater than 0.6. The larger the Cronbach's Alpha coefficient, the higher the consistent reliability (Nunally & Burnstein, 1994; Tho & Trang, 2009).
- Cronbach's Alpha values: greater than 0.8 is a good scale; from 0.7 to 0.8 is the scale that can be used; from 0.6 or more can be used in case the research concept is new in the research context (Nunally, 1978; Peterson, 1994; Trong & Ngoc, 2005).

(i) Reliability of human resource recruitment scale: the variables in the HRRR scale have Cronbach's Alpha coefficient = 0.816 > 0.6, which ensures high reliability. The lowest total correlation coefficient of 0.419 is higher than 0.3, showing that all observed variables are used for EFA factor analysis.

(ii) Reliability of the scale of training and human development: The variables in the HRT scale have Cronbach's Alpha coefficient = 0.815 > 0.6, which ensures high reliability. The lowest total correlation coefficient of 0.566 is higher than 0.3, showing that all observed variables are used for EFA factor analysis.

(iii) Reliability of human resource assessment scale: the variables in the HRA scale have Cronbach's Alpha coefficient = 0.811 > 0.6, this ensures high reliability when removing HRA6. The lowest total correlation coefficient of 0.497 is higher than 0.3, showing that all observed variables are used for EFA factor analysis.

(iii) Reliability of the human remuneration scale: the variables in the HRP scale have Cronbach's Alpha coefficient = 0.783 > 0.6, which ensures reliability. The lowest total correlation coefficient of 0.581 is higher than 0.3, showing that all observed variables are used for EFA factor analysis.

(v) Reliability of innovation scale: The variables in the IB scale have Cronbach's Alpha coefficient = 0.797 > 0.6, which ensures reliability. The lowest corrected item-total correlation coefficient (corrected item-total correlation) reached 0.407, both higher than 0.3, showing that all observed variables are used for EFA factor analysis.

4.3. EFA exploratory factor analysis

The results of the exploratory factor analysis are shown in the table below (see Table 1):

Table 1: Pattern Matrixa

	Factor				
	1	2	3	4	5
HRT5	.758				
HRT4	.731				
HRT2	.625				
HRT1	.617				
HRT3	.515				
HRA2		.863			
HRA5		.736			
HRA3		.678			
HRA1		.520			
HRR3			.776		
HRR2			.682		
HRR1			.621		
HRR4			.533		
IB3				.752	
IB1				.632	
IB4				.617	
IB2				.526	
HRP4					.825
HRP5					.653
HRP3					.610

Source: Synthesized results from the analysis of SPSS 21

The results of exploratory factor analysis (after 2 runs) gave the results of 20 group observation variables into 5 factors named respectively according to the above table: Human resource training and development factors (HRT5, HRT4), HRT2, HRT1, HRT3); Human resource assessment factors (HRA2, HRA5, HRA3, HRA1); Human resource recruitment factors (HRR3, HRR2, HRR1, HRR4); Innovation and creativity factors (IB3, IB1, IB4, IB2), Human compensation factors (HRP4, HRP5, HRP3). Observed variables: HRP1, IB5, and HRP2, with weight < 0.5 do not satisfy the condition, so they are excluded from the model.

4.4. The results of confirmatory factor analysis CFA

Is the CFA analysis to see if the measurement model of the concepts used in the study satisfactory? Do the scales meet the requirements of a good scale?

The results of CFA analysis showed that the tissue has 252 degrees of freedom. Chi - squared = 378,046 with p=000 value. Other indicators: Chi - squared/df = 2.363, GFI, TLI, CFI are all higher than 0.9 (Bentler & Bonett, 1980), RMSEA = 0.055 < 0.08 (Steiger, 1998), this can be infer the model is considered to fit the market data (see figure 2).

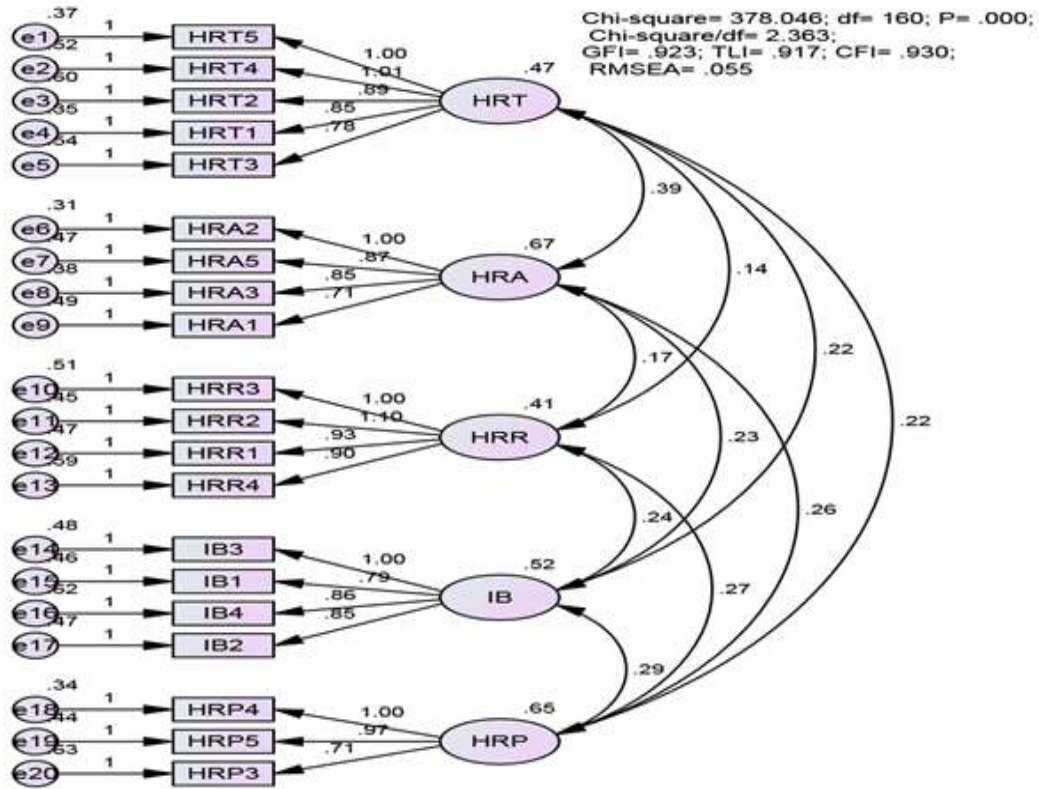


Figure 2: Confirmatory factor analysis (CFA) results (normalized)

Source: Synthesized results from the analysis of SPSS and Amos 21

(i) *Unidirectionality/monad*: The CFA analysis showed: Chi - squared = 378,046 with p=000. Other indicators: Chi - squared/df = 2.363, GFI, TLI, CFI are all higher than 0.9 (Bentler & Bonett, 1980), RMSEA = 0.055 < 0.08 (Steiger, 1998)-> This gives We have a necessary and sufficient condition for the set of observed variables to achieve unidirectionality (Steenkamp & Van Trijp, 1991).

(ii) *Convergent value*: For the weights (normalized) all > 0.5, it proves that the scale of concepts all achieve convergent value.

(iii) *Discriminant value*: The correlation coefficient between the research concepts in the model is positive and < 1 and the difference compared to the 1 P-value is very small and < 0.05, so the correlation coefficient is very small. The relationship of each pair of concepts is different from 1 at the 95% confidence level.

4.5. Research hypothesis test results

Table 3: Regression Weights: Regression Weights

			Estimate	S.E.	C.R.	P	Label
IB	<---	HRT	.453	.089	4.656	***	
IB	<---	HRA	.367	.086	3.652	***	
IB	<---	HRR	.232	.075	2.378	***	
IB	<---	HRP	.195	.066	1.585	.153	
IB	<---	LM	.120	.051	1.382	.008	

Source: Synthesized results from the analysis of SPSS and Amos 21

The results of SEM model analysis show that there are 4/5 factors posed in the hypothesis affecting innovation at Viettel Military Telecommunications Group, including: training and human resource

development, human resource assessment, recruitment of human resources, and qualifications of employees. These factors are all statistically significant at the 95% confidence level. The HRP factor was not statistically significant. The regression weights of the table above all have positive signs, showing that the concepts of training and human resource development, human resource assessment, human resource recruitment and employee qualifications have a positive influence on innovation at Viettel Military Telecommunications Group.

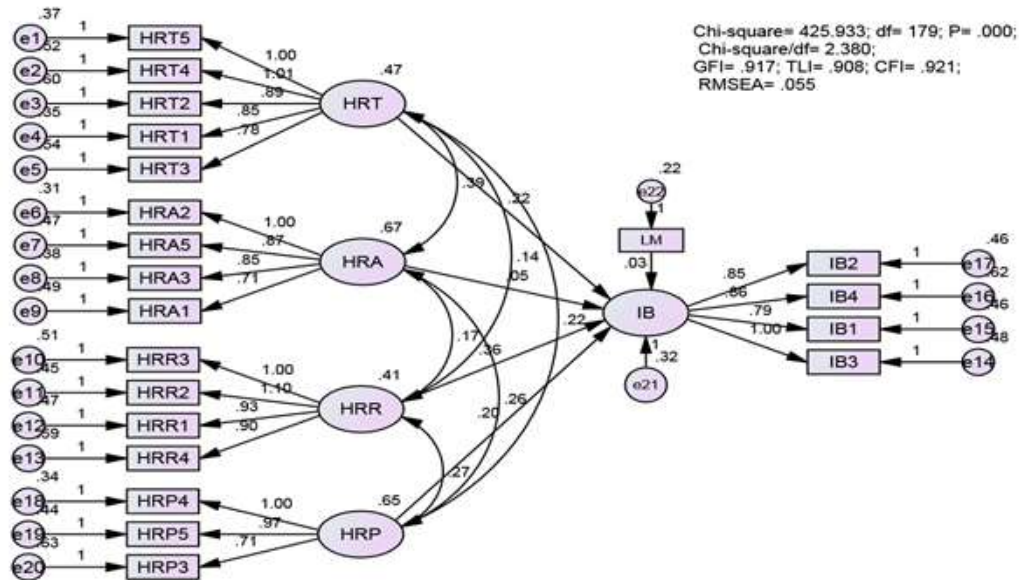


Figure 3: SEM (normalized) structural model analysis results

Source: Synthesized results from the analysis of SPSS and Amos 21

Of the four factors, the factor of human resource training and development has the strongest impact with a standardized weight value of 0.453, followed by the human resource evaluation factor with the weight of 0.367, the human resource factor is 0.232, and finally the worker's qualification factor is 0.120 (see Figure 3). The linear regression equation showing the relationship between human resource management variables affecting innovation at Viettel Military Telecom Group is as follows:

$$IB = 0.453. HRT + 0.367. HRA + 0.232. HRR + 0.120. LM$$

4.6. Model testing using Bootstrap analysis

To evaluate the reliability of the estimates, in quantitative research methods by sampling method, we usually have to divide the sample into 2 subsamples. Half is used to estimate model parameters and half is used for re-evaluation. Another way is to repeat the study with a different sample. Both of the above methods are often impractical because the structuring method often requires large samples, which is time-consuming and expensive (Anderson and Gerbing, 1988). In such cases Bootstrap is the suitable method to replace (Schumacker & Lomax, 2010) for the initial sample $n = 635$, Bootstrap is an iterative sampling method with substitution where the original template plays the role crowd.

Table 4: Bootstrap test

Parameter	SE	SE-SE	Mean	Bias	SE-Bias	CR
IB <--- HRT	0.080	0.004	0.435	-0.003	0.006	-0.500
IB <--- HRA	0.091	0.005	0.324	-0.002	0.006	-0.333
IB <--- HRR	0.055	0.003	0.092	-0.006	0.004	-1.500
IB <--- LM	0.053	0.003	0.097	-0.003	0.004	-0.750

Source: Synthesized results from the analysis of SPSS and Amos 21

The Estimate column shows the normal estimate with the ML (Maximum likelihood) method, the remaining columns are calculated from the Bootstrap method. The Mean column gives the average of the Bootstrap estimates. Bias (deviation) is equal to the Mean column minus the Estimate column. The CR column (Composite reliability) is calculated by Excel by dividing the Bias column by the SE - Bias column. Looking at the table above, we see that the absolute value of CR is very small compared to 2, so it can be said that the bias is very small, not statistically significant at 95% confidence => The estimates in the SEM model have can be trusted.

5. Discussing research results and implicating some solutions

The research results show that 4/5 of the initial hypotheses are accepted. Through the SEM model, it is shown that the factors of human resource training and development, human resource assessment, human resource recruitment and qualifications affect innovation at Viettel Military Telecommunications Group. This result is consistent with the research results of some authors that human resource management (recruitment, training and human resource development, human resource assessment) has a positive impact on innovation and creativity. of the organization/enterprise (Van Dierendonck et al. (2016), Ali et al. (2017), Samma Faiz Rasool et al (2019), Asif et al (2019). and human resource development have the strongest impact on innovation at Viettel Military Telecommunications Group, followed by human resource assessment factors, human resource recruitment factors, and employees' qualifications. Public organizations in general and Viettel Military Telecommunications Group in particular are increasingly perfecting human resource management, along with the innovation process. There are certain successes in the process of perfecting the recruitment of human resources, training and developing human resources, evaluating human resources, and rewarding human resources in order to have human resources develop in both quantity and quality in the labor market. However, one of the challenges facing the human resources of Viettel Military Telecommunications Group is the lack of good managers, highly qualified experts in engineering and technology; there is a shortage of skilled workers and technicians capable of self-control in technology and towards research, innovation and creativity to improve production and business efficiency. The reason is that most of the management staff come from technical backgrounds and have not been equipped with modern corporate governance knowledge and skills; The technical staff of Viettel Military Telecommunications Group are mainly trained in the country, the quality is not high, the foreign language skills are still weak, so they are limited in accessing technical and technological developments on the Internet. The world and training have not really been paid attention by the units as expected. Through the research results, the author proposes a number of solutions to improve the implementation of human resource management to promote innovation and creativity of Viettel Military Telecom Group in the coming time as follows:

5.1. Invest more in training and human development

Upgrading the training system of enterprises in the direction of modernity, training with focus, renovating training programs in the direction of advanced in accordance with Industry 4.0 and the digital economy. Human resource development must meet the requirements of creating innovation in the labor structure, increasing the proportion of staff with high intellectual qualifications in the fields of economic management, technical management, and mining. telecommunications services and value-added services. Ensuring the balance of qualification structure in fields and among units in Viettel Military Telecommunications Group. Specifically:

- To perfect the organizational structure for training, fostering and developing human resources at Viettel Military Telecommunications Group, this committee must include people with sufficient professional and technical qualifications, sufficient capacity to Ensure well research on needs and subjects and have the ability to organize the implementation and evaluate the effectiveness of this work.
- Must carefully study the needs and subjects that need to be trained, fostered and developed: In order to avoid wasting time, energy and costs, businesses need to properly study the actual needs of the customers. officers and employees, identify the right subjects that need to be trained and developed

on the basis of the harmony between the business goals of the enterprise and the individual so that the right subjects need training and the right expertise. subject to be trained.

- Choose the appropriate method, do well the job of arranging and using labor after being trained and fostered. In order to improve the effectiveness of this activity, Viettel Military Telecommunications Group must choose a training method suitable for each subject and each professional knowledge that trainees are trained in.

5.2. *Improve the effectiveness of the assessment*

Viettel Military Telecommunications Group needs to improve the efficiency of human resource assessment through implementing a rating system to evaluate employees associated with behavioral competence and green job performance skills such as setting up a standard system for employees. standards for assessing human resources associated with work. Because of their experience in many developed countries, they conduct staff training on the basis of standardized titles, high professionalism, and effective human resource assessment. On the basis of human resource assessment and human resource training, salary norms and promotion mechanisms are built based on title standards. Even telecommunications corporations in the region such as Japan and Korea, they also implement the inspection, testing, and publicization regime according to the internal inspection and cross-checking process to build a team of employees, professional staff.

Enhancing employee evaluation through innovation and creativity indicators at work. Because at units of Viettel Military Telecommunications Group, they have been and continue to innovate and be creative in researching and applying technologies of the industrial revolution 4.0 into their production and business activities such as: virtualization technology, artificial intelligence, big data processing technology, mobile computing technology, ...

5.3. *Pay attention to recruitment*

At Viettel Military Telecommunications Group, recruiting human resources is of great importance to businesses, this is the process of "sanding for gold" of enterprises. Effective recruitment will provide businesses with a skilled, dynamic, creative workforce, supplementing human resources in line with business requirements in the context of the digital economy and Industry 4.0. Recruitment is of great importance to businesses because it is the first stage of human resource management, only when doing well in the recruitment stage can we do well in the stages of training, human resource development, and evaluation. human resources and human resources.

With an ever-expanding scale and increasing human demand for telecommunications services, it requires a high level of professionalism and ensures to meet the needs of customers quickly, with a high level of expertise. In that spirit, human resource recruitment needs to meet the standards of qualifications, high-tech skills, proficiency and work in the context of the digital economy and the Industrial Revolution 4.0. Thus, Viettel Military Telecommunications Group needs to attach importance to the initial implementation of human resource management, which is to attach importance to the recruitment work using Bigdata to help promote innovation, creativity, and value creation of telecommunications businesses. information as well as the shortest path to effective human resource management.

5.4. *Strengthening effective human resource treatment*

For employees, salary is always an important and meaningful issue. Wages have the function of reproducing labor power, of stimulating function, of insurance function... for employees. Therefore, want to maintain long-term working ability for employees. Telecommunications enterprises must compensate for the loss of energy, that is, to recreate the lost labor force. At the same time, the elements constituting wages must ensure to constantly improve labor productivity, quality and efficiency; wages must encourage talented and talented workers; In order to promote the effect of the treatment of employees of Viettel Military Telecommunications Group, in addition to performing well the salary work, Viettel Military

Telecommunications Group needs to pay attention to voluntary benefits such as insurance, insurance and other benefits. Life insurance, support to buy houses, buy cars for the talents of their own businesses.

6. Conclusion

Implementing human resource management, innovation and creativity at Viettel Military Telecommunications Group is one of the issues that need to be implemented not only on the level of enterprises, but also on the local, sectoral and national levels. . The study built and tested the impact model of human resource management on innovation and creativity of Viettel Military Telecommunications Group. The research results show that the factors of human resource management that affect innovation at Viettel Military Telecommunications Group include: Human recruitment, human resource training and development, job performance evaluation. . In which, the factor of training and human resource development is the factor that has the strongest impact on innovation and creativity in Vietnamese telecommunications enterprises. Despite the data from 618 surveys of Viettel Military Telecommunications Group, the investigation of the sample does not really cover Viettel Military Telecommunications Group.

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DEVELOPING SPECIFIC TOURISM PRODUCTS FOR THE MU CANG CHAI DESTINATION, YEN BAI PROVINCE

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ABSTRACT

The research paper's overall goal is to research the development of specific tourism products in Mu Cang Chai district, Yen Bai province. Which focuses on clarifying the conditions, content, and development criteria; proposing a research framework with development conditions; and environmental factors influencing the development of specific tourism products in Mu Cang Chai, Yen Bai. The research also conducts an inspection of the research framework on conditions for developing specific tourism products to increase reliability and clarify the importance of conditions for developing specific tourism products in Mu Cang Chai, Yen Bai through a multivariable regression model, thereby determining the priority solutions to develop tourism products in Mu Cang Chai, Yen Bai. The analysis results show that all conditions positively impact the development of specific tourism products in the Mu Cang Chai district. Besides, another significant finding in the study is that the most specific product rated by tourists in the district is a tourism product that experiences extreme sports. Several impacts and policies have been recommended for destination management organizations, tourism businesses, travel agencies, lodging, restaurants, and Mu Cang district residents to promote several specific activities to develop local tourism products.

Keywords: Tourism, Specific tourism, Specific tourism product, Mu Cang Chai district, Yen Bai province.

1. Introduction

1.1. Rationale of the Study

Theoretically

Specific tourism products can create uniqueness, attraction, competition, and brand for the destination. With such an important role, the specific tourism product is always a topic that attracts the attention of many tourism research scholars, policymakers, tourism organizations, and businesses. This has also become a widely studied topic by many domestic and foreign research scholars. The literature review shows that there are still differences in determining the research framework and the system of conditions for developing specific tourism products. Because there is no suitable method or model to determine the specific conditions of tourism product development in all tourist destinations at all times. Therefore, the research aims to build a research framework with specific conditions for developing tourism products suitable for Mu Cang Chai district, Yen Bai province - the subject of the study.

Practically

The ability to replace and supplement tourism products is increasingly large, requiring countries, regions, and localities to constantly diversify tourism products, improve quality and create specificities in the product. This also means that countries, regions, and localities must simultaneously invest in resources, and marketing,... to improve their competitiveness to attract customers with specific products and services - a long-term solution and most sustainable.

In Vietnam, the development of tourism products in a specific direction, making a difference has been posed as an important strategic content of Vietnam's tourism to improve competitiveness in the process of international integration with regional and international. In particular, the basic special issue is to build specific products with Vietnamese identity. Tourism products need to bring the typical nuances of each locality.

Mu Cang Chai district, Yen Bai province, is a district with many outstanding potentials and strengths to develop specific tourism products as a key tourist destination of the province and influential in the Northwest region. However, without a clear orientation, the development of specific tourism products in the Mu Cang Chai district still has many shortcomings that are not commensurate with the district's potential and strengths. The primary reason is that Mu Cang Chai tourism has not been oriented to develop comprehensively and methodically based on available resources, opportunities, and advantages, and thus has not been able to concentrate resources with focus. Therefore, the problem is to find the most representative values that are representative, specific, meaningful, and widespread to focus on investing in the creation, development, promotion,... becoming a typical tourist product of Mu Cang Chai. From here, creating favorable conditions for Mu Cang Chai tourism to develop, contributing to bringing Yen Bai province to the same level as the whole country, and promoting the development of Vietnam's economy.

As a result, to develop more strongly specific tourism products in Mu Cang Chai, it is critical to first identify the conditions, contexts, and criteria for the development of specific tourism products in this location; which has theoretical and practical implications.

1.2. Research Overview

Tourism activities occupy an important position in the economic structure of many countries, annually contributing a large amount to the budget, bringing great benefits to countries with abundant tourism potential, and improving the lives of the people. Therefore, the development of tourism in general and the development of specific tourism products, in particular, are interested in research by scientists.

Firstly, research related to tourism development. During the research period, the authors have approached works around the world as theoretical and practical foundations such as: Janet Cochrane (2008), *Asian Tourism Growth and Change*; Stephen J. Page & Joanne Connell (2014), *Tourism, A Modern Synthesis*; Pauline J. Sheldon & Cathy H.C.Hsu (2015), *Tourism Education, Global Issues and trends*. In Vietnam, there are studies on tourism and tourism development, such as: Dinh Thi Thu Thao (2017), *Phát triển du lịch vùng dân tộc thiểu số và miền núi - tiềm năng, thách thức*; Nguyen Quyet Thang (2017), *Giải pháp phát triển du lịch bền vững cho vùng Đồng bằng Sông Cửu Long trong bối cảnh hội nhập*; Nguyen Thanh Binh (2018), *Phát triển du lịch bền vững quần thể danh thắng Tràng An tỉnh Ninh Bình*; Le Duc Tho (2019), *Phát triển du lịch theo hướng bền vững ở Quảng Bình*;... These studies have presented potentials, challenges as well as long-term development solutions and the right direction for some localities of Vietnam in particular and Vietnam in general.

Secondly, research related to tourism products and develop specific tourism products. Regarding tourism products, many authors have mentioned it, typically V. Seaton, M. M. Bennett (2004), *Marketing Tourism Products: Concepts, issues, cases, international*; Nicole Haeusler (2016), *Training "Regional Product Development "Support to Initiative of ASEAN integration" in the Tourism Sector in Vietnam"*; Nguyen Van Luu (1998) in *Thị trường du lịch*; Bui Xuan Nhan (2009), *Marketing du lịch*;... In addition, many studies have initially systematized several theories on developing specific tourism products and applied them to practical research on developing specific tourism products in some localities such as: Pham Trung Luong (2007), *Phát triển SPDL đặc thù nâng cao sức cạnh tranh của du lịch Việt Nam*, Hoang Thi Thu Thao (2012), *Phát triển SPDL tại Thành phố Đà Nẵng*, Tran Thi Yen Anh (2013), *Nghiên cứu sản phẩm du lịch đặc thù của tỉnh Hậu Giang*, ITDR (2015), *Xây dựng SPDL đặc thù vùng Đồng bằng sông Hồng*; Nguyen Van Chat, Duong Duc Minh (2015), *Xây dựng SPDL đặc thù cho khu vực phía Nam tỉnh Lâm Đồng*, Luong Thi Hat (2017), *Nghiên cứu phát triển sản phẩm du lịch tỉnh Bắc Kạn*, Tran Thi Bich Hang (2018), *Phát triển sản phẩm du lịch vùng đồng bằng sông Hồng và duyên hải Đông Bắc giai đoạn 2020-2030*, Nguyen Thi Huyen (2018), *Phát triển sản phẩm du lịch đặc thù theo hướng bền vững tỉnh Quảng Ninh*, Nguyen Lan Phuong (2019), *Phát triển sản phẩm du lịch đặc thù vùng núi phía Bắc*,...

Thirdly, studies on the development of tourism in Yen Bai. There have been some research works for tourism research and development activities in Yen Bai province so far, such as: People's Committee of Yen Bai Province (2018), *Quyết định về việc phê duyệt đề án phát triển sản phẩm du lịch đặc thù miền Tây Yên*

Bái, đến năm 2020, tầm nhìn đến năm 2030; Tien Khanh (2021), *Khai thác tiềm năng, phát triển du lịch sinh thái ở Yên Bái*;... It can be seen that although there is a lot of potential for tourism development, there are still few studies related to Yen Bai tourism development, mainly projects, and decisions made by local authorities and articles.

Fourth, research related to tourism development in Mu Cang Chai. For tourism research and development activities in Mu Cang Chai district, up to now, there have been several research projects such as: Dao Hong Bich (2018), *Giải pháp phát triển du lịch nông nghiệp ở huyện Mù Cang Chải - Yên Bái*; Luong Vu Bich Hang (2018), *Phát triển kinh doanh du lịch cộng đồng tại Mù Cang Chải*; Minh Thuy (2020), *Mù Cang Chải xây dựng thương hiệu cho sản phẩm du lịch*; Do Huyen Trang (2021), *Nghiên cứu sự tham gia của cộng đồng trong phát triển du lịch ở Mù Cang Chải, Yên Bái*; People's Committee of Mu Cang Chai District (2021), *Định hướng phát triển du lịch Mù Cang Chải đến năm 2025*;... These studies initially went into the study of tourism development activities in Mu Cang Chai district, but only stopped at qualitative analysis, not in-depth research on the problems posed to tourism development in the world district area. As for the research and development of special tourism products in Mu Cang Chai district, there is no topic on this issue. This is the research gap that will be inherited by the topic to form and develop theories and apply practical research to conditions, content, and criteria for the development of specific data products in Vietnam. Mu Cang Chai district, Yen Bai province to provide solutions and recommendations for the locality.

Thus, the research group's topic "Developing specific tourism products for the Mu Cang Chai destination, Yen Bai" is independent, not duplicated in comparison with previous research works; has both theoretical and practical significance.

2. Theoretical basis

2.1. Some theoretical issues about specific tourism products

2.1.1. Tourism product concept

Before focusing on discussing specific tourism products, it is necessary to clearly understand the concept of tourism products. Because tourism is a general economic industry with many unique characteristics, tourism products are also different from normal goods.

Since 1998, Michael M. Coltman has emphasized that SPDL is a whole consisting of tangible and intangible heterogeneous components. Then, S. Medlik (2004) stated that: "*Tourism product, in the narrow sense, is understood as anything that tourists buy, in a broader sense, it is a combination of what tourists do and recreational facilities, sightseeing, facilities, and services that visitors use to make it happen*". It can be seen that the common point of these two points of view is to show that a tourism product is a complex product that includes many elements and is served in the form of a service package.

Since then, there have been many different views on tourism products, one of the most complete and widely used concepts proposed by the World Tourism Organization (UNWTO, 2016): "*Tourism product is a combination of tangible and intangible elements, such as natural, cultural, man-made resources, attractions, facilities, services, and activities surrounding a tourism destination. specific interests, represent the core of the destination marketing mix, and create an overall travel experience that includes emotional aspects for potential customers.*"

From the above definition, it can be seen that a tourism product is a combination of intangible and tangible factors to give visitors a complete travel experience at the destination and emphasize the emotional element. In addition, like other products, a tourism product is priced and sold through distribution channels and also has a life cycle (UNWTO, 2016).

In Vietnam, the Law on Tourism (2017) stipulates that: "*Tourism product is a collection of services based on exploiting the value of tourism resources to satisfy the needs of tourists*" (p.2). This concept reflects that tourism products are essential services to help tourists make their trips, based on local tourism resources that are exploited and used.

As can be seen, there have been many concepts under different perspectives given, however, the common point of the concepts is confirmed: tourism product is a set of services (such as transportation services, accommodation services, food services, sightseeing and entertainment services, tour guide services,...) to satisfy the needs of tourists during the trip. In practice, tourism products are not only limited to a collection of tourism services but also include other material and immaterial elements.

2.1.2. Specific tourism product concept

The specific tourism product is a relatively new concept in Vietnam, which is scattered and used in several tourism documents without a complete theoretical system. This section aims to summarize some views related to the concept of specific tourism products used in the country and the world.

Firstly, it is necessary to understand the general concept of specific products in business and commercial activities in general. The phrase "specialty product" is used in traditional marketing to refer to products and goods that have different shapes, textures, properties, uses, etc. found in similar goods widely available in the market (Butler, 1946; Iskow et al., 1994; Köhler-Rollefson and Mundy, 2010). In modern marketing, a specific product is understood as a product that certain consumers will actively buy because of its unique characteristics or brand identity. Consumers (searching for specific products) know what they want and will spend time and effort to get that product, even paying a premium price (Kotler and Armstrong, 2019).

Related to this concept, in the tourism industry, there are several terms such as "specialized tourism" or "unique tourism" that are used to refer to a different and specific type of tourism (compared to popular products on the market). school) (Neven, 2014; Krakover, 2013). These products and services often serve a niche tourism market on a small scale but can bring high value. However, these terms are currently used in limited and single-use in several types of research and documents around the world, with almost no specific definition.

In this regard, the most commonly used and studied concept is probably "special interest tourism" (SIT). According to Derrett (2001), this type of tourism aims to provide recreational and relaxing experiences that are customized to the unique interests of individuals and groups of tourists. This concept is considered the opposite of "general interest tourism", also known as "mass tourism", which meets the popular and mass needs of tourists; offers things that can be easily found in many different destinations.

Some visitors using SIT focus on activities they enjoy in particular (shopping, climbing, skiing, etc.), while others feel the urge to experience a certain destination because of specific elements there (Weiler & Hall, 1992; Swarbrook & Horner 1999; Rittichai Kuwait, 2018). Weiler and Hall (1992) emphasize that geography is an important factor in tourism and that special preferences may be catered for only in a certain region/destination. Similarly, Read (1980) states that SIT participants are "tourists who visit a destination to pursue their particular interest in a certain area or destination" (p.195). In other words, visitors choose this destination over nowhere else because it has unique values that satisfy a particular interest/interest of them. In short, "special interest tourism" can be understood as a type of tourism with specific characteristics to serve the special interests/interests of tourists in specific destinations (Jin & Sparks, 2017, 2017). quoted by Wen & Wu, 2020).

In general, the concept of a specific tourism product can be approached from the demand side, focusing on a particular type of visitor need. However, it can also be approached from the supply side, to refer to tourism services with specific and unique characteristics only available in a single locality or destination. However, both approaches must show that supply and demand meet to develop a specific tourism product.

It can be said that building a destination brand is a particularly important requirement in the process of tourism development. However, for a destination to have a brand, it is necessary to have specific products. Each destination needs to base itself on its potential and specific conditions to create specific tourism products to serve each customer market.

In Vietnam, a concept that is very commonly used in tourism research and documents in Vietnam by Assoc.Prof.Dr. Pham Trung Luong (2007) proposes as follows: *“Typical tourism products are those with attractive, unique, original and representative elements of tourism resources (natural and human, literature) for territory or a tourist destination; with services that not only satisfy the needs and expectations of visitors but are also impressed by their originality and creativity”* (p.15).

Similarly, Ph.D Do Cam Tho (2009) also made the following point of view: *“A specific product is a product that ensures the promotion of the highest specific natural resource values, using tourism resources. special has the uniqueness of the locality that other places do not have. Specific tourism products are products capable of creating a distinction between one locality from another, and one destination from another. A particular tourism product may be unique or distinctive, but it may or may not be attractive, depending on whether it matches the needs of the market”* (p.17).

It can be seen that both of these points of view indicate that a particular tourism product is built on the typical elements of a locality, creating a distinctive mark that distinguishes this destination from other destinations. to others but must satisfy the needs of visitors.

Similarly, Cao Hoang Ha (2021) argues that: *“A specific tourism product is a distinct tourism product, which is different from normal tourism products thanks to its distinctiveness, uniqueness, and uniqueness. the excellence of resources and services”*. However, this researcher believes that specific tourism products have unique and special features but are not necessarily attractive to tourists. According to him, specific tourism products must be attractive enough to attract tourists to help guide tourism development and build destination brands.

The Vietnam National Administration of Tourism (2016) also offers a few concepts:

- *“Specific tourism products are tourism products built on the unique (possibly unique) specific values of tourism resources; based on the unique values, outstanding achievements of the economy - society, science, and technology... of each destination, each locality, each region, and each country with services that not only satisfy needs the needs of tourists but also create impressions by the uniqueness (uniqueness), creativity.... in the hearts of tourists.”*

- *“Particular tourism products are those capable of creating tourism brands and tourist images; creating a difference between one tourist destination and another (between one locality and another, between one region and another, between one country and another). However, the attractiveness of specific tourism products depends on the tastes and needs of each tourist market; may be attractive to one market, but not attractive to another.”*

According to ITDR (2017) *“Specific tourism products are tourism products built based on specific, unique (possibly unique) values of tourism resources; based on the unique values, outstanding achievements of the economy - society, science, and technology... of each destination, each locality, each region and each country with services that not only satisfy the needs of tourists but also create impressions by the uniqueness (uniqueness), creativity... in the hearts of tourists”*; *“Particular tourism products are those capable of creating tourism brands and tourist images; creating a difference between one tourist destination and another (between one locality and another, between one region and another, and between one country and another). However, the attractiveness of specific tourism products depends on the tastes and needs of each tourist market; may be attractive to one market, but not attractive to another.”*

From the above concepts, the first thing to confirm is that a specific tourism product is first and foremost a tourist product of a destination. Thus, when building a specific tourism product, in addition to promoting the highest specific resource values, it is also necessary to take into account the feasibility and marketability of this product. Because there are factors unique to this market that are not unique to another market, or this particular product is attractive to this market but only specific but not attractive to another market. Therefore, it is always necessary to identify the key market from which to identify specific tourism products.

2.1.3. Classification of tourism products

There are different ways to classify specific tourism products based on different criteria systems and approaches, which can be based on the size of the destination providing tourism services, the type of mainstream activities, motivations, or special interests of visitors.

Classification based on the size of the geographical space providing tourism services:

According to Cao Hoang Ha (2021), tourism products can be divided into two categories:

- "National-specific tourism products: using tourism resources with the highest uniqueness and characteristics compared to the whole country" (p.158)
- "Special tourism products with local characteristics: using tourism resources with unique and distinctive characteristics of a locality in comparison with other localities in the region" (p.159)

According to this classification, tourism products at the local scale (of the tourist destination) may attract tourists from neighboring areas but are not attractive enough nationally or become Tourism products that help build national brands to attract international tourists as tourism products with national characteristics.

Classification of specific tourism products based on main activities in the tourism program or special interests of visitors:

Table 2.1. Categorize specific tourism products based on the main activities in the tourism program or the special interests of visitors

Sociocultural	Nature	Sport	Entertainment - Consumption	Rest - Health
<ul style="list-style-type: none"> - Educational tourism - Art tourism - Heritage tourism - Religious tourism - Volunteer travel 	<ul style="list-style-type: none"> - Ecotourism - Adventure travel - Research tourism - Green tourism - Island Tourism 	<ul style="list-style-type: none"> - Mountain climbing tourism - Cycling tourism - Boat racing tourism - Surfing tourism - Jogging tourism - Sports events tourism 	<ul style="list-style-type: none"> - Festivals and events tourism - Music tourism - Film tourism - Shopping tourism 	<ul style="list-style-type: none"> - Medical tourism - Healthcare tourism - Spas and resorts tourism - Meditation tourism - Yoga tourism

Source: Summary of the author team

There are also several specific types of tourism serving other special needs such as dark tourism, ghost tourism, sex tourism, rural tourism, etc. Farm and garden tourism, wine and food tourism (Rittichai Kuwait, 2018).

2.2. Some theoretical issues about developing specific tourism product

2.2.1. The concept of developing specific tourism products

Regarding the development of specific tourism products, many different views have been given, typically the concept of the World Tourism Organization (UNWTO) (2011): “Tourism product development is a process in which the values of a particular place are used to satisfy the needs of domestic tourists and international tourists. Tourism products can include: natural or man-made attractions, hotels, resorts, restaurants, theaters, activities, festivals and events.”

In addition, the concept of developing specific tourism products has now been interested by the Party and State and researchers. According to the Vietnam Tourism Law (2017): “The government has a policy to

support the development of key tourism products for each region and nationwide in phases, meeting the needs of the market on the basis of assessment and classification of tourism resources”.

In "Vietnam Tourism Development Strategy 2001-2010 period and vision to 2020 of Vietnam National Administration of Tourism" (2012) also identified: *“Developing sustainable tourism, oriented towards eco-tourism and cultural-historical tourism, ensuring continuous growth, actively contributing to preserving and protecting the natural and social environment, national cultural identity, building specific tourism products, high quality, competitive in the region and the world”*

Thus, the development of specific tourism products has been posed as an important strategic content of Vietnam's tourism industry in order to improve competitiveness in the process of integration of Vietnam's tourism with the region and internationally. Thereby, it can be seen that our Party and State have focused and paid attention to the development of specific tourism products, considering it as an orientation and strategy to promote the development of Vietnam's tourism industry.

However, the development of specific tourism products must come from the development of tourism products. In which, emphasis is placed on the value of attractive, unique and characteristic tourism resources of the destination. Thus, the concept can be formulated:

"Development of specific tourism products is to perfect existing specific tourism products and build new specific tourism products at that tourist destination".

2.2.2. Conditions for the development of specific tourism products

The form of tourism associated with specific tourism products of each locality is currently a type of tourism that is having conditions for development in places with specific resources in terms of terrain, customs, and traditions, festivals... Tourism associated with specific tourism products has been bringing high economic efficiency to the tourism industry. Not only that, but this form of tourism also brings income and improves the living standards of local people.

Tourism associated with specific tourism products of the destination currently accounts for a relatively large proportion of tourism activities. For tourism to develop quickly and sustainably, it is necessary to define tourism associated with specific products as a breakthrough for economic development. In order to build a specific tourism product, specific conditions must be met such as supply conditions (to build products suitable for resource conditions), and demand conditions (to build tourism products to meet tourists' demand). Specifically, conditions for the supply of specific tourism products include: specific tourism resources, tourism infrastructure, technical facilities for specific tourism, human resources serving specific tourism, and policies to develop specific tourism products; Conditions on demand for specific tourism products include: Main sources of visitors, number of visitors, tourist demand of tourists for specific tourism products, ability to pay tourists.

2.2.3. Content of developing specific tourism products

The development of specific tourism products needs to be synchronized in the following aspects: Development in breadth (diversification of tourism products) and in-depth (improvement of tourism product quality).

To diversify specific tourism products towards sustainability, a number of measures can be taken: Offer existing tourism products to a new customer market; Improve and renew existing tourism products by adding added value to tourism products; Exploit the destination containing the value of new specific tourism resources to develop new tourism products. In order to improve the quality of specific tourism products in a sustainable way, it is possible to develop conditions in terms of infrastructure, human resources,...

2.2.4. Criteria for developing specific tourism products

Developing specific tourism products in a sustainable way poses a requirement not only to develop tourism products of particular value, suitable to market demand in terms of quantity and quality but also to ensure the level of satisfaction of tourists' needs, giving the economic, socio-cultural, and environmental significance of the destination.

Ph.D. Tran Thi Bich Hang (2018) stated that: “There are 4 groups of criteria to evaluate the development of specific tourism products with a total of 14 criteria. Specifically as follows: Criteria for assessing the level of satisfaction of tourists' needs (including diverse specific tourism products, quality specific tourism products, KDL's satisfaction with tourism products in particular, tourists are willing to introduce specific tourism products); Criteria to evaluate the level of economic sustainable development (including stable visitor growth, stable tourism revenue growth, increased job opportunities and income, investment from tourism for social welfare stable association); Criteria for assessing the level of socio-cultural sustainable development (including the level of degradation of historical and cultural relics, the low rate of commercialization of traditional cultural activities, the low level of high social order and safety); Criteria for assessing the level of environmental sustainability (including low rate of landscape degradation, rate of natural resources being destroyed, low degradation, and low rate of environmental pollution).

3. Research Methods

3.1. Data collection methods

Secondary data source: Secondary data used for the research include monographs, scientific research topics at all levels, relevant articles from the national library of Vietnam, the library of Thuong Mai University, statistics from the Vietnam National Administration of Tourism, the World Tourism Organization (UNWTO) and some domestic websites. Actual secondary data on the development of specific tourism products of the destination Mu Cang Chai, Yen Bai: reports and statistics of Department Culture and Information of Mu Cang Chai district, Department of Culture - Sports - Tourism of Yen Bai province.

Primary data source: Primary data is collected through the following techniques: 1) Interviewing experts in the field of tourism; 2) Sociological survey of tourists who have visited and experienced tourism products at the destination of Mu Cang Chai, Yen Bai; 3) Actual observation of tourism activities in Mu Cang Chai. The primary data collected is mainly related to the evaluation of conditions and criteria for developing specific tourism products in the direction of sustainability of Mu Cang Chai district over time.

3.2. Qualitative research methods

Qualitative research was conducted in November 2021. In-depth interviews were conducted by 7 experts - people who work directly or do research related to the tourism sector. The content of the in-depth interview consisted of two main contents: (1) Determining the criteria for developing specific tourism products at the tourist destinations of Mu Cang Chai, Yen Bai; (2) Suggest some solutions to encourage and promote the development of specific tourism products in the tourist destination of Mu Cang Chai, Yen Bai.

3.3. Quantitative research methods

Quantitative research was conducted from November 2021 to January 2022. The research sample has been selected as domestic tourists with the condition that they have visited and experienced tourism products at the destination of Mu Cang Chai, Yen Bai, because tourists to Mu Cang Chai account for the majority of the time. domestic tourists. Besides, due to the complicated epidemic situation, Vietnam stopped accepting international visitors, leading to almost no international tourists coming to Mu Cang Chai.

The research team uses the calculation of Bollen (1998). The calculation will be $n*5$ observations (where n is the estimation parameter or the scale for the factors). Specifically, the research has 4 scales for *Specific Tourism Resources*; 4 scales for *Tourism Infrastructure*; 3 scales for *Specific Technical Facilities For Tourism*; 3 scales for *Human Resources For Specific Tourism*; 3 scales for *Specific Tourism Product Development Policy*; 3 scales for *Key Guest Sources*; 3 scales for *Number of Visitors*; 3 scales for *Tourist Needs of Tourists For Specific Tourism Products* and 4 scales for *Tourist Affordability*.

So the sample size will be $30*5=150$ observations. However, with a scientific research topic, to ensure objectivity and accuracy, the research team distributed 350 questionnaires to domestic tourists.

All answer results are entered into SPSS 26.0 software to check the reasonableness of the data, and check the blank data to clean the data. After cleaning the data, and removing invalid answer sheets, the remaining 303 votes reached 95.3% to meet the requirements and will be used in the next analysis...

4. Research results and discussion

4.1. Research results

4.1.1. The situation of tourism activities of Mu Cang Chai, Yen Bai in the period 2016 - 2020

Table 4.1. The number of visitors and tourism revenue in Mu Cang Chai, Yen Bai 2016 – 2020

Year	Visitors (person)	Revenue (Billion VND)
2016	110.000	60
2017	60.000	30
2018	90.000	45
2019	250.000	93
2020	167.000	100

Source: Department of Culture and Information of Mu Cang Chai District

Through the summary table, it can be seen that the number of visitors and revenue of Mu Cang Chai has a remarkable increase in 2016, a decline in 2017 and continued steady growth until the end of 2019. These variations are due to:

- In 2016, Muong Lo Culture - Tourism Week; The Week of Culture - Sports and Tourism of the National Scenic Landscape of Mu Cang Chai Rice Terraces was held to make domestic and foreign tourists flock to Mu Cang Chai to participate in tourism activities, especially experience and admire the paragliding "Bay tren mua vang" festival was held in Khau Pha pass.

- In 2017, Mu Cang Chai was severely damaged by floods, partly affecting tourists' decisions to travel. Therefore, the number of visitors and tourism revenue of the district decreased significantly compared to 2016.

- Because the locality has been active in boosting propaganda and advocacy for people to comprehend and voluntarily study and conduct tourism, the number of tourists and revenue have increased again in 2018, enhancing the visitor experience.

- In 2019, the locality has focused more on investment, development, and improvement of infrastructure (transportation system, power supply system, water supply, health care). Since then, the number of visitors in 2019 increased by 177% compared to 2018, revenue increased by 48 billion VND.

- In 2020, the COVID-19 epidemic took place during the peak tourist season. This led to a sharp decrease in the number of tourists, specifically, the number of tourists decreased by more than 80,000 people.

4.1.2. Results of testing the reliability and importance of specific conditions for developing tourism products in Mu Cang Chai, Yen Bai

Using SPSS 26.0 software to support multivariate regression analysis with the research framework and collected data, the research team assessed the reliability of the scales by Cronbach's Alpha reliability coefficient.

The scales will be tested using Cronbach's Alpha tool. With Cronbach's Alpha, it will help to eliminate unsatisfactory observed variables or unsatisfactory scales during the research.

The results of the evaluation of the Cronbach's Alpha reliability coefficient with the observed variables in the scales are all greater than 0.6, and the correlation coefficients of the total relevant observed variables are greater than 0.3. Thus, all scales are reliable and suitable for inclusion in EFA exploratory factor analysis.

Factor Analysis EFA

The results of EFA factor analysis (using varimax rotation) showed that the coefficient of $KMO = 0.786 > 0.5$ was satisfactory, eight factors were extracted at Eigenvalue as $1,032 > 1$ and the total variance

extracted was 63.722% > 50%. For the factor rotation matrix table, all variables have a factor loading coefficient of 0.5 or more. Conclusion The scale of observed variables included in the analysis is satisfactory and meaningful.

Correlation test

Pearson correlation analysis is used in this section to consider the fit when including components into the regression model. Pearson correlation coefficient (r) is used to quantify the closeness of the linear relationship between two quantitative variables. The absolute value of r indicates the strength of the linear relationship.

r ≤ 0.3: correlation is not strong; 0.3 < r < 0.5: relative correlation

chop; r ≥ 0.5: close correlation.

The sig. value indicates whether the relationship between the observed variables is statistically significant or not. Here, the correlation coefficient r is all greater than 0.3 and the sig value is <0.01 showing that the independent variables all have a relationship with the dependent variable at a 99% significance level and are all positive relationships.

Regression model

Regression analysis was performed using the Enter method, the variables were included at the same time to select based on the criteria for the exclusion of variables with Sig. > 0.05. Values R²=0.722 and adjusted R²=0.550 mean that 55% of the variation in specific tourism product development of Mu Cang Chai and Yen Bai destinations is explained by independent variables in the research framework. (Table 4.1)

Table 4.1. Multivariate regression analysis results

The scale	Unnormalized coefficients		Normalization coefficient	Value t	Sig significance level.	Multicollinear Statistics	
	Regression weights	Standard deviation	Beta			Acceptance coefficient	VIF
Constant	.772	.443		2.881	.082		
1. TN	.414	.128	.435	1.277	.000	.630	1.586
2. HT	.153	.029	.322	2.330	.001	.388	2.581
3. KT	.220	.095	.222	3.877	.000	.341	2.929
4. NL	.024	.068	.120	.2010	.001	.754	1.326
5. CS	.091	.139	.093	.981	.004	.631	1.584
6. NK	.093	.059	.032	.220	.003	.703	1.422
7. LK	.231	.056	.099	.334	.000	.635	1.575
8. NC	.031	.041	.034	.551	.048	.917	1.090
9. KN	.098	.051	.087	.980	.037	.886	1.129

Source: Results of data processing from SPSS 26.0 of the authors

Thus, the regression model to assess the impact of specific tourism products development conditions of Mu Cang Chai and Yen Bai destinations is rewritten as follows:

$$\text{DSTP} = 0.435 \cdot \text{TN} + 0.322 \cdot \text{HT} + 0.222 \cdot \text{KT} + 0.120 \cdot \text{NL} + 0.093 \cdot \text{CS} + 0.032 \cdot \text{NK} + 0.099 \cdot \text{LK} + 0.034 \cdot \text{NC} + 0.087 \cdot \text{KN}$$

4.1.3. Content of developing specific tourism products of Mu Cang Chai, Yen Bai

Through the research process, the research team synthesized the main tourist product lines that Mu Cang Chai is exploiting, including eco-tourism, convalescence; historical - cultural tourism; agro-ecological tourism; sport, discovery, adventure tourism; community tourism; Spiritual tourism, festivals. Which, Mu Cang Chai has oriented to develop specific tourism products as follows: Conquering the primeval forests of Che Tao; Picnic visit Mo Waterfall; Having a picnic to see animals in the Conservation Area of Species and Habitat in Che Tao Commune; Walking picnic in Nam Khat; Conquering Pung Luong Peak; Explore Hang La cave; Picnic running the marathon in La Pan Tan watching terraced fields; Paragliding in the air.

In addition, the research team has summarized the results of tourists' evaluation of the specificity of tourism products in Mu Cang Chai, Yen Bai through the following figure:

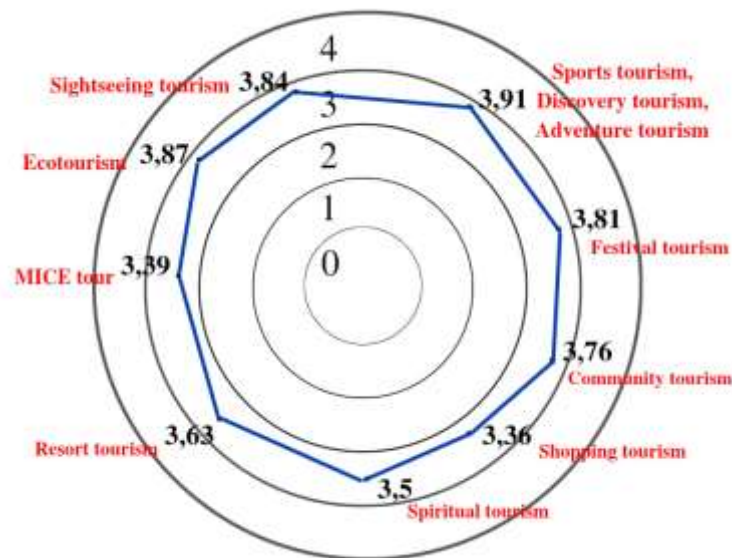


Figure 4.1. Summarize the results of tourists' evaluation of the specificity of tourism products in Mu Cang Chai, Yen Bai

Source: The results of the tourist survey of the author's team

The figure shows that tourists rate the specificity of local tourism products that they experience above average. The type of tourism product, experiencing extreme sports, is rated as the most unique in the district, reaching 3.91 points - with high specificity. Followed by ecotourism products; sightseeing tours, scenic spots; festival tourism; community tourism; resort tourism is also rated as having a relatively high level of specificity. Followed by spiritual tourism in turn; MICE tourism; shopping tourism.

4.1.4. Criteria for developing specific tourism products of Mu Cang Chai, Yen Bai

a) Traveler reviews

The research team conducted a survey and synthesized the survey results of 303 domestic tourists (who have visited and experienced tourism products at the destination of Mu Cang Chai, Yen Bai) on the development criteria of specific tourism products of Mu Cang Chai and Yen Bai destinations as follows:

Table 4.2. Summary of tourist survey results on criteria for developing specific tourism products of Mu Cang Chai and Yen Bai destinations

ON	Criteria for developing specific tourism products	Number of tourists surveyed: 303
		Average rating
1	Diverse specific tourism products	3.92
2	Quality specific tourism products	3.23
3	Satisfied with specific tourism products	3.78
4	Ready to introduce specific tourism products	3.84
5	Steady customer growth	-
6	Stable growth in total tourism revenue	-
7	Job opportunities and income increase	-
8	Investment from tourism for social welfare is stable	-
9	Low level of degradation of historical and cultural relics	3.70
10	The rate of commercialization of traditional cultural activities is low	3.58
11	High level of social order and safety	3.68
12	Low rate of degraded landscape	3.26
13	The rate of natural resources being destroyed and depreciated is low	3.08
14	Low rate of environmental pollution	3.17

Source: Compiled by the author's team

The tourist survey results show that most of the criteria for evaluating the development of specific tourism products of Mu Cang Chai district are at a good level or higher. Some of the notable results are as follows:

1. The tourism products of Mu Cang Chai have a high diversity of tourists with 3.92 points.
2. Tourism products are still monotonous, with few added services, and service quality is not high.
3. Tourists tend to be willing to recommend the district's tourism products to their friends.
4. Mu Cang Chai ensures a level of social order and safety.
5. The development of specific tourism products is gradually achieving economic and socio-cultural sustainability.

b) Expert reviews

The research team conducted in-depth interviews with 7 experts and synthesized the survey results on the criteria for developing specific tourism products of Mu Cang Chai and Yen Bai destinations as follows:

Table 4.3. Summary of the results of in-depth interviews with experts on the criteria for developing specific tourism products of Mu Cang Chai and Yen Bai destinations

ON	Criteria for developing specific tourism products	Number of experts in-depth interview: 7	
		Number of opinions agreeing	Agree rate (%)
1	Diverse specific tourism products	7	100
2	Quality specific tourism products	3	42.9
3	Satisfied with specific tourism products	5	71.4
4	Ready to introduce specific tourism products	5	71.4
5	Steady customer growth	5	71.4
6	Stable growth in total tourism revenue	5	71.4
7	Job opportunities and income increase	7	100
8	Investment from tourism for social welfare is stable	3	42.9
9	Low level of degradation of historical and cultural relics	4	57.1
10	The rate of commercialization of traditional cultural activities is low	6	85.7
11	High level of social order and safety	6	85.7
12	Low rate of degraded landscape	3	42.9
13	The rate of natural resources being destroyed and depreciated is low	3	42.9
14	Low rate of environmental pollution	4	57.1

Source: Compiled by the author's team

The results of in-depth interviews with experts show some other remarkable results:

1. The specific tourism products in Mu Cang Chai attract more and more tourists, contributing to the economic growth of the district. Specific tourism products selected and developed by Mu Cang Chai in recent years have initially brought about remarkable results and successes.
2. Investment from tourism for social welfare, infrastructure, and social welfare works has not been commensurate.
3. Tourism product development also contains many unsustainable economic factors for local people, limiting the environment, and disrupting the landscape, and natural resources...

4.2. Solution

Based on the results of analyzing the current situation and the results of testing the conditions for developing specific tourism products of the Mu Cang Chai and Yen Bai destinations, the authors propose a number of solutions to promote the development of specific tourism products of Mu Cang Chai and Yen Bai destinations in the coming time, specifically:

Firstly, promote investigation, evaluation and market research to supplement and develop new specific tourism products with their own identity and high competitiveness. Conduct an overall investigation and assessment of the current status of Mu Cang Chai tourism products (quality, quantity, ability to meet the

needs and tastes of guests), and the potential for forming products that have not yet been discovered. exploit. From there, develop a specific plan to develop typical tourism products of Mu Cang Chai on the basis of the identified specific tourism product development orientation, and at the same time diversify and balance costs. products to meet the increasingly diverse and rich requirements of tourists. This is also the premise to access more main sources of visitors, especially international tourists.

Secondly, strengthen policies to develop specific tourism products. Mu Cang Chai needs to focus and strengthen policies to encourage and support people to participate in preserving and promoting the values of heritage and traditional local culture; strengthen policies to support the community, create jobs for local people; strengthen policies to attract tourism investment projects;...

Thirdly, improve the state management of tourism product development, aiming to develop specific tourism products in a sustainable way. Strengthening inspection and examination, close coordination between units and responsible agencies. Improve the initiative in coordination between all levels and sectors in the implementation of goals and tasks, solutions to develop specific tourism products. Continue to well implement the work of improving the quality of the staff, focusing from the input recruitment stage, arranging suitable job positions, reviewing and supplementing the staff planning regularly and substantive guarantee.

Fourthly, maintain and promote the propaganda, promotion and promotion of tourism through the addition of images and tourism advertising slogans on the product brands of Mu Cang Chai and impress consumers. Besides, it is necessary to maintain participation in national tourism fairs and conferences, etc. In addition, to promote and propagate Mu Cang Chai tourism on the mass media, websites; strengthen linkages with western districts of the province such as: Van Chan, Tram Tau, Nghia Lo town and neighboring districts. Since then, bringing the image of Mu Cang Chai closer to tourists, stimulating tourism demand to help increase the number of visitors to Mu Cang Chai.

Fifthly, improve the quality of human resources for specific tourism. Mu Cang Chai needs more effective policies to perfect the human resources for state management of tourism at all levels. First of all, the recruitment of tourism management personnel needs to ensure the right expertise, qualifications, skills, ... to really be capable of planning and developing specific tourism products for the locality. In addition, the local tourism department also needs to regularly train, foster and train the staff on state management knowledge on tourism, knowledge on building and developing tourism products, etc. state management. For the staff directly at the tourism business establishments, in addition to the tourism business establishments must actively train and foster their human resources, The district needs to be more active in completing policies to support training and fostering human resources for tourism business. Particularly for households participating in community tourism, it is necessary to pay attention to practical support through appropriate training programs.

Sixthly, invest and attract investment in tourism infrastructure and tourism technical facilities. Investment and investment attraction need to be synchronized, concentrated, and limited in terms of infrastructure and tourism technical facilities. It is necessary to focus on investing and attracting investment in building transport routes connecting tourist routes inside and outside the district, convenient to key local tourist destinations. In addition, in order to support the development of specific tourism products that are meaningful to international tourists and tourists throughout the country, each commune needs to have a high-class accommodation system that can well meet the needs of guests. Step up investment in completing technical infrastructure for tourism development such as parking lots, roads, scenic spots, service areas, etc. in key tourist areas and spots of the district. Invest in upgrading and building new service infrastructure to serve tourists such as healthcare, banks, tourist information centers, rest stops, internet access points, etc. However, the investment attraction also needs to strictly adhere to the viewpoint of accepting only investors whose investment projects ensure environmental specifications, not to cause harm to the ecological system, to disrupt the landscape, or to pollute the environment,...

Seventhly, supplement and improve the quality of specific tourism products. In order to supplement and enhance unique tourism products with its own identity and high competitiveness, Mu Cang Chai needs

to: Build a typical unique tourism product of the district "Discover special national landscapes. Mu Cang Chai terraced fields, natural landscape and associated with the development of adventure tourism, learn about the national cultural identity (Hong people...)" ; Focusing on developing tourism products with potentials and strengths to develop into the mainstream tourism products of Mu Cang Chai (Eco-tourism, convalescence; Festival tourism; Community tourism; Tourism; Tourism); sports, exploration, adventure calendar); Exploiting and developing other complementary tourism products; Development of new tourism products (Eco-tourism, agriculture; Scientific research tourism, nature discovery; Agricultural and rural eco-tourism; OCOP tourism; COVID-19 safe tourism) ;...).

Eighthly, focus on sustainable factors in developing specific tourism products. Reasonable and effective exploitation and use of natural resources for tourism development in association with the synchronous implementation of measures to protect resources for sustainable development. Encourage the local community to participate in the conservation of heritage, historical and cultural sites, and cultural space of the Mong people. In particular, it is necessary to improve the management efficiency corresponding to the maximum capacity of the tourist attractions, to minimize the overload of tourists causing the generation of waste, affecting the ecological environment.

5. Conclusion

The research has combined secondary data sources and primary data, combined qualitative research methods and quantitative research methods to comprehensively analyze the current situation of developing specific tourism products in Mu Cang district. For the period of 5 years 2016 - 2020. By quantitative research method, the topic has tested the reliability and importance of the conditions for developing specific tourism products in Mu Cang Chai, Yen Bai. The results of multivariable regression analysis show that, out of 9 conditions included in the analytical model, all 9 conditions positively affect the development of specific tourism products in Mu Cang Chai district; in which the condition on specific tourism resources has the largest impact coefficient while the condition on main tourist sources has the smallest impact coefficient on the development of specific tourism products in the district. In addition, the research also reflected the current status of content development of specific tourism products in the locality. In addition, the study also assessed the level of satisfaction of tourists' needs and the sustainable development aspects of economy, culture - society and environment of specific tourism products in Mu Cang Chai district. In general, the criteria for developing specific tourism products in Mu Cang Chai district are above average and relatively good, but still limited, and need improvement. Thereby, the authors propose eight solutions that are considered the most urgent to develop specific products of Mu Cang Chai district in particular and Yen Bai tourism in general in the coming time.

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THE ROLE OF PERCEIVED CREDIBILITY AND PARASOCIAL INTERACTION OF BEAUTY INFLUENCERS IN VIDEOS REVIEWING SKINCARE PRODUCTS: A CASE STUDY OF GEN Z IN VIETNAM

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ABSTRACT

Nowadays, influencer marketing, a form of social media marketing that relies on endorsements and product mentions from influencers, people with a large social following who are thought to be experts in their field, has gained popularity. This study investigates the factors related to beauty influencers (also known as influential people in beauty segments) in review videos assessing skincare products that impact the purchase intention of Gen Z. The study focuses on the impact of parasocial interaction between Gen Z and the beauty influencers as well as the effect of perceived credibility on the purchase intention. Moreover, the authors also examine how they are affected by physical attractiveness, attitude homophily, and audience participation. The results indicate that both perceived credibility and parasocial interaction with beauty influencers positively impact purchase intention of skincare products of Gen Z. Physical attractiveness is positively related to perceived credibility. In addition, physical attractiveness, attitude homophily, and audience participation have a positive impact on parasocial interaction. Both qualitative and quantitative methodologies are used in the research. Several online interviews with 18 students who belong to Gen Z in Vietnam are made to conduct qualitative research. In Vietnam, quantitative research is undertaken using a survey with participants aged from 15 to 26. The research data will be collected and analyzed via the Cronbach's Alpha reliability test, exploratory factor analysis, confirmatory factor analysis, and structural equation modeling.

Keywords: Influencer marketing, skincare product, beauty influencer, purchase intention.

1. Introduction

These days, social networking platforms like Facebook, YouTube, Instagram, and TikTok are becoming an indispensable part of the lives of millions of users. Social media, known as the "participative Internet" (Jones & Fox, 2020), refers to a wide range of Internet-based communications, tools, and resources. In addition, influencer marketing is widely used and constantly developing. Besides, the form of Electronic Word of Mouth (eWOM) is used by many businesses and offers huge valuable benefits. Influencer refers to specific characters or figures who have a large number of online followers and can reach the target consumer to spread the brand's message. They have the power to influence others' decisions because of their authority, knowledge, position, or relationship (real or perceived) with them (Gretzel, 2018).

These influencers produce online video content on YouTube and other social media platforms (Ofcom, 2017; Parnell, 2017), so advertisers have found a new and unique way to integrate their content into online video. In short, using influencers on social networking platforms helps businesses increase comprehensive brand identity and create good trust and reliability among customers. In addition, this is especially important when Gen Z tends to care and believe in the sharing and experience of those who have used products like influencers.

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In recent years, there has been a growing number of influencers in the cosmetics market, leading to many video reviews of beauty products created by various beauty influencers, especially skincare products. Many of them are from several famous and well-known beauty influencers in Vietnam through social networks, such as Trinh Pham, An Phuong, Chloe Nguyen, etc.

In Vietnam, most previous studies mainly focused on blogs or posts by influencers who share feelings about the use of products, known as beauty bloggers. These studies have proven that some elements of beauty influencers affect consumer buying intentions (Dat & Thu, 2020). To better understand the impacts of elements of the beauty influencers in videos reviewing skincare products on purchase intention of Gen Z in Vietnam, the research has implemented the topic “The role of perceived credibility and parasocial interaction of beauty influencers in videos reviewing skincare products: A case study of Gen Z in Vietnam”. The study examines the relationship between parasocial interaction, perceived credibility, and purchase intention of skincare products of Gen Z in Vietnam and verifies effects of factors such as physical attractiveness, attitude homophily, and audience participation on the two factors mentioned above.

2. Theoretical framework

2.1. Research overview

Since social networking has steadily become a trend for marketing and consumption, studies on the subject have grown in all sectors. As a result, the research on issues related to this model is more and more focused.

Sokolova and Kefi (2020) conducted research on the effects of perceived credibility and parasocial interaction on purchase intention. The favorable impacts of parasocial interaction between online audiences and influencers, as well as their perceived credibility on purchase intention, are measured in this study. To assess parasocial interaction and credibility, physical attractiveness, attitude homophily, and social attractiveness are all considered. The paper was based on research conducted on four influencers in the French fashion business using two social networking platforms, Instagram and YouTube. The research sample includes 1209 respondents, with Gen Z, Gen Y, and Gen X accounting for 79%, 17%, and 4%, respectively.

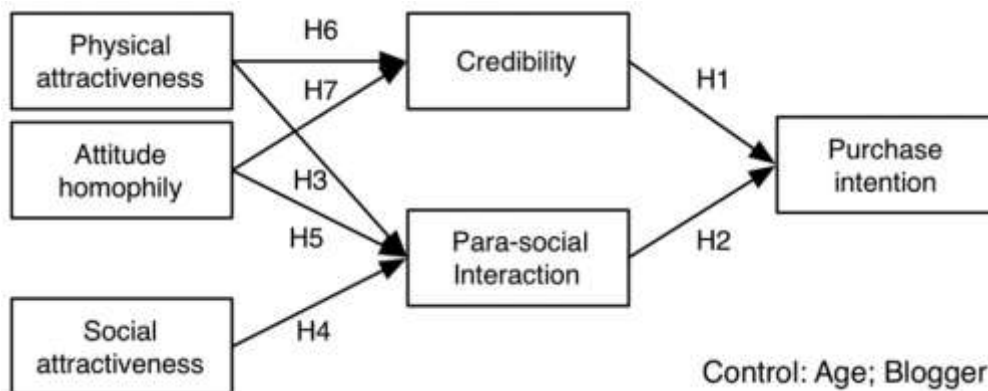


Figure 1. Research model of Sokolova and Kefi (2020)

Munnukka et al. (2019) analyzed the efficiency of YouTube vlogs for product endorsement, which is referenced in parts of this paper. The research investigates the roles of audience engagement, parasocial relationships, and value in vlogger statements regarding perceived credibility and brand attitudes. The study, which studied data from 203 millennials (aged 26–35), discovered that audience participation in vlogs improves social bonds with vloggers, boosting higher perceived credibility from vloggers as endorsers. Furthermore, audience perceptions regarding vlog endorsements influence viewer engagement. The findings indicate that vlogs with a high level of audience involvement are more likely to promote brand endorsement acceptance by raising viewers’ opinions of perceived trustworthiness. The importance of parasocial relationships in message acceptability in the context of vlogs is underlined.

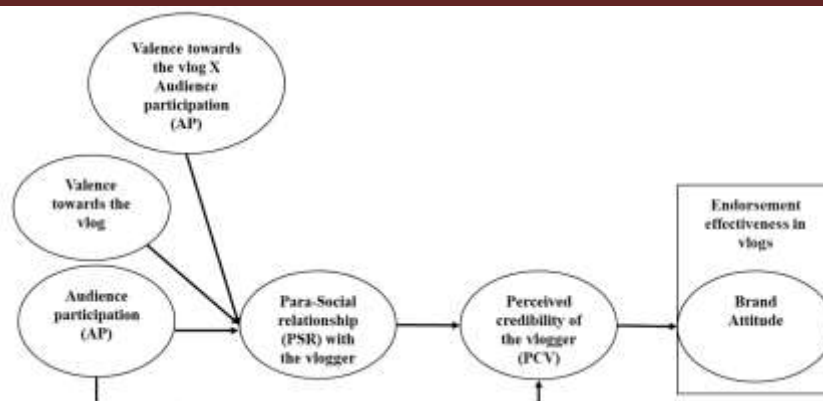


Figure 2. Research model of Munnukka et al. (2019)

2.2. Literature review

2.2.1. Theory of persuasion

According to Bettinghaus and Cody (1987), persuasion is the purposeful attempt by an individual to persuade another individual or group of individuals to change their attitudes, beliefs, or behavior through the transmission of a message. Furthermore, persuasion is a symbolic process where the communicator seeks to persuade others to modify their views or behavior about an issue by transmitting messages in a relaxed and non-binding environment (Perloff, 2017). From the above definitions, sponsored skincare product review videos can be seen as a persuasion process because sellers want beauty influencers to promote their products or services and thus positively affect consumers' beliefs, attitudes, or behaviors about their products and brands. This study initially focuses on how people process information to determine what factors impact customer acceptance of beauty influencers' messages.

When it comes to persuasion theories, many researchers turn to Chen and Chaiken (1999)'s Heuristic-Systematic Model (HSM), one of the most extensively utilized dual-process theories to tackle the problem of how people respond to various types of information (Xiao et al., 2018). Informational cues, including heuristic and systematic cues, are the key to executing information processing (Xiao et al., 2018). As a result, the current research concentrates on the factors that influence beauty influencers' perceived credibility, which is seen as a primary heuristic cue. Based on HSM theory, viewers are believed to use heuristics to process the information communicated when evaluating a message in review videos based on communicator traits (such as credibility and credibility-related factors) rather than the arguments. Therefore, physical attractiveness and attitude homophily will be used in this study to measure how credible beauty influencers are in videos reviewing skincare products.

2.2.2. Theory of parasocial interaction

The parasocial interaction theory refers to virtual social interactions, in which viewers engage with media personas (Tsai & Men, 2013), which offers a sense of closeness akin to genuine interpersonal connections (Dibble et al., 2016). Academics claim that online influencers such as beauty influencers and Bloggers are similar to traditional media celebrities in certain ways (Sokolova & Kefi, 2020). Multiple followers can help bloggers develop an online community of people who share their beliefs, viewpoints, and interests (Nambisan & Watt, 2011).

According to parasocial interaction theory, forming relationships with media celebrities that serve as brand ambassadors has an impact on consumer decisions and has a positive impact on the business (Lee & Watkins, 2016). Because their specific community is more engaged with them, traditional celebrities appear to have less persuasion and credibility when compared to social media figures such as bloggers or social influencers (Djafarova & Rushworth, 2017). Parasocial interaction between YouTube bloggers and their followers boosts luxury brand awareness, according to Lee and Watkins (2016), and physical attractiveness and attitude homophily with the blogger are both positively related to parasocial interaction. Meanwhile, Sokolova and Kefi (2020) discovered that "non-luxury" bloggers' physical attractiveness had no effect on

parasocial interaction. In addition, Hwang and Zhang (2018) found that parasocial interaction, which was influenced by followers' empathy, was positively associated with purchase intention.

2.2.3. Beauty influencers

An influencer is an individual who has built their brand (also known as self-branding). They accomplish this by using posts and videos to engage followers on their social media accounts, such as Instagram, Facebook, and YouTube, for cultural or economic goals (Khamis et al., 2017). Beauty influencers, often known as beauty vloggers, are social media influencers in the beauty industry. They mainly specialize in the beauty sector and are familiar with the functions of skincare products or have used them. In addition, they frequently give cosmetics reviews and have significant followers. Therefore, businesses use influencers to boost interaction not just on their channels but also on the pages of influencers, resulting in higher engagement with potential customers (Schlüschen, 2016).

2.2.4. Influencer marketing

Influencer marketing is a marketing strategy in which businesses use the influence of influencers or key opinion leaders (KOLs) to encourage them to promote their products, for example, by offering to test a product, organizing an exclusive event, or simply paying them to raise consumer brand awareness and/or influence their purchasing decisions (Scott, 2015). According to a recent social media trends survey, 94 percent of marketers who have employed influencer marketing initiatives believe they have been successful (Ahmad, 2018). Djafarova and Rushworth (2017) and De Veirman et al. (2017) are some of the previous research that looked into the success of employing this type of marketing in a range of settings. They also conclude that the most crucial aspects influencing customer behavior are the consumer's trust and the credibility of influencers.

2.2.5. Skincare products

Cosmetics, including skincare products, are concoctions of natural or synthetic chemical compounds that are intended to enhance the appearance or odor of the human body (Schneider et al., 2001). Dryness, eczema, acne, free radical scavenging, anti-inflammatory, anti-aging, skin whitening, skin protection, and sunscreen are used for skincare products (Aburjai & Natsheh, 2003). Skincare products are categorized into toners, cleansers, sunscreens, anti-wrinkle creams, dark circles removers, astringents, face creams, moisturizers, lotions.

2.2.6. Concept of Gen Z

Unlike earlier generations, Gen Z is the first to grow up with technological gadgets and an Internet connection. Furthermore, they think it is both willing and necessary to offer feedback and opinions about the items and services they have used. Most studies agree that Gen Z refers to those born between the late 1990s and the early 2010s. Seemiller and Grace (2017) define Gen Z as persons born between 1995 and 2010, or 2012 (Livingstone, 2018). However, Vietnam officially joined the worldwide Internet in late 1997, and the approach of influencer marketing on social networks progressively emerged to market items to the younger population. Therefore, this study agreed with the assumption that Gen Z is defined as individuals born between 1997 and 2012.

2.3. Research model development

With the significant impact that parasocial interaction has on word of mouth (WOM), influencers and businesses are attempting to boost parasocial interaction in order to promote their brand awareness and facilitate their company (Labrecque, 2014). Proximity arising from parasocial interaction has been presented and conceptualized in many research papers as a prerequisite for purchase intention (Kim et al., 2015; Lee & Watkins, 2016). Hwang and Zhang (2018) discovered that parasocial interaction is positively associated with purchasing intention in the beauty industry. Therefore, this paper will investigate the impact of parasocial interactions on followers' purchase intentions for skincare products in video reviews of beauty influencers they follow. The first research hypothesis is as follows:

H1: Parasocial interaction between customers and beauty influencers positively impacts intention to purchase skincare products.

Many prior studies have proven that perceived credibility may boost the persuasiveness of a message and influence purchase intention (Ohanian, 1990; Wilson & Sherrell, 1993). Furthermore, Wathen and Burkell (2002) state that a follower can buy a product supported by an influencer who is seen to be credible or trustworthy. Furthermore, Sokolova and Kefi (2020) reach similar conclusions when arguing that advertisement credibility is the primary factor of purchase intention. As a result, beauty influencers and video reviews on social media are fast rising and have an influence on customer purchase intention. The second hypothesis proposed is as follows:

H2: Perceived credibility for beauty influencers positively impacts intention to purchase skincare products.

Audience participation refers to how viewers engage in various vlog activities such as likes, shares, comments, subscriptions, and replies to other viewers' remarks (Khan, 2017). According to Kujur and Singh (2017), the characteristics of online content (such as vividness, interactivity, entertainment, and information) have a direct influence on audience participation in the online environment. A parasocial experience with a media persona develops both during and after the viewing experience (Brown, 2015). This indicates that the experience begins with audience participation and is characterized by perceived relationship growth with and a deep understanding of the vlogger. As a result, the following theory is proposed:

H3: Audience participation positively impacts parasocial interaction between customers and beauty influencers.

Attitude homophily refers to how similar people interact with other people regarding ideas, education, social status, etc. (Eyal & Rubin, 2003). It has been established that influencer-recipient interaction facilitates interpersonal interactions, strengthens emotional attachments, strengthens partnerships, and enables interactions and connections (Zhang et al., 2018). A higher degree of homophily between customers and websites, according to Kim et al. (2018), adds to positive attitudes toward the website and its word-of-mouth marketing. Sakib et al. (2020) observed that the closeness of viewpoints between vloggers and their audiences increases social interactions in the present context. As a result, the following theory is proposed:

H4: Attitude homophily between customers and beauty influencers positively impacts parasocial interaction between customers and beauty influencers.

In this study, attitude homophily is a key component impacting the level of faith viewers have in influencers. They feel the information they get is more trustworthy when it comes from influencers, who used to have the same problem and know how to solve it. According to Wang et al. (2008), homophily is significant in determining perceived trustworthiness and affects persuasion processes on websites and online discussion groups. Also, attitude homophily is recommended as a factor that positively influences the perceived credibility of the influencer (Djafarova & Rushworth, 2017). As a result, the following theory is proposed:

H5: Attitude homophily between customers and beauty influencers positively impacts perceived credibility for beauty influencers.

In the social psychology literature, physical attractiveness describes how appealing or pleasing a person's physical features and aesthetic beauty are (Sokolova & Kefi, 2020). In the instance of YouTube and luxury items, Lee and Watkins (2016) found a similar result for physical attractiveness and parasocial interaction. On the other hand, Sokolova and Kefi (2020) find that physical attractiveness has an influence on parasocial interaction for fashion and beauty bloggers. In social networking service study, physical attractiveness has not yet been addressed as a factor in parasocial interaction (Frederick et al., 2012). To address this disparity, the study decided to re-examine the relationship between physical attractiveness and parasocial interaction, but this time in the context of Gen Z customers and the Vietnamese beauty sector. The following research hypothesis is proposed:

H6: Physical attractiveness of beauty influencers positively impacts parasocial interaction between customers and beauty influencers.

Credibility has been regarded as a less subjective or emotional factor of social influence (Gass, 2015). A social media influencer may influence customers with a good attitude, eventually leading to purchase intention (Till & Busler, 2000). Sokolova and Kefi (2020) found a positive relationship between perceived credibility and physical attractiveness in the beauty industry, which is seen as a critical component in the influencer marketing method. As a result, the influencer's credibility may suffer due to a lack of physical appeal or professional skill. Therefore, the final hypothesis is:

H7: Physical attractiveness of beauty influencers positively impacts perceived credibility for beauty influencers.

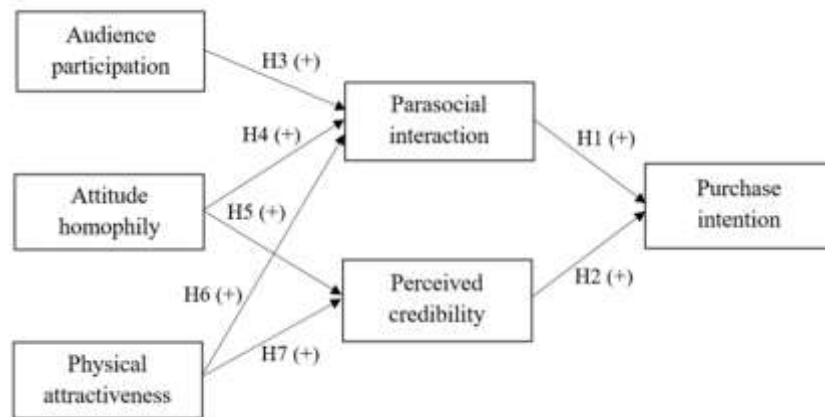


Figure 3. Proposed research model

Source: The author group, 2021

3. Research method

3.1. Qualitative research

Qualitative research is used to investigate and reveal key concerns surrounding the implementation of influencer marketing tactics, as well as the current customer propensity. The target responder was addressed in the most natural way in order to obtain the most impartial thoughts and perspectives. The qualitative survey findings include the most critical variables in the model and are used to conduct the quantitative research.

3.1.1. Qualitative research design

The interviews were done via the Internet in the form of a personal interview. The survey sample was chosen using the non-probability convenience approach. The qualitative respondents were 18 university students, questioned using 22 open-ended questions to better comprehend the replies.

3.1.2. Qualitative research results

The majority of the responses obtained were quite similar, including comparable variables. In particular, one of the factors that influence the intention to buy skincare products in beauty influencers' review videos, which all respondents agreed on is the number of interactions between viewers for video reviews (comments, likes, shares). The qualitative research results help in detecting and including the audience participation factor, as well as other factors inherited from the theoretical foundation, in the research model for further quantitative analysis.

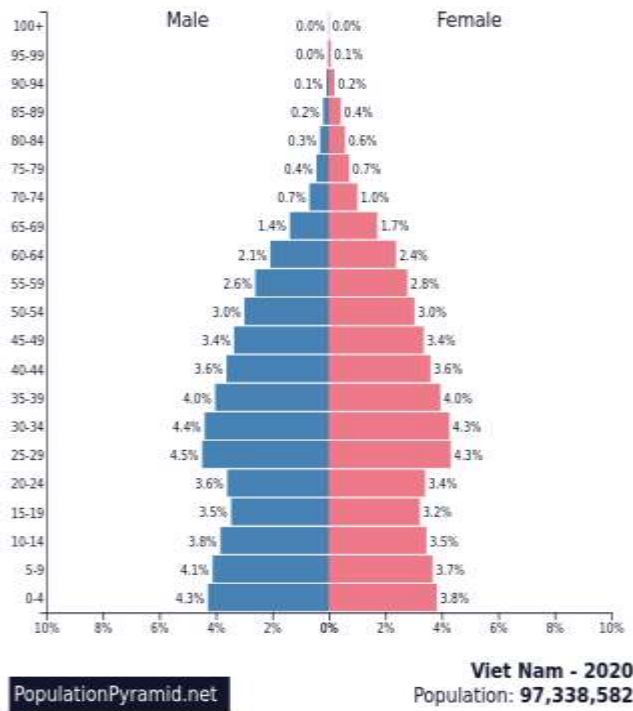
3.2. Quantitative research

3.2.1. Scales

In the quantitative survey, a number of nominal-scale questions are used to better understand the target demographic. Furthermore, all observed variables were evaluated using a 7-point Likert scale, with 1

“strongly disagree”, 2 “disagree”, 3 “partly disagree”, 4 “neutral”, 5 “partly agree”, 6 “agree” and 7 “strongly agree”.

3.2.2. Sampling process



Age	Male (%)	Female (%)
0-4	4.3	3.8
4-9	4.1	3.7
10-14	3.8	3.5
15-19	3.5	3.2
20-24	3.6	3.4
25-29	4.5	4.3
30-34	4.4	4.0
35-39	4.0	3.6
40-44	3.6	3.4
45-49	3.4	3.0
50-54	3.0	2.8
55-59	2.6	2.4
60-64	2.1	1.7
65-69	1.4	1.0
70-74	0.7	0.7
75-79	0.4	0.6
80+	0.6	0.7

Figure 4. Structural composition by ages of Vietnam in 2020

Table 1. Percentages of each age group

Source: PopulationPyramid.net

The research has a table of percentages of each age group from the structural composition by age, as shown in Table 4. According to the table above, the sample size is calculated using the formula:

$$n = z^2 \times \frac{p \times (1-p)}{e^2}$$

With:

n: The sample size to be determined.

Z: The value of the distribution table Z is based on the selection reliability.

p: The percentage of successful estimation of sample size n.

e: Allowed error.

Based on the above data table, the percentage of the group from 15 to 26 years old in Vietnam is calculated as:

$p = \text{Percentage of male and female (15-19)} + \text{Percentage of male and female (20-24)} + \text{Percentage male and female (25-26)}$

Because the proportion of people aged 25 and 26 is not recorded in Vietnam, the average method is used to calculate the percentage of people at this age.

Percentage of male and female (25-26) = Percentage of male and female (25-29) * $\frac{2}{5} = (4.5 + 4.3) * \frac{2}{5} = 3.52\%$

From there, $p = 3.52 + (3.5 + 3.2) + (3.6 + 3.4) = 17.22\%$

With 95% confidence, $z = 1.96$ and allowable error $e = \pm 0.05$. Thus, the sample size is minimal. The minimum required for the study is:

$$n = z^2 \times \frac{P \times (1-P)}{e^2} = 1.96^2 \times \frac{0.1722 \times (1-0.1722)}{0.05^2} \approx 220$$

The study includes 400 research samples that were judged suitable for further evaluation. Further, with a total of 26 observed variables, the number of valuable samples collected in this study satisfied the requirements of Hair et al (2006) that the observation/measurement variable is 5:1. In addition, the study also meets the requirements of Kline (2010) that for the structural equation modeling (SEM), the sample size is five to ten times the number of observed variables.

4. Results and discussion

4.1. Results

4.1.1. Descriptive statistics

After conducting the survey, the study put the encrypted copy of the answers of 400 respondents into SPSS and AMOS software for analysis and verification. Statistical results show that all respondents belong to Gen Z with 96 people (24.0%) from 15 to 18 years old, 216 people (54.0%) from 19 to 22 years old, and 88 people (22%) from 23 to 25 years old. Therefore, the collected data approximates the target of the cluster sampling method.

4.1.2. Reliability, convergent and discriminant validity analysis

The results show that all scales were up to standard with Cronbach's Alpha coefficient greater than 0.7 (Hoang Trong & Mong Ngoc, 2008), composite reliability (CR) greater than 0.7, average variance extracted (AVE) greater than 0.5, and maximum shared variance (MSV) less than AVE should be used in further evaluative analysis (Hair et al., 2010).

Table 2. Results of reliability, convergent and discriminant validity analysis

Constructs	Number of variables	Reliability		AVE	MSV
		Cronbach's Alpha	Composite Reliability		
Physical attractiveness	3	0.795	0.798	0.569	0.319
Attitude homophily	3	0.876	0.876	0.702	0.264
Audience participation	5	0.885	0.886	0.608	0.549
Perceived credibility	5	0.838	0.841	0.517	0.401
Parasocial interaction	6	0.889	0.891	0.577	0.569
Purchase intention	4	0.849	0.849	0.584	0.569

Source: Research results, 2021

4.1.3. Research results

The results of confirmatory factor analysis (CFA) with 26 variables meets the requirements for factor loading coefficient greater than 0.5, showing that the model is suitable for market data when all indicators

are satisfactory: CMIN/DF = 1.708 < 2, GFI = 0.915 > 0.9, CFI = 0.964 > 0.9, TLI = 0.959 > 0.9, RMSEA = 0.042 < 0.08 (Hair et al., 2010).

From the results of testing the research hypothesis, with a P-value greater than 0.05, the study concludes that attitude homophily had no impact on perceived credibility. The other P-values were all less than 0.05, so the relationships were significant. Of the seven proposed hypotheses, the study rejects one hypotheses H5, and accepts the other six hypotheses.

Table 3. Research hypothesis test results

Hypothesis	Unstandardized Coefficients Beta	Standardized Coefficients Beta	S.E.	C.R.	P	Results
H1: PSI -> PI	0.433	0.632	0.04	10.927	***	Support
H2: PC -> PI	0.285	0.336	0.041	6.943	***	Support
H3: AP -> PSI	0.596	0.612	0.053	11.348	***	Support
H4: AH -> PSI	0.415	0.366	0.048	8.58	***	Support
H5: AH -> PC	0.073	0.08	0.046	1.602	0.109	Reject
H6: PA -> PSI	0.206	0.141	0.064	3.218	0.001	Support
H7: PA -> PC	0.705	0.598	0.072	9.749	***	Support

Note(s): PI = Purchase intention, PSI = Parasocial interaction, PC = Perceived credibility, AP = Audience participation, AH = Attitude homophily, PA = Physical attractiveness.

Source: Research results, 2021

4.2. Discussion

The results show that audience participation is the factor that has the most decisive impact on parasocial interaction between customers and beauty influencers with the standardized beta coefficient of 0.612 (H3). The two other factors that positively affects parasocial interaction are attitude homophily and physical attractiveness of beauty influencers, with the standardized beta coefficient of 0.366 and 0.141, respectively (H4 and H6). Meanwhile, physical attractiveness is the only factor in this research has a positive effect on customer perceived credibility with the standardized beta coefficient of 0.598 (H7), consistent with the empirical study of Munnukka et al. (2019) and the study of Sokolova and Kefi (2020).

Compared with the study of Sokolova and Kefi (2020), a striking difference in the results of this study is that attitude homophily between customers and beauty influencers has no impact on the parasocial interaction between customers and beauty influencers (H4). Previous studies have shown that attitude homophily is recommended as a factor that positively influences the perceived credibility of the influencer (Djafarova & Rushworth, 2017; Sokolova & Kefi, 2020). However, this finding is not supported by current research. This can be explained by the fact that the responders are from Generation Z, and the product is a skincare product. Although GenZ takes other people's opinions very seriously, attitude homophily is regarded as a crucial factor influencing the level of trust consumers have in influencers (eMarketer, 2011). However, since this generation has grown up with so many alternatives, they are independent thinkers who are picky when purchasing. Especially when it comes to skincare products that directly touch the skin, they are chosen with care. Furthermore, Gen Z customers are less brand loyal, preferring to buy the product that fully satisfies their requirements rather than being influenced or driven by the brand name (Gielens et al., 2021). Instead of being primarily controlled by the attitude homophily, Gen Z is remarkably open and enjoys discovering new and intriguing information on social networking platforms.

Finally, with a more considerable standardized beta value (0.632 versus 0.336), the impact on the customer intention to purchase a featured product of parasocial interaction is more substantial than perceived credibility (H1 and H2). This result helps the study confirm that a customer goes through both affective and internalization processes when influenced to purchase a product. However, a closer look shows that the

impact of parasocial interaction is slightly stronger than credibility. It means that customers who are attached or even addicted, to the beauty influencers are more likely to purchase than less attached customers. This result is consistent with the empirical study for Gen Z of Sokolova and Kefi (2020).

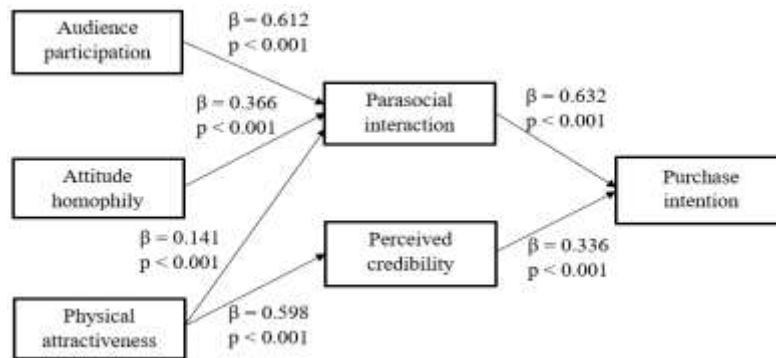


Figure 5. Research model after structural equation modeling

Source: Research results, 2021

5. Conclusion

5.1. Conclusion

Research has shown that both perceived credibility and parasocial interaction of beauty influencers through skincare product review videos positively influence the purchase intention of Gen Z viewers. This result is similar to Sokolova and Kefi (2020), which indicates that viewers have to go through an emotional and internal process when their intention to buy products is affected. Parasocial interaction is an intimate indication of interpersonal relationships. The audience feels empathy, intimacy, and comfortable when sharing problems with the influencer, which makes them more likely to accept advice from the influencers and finally increases the intention to purchase the recommended products. On the other hand, viewers are also consumers, tending to trust products and services only when they feel the level of trust or credibility from their favorite beauty influencers as a valuable source of information.

The study indicated that for Gen Z customers in Vietnam, interacting with beauty influencers on social media platforms has a more significant influence on the ability to buy suggested products in the video. In contrast, the perceived credibility of the video poster plays a more passive role (Sokolova & Kefi, 2020), with $\beta = 0.336$ compared with 0.632. Physical attractiveness has been shown to positively affect both perceived credibility and parasocial interaction of beauty Influencers. Its influence on the perceived credibility of the influencers is considerable ($\beta = 0.598$). This implies that Gen Z consumers view physical attractiveness as the criterion for evaluating information from beauty influencers. Unlike Sokolova and Kefi (2020), this study shows that physical attractiveness has an impact on social interaction. However, this effect is feeble ($\beta = 0.141$), consistent with the results of Frederick et al. (2012) and Lee and Watkins (2016). The weak influence between physical attractiveness and parasocial interaction may stem from different definitions of what is beautiful by each individual. Beauty can be related to the body, face, hair, or voice and how all of this feels on social media. The study shows that attitude homophily only affects parasocial interaction, not perceived credibility. When viewers feel the similarity of thoughts and beliefs with beauty influencers, they may quickly become more interested in sharing and interacting with them, making their relationship closer and more confidential (Lee & Watkins, 2016). On the other hand, followers also expect beauty influencers who like to bring new ideas so that they can find helpful advice and appeal in video content. This can explain why the similarity of attitudes does not affect the credibility of beauty influencers in the process of persuading viewers. In addition, this leads to results contrary to previous studies, such as Lee and Watkins (2016) and Sokolova and Kefi (2020).

5.2. Theoretical implications

This study contributes to existing studies on the impact of beauty influencers and influencer marketing. This study contributes to the literature on influencer marketing and the impact of word of mouth

on the Internet by testing and proving the impact of perceived credibility by beauty influencers and parasocial interactions on the intention of purchasing skincare products of Gen Z.

In addition, the research tested and demonstrated that the audience participation factor has a positive impact on the perceived credibility, which has great significance in reality and contributes to the development of this study. Moreover, in Vietnam, this study found that the attitude homophily did not affect the perceived credibility, while the relevant studies mentioned this relationship. This can be explained due to the differences in the target subjects and the research market.

5.3. Managerial implications

The study is carried out in the Vietnam market, especially Gen Z - a potential customer group for cosmetic brands. The research results have concluded that it may benefit brands, helping them establish relationships between influencers and customers to promote Gen Z to purchase skincare products.

Through research results, perceived credibility is considered an essential factor in the impact of review videos of beauty influencers about skincare products on the purchase intention of Gen Z. Therefore, these brands should choose reliable beauty influencers who fit the business standard and have the right segment of followers. The study also concludes that the perceived credibility factor is positively related to purchase intention. This means that brand-related content in videos reviewing skincare products needs to be produced in their own way to increase the truth and minimize commercial effects to avoid viewers feeling like advertising.

Similarly, parasocial interaction is positively related to the purchase intention of Gen Z. Therefore, beauty influencers not only need to build content with their personality but also care about followers to build strong social relationships. The results also show that three factors, including physical attractiveness, attitude homophily, and audience participation, positively impact parasocial interaction. This shows that beauty influencers not only need to take care of their appearance to maintain a sympathetic image with potential customers but also constantly interact and share information with the audiences or Internet users as well as facilitate the audience to interact with them through the minigames, or questions and answers (Q&A), etc. On top of that, attitude homophily, similar to influential values and shared beliefs, is closely related to parasocial interaction. Therefore, the contents of these review videos must be related to the similarity of views between people with influence and followers.

Appendix

Appendix A. Measurement scales

Label	Measurement items	1	2	3	4	5	6	7
PHYSICAL ATTRACTIVENESS (Ohanian, 1990)								
PA1	Beauty influencers are quite pretty.							
PA2	Beauty influencers are classy.							
PA3	Beauty influencers are attractive.							
ATTITUDE HOMOPHILY (Eyal & Rubin, 2003)								
AH1	Beauty influencers think like me.							
AH2	Beauty influencers behave like me.							
AH3	Beauty influencers share my values.							
AUDIENCE PARTICIPATION (Munnukka et al. (2019)								
AP1	I spent a lot of time watching the videos of beauty influencers.							
AP2	I was heavily into the videos of beauty influencers.							
AP3	I tried to fit the videos of beauty influencers into my schedule.							
AP4	I perceived a high level of participation in interacting with							

Label	Measurement items	1	2	3	4	5	6	7
	the videos of beauty influencers.							
AP5	I was very much involved with the videos of beauty influencers.							
PERCEIVED CREDIBILITY (McCroskey & Teven, 1999)								
PC1	I find beauty influencers experts in their domain.							
PC2	I find beauty influencers efficient in their job.							
PC3	I find beauty influencers trustworthy.							
PC4	I think beauty influencers care about their followers.							
PC5	Beauty influencers update their content regularly.							
PARASOCIAL INTERACTION (Lee & Watkins, 2016)								
PSI1	When I'm watching the beauty influencers, I feel as if I am part of their group.							
PSI2	I think the beauty influencers are like my old friends.							
PSI3	I would like to meet the beauty influencers in person.							
PSI4	The beauty influencers make me feel comfortable as if I am with friends.							
PSI5	I look forward to watching the beauty influencer's videos, reading their articles and comments.							
PSI6	I would follow beauty influencers and interact with them on other social networking sites.							
PURCHASE INTENTION (Dhanesh & Duthler, 2019; Sokolova & Kefi, 2020)								
PI1	I would purchase the products promoted by beauty influencers in the future.							
PI2	I would buy other products of this brand because of beauty influencers.							
PI3	I would actively seek out the product shown by beauty influencers in order to purchase it.							
PI4	I would encourage people close to me to buy the products promoted by beauty influencers.							

Appendix B. Exploratory factor analysis (EFA)

B.1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.930
Bartlett's Test of Sphericity	Approx. Chi-Square	5790.697
	df	325
	Sig.	0.000

B.2. Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.695	37.289	37.289	9.296	35.753	35.753	7.623
2	2.773	10.666	47.955	2.417	9.296	45.049	6.813
3	1.942	7.468	55.423	1.577	6.064	51.113	5.717
4	1.374	5.284	60.706	.950	3.654	54.767	3.352
5	1.165	4.480	65.187	.793	3.051	57.818	6.919
6	1.004	3.863	69.050	.583	2.244	60.062	3.785
7	.690	2.654	71.703				
8	.600	2.307	74.010				
9	.580	2.231	76.241				
10	.525	2.019	78.260				
11	.514	1.977	80.237				
12	.504	1.938	82.174				
13	.465	1.790	83.965				
14	.449	1.728	85.692				
15	.428	1.647	87.339				
16	.377	1.452	88.791				
17	.371	1.426	90.216				
18	.360	1.385	91.601				
19	.344	1.323	92.924				
20	.310	1.191	94.115				
21	.289	1.113	95.227				
22	.270	1.039	96.266				
23	.263	1.013	97.279				
24	.261	1.002	98.282				
25	.242	.930	99.211				
26	.205	.789	100.000				

Extraction Method: Principal Axis Factoring.

B.3. Pattern Matrix

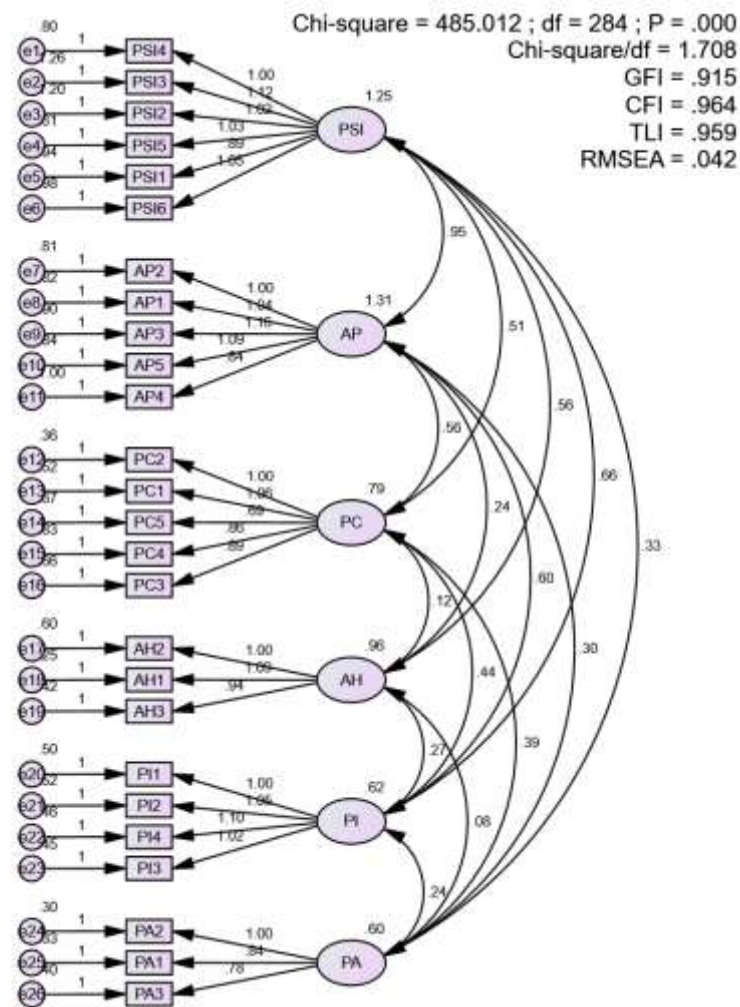
	Factor					
	1	2	3	4	5	6
PSI4	.776					
PSI3	.761					
PSI2	.751					

	Factor					
	1	2	3	4	5	6
PSI5	.719					
PSI1	.644					
PSI6	.623					
AP2		.882				
AP1		.818				
AP3		.699				
AP5		.696				
AP4		.609				
PC2			.806			
PC1			.781			
PC5			.691			
PC4			.637			
PC3			.527			
AH2				.889		
AH1				.813		
AH3				.788		
PI1					.844	
PI2					.707	
PI4					.672	
PI3					.658	
PA2						.803
PA1						.752
PA3						.680
PSI4	.776					
PSI3	.761					
PSI2	.751					
PSI5	.719					
PSI1	.644					
PSI6	.623					
AP2		.882				
AP1		.818				
AP3		.699				
AP5		.696				
AP4		.609				
PC2			.806			
PC1			.781			
PC5			.691			
PC4			.637			
PC3			.527			
AH2				.889		
AH1				.813		
AH3				.788		
PI1					.844	
PI2					.707	
PI4					.672	
PI3					.658	

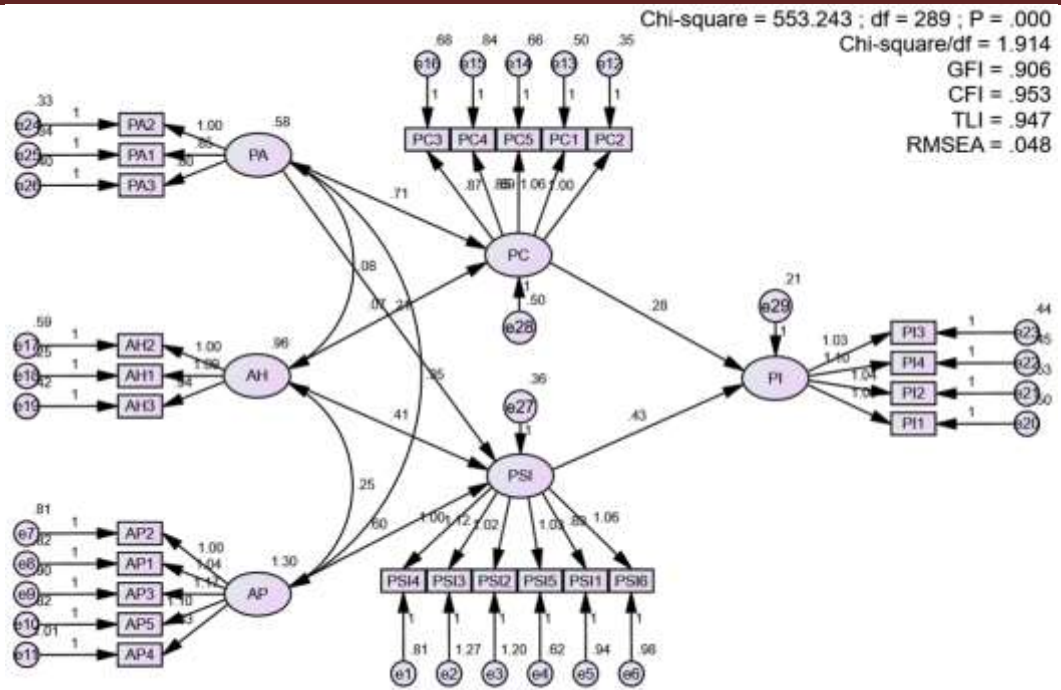
	Factor					
	1	2	3	4	5	6
PA2						.803
PA1						.752
PA3						.680
Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization.						
a. Rotation converged in 6 iterations.						

Appendix C. Confirmatory factor analysis (CFA)

	CR	AVE	MSV	MaxR(H)	PI	PSI	AP	PC	AH	PA
PI	0.849	0.584	0.569	0.850	0.764					
PSI	0.891	0.577	0.569	0.895	0.754	0.759				
AP	0.886	0.608	0.549	0.890	0.673	0.741	0.780			
PC	0.841	0.517	0.401	0.860	0.633	0.514	0.555	0.719		
AH	0.876	0.702	0.264	0.891	0.348	0.514	0.217	0.133	0.838	
PA	0.798	0.569	0.319	0.807	0.400	0.380	0.342	0.565	0.107	0.755



Appendix D. Structural equation modeling (SEM)



D.1. Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
PC	0.374
PSI	0.707
PI	0.638
PA3	0.485
PA1	0.548
PA2	0.637
PI3	0.578
PI4	0.609
PI2	0.544
PI1	0.539
AH3	0.669
AH1	0.819
AH2	0.618
PC3	0.47
PC4	0.407
PC5	0.369
PC1	0.643
PC2	0.695
AP4	0.472
AP5	0.659
AP3	0.663
AP1	0.631
AP2	0.616
PSI6	0.585
PSI1	0.511
PSI5	0.681
PSI2	0.52
PSI3	0.551

PSI4	0.604
------	-------

D.2. Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
PC	<---	PA	0.705	0.072	9.749	***
PSI	<---	AH	0.415	0.048	8.58	***
PSI	<---	PA	0.206	0.064	3.218	0.001
PSI	<---	AP	0.596	0.053	11.348	***
PC	<---	AH	0.073	0.046	1.602	0.109
PI	<---	PC	0.285	0.041	6.943	***
PI	<---	PSI	0.433	0.04	10.927	***
PSI4	<---	PSI	1			
PSI3	<---	PSI	1.123	0.072	15.558	***
PSI2	<---	PSI	1.025	0.068	15.026	***
PSI5	<---	PSI	1.031	0.058	17.678	***
PSI1	<---	PSI	0.893	0.06	14.877	***
PSI6	<---	PSI	1.056	0.065	16.13	***
AP2	<---	AP	1			
AP1	<---	AP	1.04	0.062	16.808	***
AP3	<---	AP	1.166	0.067	17.323	***
AP5	<---	AP	1.101	0.064	17.25	***
AP4	<---	AP	0.834	0.059	14.143	***
PC2	<---	PC	1			
PC1	<---	PC	1.062	0.062	17.215	***
PC5	<---	PC	0.694	0.056	12.349	***
PC4	<---	PC	0.848	0.065	13.096	***
PC3	<---	PC	0.868	0.061	14.274	***
AH2	<---	AH	1			
AH1	<---	AH	1.085	0.059	18.407	***
AH3	<---	AH	0.943	0.055	17.249	***
PI1	<---	PI	1			
PI2	<---	PI	1.045	0.076	13.835	***
PI4	<---	PI	1.104	0.076	14.601	***
PI3	<---	PI	1.026	0.072	14.251	***
PA2	<---	PA	1			
PA1	<---	PA	0.851	0.064	13.36	***
PA3	<---	PA	0.802	0.063	12.73	***

D.3. Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
PC	<---	PA	0.598
PSI	<---	AH	0.366
PSI	<---	PA	0.141
PSI	<---	AP	0.612
PC	<---	AH	0.08
PI	<---	PC	0.336
PI	<---	PSI	0.632
PSI4	<---	PSI	0.777
PSI3	<---	PSI	0.742
PSI2	<---	PSI	0.721

			Estimate
PSI5	<---	PSI	0.825
PSI1	<---	PSI	0.715
PSI6	<---	PSI	0.765
AP2	<---	AP	0.785
AP1	<---	AP	0.794
AP3	<---	AP	0.815
AP5	<---	AP	0.812
AP4	<---	AP	0.687
PC2	<---	PC	0.834
PC1	<---	PC	0.802
PC5	<---	PC	0.607
PC4	<---	PC	0.638
PC3	<---	PC	0.685
AH2	<---	AH	0.786
AH1	<---	AH	0.905
AH3	<---	AH	0.818
PI1	<---	PI	0.734
PI2	<---	PI	0.737
PI4	<---	PI	0.78
PI3	<---	PI	0.76
PA2	<---	PA	0.798
PA1	<---	PA	0.74
PA3	<---	PA	0.696

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ANALYZING THE ELEMENTS WHICH INFLUENCE THE CHANCES OF USING FINTECH IN A “NEW NORMAL” SITUATION REGARDING THE COVID-19 LOCKDOWN IN HO CHI MINH CITY, VIETNAM

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ABSTRACT

The COVID-19 pandemic causes impacts on the economy and social life. The effects of social distancing push people to change their behavior to favor using electronic forms of payment. Financial technology (Fintech) companies increase their market share, and users will be able to swiftly migrate to online payment methods. This study investigates the factors that influence the adoption of financial technology services as a new normal habit. The components of perceived Fintech usefulness are evaluated using a methodology proposed in this paper. The author conducted a sample size of 260 observations which is aged from 18. Customers' attitudes and, as a result, their desire to use are positively influenced by perceived utility, brand image, user innovativeness, and trust, according to the findings. Overall, client trust in Fintech services has increased, and it is now considered the new normal habit. Theoretical and practical implications are discussed.

Keywords: financial technology (fintech), COVID-19 lockdown, perceived usefulness, intention to use, loyalty, new normal behavior.

1. Introduction

Financial Technology is abbreviated to “Fintech”, which have core elements such as blockchain, big data, and intelligent investment advice widely used in the financial sector. Fintech offers new innovations in financial services to improve the efficiency of transaction execution (Y. Kim et al., 2015). In addition, Fintech also promotes the shift of traditional financial services to high-tech services in the financial services industry with greater diversity, faster, and more convenience. As a result, Fintech provides a broader contribution of financial services, on the basis of starting from the products created to the services and markets available (Jin et al., 2019).

The financial market is revolutionizing the way the application of technology increases, especially the application of electronic banking (Barquin & Hv, 2015). Electronic banking plays an important role in providing financial services to customers (Cortiñas et al., 2010). In an article by Forbes magazine, in developed financial markets like the US, witnessing the strong growth of Fintech start-ups with an estimated market value of 18 billion USD (Kauflin, 2020). In the era of information exchange becoming easier, Fintech is preferred as a financial technology solution because of its speed and convenience (Das, 2019).

The effects of the COVID-19 pandemic are also the driving force behind the development of Fintech technology applications to better match consumer behavior in the new normal (Le, 2021). Nguyen's research (2021) also shows a special relationship between customer satisfaction and financial performance of banks through online transactions under limited conditions due to COVID-19 in Vietnam.

Previous studies on Fintech have mainly focused on systems analysis (Wonglimpiyarat, 2017) on the adaptability of customers in applying Fintech to assess risk perception or information security (Fernando et al., 2018); ease of use (Wang & Chang, 2018); or cross-platform connectivity (Gimpel et al., 2018). However, what attracts customers to change their behavior to use Fintech technology instead of traditional methods

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comes from preferential transaction costs or other attractive financial solutions (Lim et al., 2019). ; Ryu, 2018). However, not necessarily customers completely prioritize online shopping; they still shop in the traditional way and switch to paying with Fintech applications (Scarpi et al., 2014).

The following sections of the study will be presented in detail as follows. Section two examines theories and issues about the relationship between the application of Fintech technology and the changing behavior habits of customers (or users). Section three describes the main variables, data collected and research methods. Then, this section will present the results of the study. Section five will conclude the theory, propose application and the summary of the research paper.

2. Theoretical framework

2.1. The impact of COVID-19 lockdown, trust, data security and privacy, quality administrative services and perceived usefulness toward Fintech

2.1.1. Social distancing due to COVID-19 has a positive impact on perceived usefulness of Fintech

In the context of COVID-19 effect, Das' research (2019) also demonstrates that Fintech application is gradually developing alongside the development of diverse financial models. As a result, Fintech has become a vital tool in people's daily lives (Fu and Mishra, 2020a). This demonstrates the amount of usefulness in perception, demonstrating that users' beliefs tend to believe that Fintech is a new technology that is more beneficial and efficient (Venkatesh et al.).

2.1.2. Trust has a positive effect on perceived usefulness of Fintech

Many past studies that have an impact on willingness to utilize Fintech products or services have demonstrated the importance of trust. This concept of trust, on the other hand, is multidisciplinary (M. K. O. Lee & Turban, 2001; McKnight & Chervany, 2001). Furthermore, research demonstrate that the higher consumers' trust in service providers, the more likely they are to utilize the service, which encourages user behavior (Qiu & Li, 2008; Muoz-Leiva et al., 2017).

2.1.3. Data security and privacy have a positive impact on perceived usefulness about Fintech

One of the elements affecting Fintech consumers' access is their perception of risk (Liebermann & Stashevsky, 2002). Financial risk is a more straightforward concept that can harm consumers' assets, such as online buying (Forsythe & Shi, 2003). The hazards of security are preventing Fintech from being prioritized (Muoz-Leiva et al., 2017).

2.1.4. Service quality and safety have a positive impact on perceived usefulness for Fintech.

According to Hu (2019), user expectations about the quality of administrative services (QAS) have an impact on user experiences. If service security is not assured or users have unpleasant experiences with QAS, they will be willing to explore for alternatives (Stewart & Jürjens, 2018). As a result, users' risk perceptions will be reflected in the system's experience and safety when utilizing the service in the long run. This is also the foundation for forming hypothesis H4.

2.1.5. The perceived usefulness to Fintech positively affects the intention to adopt Fintech.

Davis (1989) research on the concept of perceived usefulness of the application of Fintech technologies and services. The list of features used to assess usefulness was developed from the scale (Davis et al., 1989). Research by Chuang (2016) and J. Lee (2019) has demonstrated the benefits Fintech brings to people's lives such as saving time, boosting work performance or shortening procedures. complicated routine. Research by Tat Huei (2018) also shows that consumers in Malaysia also tend to change their consumption habits by using Fintech more in shopping and consumer payments. Because of its convenience, speed, efficiency, and most importantly, safety, users can make payments without moving in the traditional way (Jiwasiddi et al., 2019).

2.2. Intention to adopt Fintech: Fintech adoption intention has a positive relationship with user loyalty

Loyalty is defined as a pattern of behavior that is measured by the frequency of future visits and product or service repurchases (Anderson et al., 2014). Customer loyalty to Fintech service providers can be influenced

by their Fintech experience (Anderson et al., 2014; Wang & Chang, 2018). Users can readily reach their own conclusions regarding the service's quality and convenience after spending time with it (Jung & Shin, 2019). As a result, hypothesis H6 is established in the following manner.

2.3. Fintech adoption is influenced by computer skills

Computer abilities are also thought to have a positive impact on the impression of Fintech's utility (Ryu, 2018). It is understandable that as individuals get more computer savvy, they will become less risk adverse and more open to new technology (Ratten, 2014). Furthermore, this study compares the intention to utilize Fintech before and after the COVID-19 lockdown.

3. Research method

This selected data is imported into Excel 2016 for basic processing, then imported into IBM SPSS 20.0 and IBM Amos 20.0 software to test the necessary assumptions.

3.1. Survey sampling method and data collection

In this study, the sample is selected by the convenience-non-probability method; That is, researchers select elements with unequal probability to determine the number of surveys. The researcher will select whatever element they have access to to achieve the desired number of surveys (Nguyen Dinh Tho and Nguyen Thi Mai Trang, 2009; Dig, Domingo & Consigado, 2017). Moreover, with this sampling method, it is easy for the research participants to approach the respondents because they are ready to answer the research questionnaire as well as it is less costly in terms of time and cost (Cooper and Schindler, 1998). in order to obtain the required data.

The reliability of the information will depend on the sample size selected. The larger the sample, the higher the accuracy of the research results, but increasing the sample size increases the cost, resources and time. On the contrary, if the sample size is small, it is beneficial in terms of cost and time, but the information is unreliable. For multivariate regression analysis, the formula to calculate the minimum sample size to be achieved for a study is: $50 + 8 \times m$ survey (Tabachnick & Fidell, 2007) (m is the number of independent variables selected in the model). , $m = 6$ for this study). On the other hand, the minimum sample size is $5 \times n$ (n is the number of observations) samples for a parameter to be estimated (Bollen, 1989), (Nguyen Dinh Tho and Nguyen Thi Mai Trang, 2007). Therefore, the sample size in this study is chosen to satisfy more than $50 + 8 \times 7 = 106$ and $5 \times 26 = 130$. To ensure both of the above conditions, the author decided to choose a sample size of 260.

The data collection survey table is built based on the proposed research model. The survey consists of two main parts: general information and evaluation. The first part includes some information about the surveyor. The second part is the part related to the research paper - is the main part of the survey, surveyors will have to evaluate by scoring using a 5-level Likert scale with 26 questions representing 26 observed variables in the scale.

The data collection method in this study is online collection: online surveys are much faster than traditional methods and all information is collected automatically, so information can be collected. faster and more accurate, instead of waiting on traditional paper surveys or interviews. Furthermore, the online questionnaire has the ability to help participants answer the questions in privacy, which means that the respondents will answer more honestly and produce better results. The survey is made on the Google form tool, then exports the survey link and sends it through media such as Facebook, Zalo.

3.2. Data analysis techniques

3.2.1. Measurement of scale reliability

The purpose of measuring scale reliability through item-total correlation and Cronbach's Alpha test is to examine the reliability of the scale and the correlation between observed variables in the scale, in order to eliminate heterogeneous variables as well as avoid false factors (Nguyen Dinh Tho & Nguyen Thi Mai Trang, 2009). The criteria used when performing Cronbach's Alpha coefficient analysis:

First, corrected item-total correlation should be greater than 0.3 which indicates that the variables are relatively high correlation, the scale is reliable or satisfies the internal consistency as well as the favorable relation within a set of items. The item-total correlation has to be conducted for determining and omitting the item having uncertain association to the whole group (Hoang Trong and Chu Nguyen Mong Ngoc, 2008). Therefore, observed variables with a total correlation coefficient less than 0.3 will be excluded from scale as they do not contribute much to description of measured concept (Nunally, 1978).

Second, the greater the Cronbach's Alpha coefficient, the higher the intrinsic consistency reliability or in other words, more homogeneous: greater than 0.8 is a good measurement scale; from 0.7 to 0.8 is usable; in case the research concept is new or unfamiliar in the context of the research, an Alpha index of 0.6 or higher is usable (Nunally, 1978; Peterson, 1994; Slater, 1995). In this paper, the author chose an Alpha coefficient greater than 0,7.

3.2.2. Exploratory Factor Analysis (EFA)

The exploratory factor analysis (EFA) method belongs to interdependence techniques, which means it does not depend on whether it is dependent variable or independent variable, but based on the correlation between interrelationships. EFA is used to shorten a set of many interdependent observation variables into one identical variable (called an aggregation factor) so that they are more meaningful and typical while still maintaining most of the information of the original set. In the EFA (Exploratory Factor Analysis) analysis, following values should be considered to ensure significance of the test:

First, according to Hair et al. (2010), KMO (Kaiser – Meyer – Olkin) measure of sampling adequacy indicating the data appropriation exploration. This coefficient should be in [0.5; 1] to confirm the usability of the data sample; if it is below value of 0.5 the findings of factor analysis will not be in use (Garson, 2003). Besides, Barlett's test of sphericity decides whether variables are relevant and appropriate for structure detection or not. If the test variables are statistically significant with the significant level or P-value below or equal to 0.05, observed variables are correlated with each other. (Hoang Trong and Chu Nguyen Mong Ngoc, 2008).

Moreover, EFA Analysis also considers the Eigenvalue. This value represents the degree of variance of explained variables by each factor. With regards to Kaiser's Eigenvalue-greater-than-one rule, only factors with Eigenvalue greater than 1 are kept for further interpretation (Kaiser, 1960) and the total variance explained must be greater than 50% as expressed by Hair et. al (1998).

At the same time, the Factor Loading which factors each measurement variable belongs to, should also need to be paid close attention. According to Hair et al. (1998), Factor loading > 0.3 is considered to be at a minimum, Factor loading > 0.4 is considered important, and ≥ 0.5 is regarded as practical. So, in this research, the Factor loading loading value of 0.5 is favorable for optimal findings. In this study, the Principal Axis Factoring extraction method with Promax rotation was applied.

3.2.3. Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) is the method to determine the suitability of the research data with the theoretical model. CFA is one of the statistical techniques of linear structure models (SEM). CFA lets us test how well the measured variables represent constructs. In adapting EFA factors, research data is a foundation to better find out the component factors; while the CFA is intended to confirm the model of the component elements that are available through previous studies or the predefined model. More details, when conducting CFA, it is necessary to analyze:

- Convergence of the model by considered standardized regression coefficient
- Relevance of the model to market data
- Composite reliability ρ_c (CR) of each concept
- The Average variance extracted (ρ_{vc}) of each concept

Specifically, when it comes to check out the convergence of the model, the weights in "Standardized regression coefficient" must be greater than 0,5. Moreover, to test suitability of model with market data, it is necessary to review indicators with criterias in Appendix.

Thirdly, reliability is an assessment of the degree of consistency between multiple measurements of a variable (Hair et al 2006). There are a few ways to examine reliability in results. Hair et al. (2006) suggested that composite reliability is a good method for examining this. In this research, the author conducted the Composite Reliability test of the scale – ρ_c (CR) which value must reach 0.7 or more (Joreskog, 1971). The calculating formula Composite Reliability based on Standardized Regression Weight as follows:

$$\rho_c = \frac{\left(\sum_{i=1}^p \lambda_i\right)^2}{\left(\sum_{i=1}^p \lambda_i\right)^2 + \sum_{i=1}^p (1 - \lambda_i^2)}$$

Where λ represents the factor loadings for each item i , n is the number of items for that construct, p is the number of observed variables in scale (Hair et al, 2006). Fourth, the author conducts the Average Variance Extracted test of each concept. According to Hair (1998), the extracted means of each concept should exceed 0.5 which explains that the factors cited explain at least 50% of the variance of observed variables. The Average Variance Extracted is calculated as the following formula:

$$\rho_{vc} = \frac{\sum_{i=1}^p \lambda_i^2}{\sum_{i=1}^p \lambda_i^2 + \sum_{i=1}^p (1 - \lambda_i^2)}$$

The criteria for these analyzes shall be suggested by Hair et al. (2014), including:

- Reliability:
- Standardized Loading Estimates 0.5 (≥ 0.7 is Initial)
- Composite Reliability (CR) 0.7
- Convergent validity: Average Variance Extracted (AVE) 0.5
- Discriminant validity:
- Maximum Shared Variance (MSV) < Average Variance Extracted (AVE)
- Square Root of AVE (SQRTAVE) > Inter-Construct Correlations

3.2.4. Linear structural model – SEM

The linear structural model analysis (SEM) method is a collection of statistical models rather than a separate statistical method. The analysis method of the linear structural model is used to test the proposed research model. The structural model specifies the relationship between underlying variables (concept measured based on multiple observed variables). The author SEM model using AMOS 20.0 software through following analysis:

- Verify the reliability of the scale by confirmatory factor analysis (CFA);
- Testing the suitability of the model as a whole with market data.

3.2.5. T-test and analysis of variance ANOVA

T-test and analysis of variance ANOVA help draw conclusions about the impact of demographic variables such as gender, age, income,... dependent variable. In other words, the purpose of T-test and ANOVA is to discover the difference of the dependent variable between groups of respondents on a demographic characteristic.

T-test can only be applied to test qualitative demographic variables capable of receiving two observed values; in case more than two values are measured, the ANOVA test will be used instead. For the T-test, if the Sig Levene test coefficient is lower than the significance level of 0.05, it can be concluded that the variances

of the two values of the qualitative variable are different, that is, there is a significant difference. To make statistics between two different values of the qualitative variable, we use the t test results in the line Equal variances not assumed.

On the contrary, if the Sig Levene value is greater than 0.05, then the variances of the two populations are not different, we use the test results in the line of Equal variances and can conclude that the variance between the two groups is different in terms of the multiplicative characteristics. The password is no different.

In ANOVA test, Levene test is used to test whether the group variance is different or not. If the Sig coefficient of the Levene test is greater than 0.05, the variances are the same and the ANOVA test can be performed in the next step. In the ANOVA test step, if the Sig value is less than or equal to 0.05, it can be concluded that there is a difference in this dependent variable between different groups in terms of demographic characteristics. However, in the case where the Sig value is greater than 0.05, it is not possible to draw conclusions about the difference in variance between different groups in terms of demographic characteristics.

4. Results and discussion

4.1. Results

4.1.1. Description of the formal study sample

a) Description of observations

Among the measures, the standard deviation of PU and SC is the smallest and other variables also have this value less than 1, indicating that the answers are less deviated from the mean (Groebner et al., 2011).

Table 4.1. Descriptive statistics of observations

	N	Minimum	Maximum	Mean	Std. Deviation
LF	239	1,67	5,00	3,9484	,74825
INT	239	1,00	5,00	3,7671	,82001
PU	221	2,80	5,00	4,0670	,49050
PR	239	1,50	5,00	3,9331	,69980
SC	221	2,20	5,00	4,0425	,56937
DPS	221	1,67	5,00	3,9110	,73761
QS	239	1,67	5,00	3,8703	,84427
DSP	239	1,67	5,00	3,8424	,65664
Valid N (listwise)	221				

b) Description of demographic factors

With 196 survey respondents, the female sex ratio accounted for 75.4%, while the male sex ratio accounted for 26.6% with 84 survey participants. As a result, women are marginally more likely than males to participate in the survey.

Occupation: 23 are students (accounting for 8.8%), 114 people are office workers (accounting for 43.8%), there are 50 people are civil servants (accounting for 19.2%) the rest are business groups with 27.7%. Thus, the target group is office workers who participated in the survey the most.

Regarding income level: 37 people have income < 10 million (accounting for 14.2%), there are 193 people with income from 10 to 15 million (accounting for 74.2%), there are 17 people with an income of 15-20 million (accounting for 6.5%), the rest is from 20 million or more, there are 13 people participating in the survey (accounting for 5%).

Table 4.2. Survey sample statistics

	Frequency	Frequency %
Gender		
Male	64	24.6
Female	196	75.4
Income		
Under 10 million VND	37	14.2
From 10 million VND - 15 million VND	193	74.2
From 15 million VND - 20 million VND	17	6, 5
Over 20 million VND	13	5.0
Occupation		
Student	23	8.8
Office worker	114	43.8
Civil servant	50	19.2
Business	72	27.7
Age		
18 - 25	129	49.6
From 26 - 35	99	38.1
From 35 - 45	25	9.6
Over 46	7	2.7

This section should simply state the findings, without bias or interpretation, and arranged in a logical sequence. Non-textual elements, such as, figures, charts, photos, maps, tables, etc. to further illustrate the findings, should also be included if appropriate. In the text, refer to each non-textual element in consecutively numbered order [e.g., Table 1, Table 2; Chart 1, Chart 2; Map 1, Map 2], and complete with a heading [title with description goes above the figure, table, chart, etc.].

4.2. Discussion

4.2.1. Test the difference of demographic

The author found that the Sig value of Levene test = 0.523 > 0.05 and Sig of t test in the assumption of equality = > 0.05 so it can be concluded that there is no difference in purchase intention between these 2 gender groups in Loyalty to use Fintech (LF).

The Sig. = 0.173 > α = 0.05, so we accept H₀: The variance between age groups is the same. Therefore, the conclusion can be further analyzed in Anova for this case. Looking at the coefficient sig anova = 0.032 < 0.05 shows that there is a difference between age groups in the choice of Loyalty to use Fintech (LF).

Next, the Sig. = 0.744 > α = 0.05, so we accept H₀: The variance between occupational groups is equal. Therefore, the conclusion can be further analyzed Anova for this case. Looking at the coefficient sig anova = 0.838 > 0.05 shows no difference in occupation for Loyalty to use Fintech (LF) in the scope of this study.

Finally, the Sig. = 0.578 > α = 0.05, so we accept H₀: The variance between the income groups is equal. Therefore, the conclusion can be further analyzed in Anova for this case. Looking at the coefficient sig anova

= 0.3 > 0.05 shows that there is no difference between income groups in terms of Loyalty to use Fintech (LF) in the scope of this study.

4.2.2. Analysis of Cronbach's Alpha coefficient for the main scale

The results of running the 1st scale reliability test show that in the group of variables PU with PU5 observations, the group of SC variables with SC5 have Cronbach's Alpha if Item Deleted coefficient greater than the total Cronbach's Alpha coefficient. Therefore, it is necessary to remove these 2 observations and rerun the scale reliability test for these 2 groups of variables in turn.

The first is that the total Cronbach's Alpha indexes of these 7 groups of variables are all > 0.6 with PU (0.891), INT (0.869), LF (0.813), PR (0.812), SC (0.807) DSP (0.779) QS (0.801).

At the same time, none of the observed variables has a variable correlation coefficient - sum less than 0.3 and Cronbach's Alpha if the variable is less than Cronbach's Alpha, no variable will be excluded (Hair et al., 2007).

Therefore, it can be concluded that the scale has high reliability, consistency and relationships within the scale are very good. Thus, the results of the evaluation of the scale by Cronbach's Alpha method for the scales before the EFA factor analysis for 7 factor components show that all 7 factors are eligible to perform the next EFA analysis.

Thus, the results of the evaluation of the scale by Cronbach's Alpha method for the scales before EFA factor analysis for 76 factor components show that all 7 factors are eligible to perform EFA analysis.

Exploratory Factor Analysis (EFA)

The number of observed variables suitable for the study is 24 observations suitable for analysis discovery factor.

The load coefficients are all greater than 0.4, showing that the observed variable has very good convergence (Hair and Ctg 1998, 111), and no indicator appears in two different groups of factors.

Confirmatory Factor Analysis (CFA)

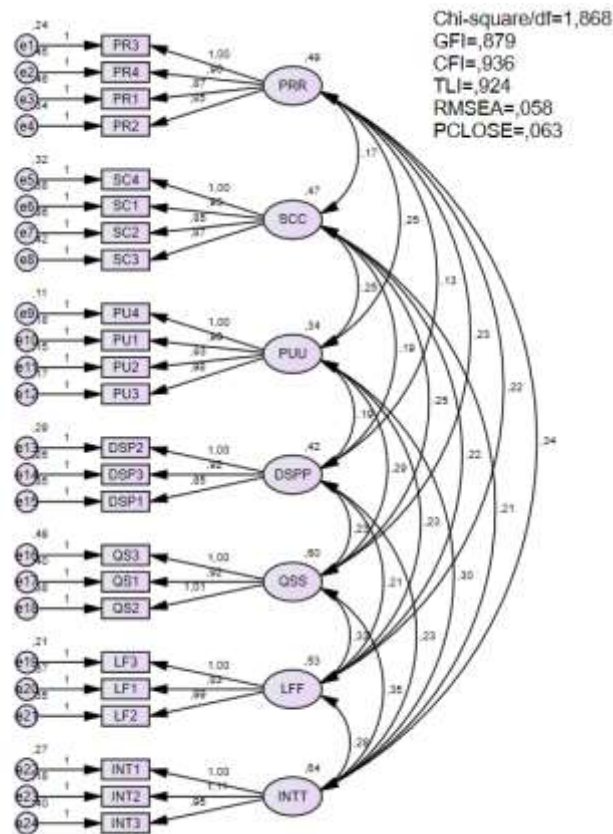


Figure 4.3. The results of testing the CFA model

First to analyze and check the model's convergence, when the "Standardized Regression Coefficient" has a weight greater than 0.5, then the model is achieved convergence.

The model fit results in the CFA (Appendix) show that the model fits the market data with the indexes. The model with experimental value of CMIN = with p-value = 0.000 and index CMIN/df = 1,868 < 2 is very satisfactory. In addition, GFI index = 0.879 > 0.8; CFI = 0.936 > 0.9; RMSEA index = 0.058 < 0.06 and PCLOSE = 0.063 > 0.05 both show that the model fit is very good.

The regression weights of the CFA results and the correlation coefficient table, combining the amos 20.0 tool and the stats tool package leads to the table 3.13.

The author finds that the combined reliability (CR) and the extracted mean variance (AVE) of all variables are the same satisfy the condition. Thus, from the results obtained after running the CFA, it can be seen that the model fits the market data very well, the convergence scale and the extracted mean variance and the composite reliability of the response concepts requested.

▪ *Structural Equation Modeling Analysis (SEM)*

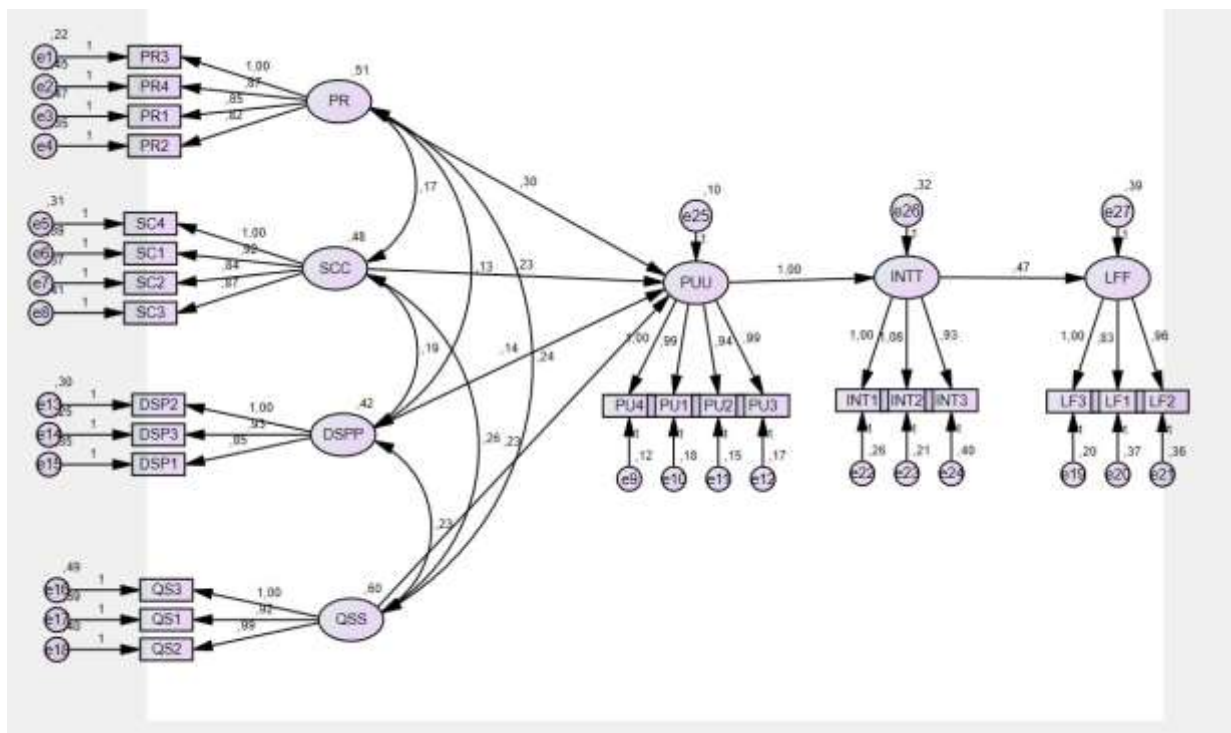


Figure 4.4. The results of testing the SEM model

It can be seen in 04 independent variables SC, PR, DSP, QS all have p = 0.00 < 0.001, so all have statistical significance at 95% for the intermediate variable perceived usefulness PU. Therefore, hypothetical conclusions from H1 -> H4 including Impact of COVID 19 lockdown (PR), Trust (SC), Data Security and Privacy (DSP), Quality administrative services (QS) all have an impact on Perceived usefulness towards Fintech (PU).

In the effect of hypothesis H5 shows that PU on INT has p-value = 0.00... so it is significant at 95% significance level. Therefore, it is concluded that Perceived usefulness towards Fintech (PU) has an impact on Intention to adopt Fintech (INT).

Consider the hypothesis H6 indicating that the impact of Intention to adopt Fintech (INT) on Loyalty to use Fintech (LF) is 0.520. The impact sign shows that this relationship is a positive one.

Table 4.5. Summary of hypothesis testing results

Hypothesis	Conclusion
Hypothesis H1: Social distancing due to COVID-19 has a positive impact on perceived usefulness of Fintech.	Accept (+)
Hypothesis H2: Trust has a positive impact on perceived usefulness of Fintech.	Accept (+)
Hypothesis H3: Data security and privacy have a positive impact on perceived usefulness of Fintech.	Accept (+)
Hypothesis H4. Service quality and safety have a positive impact on perceived usefulness for Fintech.	Accept (+)
Hypothesis H5. The perceived usefulness to Fintech positively affects the intention to adopt Fintech.	Accept (+)
Hypothesis H6. Fintech adoption intention has a positive relationship with user loyalty.	Accept (+)

5. Conclusion

Customers have favorable behaviors and higher intentions to utilize items that are practical, time-saving, and cost-saving, according to the research. Customers who are secure in the security and confidentiality of their personal information are more favorable about the product and are more likely to utilize it. Furthermore, remarks on the images of banks and Fintech businesses have an impact on behavior and intent to use. The stronger a customer's opinion of a bank's or Fintech company's image is, the more favorable thoughts they have about the bank's or Fintech company's products, and the more likely they are to utilize them. Furthermore, clients who are more daring and interested about things on smartphones would have no reservations about checking them out.

Perceived risks and convenience have little impact on behavior, and hence on the desire to use items that are incorporated into banks' products or sold through banking channels. As a result, in order to attract customers to jointly deliver goods by banks and Fintech businesses, both must pay attention to product practicality, build trust, generate attractive brands and images, and concentrate management efforts on younger customers who desire to discover and experience.

This research has certain limitations that could lead to more constructive future research:

For starters, the records were only obtained in Vietnam. Therefore, it is limited in terms of cross-cultural and economic situations. To improve generalizability in consumer-brand connections, future research should be undertaken in a variety of cultures and economies (both emerging and developed).

Second, due to a shortage of resources and time, the interaction between Fintech services and users is influenced, resulting in information that does not fully reflect actual connection among Fintech and consumers. Future research might use a wider range of approaches to examine how the connection between services and users has evolved over time and to capture real-time patterns. Future study might focus on a few individual Fintech services and compare them to identify which elements of each service can provide a competitive advantage.

There were still many complicated changes during the pandemic, contributing to unforeseen macroeconomic changes. In order to maintain economic recovery, Vietnam entered the "New Normal" phase. Fintech apps will play a prominent part in the 4.0 age of technology, when many industries are undergoing digital transformations to keep up with the global trend, as well as limiting the use of currency to prevent the spread of the virus. Fintech services, on the other hand, have had a great opportunity to grow, retain a nice experience, and gain loyal clients. Fintech services will thrive in the future. Businesses must understand more about their customers' online behaviors and habits in order to make the best judgments possible in order to meet their demands.

6. Appendix

Appendix A. Sample frequency statistics

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	From 18 - 25	129	49,6	49,6	49,6
	From 26 to 35	99	38,1	38,1	87,7
	From 35 - 45	25	9,6	9,6	97,3
	Over 46	7	2,7	2,7	100,0
	Total	260	100,0	100,0	

Profession

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	23	8,8	8,9	8,9
	Office staff	114	43,8	44,0	52,9
	Civil servants	50	19,2	19,3	72,2
	Business	72	27,7	27,8	100,0
	Total	259	99,6	100,0	
Missing	System	1	,4		
Total		260	100,0		

Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than VND 10 million	37	14,2	14,2	14,2
	From VND 10 million - VND 15 million	193	74,2	74,2	88,5
	From VND 15 million - VND 20 million	17	6,5	6,5	95,0
	Over 20 million VND	13	5,0	5,0	100,0
	Total	260	100,0	100,0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	64	24,6	24,6	24,6
	Female	196	75,4	75,4	100,0
	Total	260	100,0	100,0	

Appendix B. Description statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LF	239	1,67	5,00	3,9484	,74825
INT	239	1,00	5,00	3,7671	,82001
PU	221	2,80	5,00	4,0670	,49050
PR	239	1,50	5,00	3,9331	,69980
SC	221	2,20	5,00	4,0425	,56937
DPS	221	1,67	5,00	3,9110	,73761
QS	239	1,67	5,00	3,8703	,84427
DSP	239	1,67	5,00	3,8424	,65664
Valid N (listwise)	221				

Appendix C. Test the differences of demographic factors by T-test and ANOVA

Gender

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
LF	1	58	3,8793	,79643	,10458
	2	181	3,9705	,73307	,05449

Independent Samples Test

		Levene's Test for Equality of Variances		T-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
LF	Equal variances assumed	,409	,523	-,807	237	,420	-,09122	,11298	-,31380	,13136

Descriptives

LF

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Student	23	4,0435	,69851	,14565	3,7414	4,3455	2,67	5,00
Office staff	95	3,9439	,74480	,07642	3,7921	4,0956	2,00	5,00
Civil servants	50	3,9867	,74371	,10518	3,7753	4,1980	2,00	5,00
Business	70	3,8952	,78747	,09412	3,7075	4,0830	1,67	5,00
Total	238	3,9482	,74982	,04860	3,8524	4,0439	1,67	5,00

Test of Homogeneity of Variances

LF

Levene Statistic	df1	df2	Sig.
,412	3	234	,744

ANOVA

LF

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	,481	3	,160	,283	,838
Within Groups	132,769	234	,567		
Total	133,250	237			

Robust Tests of Equality of Means

LF

	Statistica	df1	df2	Sig.
Welch	,288	3	83,362	,834

a. Asymptotically F distributed.

INCOME

Descriptives

LF

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Less than VND 10 million	33	3,9394	,71421	,12433	3,6861	4,1926	2,67	5,00
From VND 10 million - VND 15 million	180	3,9833	,73931	,05511	3,8746	4,0921	1,67	5,00
From VND 15 million - VND 20 million	14	3,5952	,82874	,22149	3,1167	4,0737	2,00	5,00
Over 20 million VND	12	3,8611	,85821	,24775	3,3158	4,4064	2,67	5,00
Total	239	3,9484	,74825	,04840	3,8530	4,0437	1,67	5,00

Test of Homogeneity of Variances

LF

Levene Statistic	df1	df2	Sig.
,659	3	235	,578

ANOVA

LF

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2,060	3	,687	1,230	,300
Within Groups	131,193	235	,558		
Total	133,252	238			

Robust Tests of Equality of Means

LF

	Statistica	df1	df2	Sig.
Welch	,974	3	28,272	,419

a. Asymptotically F distributed.

Appendix D. Scale reliability testing

Reliability Statistics

Cronbach's Alpha	N of Items
,730	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PU1	16,17	4,131	,653	,623
PU2	15,99	4,257	,661	,626
PU3	16,14	4,147	,647	,625
PU4	16,06	4,104	,732	,599
PU5	16,38	5,395	,040	,888

Reliability Statistics

Cronbach's Alpha	N of Items
,891	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PU1	12,28	3,293	,733	,871
PU2	12,13	3,378	,756	,862
PU3	12,28	3,315	,727	,873
PU4	12,20	3,232	,830	,834

Reliability Statistics

Cronbach's Alpha	N of Items
,869	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
INT1	7,40	3,253	,756	,810
INT2	7,37	3,051	,804	,765
INT3	7,48	3,316	,693	,868

Reliability Statistics

Cronbach's Alpha	N of Items
,813	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
LF1	7,85	2,645	,622	,786
LF2	7,84	2,388	,651	,760
LF3	7,81	2,434	,724	,683

Reliability Statistics

Cronbach's Alpha	N of Items
,812	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PR1	11,75	4,731	,605	,777
PR2	11,77	5,014	,609	,774
PR3	11,74	4,680	,693	,735
PR4	11,76	4,679	,620	,770

Reliability Statistics

Cronbach's Alpha	N of Items
,714	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SC1	15,74	6,231	,610	,610
SC2	15,69	6,493	,591	,621
SC3	15,82	6,638	,509	,652
SC4	15,66	6,232	,609	,610
SC5	15,98	7,768	,146	,807

Reliability Statistics

Cronbach's Alpha	N of Items
,807	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SC1	12,00	4,591	,626	,756
SC2	11,95	4,828	,606	,766
SC3	12,08	4,743	,584	,776
SC4	11,92	4,442	,676	,732

Reliability Statistics

Cronbach's Alpha	N of Items
,779	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
DSP1	7,74	2,117	,582	,738
DSP2	7,80	1,927	,637	,679
DSP3	7,60	2,093	,631	,687

Reliability Statistics

Cronbach's Alpha	N of Items
,801	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
QS1	7,61	3,243	,662	,715
QS2	7,78	3,204	,624	,752
QS3	7,74	2,958	,657	,718

Appendix E: Check the efa discovery factor

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,889
Bartlett's Test of Sphericity	Approx. Chi-Square	3293,997
	Df	276
	Sig.	,000

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadingsa
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8,737	36,406	36,406	8,370	34,876	34,876	5,195
2	2,082	8,673	45,079	1,655	6,894	41,770	4,570
3	1,668	6,952	52,031	1,252	5,218	46,988	6,377
4	1,429	5,955	57,985	1,028	4,283	51,271	5,192
5	1,310	5,458	63,443	,934	3,891	55,162	4,198
6	1,090	4,540	67,983	,728	3,035	58,197	4,702
7	1,013	4,221	72,204	,694	2,893	61,090	5,321
8	,715	2,978	75,182				
9	,641	2,670	77,851				
10	,576	2,399	80,251				
11	,520	2,166	82,417				
12	,485	2,021	84,438				
13	,451	1,879	86,317				

14	,443	1,844	88,161				
15	,413	1,722	89,884				
16	,364	1,516	91,399				
17	,343	1,428	92,828				
18	,329	1,371	94,199				
19	,295	1,230	95,430				
20	,275	1,146	96,576				
21	,244	1,016	97,591				
22	,237	,987	98,579				
23	,185	,773	99,352				
24	,156	,648	100,000				

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Matrixa Pattern

	Factor						
	1	2	3	4	5	6	7
PR3	,758						
PR1	,742						
PR4	,742						
PR2	,689						
SC4		,814					
SC1		,686					
SC2		,668					
SC3		,655					
PU4			,921				
PU2			,732				
PU1			,673				
PU3			,536				
QS3				,836			
QS1				,775			
QS2				,614			
DSP3					,786		

DSP2					,773		
DSP1					,680		
LF3						,821	
LF1						,790	
LF2						,650	
INT1							,893
INT2							,842
INT3							,581

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Structure Matrix

	Factor						
	1	2	3	4	5	6	7
PR3	,784		,552				,423
PR1	,707						
PR4	,705						
PR2	,702						,437
SC4		,796	,417	,407			
SC1		,715	,471				
SC2		,684	,412				
SC3		,683			,400		
PU4	,488	,517	,891	,476			,518
PU2	,499	,471	,818	,547	,419	,460	,504
PU1	,479	,456	,798	,530		,536	,557
PU3	,559	,541	,764	,552	,492	,436	,484
QS3			,425	,779			
QS1			,432	,756			
QS2	,402		,518	,742	,458	,490	,434
DSP3					,772		
DSP2					,762		
DSP1					,684		
LF3			,425	,513		,832	

LF1			,409			,758	
LF2				,452	,449	,740	
INT2	,549		,530	,487	,415		,883
INT1	,450		,536	,443		,412	,864
INT3	,616		,481	,483			,754

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

Appendix F: CFA Model Suitability Assessment
Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	69	431,405	231	,000	1,868
Saturated model	300	,000	0		
Independence model	24	3410,307	276	,000	12,356

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	,035	,879	,843	,677
Saturated model	,000	1,000		
Independence model	,251	,260	,195	,239

Baseline Comparisons

Model	NFIDelta1	RFIrho1	IFIDelta2	TLIrho2	CFI
Default model	,873	,849	,937	,924	,936
Saturated model	1,000		1,000		1,000
Independence model	,000	,000	,000	,000	,000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	,837	,731	,783
Saturated model	,000	,000	,000
Independence model	1,000	,000	,000

NCP

Model	NCP	LO 90	HI 90
Default model	200,405	145,806	262,824
Saturated model	,000	,000	,000

Model	NCP	LO 90	HI 90
Independence model	3134,307	2949,726	3326,228

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1,666	,774	,563	1,015
Saturated model	,000	,000	,000	,000
Independence model	13,167	12,102	11,389	12,843

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	,058	,049	,066	,063
Independence model	,209	,203	,216	,000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	569,405	584,149	815,092	884,092
Saturated model	600,000	664,103	1668,204	1968,204
Independence model	3458,307	3463,435	3543,764	3567,764

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2,198	1,988	2,439	2,255
Saturated model	2,317	2,317	2,317	2,564
Independence model	13,353	12,640	14,094	13,372

HOELTER

Model	HOELTER.05	HOELTER.01
Default model	161	171
Independence model	24	26

Appendix G: CFA - Converging, distinguishing, reliability value

	CR	AVE	MSV	MaxR(H)	LFF	PRR	SCC	PUU	DSPP	QSS	INTT
LFF	0,818	0,601	0,339	0,832	0,775						
PRR	0,814	0,525	0,383	0,827	0,426	0,724					
SCC	0,808	0,514	0,389	0,812	0,434	0,349	0,717				
PUU	0,894	0,679	0,429	0,897	0,558	0,619	0,624	0,824			
DSPP	0,781	0,544	0,252	0,786	0,441	0,278	0,423	0,502	0,738		
QSS	0,800	0,572	0,426	0,802	0,582	0,430	0,477	0,653	0,457	0,756	
INTT	0,874	0,699	0,429	0,889	0,481	0,602	0,377	0,655	0,446	0,561	0,836

Appendix H: SEM - Regression weighting regression weights

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
PUU	<---	SCC	,229	,052	4,373	***	
PUU	<---	PRR	,299	,047	6,310	***	
PUU	<---	DSPP	,140	,054	2,608	,009	
PUU	<---	QSS	,227	,051	4,491	***	
INTT	<---	PUU	,996	,092	10,881	***	
LFF	<---	INTT	,473	,064	7,417	***	
PR3	<---	PRR	1,000				
PR4	<---	PRR	,871	,080	10,824	***	
PR1	<---	PRR	,846	,081	10,496	***	
PR2	<---	PRR	,818	,073	11,216	***	
SC4	<---	SCC	1,000				
SC1	<---	SCC	,918	,086	10,623	***	
SC2	<---	SCC	,838	,081	10,295	***	
SC3	<---	SCC	,873	,086	10,209	***	
PU4	<---	PUU	1,000				
PU1	<---	PUU	,986	,063	15,569	***	
PU2	<---	PUU	,944	,059	15,950	***	
PU3	<---	PUU	,993	,063	15,841	***	
DSP2	<---	DSPP	1,000				

			Estimate	S.E.	C.R.	P	Label
DSP3	<---	DSPP	,926	,092	10,079	***	
DSP1	<---	DSPP	,848	,090	9,450	***	
QS3	<---	QSS	1,000				
QS1	<---	QSS	,920	,086	10,689	***	
QS2	<---	QSS	,990	,091	10,894	***	
LF3	<---	LFF	1,000				
LF1	<---	LFF	,830	,076	10,975	***	
LF2	<---	LFF	,964	,083	11,599	***	
INT1	<---	INTT	1,000				
INT2	<---	INTT	1,081	,065	16,538	***	
INT3	<---	INTT	,933	,068	13,818	***	

Appendix I. SEM - Standardized regression weighting
Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
PUU	<---	SCC	,277
PUU	<---	PRR	,375
PUU	<---	DSPP	,159
PUU	<---	QSS	,309
INTT	<---	PUU	,707
LFF	<---	INTT	,520
PR3	<---	PRR	,836
PR4	<---	PRR	,680
PR1	<---	PRR	,661
PR2	<---	PRR	,703
SC4	<---	SCC	,777
SC1	<---	SCC	,713
SC2	<---	SCC	,690
SC3	<---	SCC	,684
PU4	<---	PUU	,857
PU1	<---	PUU	,800
PU2	<---	PUU	,812
PU3	<---	PUU	,809

			Estimate
DSP2	<---	DSPP	,765
DSP3	<---	DSPP	,765
DSP1	<---	DSPP	,679
QS3	<---	QSS	,744
QS1	<---	QSS	,752
QS2	<---	QSS	,774
LF3	<---	LFF	,852
LF1	<---	LFF	,708
LF2	<---	LFF	,761
INT1	<---	INTT	,843
INT2	<---	INTT	,887
INT3	<---	INTT	,763

Appendix J: Squared multiple correlations table

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
PUU	,705
INTT	,501
LFF	,270
INT3	,582
INT2	,786
INT1	,710
LF2	,579
LF1	,501
LF3	,725
QS2	,599
QS1	,566
QS3	,554
DSP1	,461
DSP3	,585
DSP2	,585
PU3	,654
PU2	,659

	Estimate
PU1	,639
PU4	,734
SC3	,467
SC2	,476
SC1	,509
SC4	,603
PR2	,494
PR1	,437
PR4	,462
PR3	,700

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FACTOR AFFECTING UNIVERSITY STUDENTS' DECISION TO USE FINTECH SERVICES IN HO CHI MINH CITY

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ABSTRACT

In Vietnam, this financial technology sector is also in a period of dynamic development. However, this is not an overarching field that Vietnam can fully grasp. There are still great challenges for the financial technology sector in the Vietnamese market. Therefore, the purpose of this topic is to study: “Factors affecting students' decision to use Fintech services in Ho Chi Minh City. Ho Chi Minh City” on the basis of research methods and testing the accuracy of the topic with the desire to find out the influence of factors affecting the decision to use Fintech services to suggest strategic methods. attracting the participation of customers using this market and the advantages, opportunities or challenges of Fintech in the future. From there, make a number of suggestions and policies to contribute to the future research direction of administrators to help Fintech capture the Vietnamese market and the sustainable development of Fintech.

Keywords: Fintech; Students in Ho Chi Minh City; Decide to use Fintech; Vietnam financial technology.

1. Introduction

The term “Fintech” is a shortened form of the phrase “Financial Technology”. Currently, this term has been expanded with many different meanings and there is no unified definition of Fintech. According to Gregor Dorfleitner ,et al (2017),Fintech denotes companies or its representatives that provide financial services combined with modern and innovative technologies. Rainer Alt and Thomas Puschmann (2012) indicate that Fintech refers to solutions that represent incremental or radical/disruptive innovation developments of applications, processes, products, or business models in the service, industry finance (Li-Min Chuang ,et al, 2016). Accordingly, Fintech applications have participated in many fields such as mobile payments (Peter Gomber ,et al, 2018), mobile networks (Keke Gai ,et al, 2016; Sheng Wen ,et al, 2012; Jun Zhang ,et al, 2012; Yan Zhang and Boon-Hee Soong, 2004), big data(Hua Yin and Keke Gai, 2015), blockchain (Samuel Fosso Wamba ,et al, 2020; Nofie Iman, 2018), P2P lending (Ruyi Ge ,et al, 2017; Peter Gomber ,et al, 2018; Ryan Randy Suryono ,et al, 2020; Haomin Wang ,et al, 2021; Xinxin Wang ,et al, 2020) cloud computing (Arcangelo Castiglione ,et al, 2015; Keke Gai, Meikang Qiu and Xiaotong Sun, 2018; Keke Gai, Meikang Qiu and Hui Zhao, 2018), banking services, hedge funds, retail groups, and telecom operators (Shubhangi Singh ,et al, 2020), image processing (Aniello Castiglione ,et al, 2007) and data analysis techniques (Meikang Qiu ,et al, 2016).

Society is increasingly moving forward with the remarkable advancements of technology in the new era. The 4.0 era is a fertile ground for the proliferation of many fields, many fields have risen to comprehensive change and led the trend, not to mention the financial sector with the spectacular birth of Fintech - financial technology. According to research by Solidiance, Vietnam’s Fintech market reached 4.4 billion USD in transaction value in 2017 and reached about 7.8 billion USD in 2020, equivalent to an increase of 77% within 3 years (Tuyet Vu Thi Anh and Thuy Vu Thi Thanh, 2021).This is a sign of the good growth of Fintech in the Vietnam market. In addition, the COVID-19 pandemic in recent years is the reason

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why Vietnam's economy has become severely depressed, but it seems to be a stepping stone to support the development of the Fintech industry to a new level New heights in the Vietnamese financial market.

With the desire to understand the factors affecting the decision to use Fintech services of the student customer segment. Because students - are a group of people representing young people at the forefront of trends who always want to keep up with the modern development of technology to adapt to the innovations of the Vietnamese market. The research team wishes to clarify the factors affecting university students' decision to use Fintech services to determine the factors and extent of the impact on the behavior of using Fintech services of consumers and especially students in the recent years of rapid development of the financial technology market in Vietnam. Through research with reference from TAM and UTAUT2 technology models, it can serve as a basis for businesses participating in the Fintech service supply market, agencies and organizations operating in the field. This can develop the Fintech field for a potential market that is expected to explode in 2022 and get closer to the student-oriented customer segment in Ho Chi Minh City. Ho Chi Minh City in particular and in Vietnam in general become more sustainable. Therefore, we realize that this topic is absolutely urgent to carry out.

2. Theoretical framework

2.1. Technology Acceptance Model (TAM)

As the technology evolved, many theories and models were born to explain the adoption and use of technology. So Davis, Bagozzi, and Warshaw 1968 established the Technology Acceptance Model (TAM) based on Rational Action Theory (TRA) to be able to explain a network of factors related to the adoption of information systems or computers using technology users. Among them, the authors suggest that two factors, Perception of Usefulness and Perceived Ease of Use, have a direct impact on behavioral intent.

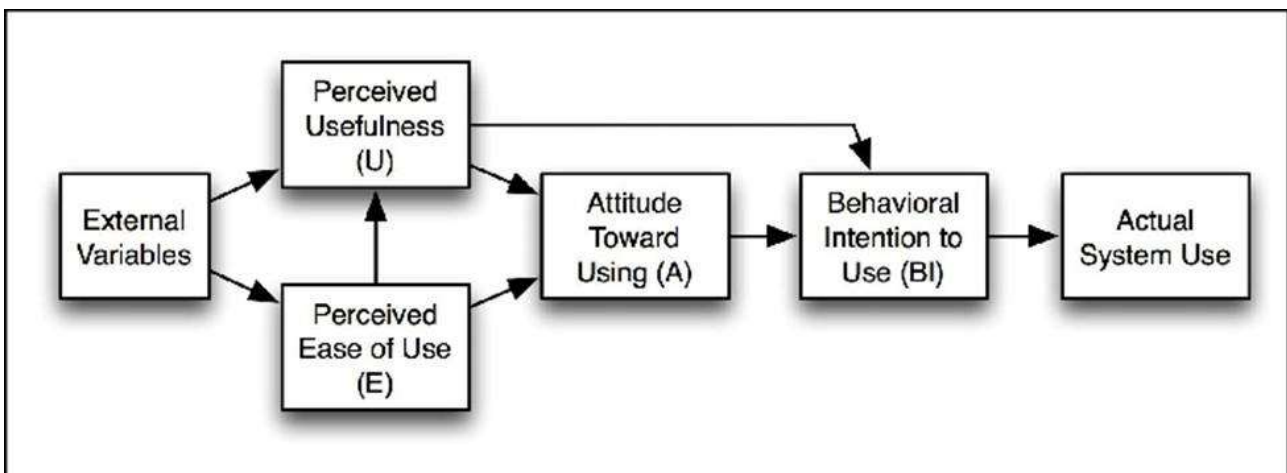


Figure 1: Technology Acceptance Model (TAM)

Source: Fred D Davis ,et al (1989)

2.2. Unified Theory of Acceptance and Use of Technology (UTAUT)

Following the introduction of models theories such as Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Adoption Model (TAM, TAM2), Motivational Model (MM), Combined Model (TAM&TPB), Model of Personal Computer Utilization (MPCU), Innovation Diffusion Theory (IDT) and Social Cognition Theory (SCT). In 2013, Viswanath Venkatesh and his colleagues relied based on these eight models theories to compare 32 factors, thereby conducting a selection to identify factors that directly impact intent behavior and use of technology including Expected Efficiency, Expected Efforts, Social Influences, Favorable Conditions, and intermediaries including Gender, Age, Experience, and Voluntary Use will influence behavioral intent and use of behavior indirectly through key factors.

The findings resulted in expected performance appearing to be a factor influencing behavioral intent in most cases. The favorable condition impact on user behavior only makes sense when tested in combination with the impact of age and experience, only for older workers at a later stage of experience.

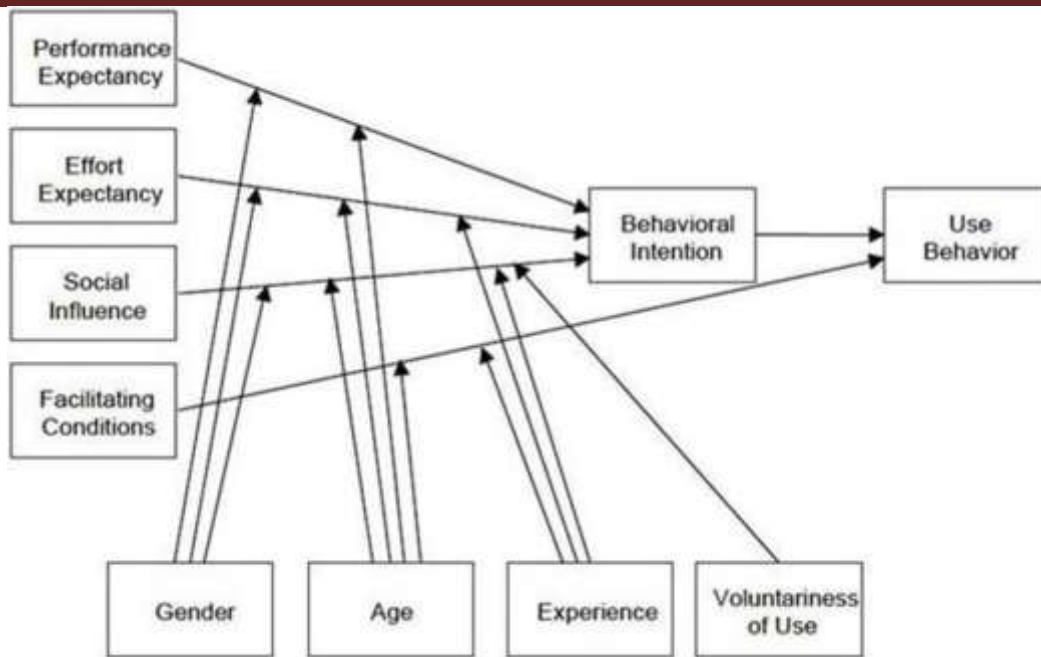


Figure 2: Unified theory of acceptance and use of technology – UTAUT

Source: Viswanath Venkatesh ,et al (2003)

2.3. Unified Theory of Acceptance and Use of Technology (UTAUT2)

Following the success of the Unified Theory of Acceptance and Use of Technology (UTAUT), in 2012, Venkatesh and colleagues expanded the unified theory of technology acceptance and use (UTAUT2) to study the adoption and use of technology in today's much-changing consumer psychology landscape. According to Viswanath Venkatesh ,et al (2012) ,proposed UTAUT2 with a combination of three additional elements to UTAUT including (1) Hedonic Motivation, (2) Price Value, and (3) Habit. Through the results of empirical research, it can be said that the UTAUT2 model has overcome the previous shortcomings of the TRA models (Icek Ajzen and Martin Fishbein, 1975), TAM (Fred D Davis ,et al, 1989), TPB (Icek Ajzen, 1991).

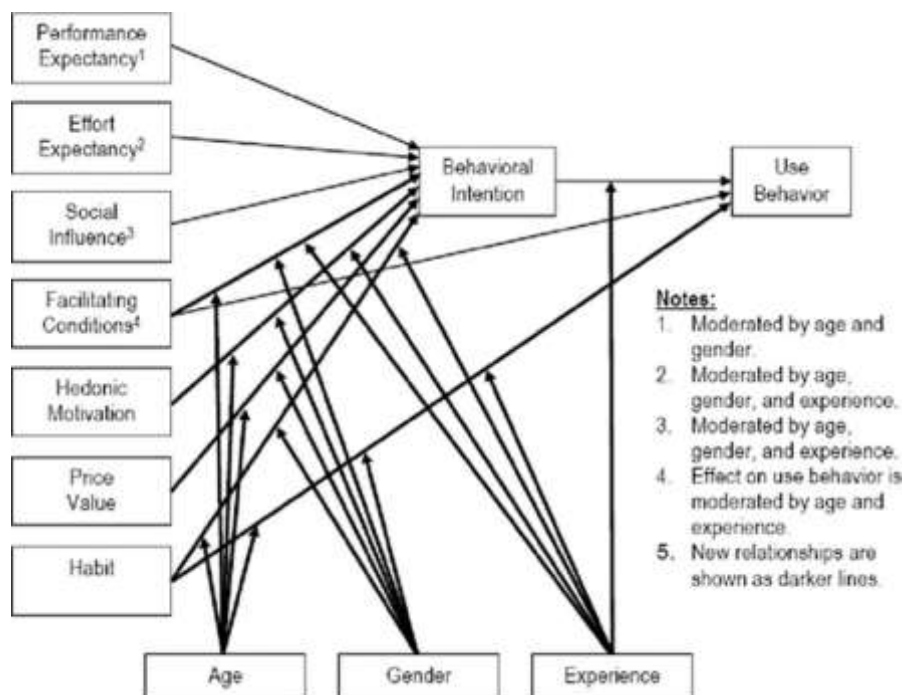


Figure 3: Unified Theory of Acceptance and Use of Technology (UTAUT2) - UTAUT2

Source: Viswanath Venkatesh ,et al (2012)

Table 1: The main factor in the UTAUT2 model

No	Factor	UTAUT2 Definition
1	Performance expectancy	The degree to which using a technology will provide benefits to consumers in performing certain activities
2	Effort expectancy	The degree of ease/effort associated with consumers' use of the technology
3	Social influence	The consumers perceive that important others (e.g. family & friends) believe that they should use a particular technology
4	Facilitating conditions	Consumers' perceptions of the resources and support available to perform a behavior
5	Hedonic motivation	The pleasure or enjoyment derived from using a technology
6	Price value	Consumers' cognitive trade-off between the perceived benefits of the applications and the monetary cost of using them
7	Habit	The extent to which people tend to perform behaviors automatically because of learning

Source: Mahendra Singh and Yoshiki Matsui (2017)

3. Research method

3.1. Model design

3.1.1. Observers

Students in HCMC who have been and intend to use Fintech services.

3.1.2. Appropriate sample sizing method

It is impossible to determine the overall number of students in HCMC. So the team chose to determine Yamane (1967) 's overall unknown case sample size:

$$n = Z^2 \times \frac{p \times (1-p)}{e^2}$$

In there:

n is the sample size to be determined;

Z is the Z distribution table look value based on select reliability;

p is the estimated rate of sample size n success;

e is the permissible error.

According to Samuel B Green and Neil J Salkind (2003) with research using a regression model, the minimum sample size will be calculated according to the formula:

$$n \geq 50 + 8m$$

In there: m is the number of independent variables involved in the regression model.

3.2. Data analysis method

3.2.1. Data analysis tools

Data analysis tools and implementation results: SPSS software 26, using statistical tools such as frequency, percentage rating.

3.2.2. Cronbach's Alpha reliability coefficient

When the correlation coefficient of the total variable of the variable is less than 0.3 or the reliability coefficient of Cronbach's Alpha is less than 0.6, the observed variable will be removed from the model, because the observed variable is no longer reliable, and lack of internal consistency (Jum C Nunnally, 1978, 1994; RA Paterson, 1994) that Cronbach's Alpha reliability coefficient from 0.6 to less than 0.7 is often used

for new research concepts or research contexts new rescue; from 0.7 to less than 0.8 is usable, and from 0.8 to less than 1 represents a very good scale.

In this preliminary study, the authors only need the Item - total correlation greater than 0.3 and the Cronbach's Alpha reliability coefficient greater than 0.7 to be satisfactory.

3.2.3. Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) is a technique to minimize estimated parameters *according to* variable groups. Analysis of exploration factors (EFA) with criteria for assessing statistical meaning include accreditation:

KMO Treatment (Kaiser - Meyer - Olkin Measure of Sampling Adequacy): Greater KMO value ($0.5 \leq \text{KMO} \leq 1$) is a sufficient condition to analyze the appropriate factor.

- Bartlett has a statistical significance when the SIG value ≤ 0.05 : is a statistical quantity to the variables that are not correlated in the whole.
- Factor Loadings must be ≥ 0.5 : are single correlation coefficients between variables and factors.
- Evaluate Eigenvalue value: The coefficient must be greater than 1 to significant factors in interpreting the variance in the overall fluctuation level.

3.2.4. Correlation coefficient analysis

Andy Field (2009) said that although the Pearson correlation coefficient can be used to assess the linear relationship between the two variables, also need to test the hypothesis that this correlation coefficient is statistically significant. T verification is used to test this hypothesis. If Sig < 0.05 will reject the hypothesis H_0 means that two variables have linear correlations together. In contrast, if Sig > 0.05 will accept hypothesis H_0 means that two variables do not have linear correlations together.

3.2.5. Multi-variable regression analysis

The Adjusted R Square value (R Square) and R² (R Square) reflect the effects of independent variables on the dependent variable. The change of these two values is from 0 to 1. If these two values are closer to 1, the more sense the model. Conversely, as close to 0, the less important model. More specifically, it is between 0.5 to 1 is a good model, < 0.5 is a bad model. Durbin - Watson (DW) is used to verify the correlations of adjacent errors. Statistical value Durbin - Watson (d) plays between 0 and 4:

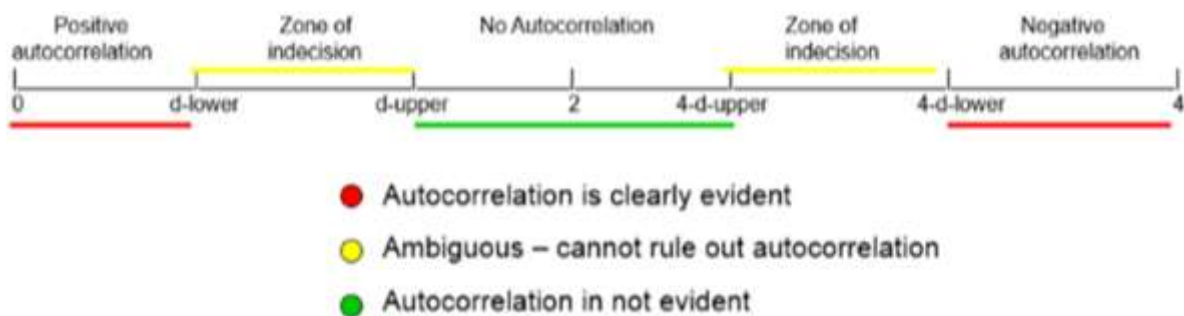


Figure 4: Durbin - Watson statistical results

Source: Vietlod (2021)

To verify the multi-plus the research post uses the VIF (Variance Inflation Factor) coefficient. If VIF > 10 has a multi-line phenomenon, however, in fact, if VIF > 2 will have a multi-added phenomenon. If VIF < 2 does not have multi-added phenomena between independent variables.

3.2.6. Analysis of differences

Inspect the difference between the two observed variables and dependency variables with an average test of two independent models (Independent - Samples T-Test). If it is a sig. < 0.05 , the inspection results are used for the assumption of unbalanced variances; If it is a Sig. > 0.05 , t-test results are used for equal variance assumptions.

In the case of classification variables from 3 groups or more, a one-way differential analysis method (ANOVA) is used to check the difference between factors. ANOVA analysis shows F value and significance levels. If it is a Sig. ≤ 0.05 , can say there is no statistically significant difference between classified variable groups at 95% confidence. Conversely, if Sig. > 0.05 , it can be said that there is a statistically significant difference between groups in observed variables.

3.3. Hypothesis and research model

Usefulness is felt like a factor in the traditional TAM model and has been widely studied in the application of new technologies. Useful levels are felt defined as the level that a person believes that using a specific system will improve their work performance (Fred D Davis ,et al, 1989). Since then, the research team expects H1 hypothesis:

H1: Perceived Usefulness (PU) has a positive (+) impact on users' decision to use Fintech services.

Perceived Ease of Use is also an important factor in the TAM model. Perceived ease of use is the “level that an individual believes that the use of specific systems will not cost a lot of effort” (Fred D Davis ,et al, 1989). The level of ease of use greatly affects the level of availability using consumer new technical services such as Fintech. Since then, the research team expects H2 hypothesis:

H2: Perceived Ease of Use (PEU) has a positive (+) impact on users' decision to use Fintech services.

According to the theory of TRA (Icek Ajzen, 1991) or TAM (Fred D Davis, 1989), Social influence is a factor that determines the intention of behavior as a subjective standard. Understanding information with social networks, the advice or opinions of people can also directly or indirectly affect it will increase trust for new payment products such as Fintech. Since then, the research team expects H3 hypothesis:

H3: Social Influence (SI) has a positive (+) impact on users' decision to use Fintech services.

According to Hyun-Sun Ryu (2018), when the user's awareness is uncertain or feels that the use of Fintech will give them the following consequences, which is called Perceived Risk. Perceived Risk shows user perception of loss in implementing the desired results when using electronic services(Qing Yang ,et al, 2015). Since then, the research team expects H4 hypothesis:

H4: Perceived Risk (PR) has a negative (-) impact on users' decision to use Fintech services.

Brand Trust and Service (BTS) are considered to be very important for the application of technology, especially technologies designed for trading finance (Xiongfei Cao ,et al, 2018; Francisco Liébana-Cabanillas ,et al, 2018; Zhen Shao and Lin Zhang, 2018). Since then, the research team expects H5 hypothesis:

H5: Brand and Service Trust (BTS) has a positive (+) impact on users' decision to use Fintech services.

Confidentiality, Privacy (CP) is the maintenance of integrity and ensures no leak or any Fintech user information is stolen. According to Young Wook Ha and Myeong Cheol Park (2013) and Gary Roboff and Cheryl Charles (1998), the financial issue is what the user feels no faith in when applied to mobile technology. Since then, the research team expects H6 hypothesis:

H6: Confidentiality, Privacy (CP) have a positive (+) impact on users' decision to use Fintech services.

Fintech applications can make mobile financial transactions convenient, cost-effective, and transparent (Hyun-Sun Ryu, 2018).Fintech brings customers many benefits, mainly reducing time, effort, and cost to carry out financial transactions (Yonghee Kim ,et al, 2015; Hyun-Sun Ryu, 2018). Since then, the research team expects H7 hypothesis:

H7: Effort Expectancy (EE) has a positive (+) impact on users' decision to use Fintech services.

The decision to use Fintech service will aim to intended, are, and have used Fintech. PU, PEU, SI, PR, BTS, CP, and EE elements will have a direct impact on people who are intended, are, and have used Decided to Use Fintech services (DU).

The hypotheses of the formal research model:

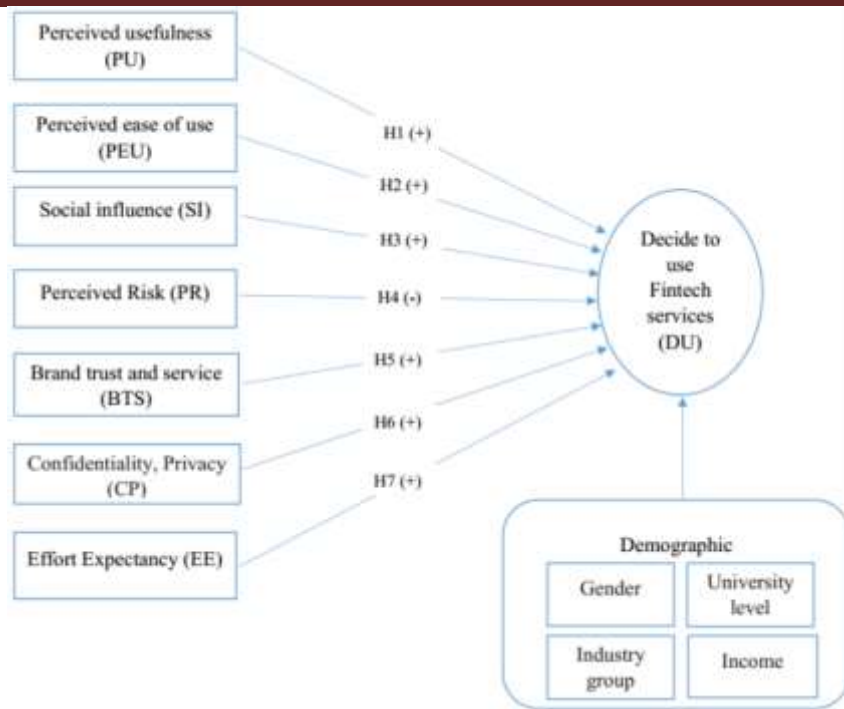


Figure 5: Research model

4. Results and discussion

4.1. Results

4.1.1. Cronbach's Alpha reliability test

Table 2 shows the test results by Cronbach's Alpha method. The authors expect confidence coefficient Alpha above 0.7 and Item – a total correlation greater than 0.3 to be satisfactory.

Table 2 results show that the Cronbach's Alpha coefficient of 7 new factors ranged from 0.821 to 0.898, which means that the observed variables have high intrinsic correlation and meet the requirements of the research team. Besides, the correlation coefficient of total variables [0.577 - 0.769] also satisfied the requirements set for 35 observed variables.

Table 2: Cronbach's Alpha reliability coefficient test

Observed variables	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived Usefulness (Cronbach's Alpha = 0.836)				
PU1	12.53	3.782	0.678	0.787
PU2	12.59	3.655	0.720	0.768
PU3	12.68	3.817	0.650	0.799
PU4	12.56	3.993	0.616	0.814
Perceived Ease of Use (Cronbach's Alpha = 0.836)				
PEU1	15.97	6.267	0.618	0.808
PEU2	16.16	6.478	0.577	0.820
PEU3	16.03	5.945	0.718	0.779

PEU4	15.98	6.448	0.640	0.803
PEU5	16.00	6.264	0.635	0.804
Social Influence (Cronbach's Alpha = 0.821)				
SI1	4.16	0.607	0.651	.
SI2	4.00	0.666	0.651	.
Perceived Risk (Cronbach's Alpha = 0.898)				
PR1	15.30	8.901	0.771	0.870
PR2	15.35	9.118	0.769	0.871
R3	15.30	9.427	0.735	0.878
PR4	15.38	9.112	0.730	0.879
PR5	15.23	9.323	0.732	0.879
Brand Trust and Service (Cronbach's Alpha = 0.894)				
BTS1	19.54	9.667	0.706	0.877
BTS2	19.73	10.045	0.712	0.876
BTS3	19.49	9.722	0.697	0.879
BTS4	19.62	9.708	0.752	0.870
BTS5	19.67	9.902	0.681	0.881
BTS6	19.59	9.795	0.753	0.870
Confidentiality, Privacy (Cronbach's Alpha = 0.838)				
CP1	7.51	2.063	0.721	0.756
CP2	7.63	2.166	0.665	0.810
CP3	7.57	2.079	0.717	0.759
Effort Expectancy (Cronbach's Alpha = 0.874)				
E1	20.65	8.422	0.662	0.854
EE2	20.75	8.665	0.650	0.856
EE3	20.71	8.181	0.749	0.840
EE4	20.77	8.499	0.653	0.856
EE5	20.76	8.208	0.688	0.850
EE6	20.75	8.437	0.654	0.856
Deciding to Use Fintech services (Cronbach's Alpha = 0.854)				
DU1	12.15	3.756	0.702	0.811
DU2	12.21	3.946	0.708	0.809
DU3	12.22	3.818	0.690	0.817
DU4	12.24	4.041	0.684	0.819

4.1.2. Exploratory Factor Analysis (EFA)

From the above data table processing results, we have Cronbach's Alpha coefficient of the variables in the study greater than 0.7, which is reliable enough for EFA analysis. The research team conducts EFA testing of the independent variable and the dependent variable, respectively. Tables 3 and 4 show the results of testing the reliability coefficients of the independent variable.

KMO coefficient > 0.5, Bartlett's test result, and a significance level Sig = 0.000 < 0.5 confirming that observed variables are correlated with each other in the population. Through KMO and Bartlett's test, the initial conditions were met to conduct factor analysis. The total value of variance extracted = 63.759% > 50%: It proves that 63.759% of the variation of the data is explained by 5 factors by the evaluation criteria of the factor extraction method. And after rotating 31 observed variables, the results of independent variables are divided into 7 groups of factors.

Table 3: KMO and Bartlett's test of independent variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.930
Bartlett's Test of Sphericity	Approx. Chi-Square	5671.042
	df	465
	Sig.	0.000

Table 4: Results of factor analysis with group of independent variables

Rotated Component Matrix^a					
	Component				
	1	2	3	4	5
CP3	0.792				
CP1	0.767				
CP2	0.766				
BTS6	0.748				
BTS4	0.737				
BTS2	0.735				
BTS5	0.728				
BTS1	0.661				
BTS3	0.607				
PU1		0.698			
PEU3		0.679			
PEU1		0.674			
PU3		0.647			
PEU5		0.632			
PU2		0.625			

PU4		0.590			
PEU2		0.563			
PEU4		0.555			
PR2			0.849		
PR1			0.823		
PR5			0.819		
PR4			0.817		
PR3			0.807		
EE2				0.798	
EE4				0.734	
EE3				0.715	
EE5				0.638	
EE6				0.629	
EE1				0.545	
SI1					0.653
SI2					0.627

However, the group found that it happened that the observed variable of one factor converged on another factor, specifically, the PU variables converged to the PEU variables. After using the method of aggregating factors together and giving specific names and recalibrating the model, the team re-tested the results of the factor analysis and received satisfactory results as table 5. The results are quite positive when no factor phenomenon was excluded from the research model. The phenomenon of observed variables of one factor converging on another factor.

Table 5: Result of factor rotation matrix II

Rotated Component Matrix^a					
	Component				
	1	2	3	4	5
BTS9	0.792				
BTS7	0.767				
BTS8	0.766				
BTS6	0.748				
BTS4	0.737				
BTS2	0.735				
BTS5	0.728				
BTS1	0.661				
BTS3	0.607				
PEU6		0.698			

PEU3		0.679			
PEU1		0.674			
PEU8		0.647			
PEU5		0.632			
PEU7		0.625			
PEU9		0.590			
PEU2		0.563			
PEU4		0.555			
PR2			0.849		
PR1			0.823		
PR5			0.819		
PR4			0.817		
PR3			0.807		
EE2				0.798	
EE4				0.734	
EE3				0.715	

Researchers continued to test the EFA format for variable dependencies. The results of the SPSS analysis (Table 6) show that the KMO value > 0.5, contemporaneous Bartlett's test result is 502.677 with significance level Sig < 0.5, total variance extracted = 69.593 % > 50% shows that the factor analysis is consistent with the research data.

Table 6: Results of factor analysis with a group of dependent variables

	Component 1
DU2	0.842
DU1	0.839
DU3	0.830
DU4	0.826

4.1.3. Correlation analysis and linear regression

The author noticed also needs to test the hypothesis that this correlation coefficient is statistically significant. The results of Table 7: Pearson correlation coefficient matrix, show that the dependent variable is "Decide to Use Fintech services" the independent variables are correlated with each other and linear regression analysis is appropriate. However, the results of correlation analysis also show that the correlation coefficients of some independent variables are quite high, so it is necessary to pay attention to the possibility of multicollinearity.

Table 7: Pearson correlation coefficient matrix

		DU	PEU	SI	PR	BTS	EE
DU	Pearson Correlation	1	0.694**	0.525**	0.214**	0.644**	0.767**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
	N	300	300	300	300	300	300
PEU	Pearson Correlation	0.694**	1	0.596**	0.347**	0.593**	0.694**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000
	N	300	300	300	300	300	300
SI	Pearson Correlation	0.525**	0.596**	1	0.310**	0.539**	0.537**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
	N	300	300	300	300	300	300
PR	Pearson Correlation	0.214**	0.347**	0.310**	1	0.272**	0.264**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
	N	300	300	300	300	300	300
BTS	Pearson Correlation	0.644**	0.593**	0.539**	0.272**	1	0.544**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000
	N	300	300	300	300	300	300
EE	Pearson Correlation	0.767**	0.694**	0.537**	0.264**	0.544**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	300	300	300	300	300	300

Next, is the author's linear regression analysis (Table 8,9). The multiple linear regression results show that the coefficient R Square is 0.683 and the Adjusted R Square is 0.678. That is, the independent variables explain the 67.8% variation of "Decide to Use Fintech services". The results of the regression analysis show that the Sig values. of 3 factors "Perceived Ease of Use (PEU)", "Brand Trust and Service (BTS)", and "Effort Expectancy (EE)" are all the less than 0.05, so it can be confirmed that the This factor is significant in the model.

Factor "Social Influence (SI)" with Sig. = 0.718 and the factor "Perceived Risk (PR)" with Sig. = 0.069 is greater than 0.05, so these two factors are not significant in the model. So, these two variables are excluded from the model. Regression of the model with 3 independent variables: "Perceived Ease of Use (PEU)", "Brand Trust and Service (BTS)", "Effort Expectancy (EE)", and 1 dependent variable: "Decide to Use Fintech services (DU)".

The results of the regression analysis show that the Sig values. of 3 factors "Perceived Ease of Use (PEU)", "Brand Trust and Service (BTS)" and "Effort Expectancy (EE)" are all less than 0.05, so it can be confirmed that the This factor is significant in the model (Table 10, 11) and the results also show that the variance magnification factor (VIF) has a satisfactory value. The results of the second regression analysis show that the coefficient R Square is 0.680 and the Adjusted R Square is 0.677. Therefore, the multiple linear regression model does not have multicollinearity, and the relationship between the independent variables does not affect the explanatory results of the model.

Table 8: Results of regression model 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin – Watson
1	0.827 ^a	0.683	0.678	0.36424	1.936

Table 9: Regression coefficient results 1

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	Vif
Constant	-0.086	0.180		-0.478	0.633		
PEU	0.245	0.058	0.218	4.232	0.000	0.407	2.456
SI	0.014	0.039	0.016	0.362	0.718	0.569	1.758
PR	-0.055	0.030	-0.064	-1.823	0.069	0.861	1.161
BTS	0.275	0.045	0.262	6.046	0.000	0.575	1.739
EE	0.540	0.053	0.482	10.166	0.000	0.479	2.088

Table 10: Results of regression model 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin – Watson
1	0.825 ^a	0.680	0.677	0.36507	1.955

Table 11: Regression coefficient results 2

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	Vif
Constant	-0.180	0.172		-1.048	0.296		
PEU	0.231	0.055	0.205	4.195	0.000	0.452	2.211
BTS	0.272	0.044	0.259	6.182	0.000	0.615	1.626
EE	0.542	0.053	0.483	10.303	0.000	0.491	2.035

To test the effectiveness of the regression models, the authors conducted an evaluation of the regression assumptions. With a target, the results do not violate the assumption of series autocorrelation first-order, **Assume that there is no correlation between the residuals** accepting the hypothesis that there is no autocorrelation phenomenon.

The assumption of the linear relationship is Tested by scatter plot for normalized residuals and normalized prediction values, The obtained results show that the normalized residuals are distributed centered around the zero coordinate line and tend to form a straight line, so the assumption is that the linear relationship is not violated (Trong Hoang and Ngoc Chu Nguyen Mong, 2008), (Figure 6).

Assume that the residuals are normally distributed: The residual scatter plot shows an approximately normal distribution of the residuals. Mean which is close to 0, standard deviation Std. = 0.995 is close to 1. From this, it can be concluded that the normal distribution of residuals is not violated (Trong Hoang and Ngoc Chu Nguyen Mong, 2008), (Figure 7).

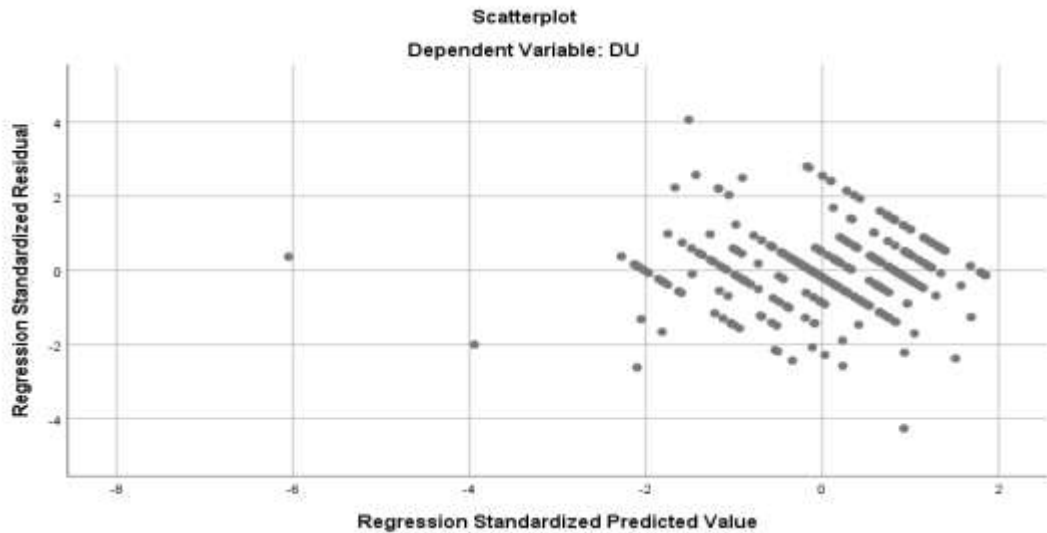


Figure 6: Scatter plot of normalized residuals and normalized predictors

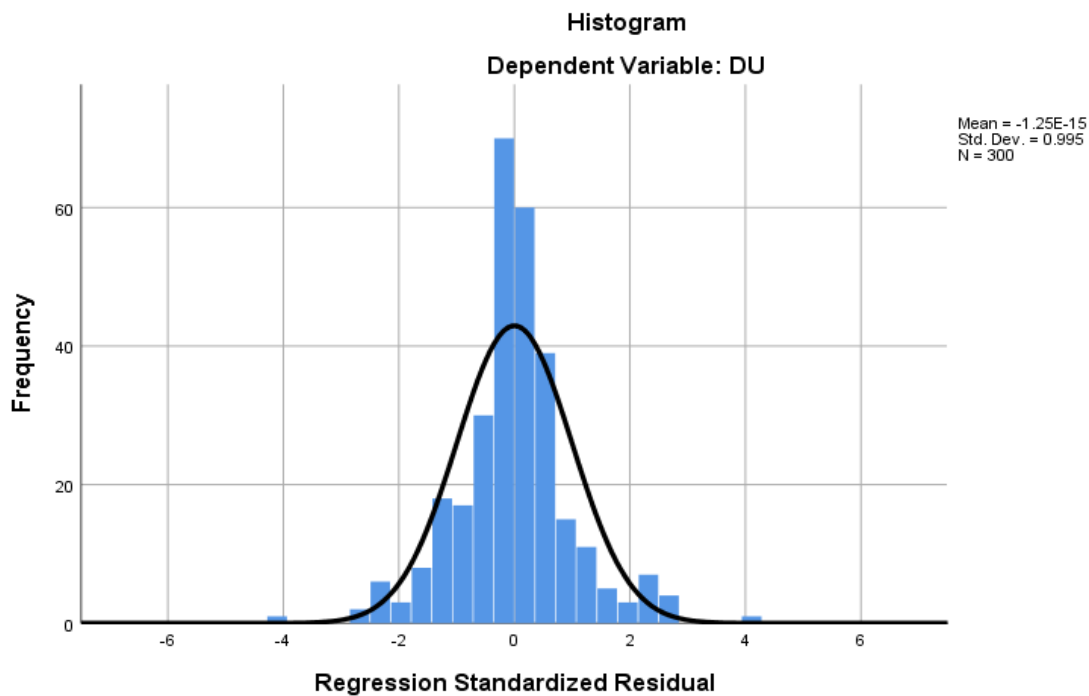


Figure 7: Histogram assumes a normal distribution of the residuals

4.1.4. Evaluate the model's fit

To test more firmly the accuracy of the model, the authors proceed through the step of analysis of variance ANOVA to conclude. The results obtained from the ANOVA (table 12), show the F-statistical value with the Sig value. is less than 0.05, so it is safe to reject the above hypothesis Ho (Trong Hoang and Ngoc Chu Nguyen Mong, 2008). Therefore, we can conclude that the regression model satisfies the evaluation and fitness test conditions for drawing research results. The results of the regression analysis show that the variables PEU, BTS, and EE having an impact on the dependent variable are accepted and The hypothesis that PR and SI variables have an impact on DU variables is not accepted because PR and SI factors have no statistical significance in the model.

Table 12: Analysis of variance results

Model		Sum of Squares	Df	Mean Square	F	Sig
1	Regression	83.774	3	27.925	209.525	0.000 ^b
	Residual	39.450	296	0.133		
	Total	123.224	299			

4.2. Discussion

4.2.1. Interpretation

The study "Factors affecting university students' decision to use Fintech services in Ho Chi Minh City" was carried out based on the model of acceptance and use of expanded integrated technology UTAUT-2 with 7 factors: "Perceived Usefulness - PU", "Perceived Ease of Use - PEU", "Social Influence - SI", "Perceived Risk - PR", "Brand Trust and Service - BTS", "Confidentiality, Privacy - CP", "Effort Expectancy - EE" through convenient sampling method of 300 students in HCMC. From the research results, the model explains the specific influence of 3 factors: "Perceived Ease of Use - PEU", "Brand Trust and Service - BTS", and "Effort Expectancy" - EE" affects the behavior of using Fintech services. Some factors have been removed due to the failure of the EFA test and some factors are not significant in the model. Thereby, the explanatory factors for "Decide to Use Fintech services" are expressed through the linear regression equation as follows:

$$DU = 0.205*PEU + 0.259*BTS + 0.483*EE$$

Specifically, in the case that other factors remain unchanged, "Perceived Ease of Use" increases by 1 unit, then "Decide to Use Fintech services" increases by 0.205 units. In case other factors remain unchanged, "Brand Trust and Service" increases by 1 unit, then "Decide to Use Fintech services" increases by 0.259 units. In case other factors remain unchanged, "Effort Expectancy" increases by 1 unit, then "Decide to Use Fintech services" increases by 0.483 units.

Through the above equation, it can be seen that the factor "Effort Expectancy - EE" has the greatest impact on the decision to use Fintech services, that is, the expectation of the benefits and efficiency that Fintech can bring to customers with service users, specifically, here, students (HCMC) have the greatest impact on the dependent variable in this model, followed by the factor "Brand Trust and Service - BTS" and "Perceived Ease of Use - PEU" also have significant impacts on the "Decide to Use Fintech Services".

4.2.2. Implication

Students are the young generation, a large force pioneering digital trends, so students are also a large consumer force of technology products. And with the advent of Fintech and the benefits it brings, students are potential users of financial technology products and services. The study shows that the impact of Effort Expectancy on university students' decision to use Fintech services is very large, so it can be seen that students use and want to use Fintech services to achieve their goals, effectively, save time, effort, money, and improve work productivity. Therefore, businesses, financial technology companies, and startup Fintech need to focus more on the effects that Fintech can bring to build services and products that bring many benefits and save costs and effort, and still bring better work productivity. Financial institutions will also have strategies and directions for choosing to invest in technology companies or other research activities. In addition, businesses also need to develop, build brands and services to enhance the organization's position in the market and promote customer trust. Besides, investing in the development of features that are effective but still easy to use, simplifying the steps of use is an advantage.

4.2.3. Limitation

The study was conducted to discover the factors that influenced university students' decisions to use Fintech services, but the team used a convenient sampling method so did not conduct the survey evenly in

the student groups in HCMC. The student group mainly surveyed economics, leading to the inability to draw highly effective conclusions and meet the original goal.

The team has not yet come up with the maximum of aspects that have a real impact on the factors, these aspects have been introduced, which are not new, a breakthrough in the findings on what led to the user's behavior; Some factors are expressed only from 2-3 observational variables. This has led to the installation of the factors. In particular, in the context that Vietnam is a potential market in this field, the research paper has become ineffective for helping businesses better understand user behavior as the original goal.

4.2.4. Recommendation

Maintain expected performance: maintaining the Expected Efficiency is an extremely necessary thing. It can be done through Upgrading and improving fintech services, customer care services, and risk resolution must be timely and accurate; Improving security with regulatory technology (regtech), quickly detecting and reporting intrusions of financial criminals to user devices, in order to minimize risks to businesses and customers; Applying technologies to help increase the speed when customers use the service, but at the same time ensure to set up a sufficient and sure security barrier; The reduction of service implementation costs.

Increase brand and service trust: it is necessary to build trust towards the long-term purpose of the customer, by the following: Develop corporate policies towards honesty and customer benefits. In addition, businesses need to focus on compensation and customer complaints policies; Conduct communication and marketing with a specific plan aimed at student customers in HCMC on popular Gen Z platforms such as Tiktok, Instagram, and run ads on learning applications for students; Businesses need to implement social responsibility (CSR) and effectively communicate messages towards the long-term purpose of users; etc.

Ease of use awareness: Design features that match the icon, measure the quality of the interface of the application and website to ensure the friendliness and ease of use on the mobile devices of the customers; Introduce and guide customers in detail by using stepping stones such as websites and social networks so that customers can reach them quickly and meet their needs promptly; Constantly updating new features, useful for the use of services by customers. At the same time, create an interface that is attractive, eye-catching, and suitable for the majority of customers to use.

5. Conclusion

From the study on factors affecting the decision to use Fintech services, it is possible to contribute suggestions to businesses and financial technology companies about the implications of research, governance, focus, and construction to develop appropriate plans to promote service use, bring financial technology services closer to everyone, specifically students - the young generation, a large force leading technology trends - in the current 4.0 era along with the birth and competition of financial technology companies, Startup Fintech,... with the development potential of Fintech in the future.

APPENDIX RESULTS

Appendix A: Cronbach's Alpha reliability test

A.1 Perceived usefulness (PU)

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	300	100.0
	Excluded ^a	0	.0
	Total	300	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.836	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PU1	12.53	3.782	.678	.787
PU2	12.59	3.655	.720	.768
PU3	12.68	3.817	.650	.799
PU4	12.56	3.993	.616	.814

A.2 Perceived Ease of Use (PEU)

Reliability Statistics

Cronbach's Alpha	N of Items
.836	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PEU1	15.97	6.267	.618	.808
PEU2	16.16	6.478	.577	.820
PEU3	16.03	5.945	.718	.779
PEU4	15.98	6.448	.640	.803
PEU5	16.00	6.264	.635	.804

A.3 Social Influence (SI)

Reliability Statistics

Cronbach's Alpha	N of Items
.788	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SI1	4.16	.607	.651	.
SI2	4.00	.666	.651	.

A.4 Perceived Risk (PR)

Reliability Statistics

Cronbach's Alpha	N of Items
.898	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PR1	15.30	8.901	.771	.870
PR2	15.35	9.118	.769	.871
PR3	15.30	9.427	.735	.878
PR4	15.38	9.112	.730	.879
PR5	15.23	9.323	.732	.879

A.5 Brand Trust and Service (BTS)

Reliability Statistics

Cronbach's Alpha	N of Items
.894	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
BTS1	19.54	9.667	.706	.877
BTS2	19.73	10.045	.712	.876
BTS3	19.49	9.722	.697	.879
BTS4	19.62	9.708	.752	.870
BTS5	19.67	9.902	.681	.881
BTS6	19.59	9.795	.753	.870

A.6 Confidentiality, Privacy (CP)

Reliability Statistics

Cronbach's Alpha	N of Items
.838	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CP1	7.51	2.063	.721	.756
CP2	7.63	2.166	.665	.810
CP3	7.57	2.079	.717	.759

A.7 Effort Expectancy (EE)

Reliability Statistics

Cronbach's Alpha	N of Items
.874	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
EE1	20.65	8.422	.662	.854
EE2	20.75	8.665	.650	.856
EE3	20.71	8.181	.749	.840
EE4	20.77	8.499	.653	.856
EE5	20.76	8.208	.688	.850
EE6	20.75	8.437	.654	.856

A.8 Decide to Use Fintech services (DU)

Reliability Statistics

Cronbach's Alpha	N of Items
.854	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
DU1	12.15	3.756	.702	.811
DU2	12.21	3.946	.708	.809
DU3	12.22	3.818	.690	.817
DU4	12.24	4.041	.684	.819

Appendix B: Exploratory Factor Analysis (EFA)

B.1 KMO and Bartlett's test of independent variables

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.930
Bartlett's Test of Sphericity	Approx. Chi-Square	5671.042
	df	465
	Sig.	.000

B.2 Result of factor analysis with group of independent variables

Rotated Component Matrix^a

	Component				
	1	2	3	4	5
CP3	.792				
CP1	.767				
CP2	.766				
BTS6	.748				
BTS4	.737				
BTS2	.735				
BTS5	.728				
BTS1	.661				
BTS3	.607				
PU1		.698			
PEU3		.679			
PEU1		.674			
PU3		.647			
PEU5		.632			
PU2		.625			
PU4		.590			
PEU2		.563			
PEU4		.555			
PR2			.849		
PR1			.823		
PR5			.819		
PR4			.817		
PR3			.807		
EE2				.798	
EE4				.734	
EE3				.715	
EE5				.638	
EE6				.629	
EE1				.545	
SI1					.653
SI2					.627

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

B.3 Result of factor rotation matrix II

Rotated Component Matrix^a

	Component				
	1	2	3	4	5
BTS9	.792				
BTS7	.767				
BTS8	.766				
BTS6	.748				
BTS4	.737				
BTS2	.735				
BTS5	.728				
BTS1	.661				
BTS3	.607				
PEU6		.698			
PEU3		.679			
PEU1		.674			
PEU8		.647			
PEU5		.632			
PEU7		.625			
PEU9		.590			
PEU2		.563			
PEU4		.555			
PR2			.849		
PR1			.823		
PR5			.819		
PR4			.817		
PR3			.807		
EE2				.798	
EE4				.734	
EE3				.715	
EE5				.638	
EE6				.629	
EE1				.545	
SI1					.653
SI2					.627

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

B.4 Results of factor analysis with a group of dependent variables

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.823
Bartlett's Test of Sphericity	Approx. Chi-Square	502.677
	df	6
	Sig.	.000

B.6 Results of component matrix of dependent variables

Component Matrix^a

	Component 1
DU2	.842
DU1	.839
DU3	.830
DU4	.826

Extraction Method:
Principal
Component
Analysis.

a. 1
components
extracted.

Appendix C. Correlation analysis and linear regression

C.1 Pearson correlation coefficient matrix

		Correlations					
		DU	PEU	SI	PR	BTS	EE
DU	Pearson Correlation	1	.694**	.525**	.214**	.644**	.767**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	300	300	300	300	300	300
PEU	Pearson Correlation	.694**	1	.596**	.347**	.593**	.694**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	300	300	300	300	300	300
SI	Pearson Correlation	.525**	.596**	1	.310**	.539**	.537**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	300	300	300	300	300	300
PR	Pearson Correlation	.214**	.347**	.310**	1	.272**	.264**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	300	300	300	300	300	300
BTS	Pearson Correlation	.644**	.593**	.539**	.272**	1	.544**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	300	300	300	300	300	300
EE	Pearson Correlation	.767**	.694**	.537**	.264**	.544**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	300	300	300	300	300	300

** Correlation is significant at the 0.01 level (2-tailed).

C.2 Linear regression analysis

C.2.1 Results of regression model 1

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.827 ^a	.683	.678	.36424	1.936

a. Predictors: (Constant), EE, PR, BTS, SI, PEU

b. Dependent Variable: DU

C.2.2 Regression coefficient results 1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.086	.180		-.478	.633		
	PEU	.245	.058	.218	4.232	.000	.407	2.456
	SI	.014	.039	.016	.362	.718	.569	1.758
	PR	-.055	.030	-.064	-1.823	.069	.861	1.161
	BTS	.275	.045	.262	6.046	.000	.575	1.739
	EE	.540	.053	.482	10.166	.000	.479	2.088

a. Dependent Variable: DU

C.2.3 Results of regression model 2

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.825 ^a	.680	.677	.36507	1.955

a. Predictors: (Constant), EE, BTS, PEU

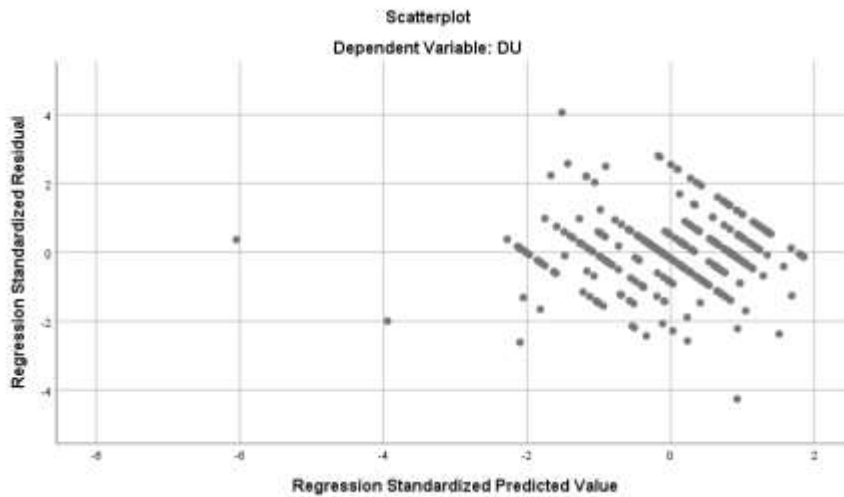
b. Dependent Variable: DU

C.2.4 Regression coefficient results 2

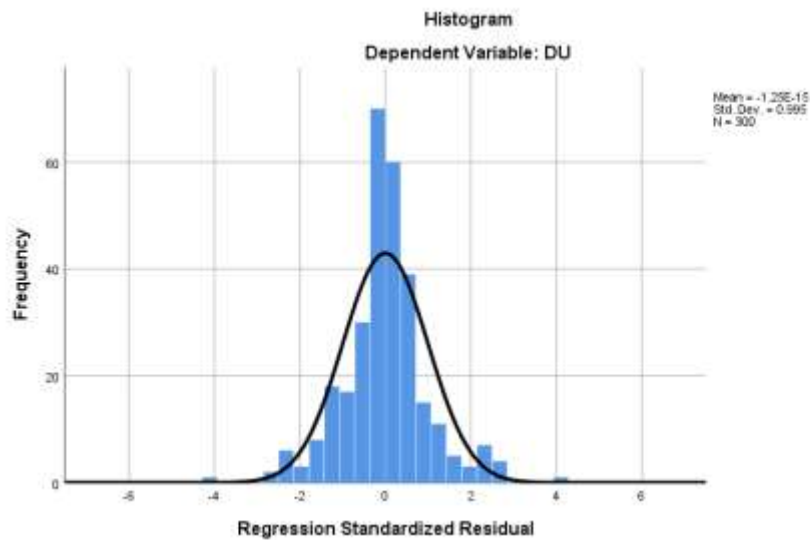
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.180	.172		-1.048	.296		
	PEU	.231	.055	.205	4.195	.000	.452	2.211
	BTS	.272	.044	.259	6.182	.000	.615	1.626
	EE	.542	.053	.483	10.303	.000	.491	2.035

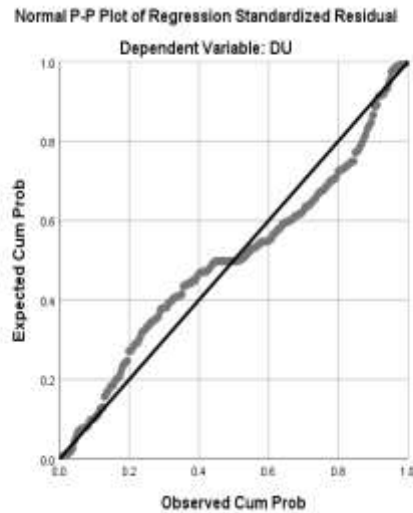
a. Dependent Variable: DU



C.2.5 Scatter plot of normalized residuals and normalized predictors



C.2.6 Histogram assumes a normal distribution of the residuals



C.2.7 Observed Cum Prob

Appendix D: Evaluate the model's fit

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	83.774	3	27.925	209.525	.000 ^b
	Residual	39.450	296	.133		
	Total	123.224	299			

a. Dependent Variable: DU

b. Predictors: (Constant), EE, BTS, PEU

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FACTORS AFFECTING ONLINE ADVERTISING ADOPTION WITHIN PODCAST EPISODES FOR GENZ IN VIETNAM

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ABSTRACT

Online advertising is becoming the fastest-growing kind of marketing. The use of the Internet, which is becoming increasingly common in Vietnam and across the world, has a significant impact on consumers. As a result of this technology, marketing techniques are gradually evolving. Podcast is a platform that is becoming increasingly popular overseas. In Vietnam, it can be observed that the Podcast market is gradually being explored and expanded, as more and more new podcast names appear. Podcasts have a lot of potentials, and many international brands are taking advantage of the growth of Podcasts to expand their influence. So the purpose of this study was to determine the factors affecting the attitude towards online ads on podcasts and its impact on GenZ's adoption in Ho Chi Minh City, thus making suggestions and solutions to businesses to adapt to customers' changing needs. The study consists of both qualitative and quantitative methodology. The study paradigm is built on Davis' Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Attitude Toward Advertising (ATA), and Model of story-telling Advertising effects. The findings of the study showed that two factors influencing GenZ's online advertising adoption are Narration features and Irritation. Based on these findings, companies who advertise on Podcast will have a better grasp of how advertisements affect customers, which will aid them in developing and delivering services that are more than merely functional to satisfy the demands of their customers.

Keywords: Online advertising adoption, Podcast, GenZ, Advertising adoption.

1. Introduction

1.1. The reason for choosing the topic

According to Discover Pods' annual podcast trends report, more than 82% of users typically listen to Podcast more than 7 hours a week, 33% of users listen to Podcast on a smart device, or 59% of users spend more time listening to Podcast than surfing the social networks. Podcast Insights statistics in the US there are about 68 million people who regularly listen to podcasts several times a week and 155 million people have listened to at least one Podcast. According to Nielsen research, 80% of podcast listeners aged 18 - 49 do not find ads annoying, because they feel that the introduced brand matches the content of the program. Nearly two-thirds of podcast listeners in the US say they're willing to review products and services after researching podcasts.

Awareness of podcasts is rising in Vietnam and has the potential to create a more direct form of interaction with the brand's target audience. In an article in January 2019, EloQ Communications said that there is an increase in acknowledging of podcasts in Vietnam and this is a potential market. Michael Tatarski (American), founder and one of the main hosts of Saigoneer Podcast, said that the number of podcast listeners in Vietnam may not be as many as the US, but that doesn't mean Vietnamese people don't like podcasts. The booming startup culture in Vietnam, along with the rise of tech-savvy young people, have spurred businesses to pursue more modern ways of doing business and reaching customers. Indeed, podcasts are one of them.

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Understanding the potential of podcasts in Vietnam, the authors decided to research about the factors affecting online advertising adoption within podcast episodes for GenZ in Vietnam.

1.2. Research objectives

Identify factors that influence the attitude of GenZ towards Podcast ads.

Measure the effects of GenZ's attitude towards Podcast ads on their online advertising adoption behavior.

Proposing solutions for Vietnamese firms/companies to have appropriate advertising strategies to avoid frustrating potential customers.

1.3. Research questions

Following are the research questions that were addressed:

Question 1: What factors impact the attitudes of GenZ who listen to Podcast ads?

Question 2: How do those factors affect GenZ's attitude towards Podcast ads?

Question 3: How to measure the level effect of factors mentioned above on online adoption in Podcast for GenZ?

1.4. Research scope

Research subject: The influence of Podcast advertising on Gen Z's attitudes when listening and their indirect impact on online advertising adoption in Podcast episodes.

Respondents: Podcast users who have been listening to Podcast advertising in Viet Nam, aged from 10 to 25 years old.

Time: From December 2021 to February 2022.

1.5. The novelty of the topic

The topic "Factors affecting online advertising adoption within Podcast episodes for GenZ" provides useful research about podcast market overview, types of podcast advertising, factors affecting attitudes toward Podcast advertising, and GenZ's advertising adoption behavior.

There have been many scientific studies on this field such as: "An empirical study on consumer's perceived value and attitude toward advertising" by Zhang and Wang (2005), "Proposing the online advertising on social network adoption model in Vietnam" by Nguyen Duy Thanh, Tran Dinh Nghia & Pham Manh Cuong (2013). However, there have been very few studies on the adoption of online advertising in Podcasts - a digital platform that is rapidly growing in popularity around the world, particularly among GenZ.

The scales for research concepts in this topic were rebuilt to fit the podcast advertising field and research conditions in Vietnam, through surveying with Gen Z, interviews with experts in the advertising field of Vietnam. With these features, the authors hope this research will provide readers with more knowledge about podcast advertising, as well as bring meaningful and practical study, serve a basis for businesses to propose a potential advertising platform, and also the right solutions to improve the quality of advertising in order to reach audiences efficiently and strategically.

2. Theoretical framework

2.1. Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1975)

Theory of Reasoned Action was first developed in 1967 by Fishbein, then modified and expanded by Ajzen and Fishbein (1975). According to this theory, the behavioral intention is the best predictor of a person's behavior on the basis of judgment to make choices in the decision-making process. As said by Ajzen and Fishbein (1975), behavioral intention is influenced by attitude towards behavior and subjective norm of behavior. In particular, the attitude towards using behavior is measured through customer's trust in the product (in this case, a technology product). Customers pay attention to the attributes that bring essential benefits and have different levels of importance. If we know the weights of those attributes, we can roughly

predict the customer choices. Social influence factors can be measured through people related to the consumer (like family , friends, colleagues,...); These people like or dislike when they buy. The level of Social Influence affecting a customer's buying tendencies depends on the level of support or opposition to consumer's buying behavior and their motives following the wishes of influencers. In summary, according to the Theory of Reasoned Action, the customer's behavioral intention is influenced by their trust in the benefits that the product provides and the influence of those around them on that behavior. However, a shortage of TRA is that it ignores social factors that may also motivate consumers.

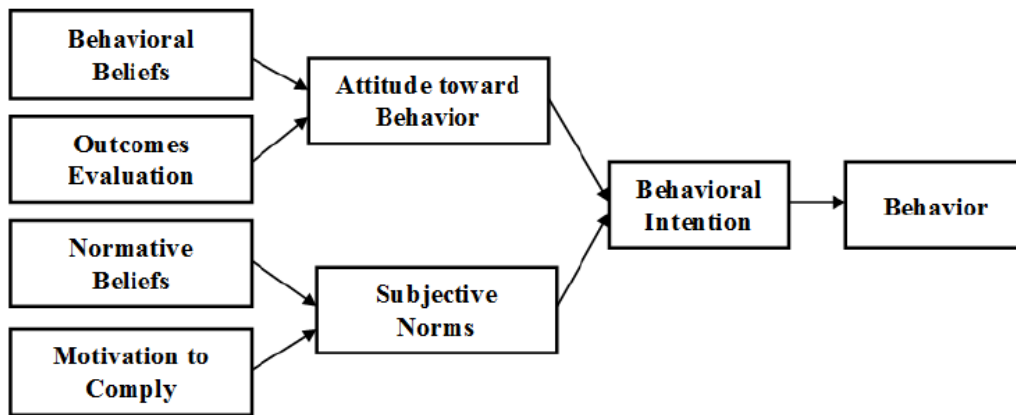


Figure 2.1. Theory of Reasoned Action

2.2. Technology Acceptance Model (TAM) (Davis, 1986)

TAM is an adaptation of the Theory of Reasoned Action (TRA) that was used to assess user acceptance of computers, which is measured by the intention to use and the influence of attitude, perceived utility, and perceived ease of use on that intention (Davis et al., 1989). The findings revealed that perceived usefulness had a significant impact on intention to use, while perceived ease of use had just a minor impact. The impacts of perceived utility and convenience of use on intention to use, on the other hand, were somewhat mediated by attitude (Davis et al., 1989). TAM was then changed by deleting the attitude component found in TRA because attitude did not play an essential role in influencing the variables. The new TAM demonstrated its purpose to act as a mediator in the link between perceived utility, perceived ease of use, and usage behavior (Venkatesh & Davis, 2000). The findings revealed that perceived usefulness and convenience of use are factors in intent to use. Several prior investigations (Heijden et al., 2003; Kim & Hong, 2012; Kim & Song, 2010; Liu et al., 2010) have backed this up. Gong et al. (2013); Roca et al. (2009); Yusniza (2007) found that perceived usefulness is a strong factor of intention to use, but perceived ease of use has a little impact. Bagozzi (2007) argued that the TAM model is ineffective for investigating and explaining usage behavior because perceived utility and simplicity of use may not adequately explore usage behavior. Chuttur (2009) stated that future research should look into and develop other models that emphasize the TAM's strengths rather than its flaws.

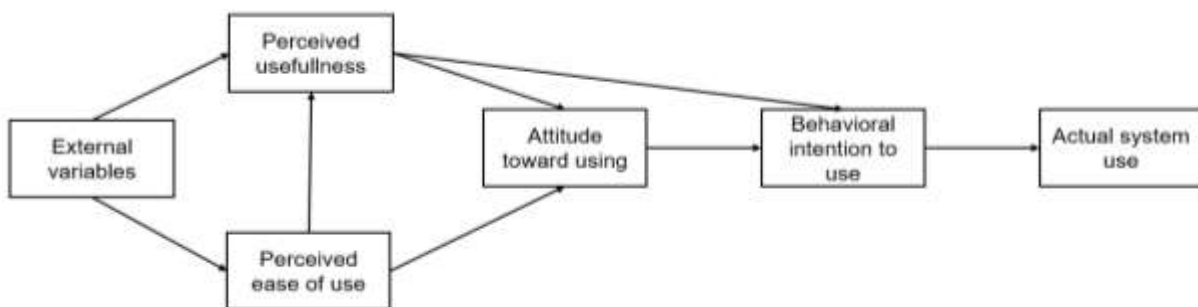


Figure 2.2. Technology Acceptance Model

2.3. Attitude towards Advertising (ATA)

According to Kotler and Armstrong, attitude is the good and bad judgments, feelings and tendencies of an individual's action towards an object or an idea. Attitude in each individual forms a frame of mind that likes or dislikes an object and accepts or avoids and leaves that object. Attitude makes people behave appropriately towards similar objects. Because attitude exists in the form of thoughts and is difficult to change, changing a particular component of an attitude may require the impact of many other components of the attitude.

Attitude towards advertising is one of the determinants in consumers' behavior towards any particular product. It is a positive or negative attitude from the subjective perspective of the user. It has a great influence on the effectiveness of advertising campaigns and brand attitudes. Understanding customers' attitudes towards advertising through social networks will help businesses build appropriate advertising content and create the attraction of advertising to consumers. (Lutz Richard, 1983)

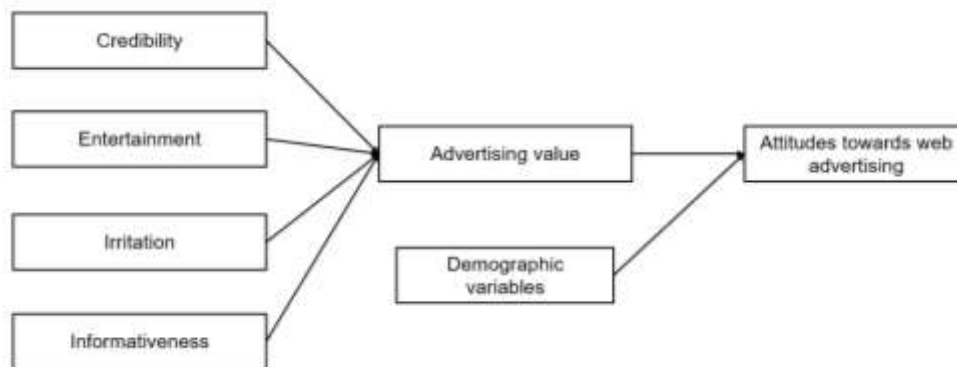


Figure 2.3. Model of attitudes towards web advertising (Brackett and Carr (2001))

2.4. Model of storytelling advertising effect

Analytical and narrative thinking processes are regarded as a different “route” of information processing (Bruner, 1986). Also, emotion played a crucial role in motivating individuals to talk about the ads (WOM), which is consistent with previous research findings in narrative persuasion literature (Green & Brock, 2002). Consumers are more likely to be persuaded by affective outcomes rather than by strong arguments from the information provided in an ad (Escalas, 2006).

Women were more likely to have positive emotions toward the founder's story compared to the customer's story or the informational advertising. Although gender was one of the control variables in this study, literature notes that women are more likely to be open-minded in expressing their emotion (Simon & Nath, 2004).

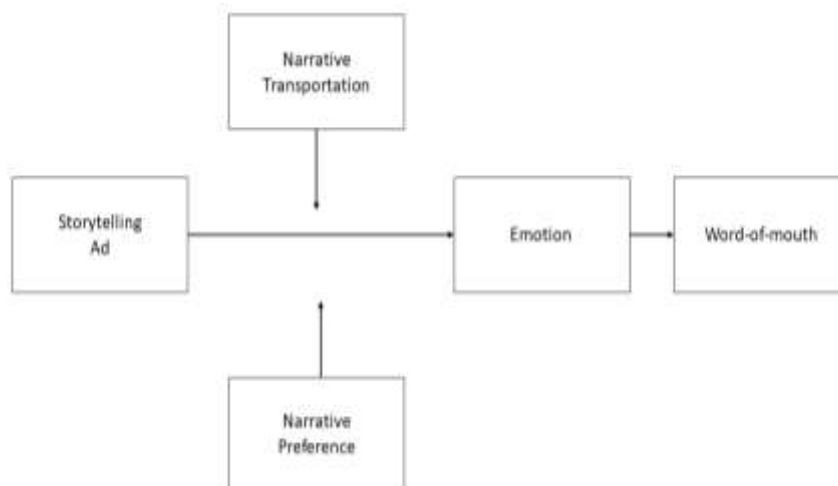


Figure 2.4. Model of storytelling advertising effect (Kang, Hong, & Hubbard, 2020)

3. Research method

The research was conducted by using qualitative and quantitative research.

Due to COVID-19 and geographical differences, qualitative research was done through video calls without any setup. The information gathered was to adjust the questionnaires, at the same time, gaining more knowledge on customers' behavior

Quantitative research was done through questionnaires. These are formed to measure different criteria.

The techniques of Cronbach's Alpha reliability coefficient analysis, Exploratory Factor Analysis, Confirmatory Factor Analysis, Structural Equation Modeling were used to form and resonate for the thesis. IBM SPSS Statistics and AMOS were used to analyze and visualize the data.

3.1. Preliminary assessment

The authors conducted in-depth interviews with four experts who are masters in the market and consumers in the field of digital marketing and e-commerce. There are three marketing executives and a brand department head in the field of buying and selling online. The questions in the qualitative interview focused on research on online advertising adoption within Podcast episodes for Gen Z in Vietnam. Experts agreed that 6 factors given by the authors had an impact on the online advertising adoption of gen Z in Vietnam. They also suggested that some observed variables should be omitted, then replaced with different variables consistent with the objectives of the research, and add the "narration features" and "advertising placement" component to the scale.

3.2. Official scales

In terms of the Irritations factor, the authors adjusted 1 factor "Ads distract me from podcast content", to "Ad distract me from podcast content because of inappropriate content", factor 5 is also eliminated "Ads' contents are inappropriate with Podcast content". Regarding the Informativeness factor number 5 - "My general opinion of Podcast advertising is favorable" was eliminated. After conducting the group discussion, the first draft scale has been adjusted to the content presented above into the second one including 34 observed variables, specifically: The Entertainment scale has 5 observed variables, Informativeness: 6, Irritation: 4, Credibility: 4, Narration Features: 4, Advertising Placement: 3, Attitude: 4 and Online Advertising Adoption: 4. Distributing the questionnaires directly to research subjects by using a convenient sampling method

3.3. Sampling & data collection

Official quantitative research was conducted by surveying 400 respondents who have listened to Podcast ads at least once, of which just 350 are valid, accounting for 87.5%. This research uses the questionnaire pre-designed on Google Docs Form. According to the random sampling method, the group of authors collected a sample of 36.4% male and 63.6% female. There were also two main age groups of respondents: 10 - 15 years old and 16 - 27 years old. In particular, the group of users aged 10- 15 years old accounted for a higher rate than the group of users aged 16 - 27 years old, specifically more than nearly five times.

4. Results and discussion

4.1. Results

4.1.1. Frequency of listening to ads and news on social media

Frequency of listening to ads and news on social media

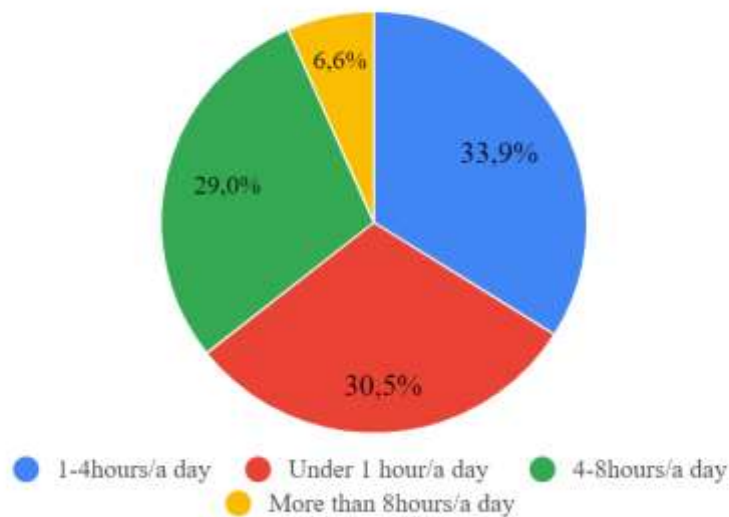


Figure 4.1 Frequency of listening to ads and news on social media

Source: Authors

As a result of the Covid-19 epidemic's impacts, people are progressively growing acclimated to staying at home and working from home, so they spend time updating news and listening to advertisements on social media every day. According to the survey, people listen 1-4 hours per day with the greatest rate of 33.9%, followed by Under 1 hour per day with a rate of 30.5%, 4-8 hours per day with a rate of 29.0%, and lastly Over 8 hours per day with a rate of 6.6%.

4.1.2. Testing Reliability Cronbach's Alpha

The result of Cronbach's Alpha of all observed variables is quite high (>0.6), therefore the components of the study model are reliable: ENT (0.906), NAR (0.925), PLA (0.908), the components consist of INF (0.876), IRR (0.843), CRE (0.806), ATT (0.872), ADT (0.811) rated good. Besides, the Corrected Item-Total Correlation of all observed variables is greater than 0.3. With the results in the Cronbach's Alpha system evaluation step, the authors accepted 6 independent variables as follows: "Entertainment" with 5 observed variables, "Informativeness" with 6 observed variables, "Irritation" with 4 observed variables, "Credibility" with 4 observed variables, "Narration features" with 4 observed variables, "Advertising placement" with 3 observed variables, an intermediate variable "Attitude" with 4 observed variables and finally the dependent variable "Online Advertising Adoption" with 4 observed variables.

4.1.3. The results of testing the conformity of the research model

The SEM analysis results show that Chi-square/df (CMIN/df) = 1.612 < 3; The model received the value CFI = 0.954 > 0.9 ; GFI = 0.881 > 0.8; TLI = 0.949 \geq 0.9; RMSEA = 0.042 \leq 0.08. All of them satisfied the general fit assessment criteria of the model. Thus, the research model is suitable for the survey data.

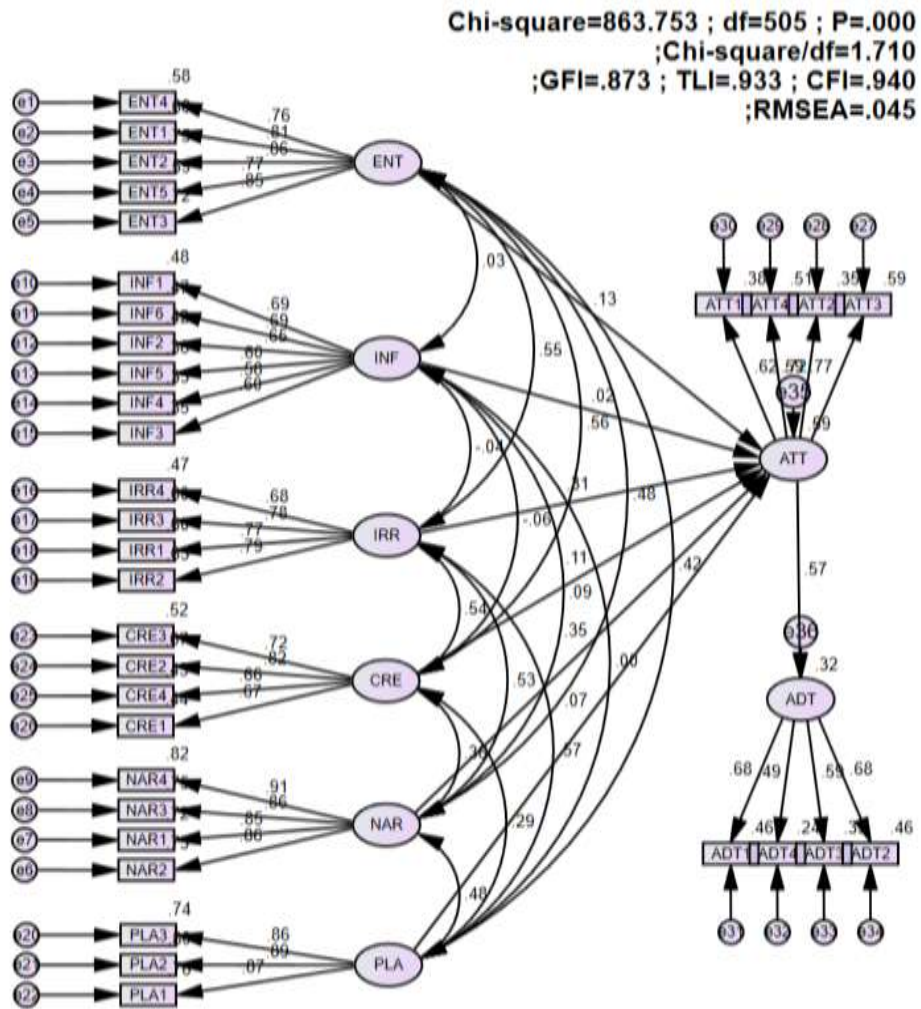


Figure 4.2 SEM analysis results of the theoretical research model

4.1.4. Bootstrap test

To assess the reliability of the SEM model's estimates, the authors apply the Bootstrap test method with 500 bootstrap samples. The results of the tests are shown in the table below. The Bootstrap method is used to calculate the columns SE, SE-SE, Mean, Bias, and SE-Bias, with the Mean column displaying the average of the Bootstrap estimates. Column CR is calculated by the formula: $CR = Bias/SE - Bias$. Because the absolute value of CR is small in comparison to 2, the difference between the two estimations is very small and not statistically significant at the 95% confidence level.

TABLE 4 - 1. The results of Bootstrap test

Parameter		SE	SE-SE	Mean	Bias	SE-Bias	CR= Bias/SE-Bias
ATT	<--- NAR	.068	.002	.316	-.004	.003	-1.333
ATT	<--- IRR	.123	.004	.362	.002	.006	.333
ADT	<--- ATT	.080	.003	.514	-.003	.004	-.75

4.1.5. Multigroup analysis of Gender (Male and Female)

TABLE 4 - 2. Multigroup analysis of Gender

MODEL	Chi-square	Df	p-value	Result
Unconstrained Model	1468.828	1010	0.652885216	<i>Constrained Model</i>
Constrained Model	1473.886	1017		
Difference	5.058	7		

Source: Authors

- P-value = 0.653 (> 0.05), there is no difference in Chi-square between the Unconstrained Model and the Constrained Model, choose the Constrained Model.

- According to the findings, Gender has no effect on the relationships in the research model. In other words, there is no distinction between males and females.

4.1.6. Multigroup analysis of Income

The multigroup analysis of Income has four groups: Under 3 million VND, 3 – 5 million VND, 5 – 10 million VND, more than 10 million VND.

TABLE 4 - 3. Multigroup analysis of Income

MODEL	Chi-square	Df	p-value	Result
Unconstrained Model	1110.4	652	0.101935971	<i>Constrained Model</i>
Constrained Model	1123.7	660		
Difference	13.3	8		

Source: Authors

- P-value = 0.102 (> 0.05) demonstrates that there is no difference in Chi-square between the Unconstrained Model and the Constrained Model.

- According to the findings, Income has no effect on the relationships between factors in the research model. In other words, there is no distinction among the four groups in the variable “Income”.

4.2. Discussion

4.2.1. Research contributions

This research focuses on the influence of online advertising adoption in Podcasts for GenZ. The outcomes of this research serve as foundations of implications for business administrators who are having intentions of using Podcasts as a helpful channel for marketing purposes. A clearer view of the impact of Podcast ads on GenZ’s attitude in order to improve the efficiency of online advertising activities, motivate online customers, especially gain profits as well as increase the business’s value.

In scientific terms, the scales measuring the impact of advertising on GenZ’s information adoption behavior built in this study can also be a reference for market research service companies to design questionnaires for the process of collecting information to meet customers' needs.

4.2.2. Managerial implications

According to research results, “**Narration features**” is the main factor that most strongly influences the online advertising adoption in Podcasts for GenZ. When advertising on Podcasts, it must capture the feelings of customers when listening to Podcasts. Be a storyteller. A lively, inspirational advertisement and VJ’s leadership that make listeners describe the true images when listening to the ad will attract the attention of potential customers.

The research results also show that “**Irritation**” is one of the factors strongly affecting the online advertising adoption in Podcasts for GenZ. Do not put too many advertisements in a podcast. Administrators

should find a way to make an advertisement look very close, true, not too exaggerated. Instead, developing advertising content based on the episode theme and focusing on the podcast.

4.2.3. Limitations of Research

Although the study has completed the research objectives, there are still some limitations :

Firstly, the researches about online advertising adoption in Podcast in Vietnam are still quite few in number. Regarding foreign research, the results are still not highly homogenous due to two factors: geographical location and age, leading to differences in information.

Secondly, due to the limited time, the majority of the research is almost done with the research subjects who are studying at the University of Economics in Ho Chi Minh City and at other universities in Ho Chi Minh City.

Thirdly, the respondents did not really answer with honesty: they often tend to choose according to feelings or familiarity. Without proper encouragement, respondents often fail to give accurate and honest answers.

Next, the question may not fully represent the objective of the research. Each respondent may interpret the answer choices differently, which in turn leads to inaccuracies in collected data.

The authors have conducted a convenient survey, without stratification of probability, compared with the research results, which are not highly representative. Therefore, further research should use probability sampling methods to increase representativeness.

Finally, there are still many other factors that the research has not fully explored yet.

4.2.4. Future research orientation

The study has achieved the objective of investigating online advertising adoption in Podcast for GenZ at the University of Economics Ho Chi Minh City and measuring user's intentions.

For future research, a larger sample size is needed for a deeper understanding of online advertising adoption in Podcast for GenZ. Approaching research subjects using qualitative research methods is also useful to understand an individual's rationale for influencing and non-influential factors. Therefore, further research is needed to find out some new factors affecting the online advertising adoption within Podcast episodes for GenZ.

Additionally, you can base on this research to find out how people accept Podcast advertising and how it affects advertising adoption. This will help you a lot to build a reasonable marketing strategy.

5. Conclusion

From the results of descriptive statistics, it could be seen that the level of interest in Podcasts of females is higher than that of males. In terms of the influence of Podcast ads on advertising online adoption, the study has shown that there are two factors having a direct impact on Attitude towards ads from the lowest to strongest include: Irritation (0.308) and Narration (0.349).

Although the research has met the objectives set at first, it still has some drawbacks as mentioned in Chapter V. In addition, the research focuses primarily on the aspects of internet advertising and does not give a comprehensive perspective of the advertising industry. There are the fact that many more factors influencing Advertising online Adoption via Podcasts have not been found, therefore, the further research could identify other new potential factors influencing the online Adoption of consumers.

6. Appendix

Appendix A. List of experts interviewed in qualitative research

NAME	WORKPLACE
Nguyen Thao Phuong	Account Executive at Fanscom Agency
Nguyen Trang Nhung	Content Executive at Mỹ thuật Bụi
Pham Ngoc Thuong Thuong	Brand Manager at VinaHC group
Dinh Ngoc Minh Chau	Associate Marketing Executive at VNG Corporation

Appendix B. Qualitative research questions

B.1. Introduction

Greetings!

First of all, I'd like to express my gratitude for attending and contributing to the discussion on the research topic, "FACTORS AFFECTING ONLINE ADVERTISING ADOPTION WITHIN PODCAST EPISODES FOR GENZ IN VIETNAM." This conversation is critical for the research's future phases.

Your participation in this discussion is entirely voluntary, and your reactions and opinions will not be influenced in any way. As a result, I eagerly await active engagement and open feedback on the subject. The success of this thesis depends on all of your open and honest sharing. I'd like to express my gratitude to everyone again.

B.2. The primary content

B.2.1. Factors affecting attitude towards advertising

1. In your opinion, what factors affect users' attitudes towards online advertising?
 2. In your opinion, do the factors listed below affect attitudes towards advertising on Podcast episodes? How important is each factor in your opinion? Why? Please show your level of agreement if you strongly agree, agree, neither agree nor disagree, disagree or strongly disagree according to the following convention:

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Factor	Unaffected	Affect	Affect level				
			1	2	3	4	5
1. Entertainment							
2. Informativeness							
3. Credibility							
4. Irritation							

3. In your opinion, in addition to the above influencing factors, are there other factors affecting consumer attitudes towards advertising on Podcast episodes? Why?

4. In your opinion, with the factors listed below, which is the most important? Please arrange in order of importance of the factors (including recommended ones)

- ... Entertainment
- ... Informativeness
- ... Credibility
- ... Interaction
- ... Irritation
- ... Advertising
- ... Thumbnails
- ... Trendy

5. In your opinion, how does the consumer's attitude after viewing the advertisement affect the adoption?

B.2.2. Demographic dependent factors

Can you list the factors of consumer demographics that affect attitudes? And how do those factors work?

Modified measures after carrying out qualitative interview

Symbol	Observed variables	Sources
ENT	ENTERTAINMENT	
ENT1	I am interested in listening to ads on Podcasts.	Ducoffe, 1996
ENT2	Ads on Podcasts are creative and different.	
ENT3	Ads on Podcasts are funny and entertaining.	Nguyen Duy Thanh, Tran Dinh Nghia & Pham Manh Cuong (2013)
ENT4	I am interested when the episode relates to the ads on Podcasts.	
ENT5	I am satisfied with the ads on Podcasts about products/services/ brands.	Nguyen Duy Thanh, Tran Dinh Nghia & Pham Manh Cuong (2013)
INF	INFORMATIVENESS	
INF1	Ads on Podcasts update enough related information about the products/ services/ brands.	Ducoffe, 1996
INF2	Ads on Podcasts suggest the products/ services/ brands that I need.	Ducoffe, 1996
INF3	Ads on Podcasts provide us with many sale promotion campaigns such as sales off or discounts,...	The authors propose
INF4	Ads on Podcasts provide me more information than other social media do.	
INF5	I receive more information when the episode relates to the ad on Podcasts.	
INF6	Ads on Podcasts are meaningful.	
IRR	IRRITATION	
IRR1	Ads on Podcasts make me irritated	Dinh Tien Minh & Le Thi

IRR2	Ads distract me from podcast content.	Hue Linh (2018)
IRR3	I feel the ads are dishonest.	
IRR4	Ads interspersed with Podcasts content with high frequency.	The authors propose
CRE	CREDIBILITY	
CRE1	Ads on Podcasts is a channel for me to refer when making a purchase.	Assoc. Ph.D.f. Ha Nam Khanh Giao and Do Thi Thuy Dung (2017)
CRE2	The content included (by the host) makes the ad more persuasive.	
CRE3	I believe in the brand mentioned on Podcasts.	
CRE4	Ads on Podcasts contribute to my purchasing decision.	
NAR	NARRATION/STORYTELLING FEATURES	
NAR1	While I was listening to the ad, I could easily picture what was described.	Green & Brock, 2002; Brechman, 2010
NAR2	While I was listening to the ad, I could picture myself experiencing what was described.	
NAR3	My attention was focused on the ad.	
NAR4	It was easy to follow the action and events taking place in the ad.	
PLA	ADVERTISING PLACEMENT	
PLA1	Ads on Podcasts appear from the beginning make me irritated.	The authors propose
PLA2	Ads on Podcasts appear during and after the Podcast often make me more interested in the content.	
PLA3	Ads taking place at any stage are prompting me to find more information about products/ services/ brands.	
ATT	ATTITUDE TOWARDS PODCAST ADVERTISING	
ATT1	I like the values which Podcasts ads bring to me.	The authors propose
ATT2	The content included by the host makes the ad more touching.	
ATT3	I consider Podcasts advertising is useful.	Kwek Choon Ling et al (2010)
ATT4	My general opinion of Podcasts advertising is favourable.	
ADT	ONLINE ADVERTISING ADOPTION	
ADT1	I will learn about online advertising on Podcasts in the near future.	Nguyen Duy Thanh, Tran Dinh Nghia & Pham Manh Cuong (2013)
ADT2	I will listen to online ads on Podcasts often in the future.	
ADT3	I will share online advertising information on Podcasts to my friends.	
ADT4	I would like to tell the content of the ad to people around me.	The authors propose

Appendix C - Main qualitative questionnaire

C.1. General questions

1. What is your age?

Under 10 years old	• 1	FINISH THE SURVEY - THANK YOU
10-25 years old	• 2	CONTINUE
Over 25 years old	• 3	FINISH THE SURVEY - THANK YOU

2. Have you ever listened to advertisements on Podcast?

Yes, I have	• 1	CONTINUE
No, I haven't	• 2	FINISH THE SURVEY - THANK YOU

3. How much time per day do you spend listening to advertisements and news on social media?

Under 1 hour/ a day	• 1
1-4 hours/ a day	• 2
4-8 hours/a day	• 3
Over 8 hours/ a day	• 4

C.2. Demographic information

4. What is your gender?

Male	• 1
Female	• 2
Other	• 3

5. Your income (including family's financial support)?

Under 3 million VND	• 1
3-5 million VND	• 2
5-10 million VND	• 3
Over 10 million VND	• 4

6. Where do you live?

City	• 1
Country	• 2

C.3. Factors affecting online advertising adoption within podcast episodes for GenZ in Vietnam

7. Which factors affect your attitude toward advertisements?

Entertainment	• 1
Informativeness	• 2
Irritation	• 3
Credibility	• 4
Advertising placement	• 5
Narration/storytelling features	• 6

8. You're going to read a series of statements regarding the factors that affect your attitude towards the ads and information adoption behavior. For each statement, please tell us your level of agreement if you strongly agree, agree, neither agree nor disagree, disagree or strongly disagree according to the following convention:

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Code	Observed variables	1	2	3	4	5
ENT	Entertainment					
ENT1	While I was listening to the ads, I could easily picture what was described. I am interested in listening to ads on podcast.	• 1	• 2	• 3	• 4	• 5
ENT2	While I was listening to the ads, I could picture myself experiencing what was described. Ads on Podcasts are creative and different.	• 1	• 2	• 3	• 4	• 5
ENT3	My attention was focused on the ad. Ads on podcasts are funny and entertaining	• 1	• 2	• 3	• 4	• 5
ENT3	It was easy to follow the action and events taking place in the ad.I am interested when the episode relates to the ads on Podcast.	• 1	• 2	• 3	• 4	• 5
ENT4	Ads on podcast update enough related information about the products/ services/ brands	• 1	• 2	• 3	• 4	• 5
INF	Informativeness					
INF1	Ads on podcast suggest the products/services/brands that I need	• 1	• 2	• 3	• 4	• 5

INF2	Ads on Podcast provide us with many sale promotion campaigns such as sales off or discounts,...	● 1	● 2	● 3	● 4	● 5
INF3	Ads on Podcast provide me more information than other social media do.	● 1	● 2	● 3	● 4	● 5
INF4	I receive more information when the episode relates to the ad on Podcast.	● 1	● 2	● 3	● 4	● 5
INF5	Ads on Podcast are meaningful.	● 1	● 2	● 3	● 4	● 5
IRR	Irritation					
IRR1	Ads on Podcast make me irritated.	● 1	● 2	● 3	● 4	● 5
IRR2	Ads distract me from podcast content.	● 1	● 2	● 3	● 4	● 5
IRR3	I feel the ads are dishonest.	● 1	● 2	● 3	● 4	● 5
IRR4	Ads interspersed with podcast content with high frequency.	● 1	● 2	● 3	● 4	● 5
CRE	Credibility					
CRE1	Ads on Podcast is a channel for me to refer when making a purchase.	● 1	● 2	● 3	● 4	● 5
CRE2	The content included (by the host) makes the ad more persuasive.	● 1	● 2	● 3	● 4	● 5
CRE3	I believe in the brand mentioned on Podcast.	● 1	● 2	● 3	● 4	● 5
CRE4	Ads on Podcast contribute to my purchasing decision.	● 1	● 2	● 3	● 4	● 5
NAR	Narration feature					
NAR1	While I was listening to the ad, I could easily picture what was described.	● 1	● 2	● 3	● 4	● 5
NAR2	While I was listening to the ad, I could picture myself experiencing what was described.	● 1	● 2	● 3	● 4	● 5
NAR3	My attention was focused on the ad.	● 1	● 2	● 3	● 4	● 5
NAR4	It was easy to follow the action and events taking place in the ad.	● 1	● 2	● 3	● 4	● 5
PLA	Advertising placement					
PLA1	Ads on Podcast appear from the beginning make me irritated	● 1	● 2	● 3	● 4	● 5
PLA2	Ads on Podcast appear during and after the Podcast often make me more interested in the content	● 1	● 2	● 3	● 4	● 5
PLA3	Ads taking place at any stage are prompting me to find more information about products/services/brands	● 1	● 2	● 3	● 4	● 5
ATT	Attitudes Towards Advertisements					
ATT1	I like the values which Podcast ads bring to me.	● 1	● 2	● 3	● 4	● 5

ATT2	The content included by the host makes the ad more touching.	● 1	● 2	● 3	● 4	● 5
ATT3	I consider Podcast advertising is useful	● 1	● 2	● 3	● 4	● 5
ATT4	My general opinion of Podcast advertising is favourable	● 1	● 2	● 3	● 4	● 5
ADT	Online Advertising Adoption					
ADT1	I will learn about online advertising on Podcast in the near future.	● 1	● 2	● 3	● 4	● 5
ADT2	I will listen to online ads on Podcast often in the future.	● 1	● 2	● 3	● 4	● 5
ADT3	I will share online advertising information on Podcast to my friends	● 1	● 2	● 3	● 4	● 5
ADT4	I would like to tell the content of the ad to people around me.	● 1	● 2	● 3	● 4	● 5

Appendix D. CFA Model

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
ENT4	<---	ENT	.764
ENT1	<---	ENT	.809
ENT2	<---	ENT	.863
ENT5	<---	ENT	.770
ENT3	<---	ENT	.850
INF1	<---	INF	.769
INF6	<---	INF	.770
INF2	<---	INF	.742
INF3	<---	INF	.713
INF5	<---	INF	.721
INF4	<---	INF	.698
NAR1	<---	NAR	.847
NAR3	<---	NAR	.862
NAR2	<---	NAR	.856
NAR4	<---	NAR	.908
ATT2	<---	ATT	.747
ATT3	<---	ATT	.874
ATT1	<---	ATT	.742

ATT4	<---	ATT	.811
IRR4	<---	IRR	.685
IRR1	<---	IRR	.774
IRR3	<---	IRR	.773
IRR2	<---	IRR	.794
ADT1	<---	ADT	.767
ADT3	<---	ADT	.715
ADT4	<---	ADT	.640
ADT2	<---	ADT	.753
PLA2	<---	PLA	.895
PLA3	<---	PLA	.863
PLA1	<---	PLA	.871
CRE3	<---	CRE	.720
CRE2	<---	CRE	.820
CRE4	<---	CRE	.655
CRE1		CRE	.665

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FACTORS AFFECTING THE INTENTION TO JOIN IN TOURISM EXPERIENCE ON SIMULATED WORLD - METAVERSE: A SPECIFIED CASE OF PHU QUOC TOUR IN VIETRAVEL COMPANY

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ABSTRACT

This study was conducted to explore the factors which affect the intention to join in a tourism experience on a simulated world - Metaverse: a specified case of Phu Quoc tour in Vietravel company. Our group consumed 250 samples in this study to find the relationship between 5 factors: Perceived ease of use, perceived usefulness, perceived value, perceived risk and social influence. A reliability and validity test were conducted so that our group found that there are 5 factors with 16 observed variables in this research. For the linear regression test, there were 3 factors affecting the intention to join in the tourism experience on a simulated world - Metaverse: a specified case of Phu Quoc tour in Vietravel company. They are perceived usefulness, perceived value, social influence and all four factors have a positive impact on intention to participate.

The main findings of this study provided practical implications for Vietravel company in particular and travel agencies in improving the future of tourism in general.

Key words: Joining intention, marketing, Metaverse, tourism experience, Vietravel.

1. Introduction

1.1. The definition of Metaverse

The Metaverse is a virtual world that integrates elements of social networking, online gaming, augmented reality (AR), virtual reality (VR), and cryptocurrency to allow users to engage "virtually." (Tran Thuy, 2020)

When Metaverse matures, it will offer online spaces where users can connect in more multi-dimensional ways, thanks to the utilization of cutting-edge technology. Users in the Metaverse can "immerse" themselves in the space where the physical and digital worlds collide, rather than only viewing digital content.

"Metaverse is a collection of virtual spaces where people can create and explore with other users who are not in the same physical space," according to Facebook.

1.2. Travel experience on the virtual world platform

The tourism industry will be in that spirit as the future economy is covered by technology or Metaverse. Tourists and young people who enjoy traveling will use virtual reality technology to "shift the feeling" to any location in the Metaverse. They will experience the beautiful scenery through 3D 360 technology with the holy VR glasses or an application of their platform provided by the virtual travel company based on the customer's needs, and they will pay in the coin recommended by the company. Visitors will use an electronic wallet to store information, and visitor information (identity, passport, ID card, etc.) will be managed automatically and securely on the compact mobile device itself by blockchain technology. Traveling has never been easier or more affordable. Artificial intelligence with native speakers'

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voices in all languages throughout the world will also replace the crew of guides. Visitors can use the "trial" technique, which allows them to check out the travel service or view the tour in virtual reality before making a decision. You will be informed ahead of time about the current situation at the tourist site, including the weather, climate, hotel, and restaurant, to avoid being startled or dissatisfied since the service is not comparable to that of a standard tour operator. the conclusion (removing attractions, poor hotel infrastructure, restaurants missing dishes, tour guides not doing their job properly...). This is a positive step forward for the tourism industry in terms of professionalizing service style and quality.

Some people believe that the virtual reality travel experience on Metaverse will harm their health, such as electronic pulses, eye problems, or the user's hearing ability. However, it is impossible to deny that technology in the Metaverse virtual world will change the majority of the economy, dominate all social activities in the direction of convenience, and help people's lives become more civilized and modern. Thus, it could contribute to the development of tourism in the country.



Figure 1. Tourism on Metaverse

Source: Internet

1.3. The context and background of the research

1.3.1. The Vietnamese tourism industry

Since the outbreak of the COVID-19 pandemic, development indicators have declined seriously. In 2020, Vietnam stopped receiving international visitors, so the number of tourists decreased by 80% compared to 2019 (reaching only 3.7 million); domestic tourists decreased by 34% over the same period; total revenue from tourists decreased by up to 59%. The year 2021 is the second year in a row that the tourism industry has been severely damaged by the pandemic. In the past 10 months, international tourism continued to close, domestic tourism decreased by 42.5% compared to 2020.

Currently, in the background that the COVID-19 pandemic is gradually being controlled, the whole country's economy is now gradually overcoming a difficult period and returning to operation with recovery measures and stimulus packages. The demand of the tourism industry is expected to step up as well. However, for tourism recovery, flexible and safe adaptation to the pandemic is still fraught with difficulties and challenges.

1.3.2. Information about Vietravel company

According to the semi-annual audited financial statements for 2021 of Vietnam Tourism and Transport Marketing Joint Stock Company - Vietravel just announced on 8/12, the revenue of the first half of the year recorded nearly 546 billion VND, decreasing by 44% with the same period.

However, doing business below cost caused the unit to suffer a loss of more than 140 billion dong. Meanwhile, expenses in the period grew simultaneously causing a loss of nearly 293 billion dong, bringing the total loss calculated up to June 2021 to more than 326 billion dong.

As far as Vietravel's explanation is concerned, the Company's net revenue was recorded to decrease seriously due to the prolonged COVID-19 pandemic.

Therefore, implement tourism in Phu Quoc by using Metaverse is also considered as a new strategy for Vietravel. This movement of Vietravel may be risky at the moment but if this solution works well, Vietravel will not only improve the financial circumstances but also gain a huge number of clients from all around the world.

1.4. The rationale for conducting the research

As the Covid-19 pandemic has been continuing for a long time, many difficulties are appearing in the economy, especially in the tourism industry. Tourism's contribution to global GDP fell from 10.5 percent in 2020 to 5.5 percent in 2019. Many tour companies and travel firms have stalled or gone out of business. Meanwhile, this industry makes an outstanding contribution to the national income. In addition, Metaverse, which has recently been rapidly spreading, displays new opportunities in tourism through various marketing activities which will provide tourists experiences in another virtual world through avatars. Metaverse is a new type of Internet application and social form that integrates a variety of new technologies. It provides an immersive experience based on augmented reality technology, and creates a mirror image of the real world based on digital twin technology. Realizing the potential of Metaverse application in promoting tourism, in this study, factors affecting the intention to join in tourism experience on Metaverse will be discussed and the case of Phu Quoc Tour in Vietravel will be analyzed to recommend some solutions to increase the intention to recover Vietnamese tourism and set background research for further development in Metaverse.

1.5. The scope and object of the research

The data was collected from students from different universities in Ho Chi Minh city who have already experienced services from Vietravel during the period of time from December 7, 2021 to December 26, 2021.

2. Theoretical framework

2.1. Theory of Reasoned Action (TRA)

The goal of the Theory of Reasoned Action (TRA) is to explain the relationship between human attitudes and behavior. Based on their pre-existing opinions and behavioral intentions, this theory is used to anticipate how people will behave. Individuals will act based on the outcomes they anticipate from engaging in the behavior.

The fundamental goal of TRA is to examine an individual's underlying motivation to execute an activity to better understand their voluntary behavior. According to the TRA, a person's desire to do an action is a strong determinant of whether or not they will do so. Furthermore, whether or not the person performs the behavior is influenced by societal norms. The intention to execute given conduct, in theory, comes before the actual behavior.

2.2. Theory of planned behavior (TPB)

According to Ajzen's (1991) theory of intended behavior, the author believes that three factors influence the intention to perform the behavior: attitude toward the behavior, subjective standards, and perceived behavioral control.

The theory of intended behavior (TPB) arose from the theory of rational behavior (Ajzen and Fishbein, 1975), which was developed in response to the previous theory's limitation of assuming that human behavior is solely due to mental control.

The individual's intention to perform a specific behavior is a central factor in the theory of planned behavior, as it is in TRA theory.

2.3. Theory of perceived risk (TPR)

Bauer (1960) defined perceived risk as consisting of two main components: the probability of a loss and the subjective feeling of bad consequences.

Component of product/service risk perception: Risk perception can be divided into four categories: loss of functionality, loss of finance, loss of time, loss of opportunity, and perception of total risk with the product/service (the sum of the consumer's perceived uncertainty or anxiety when purchasing the product).

2.4. Theory of acceptance technology model (TAM)

Davis (1986) created the TAM technology acceptance model, which is based on the notion of rational action (TRA for short). This model is based on the technology acceptance model, which is directly related to the challenge of forecasting the acceptability of a computer network or an information system.

The triple technology acceptance model was created to forecast the acceptability of a tool and identify the system improvements that must be made. Only then will users accept and trust it.

The acceptability of an information system is also affected by two main factors: perceived usefulness and perceived ease of use, according to this concept.

2.5. Proposed research hypothesis

Perceived ease of use: “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989; p.320). Numerous research studies have found that perceived ease of use is also a key factor in behavioral intentions to use information technology (Davis et al., 1989, 1992; Chen et al., 2008). Perceived ease of use (PEOU) is influenced by numerous aspects such as technology usage, interfaces, and required efforts, according to Lim & Ting (2012) and Venkatesh et al. (2003). Hence, the higher the level of difficulty of the technology, the slower the rate of adoption by the general public will be. As a result, presenting a simple and easy-to-understand technology that demands minimal effort can have a favorable impact on customers' behavioral intentions and attitudes about technology. Therefore, the hypothesis proposed is:

Hypothesis H1: Perceived ease of use has a positive impact on the intention to join in tourism experience on a simulated world - Metaverse.

Perceived risk: affects the situation where the probabilities of the outcome are uncertain. It is also defined as the “consumer’s perceptions of uncertainty and adverse consequences of buying a product (or service)” (Dowling and Staelin, 1994, p.119) or “the subjective expectation of a loss” (Nepomuceno et al., 2014). In other words, perceived risk is the expectation of a loss, and the consequences of such a loss if it occurs. Understanding elements that can decrease perceived risk is especially crucial (Beck and Crié, 2018; Cheng et al., 2008). Monika Boguszewicz-Kreft (2022) suggested that perceived risk is an important factor that influences travel-related decisions, including intentions. Hence, the hypothesis proposed is:

Hypothesis H2: Perceived risk has a negative impact on the intention to join in tourism experience on a simulated world - Metaverse.

Perceived usefulness: defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989; p.320). Other factors, including perceived usefulness, have an impact on behavioral intention (Liao, Tsou, & Shu, 2008). According to Davis (1989), perceived usefulness indicates the likelihood of a consumer using specific software to improve their performance or leisure. Based on this, we can conclude that perceived usefulness is one of the most influential factors of behavioral intention (Lee, Park, & Ahn, 2001). As a result, the hypothesis proposed is:

Hypothesis H3: Perceived usefulness has a positive impact on the intention to join in tourism experience on a simulated world - Metaverse.

Perceived value: Perceived value is defined as the utility individuals derive from tangible products or intangible services; it consists of what benefits individuals get and what costs they pay (Zeithaml, 1988; Holbrook, 1999; McDougall & Levesque, 2000). Lancaster (1966) argues that consumers make their decisions by evaluating the characteristics or dimensions of a good. It has been discovered that perceived value has a direct positive impact on behavioral intention. This impact, however, may be influenced by tourism experience, which is the outcome of tourists' perceived values (Morgan, 2006) and has been identified as a major motivator of future behavioral intention (Kim, 2014). Thus, the hypothesis proposed is:

Hypothesis H4: Perceived value has a positive impact on the intention to join in tourism experience on a simulated world - Metaverse.

Social influence: is a normative variable that assesses societal pressure and can influence our actions. It is important to note that social networks and the many circumstances in which we grow our lives (such as social activities or the workplace) might have an impact on our behavior. As a result, the varied social environment may have a significant impact on the customers' attitudes (Frambach & Schillewaert, 2002). These studies show that social influence can affect people's opinions even after they've made rational decisions. Social influence can be introduced through culture, country, family, friends, relatives, peers, and superiors, according to researchers. Social impact elements, particularly subjective norms, as well as utility criteria like perceived usefulness and perceived ease of use, have been praised as major determinants of behavioral intention to adopt a given technology in technology acceptance research (Venkatesh et al., 2003). As a result, the hypothesis proposed is:

Hypothesis H5: Social influence has a positive impact on the intention to join in tourism experience on a simulated world - Metaverse.

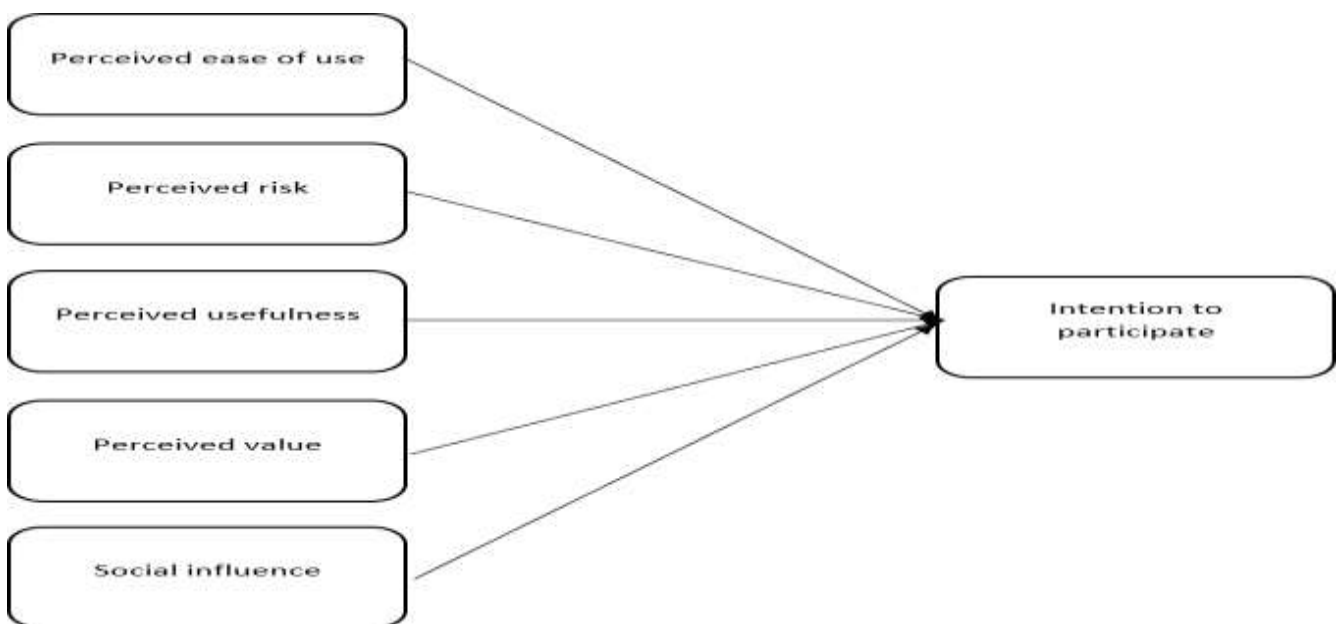


Figure 2. Research model

Source: Authors

3. Research method

3.1. Preliminary research

3.1.1. Preliminary qualitative research

Preliminary studies under qualitative methods are designed to find out whether the interviewee had understood the content or not to add, edit or remove the statement to form the official scales. Our team conducted a group discussion of 5 participants who have intentions to use services provided by Vietravel.

3.1.2. Preliminary quantitative research

The preliminary quantitative study was conducted by surveying 250 students of universities located in Ho Chi Minh city and clients who have the intention to use services provided by Vietravel. By using the online survey form, the group collected 250 forms but 238 of them were qualified. The purpose is to evaluate the content and form of statements in the draft scale to complete the official scale used in official research.

3.2. Official research

After discussing, consulting from suggestions from experts, our group decided to use the quantitative research method to explore which factors and how these factors affect the intention to join in a tourism experience on a simulated world - Metaverse.

Our group surveyed 250 respondents from different gender, universities, and school years through Google Form. Following this, our group processes data by testing the reliability of all variables through Cronbach's Alpha coefficients, using exploratory factor analysis (EFA), testing hypotheses using the Linear Regression model.

3.3. Sample method

Exploratory Factor Analysis necessitates at least 200 observations (Gorsuch, 1983), so we decided on 250 observations because they are appropriate and convenient for the research process. As a result, the study is officially conducted using quantitative methods via online survey interviews with a sample of 250 students from various universities to test theoretical models and hypotheses.

3.4. Method of analysis and data processing

3.4.1. Evaluating the reliability of the scale

Cronbach's Alpha coefficients are used to examine the scale's reliability using the inherent consistency technique.

According to Hoang Trong and Chu Nguyen Mong Ngoc (2008), the scale is extremely good if Cronbach's Alpha coefficient ranges from 0.8 to near 1, good between 0.7 and 0.8, and acceptable between 0.5 and 0.6. Cronbach's Alpha coefficients of 0.6 or more can also be considered in the context of new research. A usable scale must have a Corrected Item - Total Correlation of 0.3 or more (Hair et al., 2010).

3.4.2. Exploratory factor analysis EFA

Factor analysis aims at classifying the less correlated variables into factors with more correlated variables, generating representative factors while still having complete information relative to the number of original variables. Factor analysis includes the steps:

Step 1: Verify the appropriateness of factor analysis to the initial data by KMO index (Kaiser - Meyer - Olkin) and Bartlett statistical value. Evaluation criteria:

- KMO index > 0.5
- Small observed significance (sig <0.05)

The observed variables in the population are correlated and factor analysis (EFA) is appropriate

Step 2: Next, the factor extraction method and the factor rotation method will be conducted to determine the number of extracted factors and determine the variables of each factor.

Evaluation criteria:

- Only factors with an Eigenvalue greater than 1 will be retained in the analytical
- A model since these factors have a better summary effect than those with an Eigenvalue less than 1.
- The total variable extracted is greater than 50% to prove that the above model is consistent with the analyzed data.
- Factor loading coefficient: is a single correlation coefficient between variables and factors. Condition: factor loading > 0.5. The variable will belong to which factor at which the variable has the largest loading factor. Variables that do not meet the above criteria will be disqualified.

Step 3: Re-test the reliability of the scale of these factors with Cronbach's Alpha Coefficients.

3.4.3. Pearson correlation test

The test statistic Pearson's correlation coefficient assesses the statistical relationship, or association, between dependent and independent variables, then the linear regression analysis is appropriate. The closer these two variables are, the closer the Pearson Correlation's absolute value is equal to 1. Simultaneously, the correlation between the independent variables must be examined to detect close relationships.

3.4.4. Linear regression model

After determining that the independent variables and dependent variables have a linear relationship, linear regression can be used to model this causal relationship (Hoang Trong and Chu Nguyen Mong Ngoc, 2008)

- F-test and adjusted R square coefficient are used to validate the model's suitability.
- Evaluate the model's suitability.
- For each component, determine the significance of the regression coefficient.
- Examine the normal distribution of residuals using a frequency graph of normalized residuals; look for a mean value of 0 and a standard deviation of 1.
- The value of the Tolerance or the coefficient of magnification VIF is used to test assumptions about the multicollinearity phenomenon. There is a multicollinearity phenomenon if $VIF > 10$. (Hoang Trong and Chu Nguyen Mong Ngoc, 2008).
- The researchers used multiple regression models in the study to identify the main factors that have the greatest influence on the intention to use the MOMO e-wallet. The authors' multiple regression model is as follows: $IT = \beta_0 + \beta_1.x_1 + \beta_2.x_2 + \dots + \beta_n.x_n + \varepsilon_i$
- Include:
- IT is the intention to join in tourism experience on the simulated world - Metaverse: A specified case of Phu Quoc Tour in Vietravel company.
- x_1, x_2, \dots, x_n are factors (independent variables) affecting the intention to participate in tourism experience on the simulated world - Metaverse: A specified case of Phu Quoc Tour in Vietravel company.
- $\beta_1, \beta_2, \dots, \beta_n$ is the partial regression coefficient *
- ε is the random standard distribution error, mean equal 0, constant and independent variance.

3.4.5. Analysis of variance

The authors use an average test for two independent samples to test for differences when the sample contains two properties (Independent Samples T-Test):

- Case 1: Sig value. < 0.05 , there is a difference between the 2 variables. Then the authors use results from Equal variables not assumed
- Case 2: Sig value. ≥ 0.05 , there is no difference between the 2 variables. Then the authors use results from Equal variables assumed.

When a sample has more than two attributes, the authors apply analysis of variance ANOVA or Robust test to look for differences:

- Case 1: Sig < 0.05 then the variance is statistically significant. The authors then stopped analyzing ANOVA and replaced it with Robust.
- Case 2: Sig ≥ 0.05 then the variance is not statistically significant. Then continue to use ANOVA analysis.

3.4.6. Testing the difference between statistical groups

Using T-test and One-way ANOVA test to check whether or not there are differences in the evaluation of the intention to participate in tourism experience in a stimulated world - Metaverse among statistical groups, including gender, university, and student's years.

- If the Sig value < 0.05: If the variable between different groups of subjects is different or there is no standard distribution, the Robust test is used to conclude for this case.
- If Sig. ≥ 0.05: The variable is not different or has a standard distribution. We will use the One - Way ANOVA test to conclude.

4. Results and discussion

4.1. Results

4.1.1. Descriptive statistics

Table 1. Descriptive statistics

Questions		Frequency	Percentage
What's your gender?	Male	100	40.00%
	Female	150	60.00%
Which university do you go to?	UEH	82	32.8%
	UEL	22	8.8%
	BK	62	24.8%
	BUH	23	9.2%
	Others	61	24.4%
Which year are you in?	1	45	18%
	2	119	47.6%
	3	45	18%
	4	24	9.6%
	Others	17	6.8%

Source: Authors

In our analysis, our group showed that 60% of women participated in the survey of factors affecting the intention to join in a tourism experience on a simulated world - Metaverse while this figure was only 40% for men.

UEH's proportion ranked first with 32.8%, followed by HCMUT's proportion with 24.8%. In addition, UEL and BUH shared approximate portions of around 9%.

The figure for sophomores is responsible for 47.6%, which was the largest source of data collection as the research team consists of sophomore members. Besides, there is 18% being the proportion of freshmen and junior, and 9.6% is the share of seniors.

4.1.2. Testing Cronbach's Alpha

Table 2. Reliability testing

Component	Code	Corrected Item-Total	Cronbach's Alpha if DeletedItem	Cronbach's Alpha	Result
Perceived Ease of Use	PEU1	.700	.736	.824	Qualified
	PEU2	.732	.702		
	PEU3	.611	.822		

Perceived Risk	PR1	.504	.749	.751	Qualified
	PR2	.629	.608		
	PR3	.610	.632		
Perceived Usefulness	PU1	.563	.754	.776	Qualified
	PU2	.707	.593		
	PU3	.574	.739		
Perceived Value	PV1	.517	.704	.747	Qualified
	PV2	.622	.643		
	PV3	.599	.657		
Social Influence	SI1	.734	.805	.822	Qualified
	SI2	.760	.782		
	SI3	.713	.825		
Intention to participate	IT1	.497	.570	.675	Qualified
	IT2	.485	.584		
	IT3	.484	.588		

Source: Authors

The result of Cronbach's Alpha of all observed variables is quite high (>0.6), so the component of the model is reliable, specifically as follows: IT (0.675), PEU (0.824), PR (0.751), PU (0.776), PV (0.747) and SI (0.822). Besides, the Corrected item-total Correlation of all observed variables is greater than 0.3. With the results in the Cronbach's Alpha system evaluation step, the team accepted 5 independent variables as follows: "Perceived Ease of Use" with 3 observed variables, "Perceived Risk" with 3 observed variables, "Perceived Usefulness" with 3 observed variables, "Perceived Value" with 4 observed variables, "Social Influence" with 3 observed variables and finally "Intention to participate" dependent variable with 3 observed variables.

After a preliminary assessment, the scales used in our research meet the requirement of reliability and all 19 variables were kept for the exploratory factor analysis (EFA).

4.1.3. EFA for independent variables

A sample size of 250 requires factor loading as an indicator to ensure the practical significance of EFA ≥ 0.5 (according to Hair & ctg, (1998,111), Multivariate Data Analysis Prentice-Hall International) and we received the Rotated Components Matrix result (Appendix C).

Thus, through the EFA, we still accepted 5 independent variables with 16 observed variables, namely as follows: "Perceived Ease of Use" with 3 observed variables, "Perceived Risk" with 3 observed variables, "Perceived Usefulness" with 3 observed variables, "Perceived Value" with 4 observed variables, "Social Influence" with 3 observed variables.

The results from the Total Variance Explained (Appendix C) showed that 16 observation variables were divided into 5 groups. Cumulative of Variable value = 69.623% > 50%: meet the requirement. It has since been concluded that these five factors explain 69.623% of data variations. The Initial Eigenvalues value of all factors is high (>1); the 5th factor with the lowest Initial Eigenvalues is 1,118 > 1.

Table 3. KMO and Bartlett's Test 1

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.729
Bartlett's Test of Sphericity	Approx. Chi-Square	1490.477
	df	120
	Sig.	.000

Source: Authors

The EFA's result showed that the KMO (.729) index was greater than 0.5 which proved that the data used to analyze the factor was entirely appropriate. Bartlett's test result is 1490.477 with Sig. = 0.000 < 0.05 meaning, which at this time rejects the H0 hypothesis: observed variables do not correlate with each other overall. Thus, the correlation matrix between variables hypothesizes that the homogeneity matrix is rejected. Thus, there is a correlation between observed variables with each other.

4.1.4. EFA for dependent variable

Table 4. KMO and Bartlett's Test 2

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.665
Bartlett's Test of Sphericity	Approx. Chi-Square	113.162
	df	3
	Sig.	.000

Source: Authors

The KMO (.665) index was larger than 0.5 in the EFA, indicating that the data utilized to examine the component was completely suitable. The Sig value in the Bartlett Test is 0.000 < 0.05, so the EFA is suitable for investigating officially.

Table 5. Total variance explained for dependent variable

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.821	60.698	60.698	1.821	60.698	60.698
2	.600	20.007	80.705			
2	.579	19.295	100.000			

Extraction Method: Principal Component Analysis.

Source: Authors

From table 5, the cumulative variable is 60.698% > 50%. Thus, a scale that satisfies convergence and distinguishing values.

Table 6. Component matrix

	Component
	1
IT1	.786
IT2	.776
IT3	.775

Source: Authors

Table 6 shows that the observed variables have the Factor loading greater than 0.5. Thus, we do not delete any observed variables.

4.1.5. Pearson correlation analysis

From the result of correlation analysis (Appendix D), we see that the both Sig value of the PEU (.165) and PR (.587) factors are greater than 0.05. Meanwhile, the Sig value of the other three factors is .000 (<0.05) and the Pearson Correlation ranges from 0.241 to 0.437. As a result, except for the independent variables PEU and PR, the remaining three independent variables are extremely tightly connected to the IT-dependent variables.

4.1.6. Linear regression model

The influence of independent factors on dependent variables may be determined using Linear Regression models. Test regression model here is a multi-variable regression model with 5 independent variables. After using the EFA and the Pearson Correlation analysis, we decided the linear regression model was built as follows:

$$IT = \beta_0 + \beta_1 SI + \beta_2 PV + \beta_3 PEU + \beta_4 PU + \beta_5 PR$$

The Enter technique is used to calculate the result of the linear regression model. We reject the H0 hypothesis since the sig value of the F test is equivalent to $0.000 < 0.05$, as shown in the ANOVA table. As a result, the regression test has been developed in line with the collected data set.

Table 7. Original result of the regression analysis
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1 (Constant)	1.108	.373		2.975	.003			
	SI	.145	.061	.140	2.377	.018	.909	1.101
	PV	.360	.076	.312	4.742	.000	.724	1.382
	PEU	.023	.049	.027	.472	.638	.969	1.032
	PU	.171	.061	.181	2.818	.005	.756	1.322
	PR	-.014	.040	-.020	-.351	.726	.970	1.031

a. Dependent Variable: IT

Source: Authors

The multiple regression analysis of table 7 indicated three independent variables with 95 percent reliability (Sig. < 0.05), including SI (.018), PV (.000), and PU (.005). Meanwhile, the other two components, PEU and PR, have an overpower large Sig of 0.638 and 0.726, respectively. As a result, we decide to leave these two independent variables out of the linear regression model.

The team decided to re-analyze the results of the linear regression analysis model with the remaining three independent variables to confirm that the three independent variables SI, PV, and PU have firmer meanings with the dependent variable IT after eliminating two independent non-suitable variables through analyzing the results of the linear regression model.

Table 8. Adjusted result of the regression analysis

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	1.144	.341		3.355	.001		
SI	.144	.060	.139	2.403	.017	.931	1.074
PV	.360	.076	.311	4.750	.000	.724	1.381
PU	.174	.060	.185	2.897	.004	.767	1.304

a. Dependent Variable: IT

Source: Authors

The results of the regression analysis demonstrate that the Factor with Sig. < 0.05 has a significant influence on the dependent variable (IT) at a level of 5% significance. Thus, the observed variables having an impact on the dependent variable as mentioned above are SI, PV, and PU with the Standardized Coefficients Beta of 0.139; 0.311 and 0.185, respectively.

Table 9. The result of the linear regression analysis model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.484 ^a	.234	.225	.66294	2.008

Predictors: (Constant), PU, SI, PV

Dependent Variable: IT

Source: Authors

The brief result of regression analysis in table 9 provided the Adjusted R-Square of 22.5%. It means 22.5% variation of the intention of participation in Metaverse is explained by the independent variables SI, PV, and PU in the model. The VIF coefficients of these three independent variables are less than 0.5. Thus, these independent variables do not have the phenomenon of multicollinearity.

The standardized linear regression model equation is specifically formulated as follows:

$$IT = 0.139SI + 0.311PV + 0.185PU$$

4.1.7. Test the relation of the intention to demographic factors

a) Gender

From the Independent Sample Test (Appendix F), the Sig. value from the Levene test (F-test) equals 0.117 (>0.05). Thus, the team decided to use the results from the T-test from the Equal variable assumed. The Sig. (2-tailed) value equals 0.412. It is greater than α (0.412 > 0.05) so the conclusion is that there is no difference between the gender of males and females in the intention to participate in Metaverse.

b) University

**Table 10. One – Way ANOVA for university group
Test of Homogeneity of Variances**

IT

Levene Statistic	df1	df2	Sig.
.420	4	245	.794

Source: Authors

The Sig. value Levene Statistic in the table 10 equals 0.794 and it is greater than 0.05. Thus, the variance between these qualities is not different.

IT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.601	4	.400	.702	.591
Within Groups	139.601	245	.570		
Total	141.202	249			

Source: Authors

As the results of ANOVA, the Sig. value is 0.591 which is greater than 0.05. Thus, there is no statistically significant difference in intention to participate in the Metaverse of students in different universities.

c) **Course**

Table 11. One – Way ANOVA for course group

IT

Levene Statistic	df1	df2	Sig.
1.419	4	245	.228

Source: Authors

The Sig. value Levene Statistic in table 11 is greater than 0.05 (0.228), indicating that there is no variance between these qualitative variables.

IT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.246	4	.311	.545	.703
Within Groups	139.956	245	.571		
Total	141.202	249			

Source: Authors

As we can see from the ANOVA table, the result sig. is 0.703, which is larger than 0.05, therefore the official conclusion is that there is no statistically significant difference in the intention to engage in Metaverse among freshmen, sophomores, juniors, and seniors.

4.2. Discussion

After conducting the test of the reliability of Cronbach’s Alpha coefficients, exploratory factors analysis (EFA), Pearson correlation test, linear regression test, our group found that 3 factors including social influence (SI), perceived value (PV), perceived usefulness (PU) have positive impact on the intention to join in tourism experience on the simulated world - Metaverse. To be more detailed, the factor of perceived value has the most profound impact on the dependent variable.

However, the biggest limitation of this study is the scope of the study. For some objective reasons, the research was only conducted based on surveys from students. Meanwhile, the majority of tourists or people with travel needs are middle-aged people who have stable jobs. Besides, the concept of Metaverse is still a relatively new phrase for many people in Vietnam today, so the online survey results being somewhat affected is an unavoidable thing. Therefore, in future research papers on the same topic, data should be

collected at a more general level, namely, those who have worked and have a high frequency and experience of travel. At the same time, the authors need to supplement and provide knowledge about the Metaverse platform to the respondents before entering the data collection process.

5. Conclusion

The results showed that there are 3 factors affecting the intention to join in a tourism experience on a simulated world - Metaverse that are social influence, perceived value and perceived usefulness, in which, perceived value had the strongest influence.

Our group would like to suggest several solutions for this research

Social influence: For attracting customers to participate in travel experiences in the simulated world - Metaverse, the most important thing that Vietravel's marketing department needs to do is celebrity endorsement. Using stars, celebrities, or influencers to become ambassadors or propagandists for tourism promotion campaigns on the Metaverse platform is really a practical solution to spread this service to many people as well as build the trust of tourists. In addition, Vietravel can also promote this new form of tourism on online social platforms such as Facebook, Instagram, or TikTok, because a large number of Vietnamese people now tend to use these social media as a useful information channel on a daily basis.

Perceived value: Perceived value has the most profound impact on the intention to join in a tourism experience on a simulated world - Metaverse. Therefore, Vietravel should incorporate restaurants and hotels located in Phu Quoc to connect with them on the Metaverse platform so that tourists can conveniently book rooms or perform other services in this simulated world. In addition, the Metaverse platform built by the Vietravel company should add online activities to increase the entertainment and attractiveness of the service. Thirdly, the website used to experience online travel in the Metaverse simulated world needs to be guaranteed to operate properly, to avoid congestion or even page crashes that lead to loss of trust in tourists.

Perceived usefulness: It is necessary for Vietravel company to seriously find out information related to the Covid-19 epidemic such as vaccine coverage, number of infections, and infected areas for tourists to be convenient and active in participating in recreational activities. In addition, the Metaverse simulation world needs a guide to directly answer questions as well as give suggestions to tourists about routes, tourist attractions, or other important information to help customers save time and money for a trip.

Moreover, the government needs to direct the Ministry of Science and Technology of Vietnam to provide experts in this field to support and advise Vietravel so that the company has more experience in this type of service. In addition, leaders of Phu Quoc City in particular and Kien Giang province, in general, ought to timely and effectively help the Vietravel company with necessary geographical, policy, and demographic information.

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THE IMPACT OF OWNERSHIP STRUCTURE ON RISK OF COMMERCIAL BANKS IN VIETNAM

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ABSTRACT

This study investigates the relationship between ownership structure and bank risk in the context of Vietnam. To answer the research question, 312 observations were collected from 26 commercial banks in Vietnam from the period from 2009 to 2020. The data for this study was gathered from the Finpro platform as well as secondary annual data from financial statements of Vietnamese commercial banks. The regression method with fixed effects is used in this thesis, the author also uses the robustness test with the lagged variable in the model (FEM) to investigate the connection between ownership structure and bank risk. Bank risk is measured by Z-score (an indicator of insolvency risk) and NPL (non-performing loan). Structure ownership is represented by State ownership (SO), Foreign ownership (FO), and Domestic ownership (DO). According to the empirical findings, the relationship between State ownership and bank risk is positive, the result is consistent with the hypothesis, with the higher percentage of state ownership, the higher risk the banks get. Whereas, Foreign ownership and risk have a significantly negative relationship. There is no evidence of a substantial relationship between Domestic ownership and bank risk.

Keywords: State ownership, For Foreign ownership, Domestic ownership, NPL, Z-score.

1. Introduction

The banking system plays a very crucial role in economic development, especially in transferring capital to the economy. A strong banking system will contribute to economic development and vice versa, the weak banking system will adversely affect the entire economy. For instance, the evidence is the consequences of the weakened banking system were verified by the Asian financial crisis in 1997, or by the world economic crisis in 2007 and 2008. After the crisis, the weak macroeconomic in Vietnam combined with the weak risk management capacity of the commercial banking system, the overdue debts and bad debts of the banks started to increase sharply over the year. In 2012, the estimated NPL ratio may reach 17.21% (SBV, 2018), much higher than the rate limited by banks.

Over the years, the operating conditions of the Vietnamese banking system have undergone tremendous changes. The first is to implement the national policy in 2005-2007, then the commercial banks have turned and the WTO accession also made foreign investors pay attention to participate in the system's Vietnamese banks, the participation rate is quite high. Then by the instructions of the Prime Minister in Decree No. 254/QĐ-TTĐ of March 1, 2012, the resolution authorizes the pressure for the restructuring of the credit institution system from 2011 to 2015. The rapid capital growth of the banks in the system in a short time has led to cross and multilateral ownership relationships between banks and companies or banks and banks. These problems lead to a large number of bankruptcies, particularly systematic risks due to liquidity problems, so an analysis of the impact of the bank's ownership structure on its risk is important, especially at this stage of the restructuring of the banking system in Vietnam.

However, the majority of studies have focused on the relationship between ownership structure and operational efficiency, only a few studies researching the impact of ownership structure on banking risks. Several research projects have looked into the relationship between ownership structure and banking risk (e.g. Garcia-Marco & Robles-Fernandez (2008); Haw et al., 2010; Berger et al., 2000, 2013; Sapienza, 2014;

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Hussain et al, 2018). All of the studies listed above focused on developed markets including Spanish, East Asia, Western Europe, the United States, and Italia. However, developing markets have not received enough attention (especially in Vietnam). In terms of studies in Vietnam, instead of considering numerous types of ownership in their link with bank risk, these studies focus on a specific type of ownership, such as state-owned or foreign-owned. And only looks at one category of risks, such as liquidity or credit risk, and does not consider the influence of ownership structure on commercial bank risk overall. Thus, to solve this gap, this study is conducted on the commercial banks in Vietnam according to a modern, comprehensive approach, which uses updating data; overcoming the limitations in the research gaps, contributing to the diversity of empirical evidence, thereby bringing academic and practical value is very necessary. This study will examine the impact of ownership structure on a bank's risk. It's classified into three types, including Domestic, Foreign, and Government, the risk selected for analysis is credit risk using the NPL variable (nonperforming loan) and the overall risk is calculated by the Z-score (an inverse measure of risk).

2. Theoretical framework

2.1. Agency theory

Various theoretical and empirical studies have been performed to investigate the factors that influence bank risk-taking. The relationship between ownership structure and risk is based on the agency theory. Alchian and Demsetz (1972) developed agency theory, which is derived from economic theory, and Jensen and Meckling continued to develop it in 1976. It is a principle that is used to explain corporate governance, which is known as a relationship between leaders such as shareholders and representatives like executives or firm managers. According to this theory, shareholders are the owners of businesses that hire people to carry out work. The company's operations are delegated by the leaders to the directors or managers, who are the shareholder's representatives. Shareholders want representatives to work in their best interests and make decisions for their mutual benefit. Representatives, on the other hand, are not required for decision-making because of the most profit for shareholders (Padilla, 2002), because they want to safeguard their job and personal interests. This agency problem in businesses can be minimized by a concentrated ownership structure, because managers are closely scrutinized and, in the event of bad performance, changed by controlling shareholders (Franks, Mayer, & Renneboog, 2001). As a result, companies with concentrated ownership are anticipated to take more risks than companies with a more dispersed ownership structure. Several empirical research on the topic has been conducted based on this theoretical foundation. Some research, such as Laeven & Levine (2009) and Haw, Ho, Hu, & Wu (2010), suggests that banks with more strong owners (i.e. concentrated ownership control) take more risks. Other research, on the other hand, finds a negative link between ownership concentration and risk, which contradicts the idea. For example, Srairi (2013) for the Middle East and North Africa; Shehzad, De Haan, & Scholtens (2010) for a sample of 50 nations averaged over 2005–2007.

2.2. Moral hazard theory

According to the moral hazard theory, government support, particularly in financial terms, might encourage state-owned companies in general and state-owned commercial banks, in particular, to take on more risk since they believe they are not responsible for the outcomes of their risk-taking. Moral hazard is defined as "the situation in which one party makes decisions on the level of risk tolerance, while the other party must suffer losses if those decisions fail," according to economist Paul Krugman (Krugman, 2009). Moreover, state-owned commercial banks are frequently the funding channel for socio-economic projects that serve the government's social aims, they are frequently required to accept additional subprime lending risks (Social lending theory) (Berger et al., 2005; Stiglitz, 1993).

3. Research method

3.1. Hypotheses development

3.1.1. State ownership

Two perspectives are used to evaluate government ownership. According to the first, state ownership of banks is supposed to maintain financial stability and improve governance. Furthermore, in developing countries, state ownership of businesses is required to revitalize both financial and economic development

and, ultimately, stimulate growth. The government achieves its social and political aims by investing in banks. When it comes to state-owned banks, the government finances strategies that create more jobs, especially when private funding is unavailable. (Porta, Lopez-de-silances, & Shleifer 2002).

Secondly, government ownership in a bank plays a major role in the development of the economy and improving social welfare. Besides the business goal, it also meets social-economic development goals. Consequently, state-owned banks might be used to raise capital for initiatives with high social returns but high risk and low rate of return or to give funding to favored organizations like state-owned corporations (Clarke et al., 2005).

Particularly, state ownership is subject to public ownership, but people do not have the power or the motivation to supervise them, so the government act as the sole representative. Because of government bureaucracy and a lack of capital market monitoring, state ownership is seen as a source of inefficiency. In more detail, agency theory provides that if agency problems can not control well, it might negatively affect bank performances and risk.

Moreover, state-owned banks during the economic downturn also compensate for the limited credit supply by increasing the supply of lending activities, that way leads to preventing market failure. As a result, it affects the relationship between state ownership and risk. Thus, in this study I suppose the following hypothesis:

H1: State ownership of banks is positively related to bank risk.

3.1.2. Foreign ownership

Foreign investors are characterized by effective management, advanced technology, high monitoring mechanisms, abundant capital, and reputation (Ehsan & Javid). A variety of researchers show that foreign banks improve human resource quality and staff productivity in developing countries by sharing their experiences. These features not only help banks with foreign ownership to have financial and capital stability but also enhance operational efficiency, and improve risk management. In addition, the spillover effects management, technology, and human resources help to reduce costs and achieve better operational efficiency (Claessens et al., 2001).

In contrast, (Kobeissi & Sun) foreign-owned banks will face difficulties from different policies, regulations, and rules in the domestic market. Additionally, they nominate foreign managers to the board of management, these managers may not capture to update the information fully, or practical conditions in the local market. It means that they will set up strategies and policies that are not appropriate, as a result, the bank's risk is directly increased. Supporting this opinion, Lee (2008) gives evidence about the relationship between banking risk and higher outsider ownership has a significantly positive relationship.

In this research, the author appreciates the positive behavior of foreign shareholders with the hypothesis

H2: Foreign-owned bank is negatively correlated to bank risks.

3.1.3. Domestic ownership

Enterprises with domestic ownership are owned by individuals or institutions entities (excluding government entities). The growth of these businesses in emerging markets is linked to the privatization of state-owned businesses after crises. Privatization is a method of reducing the government's share of capital in critical economic sectors such as services, telecommunications, and banking. This behavior implies that state-owned firms in general, and government banks in particular, are financially weak and unstable (Andrews, 2005).

Many studies have found that banks with a domestic ownership structure perform more efficiently than banks with a state ownership structure by resolving the owner-representative problem with a better management system. Furthermore, commercial banks with a large percentage of domestic investors' ownership will hire management with deep expertise in the banking sector, facilitating the development of

efficiency-enhancing measures, enhancing. At the same time, shareholders are expected to exercise tighter management control over their investment capital to assure its efficiency (Clarke, Cull, & Shirley) (2005).

The author of this study emphasizes the importance of domestic investors in minimizing information asymmetry, the agency problem, and the manager's opportunistic behavior, consequently supporting the hypothesis.

H3: the domestic-owned bank is negatively correlated to bank risks.

3.2. Research data

Banking is not only a sensitive but also an important sector in the Vietnamese economy. As a result, public information remains limited, inconsistent, and incomplete. The data for this study was gathered from secondary annual data from financial statements of Vietnamese commercial banks. Stoxplus Corporation, one of Vietnam's largest financial information service firms, provided the raw data. A data sample of 26 Vietnamese commercial banks (listed and unlisted) was collected. The information was gathered between the years 2009 and 2020.

3.3. Research model

The research model inherited from **Laeven & Levine (2009), and Bouwens & Verriest (2014)**, stated in general form:

$$Y_{it} = \alpha + \beta \cdot \text{Ownership}_{it} + \gamma \cdot \text{control}_{it} + \varepsilon$$

Where:

Y_{it} : is the level of risk measurement for bank i and year t . RISK is measured by Z-score (Risk of default) measured as the return on assets add (the equity capital/total assets) divided by the standard deviation of asset returns; NPL (Nonperforming-loan) is measured as nonperforming loan divided by total outstanding loan for 26 banks ($i=1,2,3,\dots, 26$) during the period of twelve-years from 2009 to 2020 ($t=1,2,3,\dots,26$)

Ownership_{it} : is the ownership structure of commercial banks. Include State ownership (SO), Foreign ownership (FO) and Domestic ownership (DO). It is calculated by the percentage of equity shares held by State, Foreign, and Domestic individuals and institutions compared to the total outstanding shares of the company.

Control_{it} : is a set of control variables that include (SIZE) bank size is measured by the natural logarithm of total assets, (ROA) rate of return total assets is calculated by the net profit divided by total assets, (EFF) is Effective management is measured by total expenses divided total operating income, (LDR) loan-to-deposit is calculated by total outstanding loans divided total deposits.

α : is the intercept of the model

t : refers to the year in which data is collected

ε : is the error term

i : represents the individual commercial bank

3.4. Research model

The study uses quantitative research methods to examine the impact of State, Foreign and Domestic ownership on the risk of Vietnamese commercial banks. Fixed effects regression model (FEM), and uses the robustness test with the lagged variable in the model (FEM).

4. Results and discussion

Table Error! No text of specified style in document..1: Statistical summary of variables

	Obs	Mean	Std. Dev.	Min	Max
Zscore	312	20.0844	10.979	0.3377	85.0919
NPL	312	0.01886	0.01443	0	0.114
FO	300	0.1104	0.1164	0	0.3
SO	301	0.18158	0.2748	0	1
DO	300	0.7075	0.2896	0	1
EFF	312	-0.7929	4.866	-86.3024	-0.2251
ROA	312	0.0094	0.0084	-0.0599	0.0557
SIZE	312	32.219	1.2117	28.834	34.955
LDR	312	0.9000	0.19859	0.4972	1.9929

Sources: Author's data and calculations

Table 4.1 shows descriptive data of the independent, dependent, and control variables. The mean of NPL (Nonperforming loan) is 0.01886, and its changes from a minimum value of 0 to a maximum value of 0.114. With the average being lower than 0.03, all commercial banks in Vietnam are at the safe level. Among 26 commercial banks in Vietnam, there are 3 banks with State ownership more than 51% (Joint Stock Commercial Bank for Foreign Trade of Vietnam, Vietnam Joint Stock Commercial Bank For Industry And Trade, Joint stock Commercial Bank for Investment and Development of Viet Nam). The mean State ownership is 0.18858, and the percentage of state ownership changes from 0 to 1. It means that some commercial banks have no government involvement, and some banks are 100% state-owned in previous years. The average Foreign ownership is 0.112146. The participation of foreign investors is the lowest of the three ownership groups. This indicates that bank control by foreigners is not very significant. The highest percentage of foreign ownership is 30% from Asia Commercial Joint Stock Bank, An Binh Commercial Joint Stock Bank,... and some banks don't have foreign investment. In contrast, the mean of Domestic ownership is 0.7075, which is the highest value of the three groups, and it changes from 0% to 100%.

Table Error! No text of specified style in document..2: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Z-score	1.000								
(2) NPL	0.051	1.000							
(3) SO	0.239	-0.028	1.000						
(4) FO	-0.203	-0.136	-0.085	1.000					
(5) DO	-0.146	0.081	-0.916	-0.321	1.000				
(6) EFF	0.112	0.072	0.013	0.035	-0.026	1.000			
(7) SIZE	-0.106	-0.071	0.336	0.508	-0.523	0.071	1.000		
(8) LDR	0.375	-0.051	0.174	-0.049	-0.145	0.098	-0.099	1.000	
(9) ROA	0.125	-0.065	0.099	0.111	-0.138	0.489	0.013	0.295	1.000

Sources: Author's data and calculations

Table 4.2 shows the Pearson's pairwise correlation coefficients for independent variables used in regression models in order to see if there are any strongly connected variables. The majority of correlation coefficients between variables are pretty low and not significant. The largest correlation coefficient value is 0.508 for a positive correlation between SIZE (bank size) and FO (foreign ownership). Because they are smaller than 0.7, so the processing of multi-collinearity may not occur (Kennedy, 2008).

Table Error! No text of specified style in document..3: Regression results

VARIABLES	NPL (1)	NPL (2)	NPL (3)	ZSCORE (4)	ZSCORE (5)	ZSCORE (6)
SO	-0.006 (-0.5)			-15.945** (-4.02)		
FO		-0.037* (2.66)			16.19* (3.57)	
DO			0.026 (2.47)			2.48 (3.57)
EFF	0.000 (1.03)	0.000 (0.87)	0.000 (0.8)	-0.23*** (-3.29)	-0.22*** (-3.17)	-0.22*** (-3.1)
SIZE	-0.007** (-2.31)	-0.005* (-1.7)	-0.006* (-1.99)	-10.2*** (-9.92)	-10.79*** (-10.19)	-9.90*** (-9.29)
LDR	0.004 (0.74)	0.006 (1.17)	0.006 (1.1)	16.89*** (9.73)	15.67*** (8.83)	16.92*** (9.34)
ROA	-0.050 (-0.32)	-0.02 (-0.13)	-0.02 (-0.13)	356*** (7.05)	336*** (6.58)	353.4*** (6.76)
OBSERVATION	300	299	299	300	299	299
R-SQUARED	0.05	0.07	0.04	0.005	0.02	0.03
YEAR DUMMIES	YES	YES	YES	YES	YES	YES

Table 4.3 shows the regression results. Columns 1 to 3 show the results with NPL, and columns 4 to 6 show the results with Z-score. Firstly, with NPL, according to the findings, state ownership has no meaningful impact on NPL. Government ownership gives the opposite result of hypothesis H1, with the correlation coefficient between state ownership and bank risk-taking is (-0.006), but the results are not statistically significant. Thus, hypothesis H1 is not able to accept. Another assumption is that, in the example of Vietnam, there are a number of factors that may influence the relationship between government ownership and loan quality in a positive way. These forces may cancel out the negative effects of government ownership that have been documented in prior research, resulting in a negligible effect. To begin with, compared to domestic-owned banks, state banks have the advantage of lending to larger companies and companies that are subsidized by the government. Those businesses usually have lower risk profiles. Moreover, because of the importance of state-owned banks to the stability of the banking system and the economy as a whole, the State Bank of Vietnam regularly monitors its NPL ratio. This makes state banks less likely to take on excessive credit risk. (Phan, 2021). as can be seen from the table, State ownership, the first variable in ownership structure, is considered negative in relationship to Z-score with a correlation coefficient is -15.94, (t-statistic -4.02) at a 1% significant level. This result supports the H1 hypothesis by indicating that banks with higher state ownership will increase risk. A possible explanation is that, in the case of Vietnam, managers may be encouraged by political motivations to finance government enterprises or to conduct social programs. Our findings support those of prior research (Berger et al., 2005; Lassoued, Sassi, & Attia, 2016; Iannota et al., 2013).

For foreign ownership, as can be seen in Table 4.3, the regression coefficient of the foreign investor variable is negative at the 1% significance level, showing that foreign ownership has a negative relationship with risk. Specifically, in the model of the impact of NPL, the estimated coefficient of the foreign ownership variable is (-0.0366) at the 5% significant level. This can imply that foreign shareholders can improve loan quality and reduce credit risk. This result supports H2 and is consistent with previous studies (Pham, 2021) (Lassoued et al., 2015). The coefficient for Foreign ownership is positive (16.188) with Z-score and statistically significant at 1%, implying that foreign involvement lessened risk-taking and vice versa. It is consistent with agency theory, which emphasizes the conflict of interest between foreign shareholders and managers, that the difficulties in managing managers of enterprises with a majority of foreign owners may lead to bank managers being more risk-averse. This result is similar to previous studies such as Chou and Lin (2011) found that foreign banks are less risky and that foreign ownership of institutions is connected with a lower number of overdue loans in a sample of Taiwanese banks.

Surprisingly, the findings show that the correlation coefficient of domestic ownership (DO) with the non-performing loan (NPL) is positive (0.026) at a 5% level. Back to hypothesis H3, there is enough evidence to reject there is a significantly negative relationship between domestic ownership and bank risk. This result is also consistent with previous research results of Unite & Sullivan (2003). But with the Z-score dependent variable, there is no effect between domestic ownership and default risk.

Table Error! No text of specified style in document..4: FEM model with robust standard errors regression test

VARIABLES	NPL (1)	NPL (2)	NPL (3)	ZSCORE (4)	ZSCORE (5)	ZSCORE (6)
SO	-0.006 (-0.05)			-15.945** (-2.38)		
FO		-0.004* (-1.88)			16.19* (1.97)	
DO			0.026 (1.63)			2.48 (0.54)
EFF	0.000 (1.03)	0.000 (1.13)	0.000 (1.63)	-0.23*** (-3.2)	-0.22*** (-2.96)	-0.22*** (-3.01)
SIZE	-0.007 (-1.43)	0.000 (-1.17)	-0.006 (-1.39)	-10.2*** (-4.92)	-10.7*** (-4.73)	-9.91*** (-4.6)
LDR	0.004 (0.52)	0.01 (0.85)	0.006 (0.74)	16.89*** (4.89)	15.67*** (4.16)	16.92*** (4.37)
ROA	-0.050 (-0.28)	-0.02 (-0.01)	-0.02 (-0.11)	356*** (4)	336*** (3.61)	353.4*** (3.85)
OBSERVATION	300	299	299	300	299	299
R-SQUARED	0.05	0.07	0.04	0.005	0.02	0.03

This content does some more analysis to evaluate the reliability of the results recorded in the previous content. Additional tests are shown in table 4.4 to guarantee the robustness of our findings. The result presents that The state ownership and foreign ownership variable have similar results to the previous test. Domestic ownership, on the other hand, is insignificant (column 3).

Table Error! No text of specified style in document..5: Robustness checks

VARIABLES	NPL (1)	NPL (2)	NPL (3)	ZSCORE (4)	ZSCORE (5)	ZSCORE (6)
SO _{T-1}	-0.02 (-1.46)			-8.98** (-1.82)		
FO _{T-1}		-0.04** (-2.88)			9.67** (2.32)	
DO _{T-1}			0.04***			0.1945

			(3.50)			(0.06)
EFF	0.000 (0.69)	0.000 (0.85)	0.000 (0.82)	-0.23*** (-3.61)	-0.25*** (-3.85)	-0.24*** (-3.72)
SIZE	-0.010** (-2.74)	-0.01** (-2.03)	-0.01** (-2.42)	-11.46*** (-10.51)	-11.84** (-10.70)	-11.39*** (-10.32)
LDR	0.003 (0.49)	0.006 (0.93)	0.005 (0.85)	14.65*** (8.21)	14.12*** (7.86)	14.7*** (8.15)
ROA	0.0025 (0.01)	-0.003 (-0.02)	0.005 (0.03)	375*** (7.59)	378*** (7.66)	378*** (7.58)
OBSERVATION	277	276	276	277	276	276
R-SQUARED	0.04	0.06	0.03	0.003	0.002	0.0043
YEAR DUMMY	YES	YES	YES	YES	YES	YES

To check the main conclusion, a robustness test is performed. The author uses one-year lagged independent variables instead of contemporaneous ones in the regression to give an explanation for the potential issue of endogeneity (i.e., The NPL ratio and Z-score can also cause changes in the bank's ownership structure). Table 4.5 illustrates that the conclusion is still valid. The coefficient for lagged State ownership is negative (-8.98) and is significant at 5%. With lagged Domestic ownership, it is significant (column 3) at 1% and has a positive correlation coefficient. Finally, with lagged Foreign ownership, it is statistically significant at 5% level and has a negative coefficient with NPL, and in column 5 the foreign ownership coefficient is positive and has statistically significant at 5%. To sum up, Table 4.5 shows that the experimental results are consistent with earlier findings with different research methods. This adds to the credibility of the research.

5. Conclusion

The economic literature indicates that conflicts between shareholders and managers may influence commercial banks' risk-taking behavior, based on the agency theory. The purpose of this study is to examine the impact of ownership structure on risk-taking in Vietnamese commercial banks. This research is looking into how the presence of state ownership, foreign ownership, and domestic ownership may affect bank risk in Vietnam. The study's findings aid in a better understanding of the relationship between commercial banks' ownership structure and risk in Vietnam. In this research, the fixed-effect model (FEM) and the robustness test with the lagged variable in the model (FEM) are used to determine the relationship between ownership structure and bank risk. An unbalanced panel data of 26 commercial banks from 2009 to 2020 in Vietnam is used. Z-score (an inverse measure of risk) and NPL are used as risk-taking variables, while state ownership, foreign ownership, and domestic ownership are taken as ownership structures. The outcome suggested there is a relationship between ownership structure and the bank's risk. The empirical findings show a positive association between state ownership and bank risk, which supports the claim that the larger the amount of state ownership, the higher the risk for banks. Foreign ownership, on the other hand, has a considerable negative link with risk. There is no evidence that domestic ownership has a significant impact on bank risk.

The findings of this study have a number of major consequences for policymakers. Firstly, banks with high state ownership will aid in the achievement of political and social security objectives. To avoid the bank needing to take excessive risks and causing instability, the state must also maintain a level of harmony in creating value for shareholders and implementing socio-political goals. Secondly, pursuing privatization of state equity policy is the best strategy for increasing transparency and robustness in the banking system, ensuring fair competition, and reducing moral hazard issues. Thirdly, according to my research, foreign ownership reduces bank risk on average (NPL and overall risk). As a result, greater foreign investments in local Vietnamese banks should be encouraged in order to improve risk-taking behavior, notably in the area of credit risk. Despite the Vietnamese government's increasing openness to foreign investors, foreign ownership in the banking sector is still restricted by law. In the case of commercial banks in Vietnam, an individual foreign investor cannot control more than 5% of the company, an institution foreign shareholder can not

control more than 15%, and the percentage of a strategic shareholder is not exceed 20%, while overall foreign ownership is limited to 30%. In the future, this ceiling should be raised to allow for more foreign ownership.

Despite the fact that research questions have been answered and an understanding of the relationship between ownership structure and bank risk has been provided, there are still drawbacks that must be addressed in the future. To begin, the data used in the analysis is derived from the Fiinpro platform, as well as secondary annual data from Vietnamese commercial banks' financial statements. However, some banks lack data, they are omitted from the research sample, limiting the research results to only 26 commercial banks over the period 2009 to 2020. Secondly, the study only uses the FEM model and robustness test to solve the issue of endogeneity, it will be better if use more tests such as GLS, and GMM. Finally, this study only considers 3 types of ownership structures state ownership, foreign ownership, and domestic ownership. But many other ownership characteristics that also affect bank risk like institution ownership, and concentrated ownership, as a result, it's tough to draw detailed conclusions.

Appendix

Table Error! No text of specified style in document..6: List of banks

No	Ticker	Name	No	Ticker	Name
1	ABB	An Binh Commercial Joint Stock Bank	14	OCB	Orient Commercial Joint Stock Bank
2	ACB	Asia Commercial Bank	15	PGB	Petrolimex Group Commerical Joint Stock Bank
3	BAB	Bac A Commercial Joint Stock Bank	16	SCB	Sai Gon Commercial Joint Stock Bank
4	BID	Bank for Investment and Development of Vietnam	17	SEAB	Southeast Asia Commercial Joint Stock Bank
5	CTG	Vietnam Joint Stock Commercial Bank For Industry and Trade	18	SGB	Saigon Bank for Industry and Trade
6	EIB	Vietnam Export Import Commercial Joint Stock Bank	19	SHB	Saigon- Hanoi Commercial Joint Stock Bank
7	GDB	Viet Capital Commercial Joint Stock Bank	20	STB	Saigon Thuong Tin Commercial Joint Stock Bank
8	HDB	Ho Chi Minh Development Joint Stock Commercial Bank	21	TCB	Vietnam Technological and Commercial Joint Stock Bank
9	KLB	Kien Long Commercial Joint Stock Bank	22	TPB	Tien Phong Commercial Joint Stock Bank
10	LPP	Lien Viet Post Commercial Bank	23	VAB	Viet A Commercial Joint Stock Bank
11	MBB	Military Commercial Joint Stock Bank	24	VCB	Joint Stock Commercial Bank for Foreign Trade of Vietnam
12	NAB	Nam A Commercial Joint Stock Bank	25	VIB	Vietnam International Commercial Joint Stock Bank
13	NVB	Nam Viet Commercial Joint Stock Bank	26	VPB	Vietnam Commercial Joint Stock Bank for Private Enterprise

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EFFECTS OF FINANCIAL DEVELOPMENT ON TRADES IN GREEN GOODS: INTERNATIONAL EVIDENCE

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ABSTRACT

This paper is an attempt to empirically examine the influences of financial development (FD) on the trade in green goods (TGG). Based on various econometric techniques applied to a global sample of 85 developing countries and 34 developed countries during the 2001-2018 period, the findings show a slight effect of financialization on the trade value of green products whose indices were drawn from the Financial Development Index database. We find robust results by utilizing various econometric techniques and adding more explanatory variables. Furthermore, there is evidence on the long-term cointegration between financial development and TGG and our results confirm its effects in the long term. Finally, we examine the relation between two samples: developing as well as developed countries, but there is a pronounced difference in the importance of both financial institutions, particularly in developing countries. Finally, in economies with fully developed financial systems, the impact of uncertainty or risk on TGG value becomes less significant.

Keywords: Economic complexity, trade in green goods, global uncertainty, global sample.

1. Introduction

Environment is considered to be one of the five biggest threats to global health and the environment in accordance with the UNFCCC (2017) since environmental issues are capable of seriously impacting human health and the environment. Climate change and environmental degradation, for instance, might result in extraordinary risks, such as glacier melting, extreme weather conditions, unpredictable rainfall, the extinction of species, a decrease in agricultural productivity, food shortages, and a rapid decline in water availability (Dong et al., 2019; Shahbaz et al., 2018). Global attention has already been drawn to the need for a sustainable environment. Energy efficiency and pollution reduction are regarded vital to the modern world and critical determinants of any economy's long-term growth (Lyu, Khan, Zakari & Bilal, 2021; Zahoor, Khan & Hou, 2021; Zakari & Khan, 2021a; Zakari, Khan, Tan, Alvarado & Dagar, 2022).

In the contemporary setting of rising industrialization and urbanization, environmental conservation is more crucial than ever (Patnaik, 2018). According to some academics, a healthy natural environment is both desirable and necessary for businesses (Starik & Rands, 1995). Companies are increasingly aware of the importance of environmental preservation in strengthening their reputation and gaining a lasting competitive advantage, and they consider it a requirement of their operations (Farhadi, Ismail & Fooladi, 2012; Kim, 2018; Singh, Chen, Del Giudice & El-Kassar, 2019; Yadav & Iqbal, 2021). Firms keep a close eye on some environmental challenges, such as ecosystem conservation, air quality, resource sustainability, and maintaining a clean and healthy environment (Zelazna, Bojar & Bojar, 2020). Many business executives know that applying environmental standards to their operations has a positive and significant impact on their expenses, reputation, competitive advantage, and profit (Liu, Koehler, Gailhofer, Gensch & Wolff, 2019). As a result, many businesses have developed practical solutions such as workplace recycling, fostering green communities, forming sustainability committees, and adopting new digitization trends. However, there still exist problems, for example, although European countries have made significant progress in reducing greenhouse gas emissions and strengthening environmental protection over the last two decades, they still face significant environmental challenges, such as biodiversity loss, climate change effects, and natural resource exhaustion.

According to economic theory (e.g. King and Levine, 1993), financial development (FD) is a significant driver of economic development. It is crucial in the transmission of funds and provision of

financial services (Levine, 1999). The policies, circumstances, and institutions that contribute to efficient intermediation and effective financial markets are referred to as financial development. The benefits of a healthy financial system include risk diversification and efficient capital allocation. As financial development is enhanced, it will be easier to mobilize savings and deploy them to high-return investments. According to Levine (1993), the financial sector plays a significant role in economic development.

Given the negative effects of trade, it might be claimed that building a green economy will aid in reducing environmental damage and achieving carbon neutrality (UNEP, 2011). In other words, sustainable development and environmental protection are essential components of a green economy. The function of trade in green goods (TGG) as a strategy of lowering pollution while promoting economic growth by shifting manufacturing from pollution-intensive to pro-environmental items and fostering technical innovation is gaining traction in the literature (Zugravu-Soilita, 2018). In this study, we examine the effects of financial development.

2. Theoretical framework

In most trade studies, there is a complex relationship between financial development and trade, as evident in a variety of indicators that have been used to measure the degree of financial development, such as the ratio of loans to the private sector to GDP (Beck 2002 and 2003; Hur et al. 2006); Menyah et al. 2014; Kim et al. 2011); and stock market capitalization to GDP (Beck 2003, Kim et al. 2011). These indicators have also been applied to estimates of exports and imports (Beck, 2002; Becker et al.2013), trade balances (Hur et al, 2006, Beck 2002) and openness to trade (Kim et al.2011; Menyah et al. 2014), other variables have also been taken into account.

The impact of financial markets on industrial specialization trends and international competitiveness was examined by Svaleryd and Vlachos (2005) using data from OECD countries. Nevertheless, some studies have found that financial impacts on commerce are weak or inconclusive (Menyah et al., 2014; Sare et al., 2019). The impact of financial markets on industrial specialization trends and international competitiveness was examined by Svaleryd and Vlachos (2005) using data from OECD countries. Across the board, countries with well-functioning financial systems specialize in businesses that rely substantially on external money, whereas countries with poorly-functioning financial systems concentrate on businesses that rely on internal financing. Therefore, the Heckscher-Ohlin-Vanek (HOV) model suggests that the financial sector represents a source of competitive advantage (see Vanek, 1968). It was found by Hur et al. (2006) that there is a link between financial development, asset tangibility, and international trade. According to the authors, the relationship between financial development and the tangibility of assets affects patterns of international trade. The study examined 27 industries in 42 countries, to determine the degree to which enterprises rely on external funding and the tangible nature of their assets. In industries with a greater number of intangible assets, countries with higher levels of financial development observe higher export shares and trade balances.

Using data for 87 OECD and non-OECD countries covering 1960-to 2005, Kim et al. (2010) examined the long- and short-run correlations between financial development and trade openness. Based on empirical findings, the authors conclude that the development of financial markets has little impact on trade within OECD countries. *The financial development and trade openness of non-OECD countries, on the other hand, exhibit long-term complementarity and short-run substitutability.* Therefore, emerging economies benefit more from financial development than developed economies. *In their study, Sare et al. (2019) investigated the impact of financial development on international commerce in 46 African countries over the period 1980-2016.* Their findings indicate that there is no significant effect of the expansion of the banking sector on international trade either over the short term or over the long term. After accounting for transmission channels, they discover that finance and trade do not substitute in the long run.

Several empirical results have depicted the non-linear effects of FD on economic development as an inverted-U shape (Asimakopoulos et al., 2019; Botev et al., 2019). Asimakopoulos et al. (2019) observed that bigger FD had a reduced positive or insignificant impact on innovation from 1990 to 2016, whereas

innovation had an inconsequential positive impact on production growth when private sector credit exceeded a threshold of around 60%. (of GDP). It is important to note that FD only enables official economic activity at a low level until a specific threshold is reached (Botev et al., 2019). After this stage, FD may be hazardous to official economic operations due to the danger of overdevelopment.

Based on our discussion, we hypothesize:

H1: Financial development has a positive influence on the trade in green goods.

H2: The effect of financial institution development is more sizable than those of financial market development.

H3: The effect of financial development in the developing countries is more sizable than those in the developed countries.

3. Research method

In order to develop the model for investigating the relationship between financial development (FD) and trade in green goods (TGG), we have drawn upon both environmental and international trade literature.

$$\ln TGG_{it} = \beta_0 + \beta_1 FINANCE_{it} + \beta_3 CONTROL_{it} + \varepsilon_{ijt} \quad (1)$$

There are two subscripts i and t , which represent country i and year t , respectively.

Trade in Green Goods (TGG):

TGG is the value of export of EGs. *The six-digit level of the Harmonized System (HS 2007), which is part of the UN Comtrade database, was used to obtain data on bilateral trade in APEC products. We have expressed all values in the current USD. In order to cover the period 1996-2019, the United Nations Trade Statistics changed the HS codes from HS 2007 to HS 1996 in order to compile the list on the APEC.*

Key explanatory variable: Financial Development

The key independent variable $FINANCE_{it}$ in this paper is the overall financial index (LFD) measured based on two sub-indices of financial development, including financial institutions (LFI) and financial markets (LFM). We analyze these two sub-indices in three different aspects, including depth, access, and efficiency (for financial institutions (LFID, LFIA, LFIE, respective) and financial markets (LFMD, LFMA, LFME, respectively)). These variables are available from the IMF.

$CONTROL_{it}$ is the set of control variables that the selection is based on previous works in the literature, such as Allard et al. (2016), Aslam et al., (2017), and Efogo (2020). Specifically, we incorporate the income level (INC) measured by the real gross domestic product (GDP) per capita at the constant 2010 US dollars, the level of industrialization (IND) measured as a share of value-added in the industry sector to GDP, nature rents (NR) measured as a share of the sum of coal rents, mineral rents, natural gas rents, and forest rents, human capital (HDI) captured by the human capital index, level of democratization (DM), net inflow of foreign direct investment (FDI), tax rate (TAX), which is total tax and contribution tax rate measured a share of profits, and government effectiveness level (PS) captured by the government effectiveness index. Except for the variable DM collected from the Finnish Social Science Data Archive (FSSDA) and PS collected from the World Bank Group Indicator (WBGI), we source the remaining control variables from the World Development Indicator (WDI).

After merging and cleaning the country database, our final sample includes 119 countries, including 85 developing and 34 developed countries for the period 2000 – 2018. Table 1 presents a statistical description of all variables. Table 2 provides an overview of the correlation matrix between all variables. It was found that financialization and TGG are positively correlated.

From an econometric perspective, our study firstly employs the cross-sectional dependence (CD) tests developed by Pesaran (2021) to check for the existence of CD issues in our sample. We then use the Levin-Lin-Chu unit root test (Levin et al., 2002) and Im-Pesaran-Shin unit root test (Im et al., 2003) to test the stationarity of the data in the presence of CD. Table 3 presents the results of the test, which indicate that CD

is present among the variables included in the analysis. It appears that some variables may be stationary according to the Levin-Lin-Chu unit root tests and the Im-Pesaran-Shin unit root tests. Similarly, the first difference between the included variables is also tested, and the stationarity of the pair of variables is confirmed.

The panel corrected standard error (PCSE) model is suggested by Beck & Katz (1995) and Nguyen et al. (2020) as an appropriate model to be applied to the sample data due to a large number of countries (N) and short-time-interval (T), as well as the presence of CD and the stationarity of first-difference variables. Further, the one-year lag of each of the independent variables is used to account for endogenous effects associated with the simultaneity of financial variables and TGG variables. Canh & Thanh (2020) and Liao & Cao (2013) employ the feasible generalized least squares (FGLS) model to resolve heteroscedasticity, while Gala et al. (2018; Nguyen et al., 2020; Sweet & Eterovic, 2019) employ the two-step GMM to resolve endogeneity. As part of this study, another emphasis is placed on investigating the relationship between financialization and TGG in the long and short term. Attempts are made to achieve this objective by using the autoregressive distributed lag (ARDL) method (Pesaran & Smith, 1995). In order to verify the accuracy of the estimation process, a similar procedure was repeated for subsamples split by income levels. We first investigate the existence of cointegration between these two variables by applying a variety of tests, including Kao cointegration, Pedroni cointegration, and Westerlund cointegration. This is a collection of cointegration tests that have been widely used in the literature, developed respectively by Kao (1999), Pedroni (2004), and Westerlund (2005). This analysis indicates long-term cointegration between financial variables and TGG based on the results of Table 4.

Table 1: Description of variables

Variable	Definition	Measure	Source	Obs	Mean	SD	Min	Max
LnTGG	Trade in green goods values	A natural logarithm of TGG values	UN Comtrade	2261	11.41	3.16	2.42	19.11
LFD	The composite financial development index	A natural logarithm of composite financial development index	FD-IMF	2261	-1.51	0.77	-3.55	-0.05
LFI	Financial institutions development	A natural logarithm of financial institutions development	FD-IMF	2261	-1.13	0.58	-3.06	-0.04
LFM	Financial markets development	A natural logarithm of financial markets development	FD-IMF	2185	-3.05	2.72	-24.52	-0.05
LFID	Financial institution depth	A natural logarithm of financial institution depth	FD-IMF	2261	-2.03	1.31	-11.65	0.00
LFIA	Financial institution access	A natural logarithm of financial institution access	FD-IMF	2261	-1.73	1.28	-5.45	0.00
LFIE	Financial institution market efficiency	A natural logarithm of financial institution market efficiency	FD-IMF	2261	-0.59	0.27	-2.15	-0.19
LFMD	Financial market depth	A natural logarithm of financial market depth	FD-IMF	2185	-2.77	2.44	-23.54	0.00
LFMA	Financial market access	A natural logarithm of financial market access	FD-IMF	1558	-2.19	1.76	-6.19	0.00
LFME	Financial market efficiency	A natural logarithm of financial market efficiency	FD-IMF	1216	-1.92	1.90	-11.07	0.00
INC	Real output growth	A natural logarithm of real GDP per capital (constant 2010 US dollars)	WDI	2260	8.32	1.46	5.35	11.24
IND	Industrialization level	Value-added of industry sector to GDP	WDI	2259	27.17	10.70	3.24	72.15
NR	Natural rents	Share of the sum of coal rents, mineral rents, natural gas rents, and forest rents to GDP (%)	WDI	2261	7.00	10.08	0.00	58.65
HDI	Human capital	Log of human capital index.	WDI	2261	0.68	0.16	0.26	0.95
DM	Democratization level	Index of democratization	FSSDA	2261	0.45	0.25	0.03	0.89
FDI	Net inflow of foreign direct investment	Proportion of GDP	WDI	2119	-0.02	0.21	-2.92	1.61
TAX	Tax rate	Total tax and contribution tax rate (as the share of profit)	WDI	1604	48.87	39.00	7.40	339.10
PS	Government effectiveness level	Government effectiveness index	WBGI	1640	5.65	2.28	0.70	10.00

Note: WDI: World Development Indicator; FSSDA: Finnish Social Science Data Archive; WBGI: World Bank Group Indicator.

Table 2: Correlation coefficients

	(1)														
	LnTGG	LFD	LFI	LFM	LFID	LFIA	LFIE	LFMD	LFMA	LFME	LINC	IND	NR	HDI	PM
LnTGG	1														
LFD	0.719***	1													
LFI	0.623***	0.902***	1												
LFM	0.636***	0.908***	0.662***	1											
LFID	0.549***	0.855***	0.910***	0.664***	1										
LFIA	0.527***	0.747***	0.869***	0.515***	0.677***	1									
LFIE	0.391***	0.521***	0.528***	0.442***	0.408***	0.269***	1								
LFMD	0.596***	0.902***	0.726***	0.910***	0.771***	0.533***	0.439***	1							
LFMA	0.407***	0.741***	0.531***	0.840***	0.527***	0.471***	0.333***	0.698***	1						
LFME	0.696***	0.695***	0.449***	0.789***	0.428***	0.306***	0.341***	0.685***	0.449***	1					
LINC	0.554***	0.797***	0.814***	0.627***	0.757***	0.783***	0.255***	0.664***	0.545***	0.416***	1				
IND	0.0198	-0.101***	-0.255***	0.0298	-0.301***	-0.157***	-0.0336	-0.0125	0.0557	0.109***	-0.0377	1			
NR	-0.222***	-0.181***	-0.311***	-0.0535	-0.369***	-0.185***	-0.179***	-0.0583*	-0.0162	-0.0132	-0.0601*	0.756***	1		
HDI	0.581***	0.780***	0.825***	0.594***	0.754***	0.823***	0.286***	0.624***	0.525***	0.370***	0.937***	-0.124***	-0.170***	1	
PM	0.207***	0.384***	0.543***	0.182***	0.562***	0.468***	0.103***	0.260***	0.114***	0.0571	0.489***	-0.516***	-0.532***	0.495***	1

*, **, *** are significant levels at 10%, 5%, and 1%, respectively.

Table 3: Cross sectional dependence tests and stationary tests

Variable (in level)	CD-test, (2004)	Pesaran	Levin-Lin-Chu unit-root test	Im-Pesaran-Shin test (Z-bar)	Variable (in difference)	Levin-Lin-Chu unit-root test	Im-Pesaran-Shin test (Z-bar)
LnTGG	371.27***		-11.30***	-5.22***	D LnTGG	-11.31***	-5.22***
LFD	145.23***		-6.69***	-3.31***	DLFD	-17.45***	-23.48***
LFI	157.26***		-6.92***	-2.12**	DLFI	-17.06***	-23.09***
LFM	25.85***		-10.45***	-3.55***	DLFM	-17.32***	-20.20***
LFID	153.85***		-9.39***	-0.36	DLFID	-18.84***	-22.84***
LFIA	166.5***		-8.28***	7.89	DLFIA	-7.53***	-12.55***
LFIE	21.66***		-12.94***	-9.66***	DLFIE	-25.78***	-25.77***
LFMD	59.51***		-8.47***	-4.39***	DLFMD	-21.15***	-24.49***
LFMA	12.24***		-5.39***	-5.92***	DLFMA	-16.15***	-24.15***
LFME	9.81***		-19.64***	-8.87***	DLFME	-29.42***	-23.52***
LINC	258.34***		-4.35***	10.55	DLINC	-17.84***	-14.98***
IND	40.14***		-5.43***	-1.69**	DIND	-19.34***	-21.19***
NR	84.69***		-6.72***	-2.95***	DNR	-19.25***	-21.20***
HDI	361.358***		-6.02***	3.63	DHDI	-14.57***	-18.78***
PM	17.71***		-1.15	1.47	DPM	-17.67***	-21.44***

Note: Regarding the CD test, the null hypothesis is that the cross-section is independent. P-value is closed to zero, implying that data are correlated across panel groups. Regarding the Levin-Lin-Chu unit-root and Im-Pesaran-Shin test, the null hypothesis is “All panels contain unit root” and the alternative hypothesis is “At least one panel is stationary”.

*, **, *** are significant levels at 10%, 5%, and 1%, respectively

Table 4: Cointegration test

Model: f(LnTGG and FD)	Kao test	Pedroni test	Westerlund test
	Dickey-Fuller test	Phillips-Perron t	Variance ratio
FD	-5.92***	-5.94***	6.16***
FI	-5.77***	-5.09***	3.46***
FM	-8.28***	-5.11***	13.53***

Note: Regarding the Kao test, the null hypothesis is “No cointegration”, while the alternative hypothesis is “All panels are cointegrated”. Regarding the Pedroni test, the null hypothesis is “No cointegration”, while the alternative hypothesis is “All panels are cointegrated”. Regarding the Westerlund test, the null hypothesis is “No cointegration”, while the alternative hypothesis is “Some panels are cointegrated”.

4. Empirical results

4.1. Baseline results

The correlation between financial development (FD) and green goods trade values (TGG) is investigated in this study. Table 5 summarizes the estimation results. In our estimating model, financialization is statistically significant and positive. This finding is consistent when we apply various econometric models, including the PCSE estimate, PCSE estimate with more variables, the FGLS estimate, and the two-step GMM estimate. This implies that higher values of financialization increase the scale of TGG, hence confirming Hypothesis H1. When considering effects of the specific type of financialization, including financial development (FD), financial markets development (FM), financial institutions development (FI), the estimation results indicate the positive link between these four variables and TGG when studying subsamples of developing and developed countries. However, their marginal effects obtained from different robustness checks are not consistent. Results obtained from the FGLS estimate suggest that the marginal effects of FD are stronger than those of FM and FI in both developing and developed countries, whereas the results from the two-step GMM are more likely to emphasize the impact of FI on TGG. Therefore, we cannot draw the conclusion regarding a comparison between magnitude effects of FD, FI and FM.

Table 5: The effects of financialization on trades in green goods: Full sample

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	PCSE estimate			PCSE estimate with more variables			FGLS estimate			Two-step GMM		
	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG
L.LFD	2.72*** (0.109)			2.82*** (0.187)			2.72*** (0.095)			0.79* (0.435)		
L.LFI		2.01*** (0.158)			2.07*** (0.278)			2.01*** (0.150)			0.70* (0.402)	
L.LFM			0.26*** (0.028)			0.21*** (0.021)			0.26*** (0.019)			0.02* (0.014)
L.LINC	0.23*** (0.034)	0.21*** (0.032)	0.38*** (0.029)	0.24*** (0.065)	0.23*** (0.051)	0.48*** (0.033)	0.23*** (0.068)	0.21*** (0.075)	0.38*** (0.072)	-0.21 (0.414)	-0.13 (0.425)	-0.10 (0.172)
L.IND	0.09*** (0.005)	0.10*** (0.005)	0.08*** (0.005)	0.10*** (0.004)	0.09*** (0.005)	0.08*** (0.006)	0.09*** (0.005)	0.10*** (0.006)	0.08*** (0.005)	0.01 (0.015)	0.01 (0.016)	0.02*** (0.007)
L.NR	-0.07*** (0.005)	-0.08*** (0.005)	-0.09*** (0.007)	-0.08*** (0.007)	-0.07*** (0.006)	-0.09*** (0.009)	-0.07*** (0.005)	-0.08*** (0.006)	-0.09*** (0.006)	0.03* (0.014)	0.03** (0.015)	-0.01 (0.007)
L.HDI	2.61*** (0.511)	3.86*** (0.560)	4.77*** (0.499)	2.30*** (0.280)	3.79*** (0.415)	4.35*** (0.427)	2.61*** (0.596)	3.86*** (0.696)	4.77*** (0.638)	6.94** (2.901)	7.66** (3.130)	1.30 (1.556)
L.PM	0.11 (0.108)	-0.01 (0.123)	0.41*** (0.109)	0.30 (0.217)	0.07 (0.238)	0.40** (0.188)	0.11 (0.199)	-0.01 (0.227)	0.41* (0.218)	-1.12* (0.653)	-1.32* (0.734)	0.83* (0.451)
L.FDI				-0.05 (0.164)	-0.33 (0.208)	-0.23 (0.224)						

L.TAX				0.01***	0.00***	0.01***							
				(0.001)	(0.001)	(0.002)							
Observations	2,140	2,140	2,069	1,423	1,423	1,372	2,140	2,140	2,069	2,140	2,140	1,838	
Number of countries	119	119	115	116	116	112	119	119	115	119	119	115	

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In the further analysis, we examine the impact of the size of financialization on trades in green goods (TGG) for full samples. Overall, the results indicate that financialization variables are statistically significant and positive. However, the effects of Financial Development (FD), Financial institutions development (FI), Financial markets development (FM) on TGG obtained from PCSE estimate, PCSE estimate with more variables and FGLS estimate are stronger than those from Two-step GMM. Notably, FD and FI have the most impact on TGG on PCSE estimate with more variables, whereas the effect of FM is the largest on PCSE estimate and FGLS estimate. Moreover, the influence of FM on TGG is considerably smaller than that of FD and FI. Particularly, the coefficients of FM on TGG on PCSE estimate, PCSE estimate and Two-step GMM are 0.26, 0.21, 0.26 and 0.02 respectively, compared to 2.72, 2.82, 2.72 and 2.79 of FD, and 2.01, 2.07, 2.01 and 0.70 of FI.

Table 6: The effects of depth, access, and efficiency of financial market and financial institution on trades in green goods

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	PCSE estimate						FGLS estimate					
VARIA BLES	lnTG G	lnTG G	lnTG G	lnTG G	lnTG G	lnTG G	lnTG G	lnTG G	lnTG G	lnTG G	lnTG G	lnTG G
L.FID	0.66 ***						0.66 ***					
	(0.02 7)						(0.04 4)					
L.FIA		0.19 ***						0.19 ***				
		(0.04 4)						(0.07 2)				
L.FIE			1.87 ***						1.87 ***			
			(0.21 0)						(0.16 4)			
L.FMD				0.21 ***						0.21 ***		
				(0.02 7)						(0.02 0)		
L.FMA					0.33 ***						0.33 ***	
					(0.01 3)						(0.03 4)	
L.FME						0.72 ***						0.72 ***
						(0.01 7)						(0.02 9)
L.LINC	0.24 ***	0.48 ***	0.41 ***	0.40 ***	0.56 ***	0.34 ***	0.24 ***	0.48 ***	0.41 ***	0.40 ***	0.56 ***	0.34 ***
	(0.02 3)	(0.02 1)	(0.02 6)	(0.03 0)	(0.02 9)	(0.04 1)	(0.07 3)	(0.07 5)	(0.07 3)	(0.07 4)	(0.08 0)	(0.11 6)
L.IND	0.08 ***	0.08 ***	0.08 ***	0.08 ***	0.08 ***	0.07 ***	0.08 ***	0.08 ***	0.08 ***	0.08 ***	0.08 ***	0.07 ***
	(0.00 4)	(0.00 4)	(0.00 4)	(0.00 5)	(0.00 4)	(0.00 4)	(0.00 5)	(0.00 6)	(0.00 6)	(0.00 5)	(0.00 6)	(0.00 7)
L.NR	-	-	-	-	-	-	-	-	-	-	-	-

	0.07*	0.08*	0.07*	0.09*	0.12*	0.10*	0.07*	0.08*	0.07*	0.09*	0.12*	0.10*
	**	**	**	**	**	**	**	**	**	**	**	**
	(0.00	(0.00	(0.00	(0.00	(0.00	(0.00	(0.00	(0.00	(0.00	(0.00	(0.00	(0.00
	5)	6)	5)	8)	7)	7)	6)	6)	6)	6)	7)	8)
L.HDI	6.26	8.56	7.01	5.53	2.79	2.68	6.26	8.56	7.01	5.53	2.79	2.68
	***	***	***	***	***	***	***	***	***	***	***	**
	(0.37	(0.28	(0.37	(0.44	(0.44	(0.56	(0.64	(0.82	(0.65	(0.64	(0.82	(1.22
	2)	2)	5)	9)	1)	1)	4)	9)	4)	8)	7)	1)
					-	-						
L.PM	0.06	0.61	0.63	0.41	0.35	0.39	0.06	0.61	0.63	0.41		
		***	***	***	**	**		***	***	*	-0.35	-0.39
	(0.13	(0.11	(0.12	(0.12	(0.11	(0.12	(0.22	(0.23	(0.22	(0.21	(0.22	(0.18
	3)	4)	1)	2)	1)	9)	7)	5)	6)	2)	1)	6)
Observat	2,14	2,14	2,14	2,14	2,14	2,14	2,14	2,14	2,14	2,14	2,14	2,14
ions	0	0	0	0	0	0	0	0	0	0	0	0
Number												
of												
countries	119	119	119	119	119	119	119	119	119	119	119	119

Standard errors in parentheses

p<0.01,

**

p<0.05,

* p<0.1

We then investigate the effects of depth, access, and efficiency of the financial market (FMD, FMA, FME) and financial institution (FI) on trades in green goods (TGG). The results obtained from PCSE estimate and FGLS estimate are identical, which indicate that variables are positive and significant at 1% significance level. Notably, the impacts of depth and efficiency of FI on TGG are larger than those of the financial market (FM), whereas access to FI has a bigger effect than FM. In particular, the coefficients on depth and efficiency of financial institution are 0.66, 1.87 respectively, compared with 0.21, 0.72 of financial market. Meanwhile, the coefficients on access of financial institution and financial market are 0.19 and 0.33 respectively. In addition, FIE and FME have the largest influence on TGG in both estimates. The results indicate that both FM and institutional development appear to increase the TGG through the positive impacts of financial development in terms of depth and efficiency.

4.2. Further discussion: Subsamples of developing and developed economies

Table 7: Financialization and trade in green goods: Subsamples of developing and developed economies

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Developing countries			Developed countries		
	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG
L.LFD	2.91*** (0.114)			2.55*** (0.186)		
L.LFI		2.17*** (0.161)			0.80*** (0.168)	
L.LFM			0.27*** (0.032)			0.57*** (0.044)
L.LINC	-0.31*** (0.043)	0.04 (0.044)	0.34*** (0.044)	-0.02 (0.044)	0.48*** (0.030)	0.28*** (0.030)
L.IND	0.10*** (0.005)	0.10*** (0.005)	0.09*** (0.006)	0.20*** (0.011)	0.17*** (0.010)	0.15*** (0.007)
L.NR	-0.07*** (0.005)	-0.08*** (0.005)	-0.10*** (0.008)	0.05* (0.025)	0.07*** (0.026)	0.06** (0.025)
L.HDI	0.21 (0.578)	2.70*** (0.623)	2.58*** (0.696)	-6.89*** (1.208)	-1.55 (1.203)	-7.90*** (1.544)
L.PM	-0.62*** (0.156)	-1.00*** (0.182)	-0.71*** (0.153)	2.58*** (0.310)	4.00*** (0.373)	3.45*** (0.357)
Observations	1,528	1,528	1,457	612	612	612
Number of n_Partner	85	85	81	34	34	34

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In the further analysis, we examine the impact of financialization on trades in green goods (TGG) for sub-samples including Developing countries and Developed countries. Our sample includes 85 developing and 34 developed countries during the 2001-2018 period. The estimation results are reported in Table 7, which show that financial development (FD), Financial institutions development (FI), Financial markets development (FM) variables are statistically significant at a 1% significance level and positive. It is more likely that the effects of financialization on TGG are more sizable for a subsample of developing countries. Particularly, the coefficients of FD, FI, FM on TGG are respectively 2.91, 2.17, and 0.27 in the subsample of developing countries as compared to 2.55, 0.8, 0.57 in the subsample of developed countries. It is also notable that FD has the largest impact on

TGG among the three variables in both subsamples, while the influence of FM is the least significant. [Thorsten Beck \(2002\)](#) also states that countries that have developed better financial systems have higher trade balance in manufactured goods. In addition, in the Regional and Sectoral Analysis of the effect of Financial Development on International Trade, [Dwi Susanto et.al \(2010\)](#) indicate that FD is statistically significant and has the expected signs. Meanwhile, according to [Farhang Niroomand et. al \(2014\)](#), financial market development, including both the stock market and the banking sector, has a significant effect on trade openness in both short-run and long-run phenomena in the majority of countries. Regarding the remaining variables, Industrialization level (IND) is statistically significant and positive at 0,1% significance level in both subsamples of developing and developed countries. Meanwhile, Natural rents (NR) and Democratization level (DM) have positive influence on TGG in developing countries, but negatively influence TGG in developed countries.

Table 8: Robustness checks on effects of financialization and trade in green goods: Subsamples of developing and developed economies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	FGLS estimate						Two-step GMM					
	Developing countries			Developed countries			Developing countries			Developed countries		
VARIABLES	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG	lnTGG
L.LFD	2.91*** (0.103)			2.55*** (0.228)			0.73* (0.444)			0.34 (0.498)		
L.LFI		2.17*** (0.169)			0.80*** (0.304)			0.88** (0.448)			1.13** (0.509)	
L.LFM			0.27*** (0.020)			0.57*** (0.057)			0.03* (0.017)			0.20* (0.119)
L.LINC	-0.31*** (0.091)	0.04 (0.106)	0.34*** (0.102)	-0.02 (0.104)	0.48*** (0.103)	0.28*** (0.095)	-0.23 (0.279)	-0.18 (0.282)	-0.25 (0.252)	0.07 (0.307)	0.29 (0.720)	-0.12 (0.294)
L.IND	0.10*** (0.005)	0.10*** (0.006)	0.09*** (0.006)	0.20*** (0.012)	0.17*** (0.013)	0.15*** (0.012)	0.03*** (0.009)	0.02 (0.015)	0.03*** (0.009)	-0.01 (0.023)	-0.03 (0.039)	0.05 (0.036)
L.NR	-0.07*** (0.006)	-0.08*** (0.006)	-0.10*** (0.006)	0.05 (0.042)	0.07 (0.046)	0.06 (0.043)	-0.02 (0.011)	-0.01 (0.013)	-0.02** (0.008)	-0.02 (0.073)	0.00 (0.084)	0.05 (0.045)
L.HDI	0.21 (0.742)	2.70*** (0.875)	2.58*** (0.821)	-6.89*** (2.070)	-1.55 (2.223)	-7.90*** (2.162)	-2.12 (1.758)	-0.46 (2.462)	0.39 (2.444)	-1.29 (2.069)	-1.88 (7.923)	7.41 (5.216)
L.PM	-0.62*** (0.222)	-1.00*** (0.262)	-0.71*** (0.253)	2.58*** (0.511)	4.00*** (0.551)	3.45*** (0.502)	0.52 (0.495)	-0.38 (0.535)	0.96 (0.733)	-0.07 (0.478)	-0.83 (1.516)	-0.55 (0.769)
Observations	1,528	1,528	1,457	612	612	612	1,359	1,359	1,295	577	611	577

Number of n_Partner	85	85	81	34	34	34	85	85	81	34	34	34
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Standard errors
in parentheses

*** p<0.01, **

p<0.05, * p<0.1

The results of this study provide evidence that the effect of the size of financialization on the trade in green goods (TGG) in the developing countries is more sizable than those in the developed countries, following Hypothesis H3. Moreover, Hypothesis H1 cannot be rejected because the empirical results in Table 5 also show that the effects of financialization on TGG are positive. We then conduct a robustness check to validate our findings.

We re-examined the effects of financialization on TGG by using two estimations which are FGLS and Two-step GMM estimations. Three indicators are utilized to represent the value of financialization. The same subsamples of developing and developed countries are implemented, and then the results are presented in Table 8. From these results, we can draw similar conclusions with the results in Table 5 that financialization has a positive and significant effect on TGG, and the influence is larger in developing countries. There is evidence to believe that our findings are robust and reliable.

Table 9: Financialization and trades in green goods: Short-run and long-run effects

Panel A: Total sample

VARIABLES	(1)	(2)	(3)
	Whole sample		
	FD	FI	FM
	Short-term effect		
EC term	-0.42*** (0.017)	-0.43*** (0.018)	-0.32*** (0.015)
D. Financialization	-0.32** (0.136)	-0.28** (0.134)	-0.02 (0.015)
	Long-term effect		
Financialization	2.00*** (0.190)	2.00*** (0.178)	0.02 (0.035)
Observations	2,142	2,142	2,142

Panel B: Developing and developed economies

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Developing economies			Developed economies		
	FD	FI	FM	FD	FI	FM
	Short-term effect					
Error correction term	- 0.45*** (0.021)	- 0.46*** (0.021)	- 0.35*** (0.019)	- -0.22*** (0.023)	- 0.23*** (0.024)	- 0.17*** (0.018)
D. Financialization	-0.36**	-0.29*	-0.02	0.23	0.27	-0.01
	Long-term effect					
Financialization	(0.169) 1.97*** (0.229)	(0.162) 1.94*** (0.213)	(0.017) 0.02 (0.037)	(0.163) 1.72*** (0.379)	(0.203) 1.91*** (0.359)	(0.049) -0.13 (0.223)
Observations	1,530	1,530	1,458	612	612	612

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: The DFE-ARDL is employed.

Using the DFE-ARDL model, we empirically investigate the relationship between the short- and long-term effects of financialization on trade in green goods (TGG). The results are shown in Table 9. Regarding financialization, as reported in Panel A, its short-term effects on TGG are barely significant, as only financial development (FD) and financial institutions (FI) are negative and

significant at 5%. Financialization, on the other hand, has statistically significant and positive contributions to the rise in TGG in the long run, which is consistent with the findings in Table 5. In Panel B, in the short-term, financialization does not have an impact on TGG in developed countries, but barely affects TGG in developing countries. Meanwhile, in the long-term, financialization has a larger impact in developing countries. This indicates that as financialization expands, TGG rises, and these impacts become more visible over time.

4.3. Further discussion: Moderating roles of uncertainty and institutional quality

Table 10: The moderating roles of uncertainty

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	UNC_Word			UNC_Page		
	FD	FI	FM	FD	FI	FM
L.Financialization	1.10*** (0.300)	0.93** (0.403)	-0.18** (0.088)	0.65** (0.321)	0.12 (0.408)	-0.53*** (0.120)
L.UNC	5.52*** (0.766)	6.02*** (0.908)	5.66*** (0.845)	7.31*** (1.056)	8.49*** (1.288)	8.10*** (1.100)
L.Financialization*UNC	1.49*** (0.398)	1.43*** (0.529)	0.53*** (0.134)	2.04*** (0.428)	2.51*** (0.576)	1.05*** (0.185)
L.LINC	0.18*** (0.041)	0.56*** (0.044)	0.85*** (0.041)	0.20*** (0.042)	0.55*** (0.044)	0.82*** (0.040)
L.IND	0.07*** (0.003)	0.07*** (0.004)	0.05*** (0.003)	0.06*** (0.003)	0.06*** (0.004)	0.05*** (0.004)
L.NR	-0.07*** (0.005)	-0.07*** (0.005)	-0.09*** (0.006)	-0.07*** (0.005)	-0.07*** (0.005)	-0.08*** (0.006)
L.HDI	1.23** (0.565)	0.67 (0.718)	1.49*** (0.577)	1.16** (0.500)	0.59 (0.631)	1.69*** (0.540)
L.PM	0.02 (0.133)	-0.32** (0.156)	-0.12 (0.136)	-0.07 (0.139)	-0.41** (0.163)	-0.25* (0.142)
Observations	1,943	1,943	1,907	1,943	1,943	1,907
Number of countries	108	108	106	108	108	106

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In the further analysis, we argue that financial development deteriorates the negative effects of uncertainty on the size of trade in green goods (TGG). To examine our prediction, we use the World Uncertainty Index, which counts the frequency of appearance of the word “uncertainty” (Unc_Word) or the number of pages having the word “uncertainty” (Unc_Page). The uncertainty data is sourced from the Economist Intelligence Unit (EIU). The results are reported in Table 10. We replicate our previous estimation but add a term that is an interaction between financialization and global uncertainty variables. Table 10 demonstrates that the interactions between financialization and uncertainty variables are statistically significant at 1% and largely positive. The results imply that the

size of the financial system tends to expand the uncertain world. However, the existence of a good financial system is more likely to mitigate the consequences or uncertainty.

5. Conclusions

The paper examines the effects of financial development on trade in green goods (TGG) by applying different econometric techniques to a global sample of 85 developing and 34 developed countries from 2001 to 2018. Both financial market and institutional development boost the TGG because financial development in terms of depth and efficiency has a positive impact on TGG. Furthermore, the effect of financialization on TGG is more evident in the long-term and in developing countries. Finally, if these economies have a well-developed financial system, the effects of uncertainty or risk on TGG value are reduced.

On the policy front, our study suggests that accelerating financial system quality can be considered to be an effective policy in enhancing trade in green goods. This may include controlling central bank operations, taxation, and standards regarding accounting practices. In addition, the government should focus on addressing uncertainty issues and mitigate its effect.

6. Appendix

Table A.1: Countries in the sample

High Income

Australia	Austria	Canada
Chile	Croatia	Czech Republic
Denmark	Estonia	Finland
Greece	Hungary	Iceland
Ireland	Israel	Italy
Japan	Korea, Rep.	Latvia
Lithuania	Luxembourg	Malta
Namibia	Netherlands	New Zealand
Norway	Oman	Panama
Poland	Portugal	Saudi Arabia
Seychelles	Singapore	Slovak Republic
Slovenia	Spain	Sweden
Switzerland	Trinidad and Tobago	United Arab Emirates
United Kingdom	United States	Uruguay

Upper Middle Income

Albania	Algeria	Argentina
Azerbaijan	Belgium	Bosnia and Herzegovina
Botswana	Brazil	Bulgaria
China	Colombia	Costa Rica
Dominican Republic	Ecuador	Fiji
Gabon	Georgia	Guatemala
Iran, Islamic Rep.	Jamaica	Jordan
Kazakhstan	Mauritius	Mexico
North Macedonia	Paraguay	Peru
Romania	Russian Federation	South Africa
Sri Lanka	Thailand	Turkey

Low Income and Lower-Middle-Income

Angola	Bangladesh	Bolivia
Burundi	Cambodia	Cameroon
Cape Verde	Chad	Congo, Dem. Rep.
Cote d'Ivoire	Egypt, Arab Rep.	El Salvador
Gambia	Ghana	Haiti
Honduras	India	Indonesia
Kenya	Kyrgyz Republic	Lao PDR
Lesotho	Liberia	Madagascar
Malawi	Mali	Mauritania
Mongolia	Morocco	Mozambique
Myanmar	Nepal	Nicaragua
Niger	Papua New Guinea	Philippines
Rwanda	Sao Tome and Principe	Senegal
Sierra Leone	Swaziland	Tajikistan
Tanzania	Togo	Tunisia
Uganda	Ukraine	Uzbekistan
Zambia		

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IMPACT OF INTELLECTUAL PROPERTY RIGHTS PROTECTION ON VIETNAM' IMPORT AND EXPORT VALUE AFTER JOINING THE TRIPS AGREEMENT

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ABSTRACT

This is the first empirical study on the impact of IPR protection on Vietnam's import and export value after joining the TRIPS agreement. The study uses a quantitative approach, with panel data for the period 2009-2020 from 44 developed and developing countries that are trading partners of Vietnam. We use two indicators representing IPR protection, which are the International Property Rights Index (IPRI) and the Patent Rights Index (PR). The results indicate that strengthening IPRI helps promote trade, while increasing PR reduces trade. Moreover, a higher IPRI will lead to a higher increase in trade with developing countries than that with developed countries. A relatively surprising finding is that the impact of IPR protection on Vietnam's industries is limited, mainly affecting raw unprocessed industries that require little R&D investment and low capability of patent protection. Based on the above conclusions, we made some recommendations and solutions for Vietnam to promote trade to the rest of the world.

Keywords: Intellectual property rights protection, IPR, trade, TRIPS.

1. Introduction

As economies move towards knowledge-intensive activities, the issue of intellectual property rights protection (IPR) becomes more important (Fink & Braga, 1999). With an increase in trade-flow studies, economists pay special attention to IPR issues, especially since the Agreement on Trade-Related Aspects of Intellectual Property Rights in system of the World Trade Organization comes into force (Qui & Yu, 2010). Over the past two decades, the nature of the relationship between IPR protection and international trade flows has been controversial (Lerner 2009; Awokuse and Yin 2010). The debate is fueled by the mixed empirical results of the effect of the degree of intellectual property rights on trade flows (Ivus 2010).

Knowledge is inherently a non-competitive commodity (Arrow, 1962). However, the production of such goods always requires incentives for creators by protecting intellectual property. As laws related to IPR vary from country to country, it is important to understand how changing IPR policies or harmonizing them across countries through multilateral initiatives will affect the flow of goods. Although there have been a number of studies that have deeply analyzed the link between IPR protection and economic welfare, economic growth, innovation, foreign direct investment (FDI) and technology transfer, very few studies have explored the direct link between "import-export response" (Ruhul Salim, 2014) to IPR protection.

Therefore, the theoretical contribution of this study comes from analyzing the impact of strengthening intellectual property law in Vietnam in terms of bilateral trade flows. Vietnam's efforts in reforming and renewing intellectual property laws and its status as a country with great development potential and strong threat of imitation makes this an extremely important study of the impact of intellectual property protection on trade. As in previous studies, this study also explores the possibility that the commercial impact of patent protection may vary by product sector and by level of economic development in trading partner countries (Maskus & Penubarti, 1995; Smith, 1999). Since industrialized countries (mostly OECD countries) are major producers of new technologies, an expectation is raised that increased patent protection in Vietnam will have a stronger impact to bilateral trade flows from OECD countries to Vietnam than to import flows from non-

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OECD countries. The results from this study provide much needed empirical evidence on the current debate regarding policy reform in IPR and its influence on technology transfer and trade with Vietnam.

This study has many new points compared to previous studies. First, the study focuses on Vietnam, a developing country, and uses a quantitative approach to examine the impact of IPR protection on international trade flows. Although there have been a few studies examining this relationship in Vietnam, there has not been a single quantitative article that concretizes this impact. Second, most of the previous studies only focused on the import dimension, with little or no attention to the export dimension. This paper fills this gap when choosing to assess the impact of IPR on trade (including exports and imports) between Vietnam and OECD and non-OECD countries. Third, relatively few studies analyze the different effects of IPR on trade between groups of goods, therefore, this study analyzes the different effects of IPR on import and export of items under SITC codes. Moreover, in the context of the Covid 19 pandemic, the research also included this epidemic factor in the quantitative model to fully assess the impact on Vietnam's trade flows.

We will develop this study as follows. Section 2 reviews the existing literature and develops hypotheses. Section 3 discusses the sample for this study, identifies dependent variables and explanatory variables, and provides summary statistics. Section 4 presents the empirical results and an analysis of the relationship between derivatives use and firm value. Section 5 summarizes the study and draws conclusions.

2. Theoretical framework

2.1. Theoretical studies

Although the theoretical link between patent rights and innovation has received much attention, relatively little theoretical research has been done on the relationship between IPR protection and international trade. Theories up to this point suggest that increased protection of intellectual property rights can affect bilateral trade flows between countries based on the following four effects: market expansion effect, market power, the substitution effect of FDI, and the substitution effect of innovation.

2.1.1. Market Expansion Effect and Market power effect

According to Maskus and Penubarti (1995), patent rights can affect a country's trade through its market expansion effect. As the importing country strengthens its patent rights, domestic firms' imitation of imported products decreases. The result would be a reduction in the amount of domestically produced imitations, which in turn could encourage foreign firms with higher technology to expand their trade volumes to those markets as the net demand for their products increases. Yang and Maskus (2009) also suggest that stronger IP protection can improve the ability of companies to enter export markets in developing countries. In short, through the market expansion effect, exporters can increase their output to the importing country, or the quantity of imports.

Maskus and Penubarti (1995) suggest that the market power effect of IPR can also affect international trade: With stronger intellectual property rights in the importing country, the domestic market power of exporters are increased, and the exporter can choose to reduce the quantity of the product or raise the price to increase profits. By securing exclusive rights to technology, strong intellectual property rights strengthen the monopoly power of exporters. Firms with such monopoly power can exercise their market power by limiting the quantity of exports and increasing their unit prices (Smith 1999). In short, through the market power effect, exporters can choose to reduce the quantity of a product and increase the cost of the product, thereby reducing the total value of imports.

Thus, the antagonistic nature of the two effects of market expansion and market power implies that the direction of the impact of increased IPR protection on trade is unclear (Maskus & Penubarti, 1995; Smith, 1999). Smith (2001) argues that the impact of stronger IP protection on technology transfer occurring through imports depends on two opposing effects: the "market expansion" effect. (positive) and "market power" effects (negative). This ambiguity may be due to complex interactions between local market demand, the threat of imitation by the importing country, and the nature of trade barriers (Maskus, 2000, p. 113). Ivus (2011) suggests that the "market dilution" effect arises because industries have different rates of imitation, which

reduces the exports of the Northern region. To determine a country's ability to pose a threat of imitation, Smith (1999) divided the sample of importing countries into four groups based on the strength of their patent rights and their ability to imitate. He argues that the threat of imitation is highest in countries with weak IPRs and strong imitability, moderate in countries with strong or weak IPRs, and lowest in countries with strong IPRs and strong imitability. weak imitation. When the IPR is stronger, the impact on trade is as follows:

Table 1: Relationship between threat of imitation, market expansion effect and market power

	Weak IPR	Strong IPR
The ability to imitate feebleness	Ambiguous effect (+/-)	Market power effect (-)
The ability to imitate strong	Market expansion effect (+)	Ambiguous effect (+/-)

Source: Smith, P.J., (1999), "Are weak patent rights a barrier to U.S. exports?" *Journal of International Economics* 48(1), 151-177.

2.1.2. The substitution effect of FDI

MNCs typically serve foreign markets in three ways: export, FDI, and technology licensing. Through exporting, businesses can protect their intellectual property rights in the host country. Through FDI, firms can protect their intellectual property rights within the parent enterprise but outside the host country. Therefore, the risk of imitation increases when the intellectual property rights of an enterprise are not kept in the host country. Protection of intellectual property rights can increase the cost of counterfeiting and discourage imitation activities by importing countries. As a result, the strengthening of intellectual property rights in importing countries has a positive effect on both FDI and technology licensing by exporters, with a smaller export impact than FDI and licensing. technology (Smith 2001). Thus, with stronger intellectual property rights, exporters can choose to serve importing countries with FDI and reduce exports.

2.1.3. The substitution effect of innovation

Strengthening protection of intellectual property rights can encourage domestic firms to innovate and develop high-quality products or new products that can replace imports (Hao Wei and Huijun Lian, 2019). Monopolistic protection provides incentives to conduct research and development, contributing to the promotion of technological innovation (Leger, 2005). Innovation leads to the creation of new products of better quality and closer access for domestic firms to the consumer market, which means that their new creations can satisfy market needs in better country, thus reducing the need for imports (Hao Wei and Huijun Lian, 2019).

Thus, based on the above negative effects, the link between increased protection of intellectual property rights and international trade cannot be answered with theoretical arguments. Many previous studies have followed the experimental route in an attempt to estimate the impact of IPR protection on international trade.

2.2. Experimental studies

2.2.1. Studies with a positive impact

Rod Falvey, E Neil Foster, David Greenaway (2009) using gravity models with data from 69 developed and developing countries for the period 1970-1999 showed that the relationship between trade flows and protection of intellectual property rights is non-linear, depending on the type of product, the industry, will have different effects and increased IPR protection may change not only the volume but also the composition of imports from advanced countries.

Awokuse and Hong Yin (2010) conducted a study regarding China's import with 36 countries (21 OECD countries, 15 non-OECD countries). By using Anderson's new gravity model, they found results in favor of IPR protection having a stronger effect on knowledge-intensive goods. They also show that the market expansion effect is prominent in large markets with high imitation. At the same time, IPR is stronger in OECD countries.

To show that the market expansion effect dominates the market power effect in developing countries, Fatma Mrad (2017), with data covering 48 developing countries, the data are averaged over eight five-year

periods from 1970 to 2009, shows that IPR has a strong and positive effect on imports of high-tech goods, implying that the attractiveness of a developing country to foreign technology depends on that country's policy of IPRs. At the same time, joining the TRIPS agreement has a positive and statistically significant impact on the import of high-tech goods.

Using panel data (119 countries for the period 1976–2010) and the difference-in-difference approach pioneered by Rajan and Zingales (1998), Wen Chen (2017) found that the impact of increased IPR protection was significantly stronger on imports of more technology-intensive products. The results also show that: By complying with minimum standards for the protection of intellectual property rights, middle-income countries have benefited the most in importing technologically advanced products as well as succeed in attracting more technology-intensive products from other middle-income countries.

In a recent study, Hao Wei and Huijun Lian (2019) based on data from 30 Chinese provinces in 2001-2006 and gave the results that: Increasing IPR increases import value, IPR impacts larger to patent and trademark intensive industries and relatively small to non-patent intensive industries. This study also shows that IPR has a greater effect on imports in regions with a stronger threat of imitation; and as a company's innovation activity becomes more active, the effect of IPR on imports decreases.

Contrary to the results of stronger effects of IPR protection for technology-intensive goods, Christopher Ngassam, Virginia State University (2006) adopts a gravity model with cross-sectional data of 69x68 countries referring to the total non-fuel trade and high technology in 2003 came to the conclusion that higher levels of protection have a significant positive effect on non-fuel trade. However, when estimated for high-tech goods, the IPR did not have a statistically significant effect on trade.

Focuses on the relationship between IP protection and bilateral intra-industry trade between the UK and its trading partners (classified into three categories according to threat level of imitation: strong, weak, , average based on IMIT index), Haslifah M. Hasim, Nasser Al-Mawali & Debojyoti Das (2017) using gravity model, panel data from 2010-2016 concluded that: The UK IIT Total Intra-Industry Trade Index and its two components are independent of IPR protection or the imitability of the UK's trading partners. However, the combination of both IPR protection and the ability to imitate by UK counterparts are important factors that define the UK IIT. This implies that the threat of imitation, as measured by both IPR and IMIT simultaneously, is an important variable in determining intra-industry trade flows.

2.2.2. Studies including negative effects

Studying IPR of importing country affect on the export level of 10 Canadian provinces to 76 importing countries, using a gravity model with 1990 cross-sectional data, Mohammed Rafiquzzaman (2002) provides a positive association between Canada's higher patent rights and higher exports. However, the influence crosses different areas in different countries. Highly developed countries are mostly positive, middle-income countries are negatively correlated for metals, transportation equipment, chemicals, and industry. Low-income countries have a negative impact on textiles, chemicals and non-metallic minerals. For countries with high imitators (less tight IPR policies), stronger patent protection increases Canadian exports more due to market expansion effects, whereas a country with a low level of imitation will reduce exports due to market power effects.

Using gravity model to estimate bilateral trade volume of 6 ASEAN countries and 10 non-ASEAN countries representing the main trading partners of ASEAN in 3 years 1990, 1995, 2000, Nguyen Khanh Doanh , Yoon Heo (2007) shows that stronger IPR in non-ASEAN importing countries will help increase exports of ASEAN countries, but reduces imports from non-ASEAN countries of ASEAN when the IPR in ASEAN countries is enhanced. At the same time, the study also shows that industrialized countries with relatively weak IPR systems and strong imitation will experience an increase in bilateral imports when their IPR systems are strengthened and vice versa.

With data from 60 countries including developed and developing countries, from 1995-2001, using gravity models, Marco Duenas, Mercedes Campi (2014) draw conclusions about the negative impact of increased protection IPR protection for trade volumes and in the case of agricultural trade, the strengthening

of intellectual property rights that has been taking place since the conclusion of the TRIPS agreement has had a negative impact on developed countries and in particular is for developing countries.

Thus, through empirical studies, we find that although the market expansion effect is common when increased IPR protection increases bilateral trade, there are still some studies that show the opposite of the dominating market power effect. And this impact depends on different sectors, the level of imitation and the size of the importing country.

3. Research method

3.1. Sample

The study uses array data from 44 developed and developing countries for the period 2009-2020, which are Vietnam's top trading partners. Data source of GDP per capita, population, exchange rate collected from World Bank, trade (export, import) for 10 product index organized by 1-digit commodity classification Standard International Trade Number (SITC) obtained from UN Comtrade. Distance data is calculated as the distance between the capital of the export, import country and the capital city of Hanoi, Vietnam (<http://vietnam.distanceworld.com>). Data of International Property Rights Index (IPRI) and the Patent Rights Index (PR) are from De Soto's calculation (2020). In addition, we added dummy variables: COVID, FTA to determine the impact of the Covid-19 pandemic and the participation in bilateral trade agreements.

3.2. Model specification

We used a new version of gravity model developed by Anderson (2003) to estimate trade flows through the effects of GDP, population, distance, and other reinforcing and constraining factors (borderline, taxes, customs union membership). Smith (1999) also built a simple gravity model for trade in goods, which this study used to build the model, was also developed by Rafiquzzaman (2003) to evaluate the relationship of intellectual property rights to export Canada.

$$BTI_{ijk} = a_0 (Q_j/N_j)^{a_1} (N_j)^{a_2} (Q_k/N_k)^{a_3} (N_k)^{a_4} (D_{jk})^{a_5} (A_{ijk})^{a_6} e_{ijk} \quad (1)$$

Where:

BTI bilateral trade sector i sector j to k;

(Q_j/N_j) and (Q_k/N_k) are GDP per capita of regions j and k;

(N_j) and (N_k) are population area j and k, (D_{jk}) is the area j and k distance;

(A_{ijk}) is the increase and decrease factor of commercial attractiveness;

e_{ijk} is the noise.

In addition, in the global world environment, exchange rate fluctuations, participation in free trade agreements become more important in import and export, many studies have been conducted to evaluate these effects on trade as Misa Okabe (2015); Nguyen Thi Ha Trang (2011). It is undeniable that the impact of the Covid pandemic has caused a disruption in the global supply chain affecting the trade of many countries around the world, so we further studied the dummy variable in the year of Covid. Studying the influence of variables International property right index, patent right index (De Soto, 2020) on the level of trade of the country. After taking the log, the specific research model is as follows:

$$\ln(EX_{jk}) = \ln a_0 + a_1 \ln(GDP_j) + a_2 \ln(POP_j) + a_3 \ln(GDP_k) + a_4 \ln(POP_k) + a_5 \ln(DIS_{jk}) + a_6 OERSq + a_7 COVID + a_8 FTA + a_9 IPR + u_{ijk} \quad (2)$$

$$\ln(IM_{jk}) = \ln a_0 + a_1 \ln(GDP_j) + a_2 \ln(POP_j) + a_3 \ln(GDP_k) + a_4 \ln(POP_k) + a_5 \ln(DIS_{jk}) + a_6 OERSq + a_7 COVID + a_8 FTA + a_9 IPR + u_{ijk} \quad (3)$$

Where:

$\ln a_0$ is the intercept coefficient;

$a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8, a_9$ are the slopes;

u_{ijk} is noise.

In models (2) and (3), the parameters of per capita income, population and distance between countries are elasticity coefficients. The gravity equation for bilateral trade predicts that the income and population elasticity of the two countries should be positive and that the elasticity to the geographical distance between the two countries should be negative (Deardoff 1995; Rafiquzzaman 2003), an increase in per capita income will boost import demand, as well as production investment creating export value, a large population will increase import demand, and at the same time increase the labor force. The amount of labor contributes to the production process to create export value. Therefore, a_1 , a_2 , a_3 , a_4 will expect positive, a_5 will have negative result. The squared exchange rate variable has an unclear effect, a positive effect on import and export volume but not significant (Nguyen Binh Duong, 2010), increasing export competitiveness (Rubana Hassan, 2016); decrease in the quantity of imports (Hailu, 2010), there is no relationship between the exchange rate and the ratio of exports (S Hlatshwayo, 2016), an increase in the exchange rate that makes goods more expensive or relatively cheaper can increase or decrease trade flows because so a_6 is not clear. The impact of the COVID pandemic is expected to disrupt the supply chain, so a_7 is said to have a negative sign. Joining FTA helps countries reduce the burden of trade barriers to promote trade, this effect is different in different industries (Nguyen Thi Ha Trang, 2011), a_8 is considered a positive result. The coefficient a_9 has an indefinite effect, if strong IPR can increase trade through market expansion and decrease through market power effect (Maskus and Penubarti, 1995).

3.3. Model estimation

Because the research data is tabular, fixed effects regression (FE) and random effects (RE) models are used, in addition in some cases the researcher still uses the OLS method (Pooled OLS). However, Hsiao (2003) argues that using OLS can bias the estimate if not treated with adequate techniques, using POLS estimation on array datasets, it will consider all coefficients to be equal. does not change between different subjects and does not change over time, which can lead to inefficient estimates (Gujarati, 2004). However, when using the Pooled OLS model selection test, RE by the Lagrange multiplier method (LM) with the Breusch - Pagan test, to help check whether or not there is a random impact factor in the model, accepting H_0 , there is no random effect, or the error between subjects, the time points are constant. Meanwhile, the data on Vietnam's IPRI and PR indexes have changed over the years, although they are similar between the subjects, it is possible that the dataset has a large number of subjects and the IPRI difference is not large, so we have omitted the data. Through these influencing factors, however, the we still decided to perform Hausman test to choose RE and FE to check whether there is a correlation between the characteristic error between the subjects and the explanatory variable or not. The results show that the RE model is reasonable, the selection method is also consistent with previous studies (Awokuse, 2010) with similar data sets when studying China.

Similarly, when analyzing for all 10 import and export codes to remove random factors in the model, We performed Hausman test to choose FE or RE and decided to choose RE. The research data set has a dependent variable in the models, which is the value of import and export of goods, but the independent variable does not have a significant difference across fields, so the RE model is used for other models. estimation model across industries, this is also consistent with the results of Awokuse, 2010. After testing the model selection, the group checks for model defects, the model has serial autocorrelation and cross-correlation but not with variable error variance, after processing with robust command, the results are presented in chapter 4.

4. Results and discussion

4.1. Results

Table 2-5 present the results of the study, table 1-2 examine the influence of IPRI and PR indexes on Vietnam's import and export trade, the study also compares whether Vietnam's trade with other countries has different levels of development, affected by the IPRI are shown in Table 4-5.

Table 2 contains the regression results using the IPRI index for all studied countries. For Vietnam's exports to foreign markets, considering all items, variables representing national income, market size of Vietnam and partners all have positive statistical meanings on exports. However, the magnitude of the impact

of Vietnam's average income and the larger population of Vietnam proves that export volume depends on Vietnam's production capacity, not on the great demand of partners. The estimated results when classifying products according to 1-digit SITC codes show that most of the export volume of industries depends on per capita income, population size, but the level of influence of different industries are different and depend on the production characteristics of the industry. For imports, the average income of Vietnam and the population of Vietnam determine the level of imports of all goods. The distance variable mostly has a negative impact on Vietnam's import and export levels across industries. The squared exchange rate variable shows a negative but insignificant effect on exports, not significant for imports for all commodities, with some sectors having a negative but not very large impact. In addition, the COVID dummy variable shows that the years of the pandemic reduce the import and export volume of the whole industry, imports are affected more heavily than the export volume of Vietnam. The FTA dummy variable has an unclear effect, does not affect the import and export volume of all goods, but some products show its effects accompanied by strict technical standards, especially developing countries that are not yet equipped with advantages can easily fall into trade traps.

The results of table 2 are accordance with table 3-5 and consistent with previous studies, however, we focus on the influence of the IPRI index on Vietnam's trade. For all goods, increased IPR protection has a positive effect on Vietnam's trade at the 1% significance level, with the effect on exports being greater than on imports.

4.2. Discussion

4.2.1. All countries combined with IPRI and PR index

Table 2. Results estimation all countries combined with IPRI

Industry	<i>Biên International Property Rights Index</i>								
	<i>ln GDP</i>	<i>ln GDPIN</i>	<i>ln POP</i>	<i>ln POPIN</i>	<i>ln DISTANCE</i>	<i>REER</i>	<i>COVID</i>	<i>FTA</i>	<i>IPRI</i>
A - Export									
All products	0.000 (1.99)**	1.618 (333.92)***	0.000 (1.94)*	1.325 (33.11)***	-0.000 (-0.68)	-0.000 (-3.07)**	-0.0268 (-24.77)***	0.000 (0.03)	0.117 (154.65)***
Food and live animals	0.957 (4.73)***	1.313 (2.12)**	1.000 (8.82)***	-4.665 (-1.01)	-1.050 (-7.53)***	-0.000 (-4.4)***	-0.052 (-0.7)	0.085 (0.71)	-0.062 (-0.56)
Beverages and tobacco	0.960 (3.33)**	0.046 (0.02)	0.813 (5.97)***	10.861 (0.69)	-1.997 (-6.74)***	-0.000 (-1.67)*	-0.252 (-1.02)	0.840 (2.00)**	-0.310 (-0.49)
Crude materials, inedible, except fuels	0.953 (4.24)***	0.214 (0.13)	1.285 (11.03)***	-2.668 (-0.22)***	-1.466 (-5.69)***	-0.000 (-0.08)	-0.171 (-1.02)	-0.076 (-0.22)	0.682 (2.07)**
Mineral fuels, lubricants and related materials	1.119 (2.31)**	-0.722 (-0.15)	1.238 (5.1)**	-5.379 (-0.15)	-2.501 (-5.73)***	-0.000 (-2.18)**	-0.784 (-1.4)	1.089 (0.34)	0.189 (0.34)
Animal and vegetable oils, fats and waxes	0.483 (0.93)	12.325 (3.87)***	0.680 (2.4)**	-76.594 (-2.92)***	-0.994 (-2.2)**	-0.000 (-3.45)**	0.473 (1.37)	1.904 (4.24)***	-0.409 (-0.57)
Chemicals and related products, n.e.s.	0.245 (1.14)	2.477 (3.24)**	0.942 (8.14)***	-8.215 (-1.34)	-1.271 (-8.10)***	-0.000 (0.41)	0.016 (0.13)	0.472 (2.60)***	0.360 (1.60)
Manufactured goods classified chiefly by material	0.416 (2.33)**	1.712 (2.92)**	0.879 (8.16)***	-0.299 (-0.07)	-1.018 (-6.20)***	-0.000 (-1.46)	-0.005 (-0.08)	0.331 (2.40)**	0.093 (1.01)
Machinery and transport equipment	0.857 (3.68)***	3.707 (3.26)**	1.104 (7.27)***	-0.969 (-0.11)	-0.823 (-3.25)***	-0.000 (-3.02)***	-0.024 (-0.19)	0.530 (1.68)*	-0.642 (-2.88)***
Miscellaneous manufactured articles	1.245 (4.03)***	-1.771 (-0.87)	1.063 (6.49)***	23.937 (1.58)	-0.743 (-3.14)***	-0.000 (0.94)	-0.288 (-2.43)**	-0.103 (-0.55)	-0.035 (-0.28)
Merchandise and transactions not classified elsewhere in the sitc	0.753 (2.4)**	-25.742 (-8.51)***	0.490 (3.15)***	162.143 (6.68)***	-1.204 (-4.55)***	-0.000 (0.95)	0.460 (1.14)	0.181 (0.50)	5.275 (11.45)***
B - Import									
All products	0.000 (0.51)	0.702 (54.21)***	0.000 (1.62)	6.208 (58.72)***	-0.000 (-1.2)	-0.000 (-1.1)	-0.078 (-28.49)***	-0.001 (-0.49)	0.116 (63.35)***
Food and live animals	0.240 (0.81)	-0.533 (-0.34)	0.822 (3.72)***	12.879 (1.24)	-0.427 (-0.91)	-0.000 (-0.94)	-0.097 (-1.00)	0.453 (1.75)*	0.290 (1.42)
Beverages and tobacco	-0.007 (-0.02)	-2.272 (-1.44)	0.969 (4.80)***	21.853 (1.82)*	-0.285 (-0.60)	-0.000 (2.61)***	-0.252 (-1.27)	0.300 (1.12)	0.274 (0.72)
Crude materials, inedible, except fuels	-0.367 (-1.14)	1.691 (1.61)	0.576 (4.12)***	-4.705 (-0.53)	-0.272 (-0.81)	-0.000 (-1.50)	-0.312 (-1.83)*	-0.070 (-0.29)	0.603 (2.62)***
Mineral fuels, lubricants and related materials	1.743 (2.73)***	-2.908 (-1.25)	1.349 (4.01)***	18.140 (0.99)	-3.022 (-4.07)***	-0.000 (4.18)***	0.150 (0.36)	0.569 (0.92)	0.616 (1.13)
Animal and vegetable oils, fats and waxes	0.254 (0.61)	-2.014 (-0.83)	0.697 (3.44)***	8.585 (0.45)	0.092 (0.16)	0.000 (1.83)*	0.502 (1.58)	0.662 (2.38)**	1.357 (2.06)**
Chemicals and related products, n.e.s.	1.164 (3.24)***	0.411 (0.53)	1.043 (7.16)***	1.813 (0.28)	-1.157 (-3.00)***	0.000 (0.15)	0.003 (0.04)	0.109 (0.86)	-0.231 (-0.94)
Manufactured goods classified chiefly by material	1.070 (3.77)***	-2.012 (-1.78)*	1.399 (8.79)***	16.438 (1.90)*	-1.460 (-5.23)***	0.000 (0.44)	-0.452 (-2.12)**	-0.137 (-0.4)	0.180 (0.74)
Machinery and transport equipment	1.643 (3.68)***	-1.218 (-1.42)	1.43 (5.07)***	16.473 (2.4)**	-1.562 (-3.58)***	0.000 (1.92)*	-0.103 (-0.53)	-0.201 (-0.64)	-0.410 (-1.72)*
Miscellaneous manufactured articles	1.518 (5.04)***	-1.615 (-1.66)*	1.302 (5.17)***	21.766 (3.88)***	-1.689 (-5.39)***	-0.000 (-1.79)*	-0.285 (-1.63)	-0.591 (-1.76)*	0.234 (0.84)
Merchandise and transactions not classified elsewhere in the sitc	2.245 (8.49)***	-20.520 (-6.89)***	1.377 (9.98)***	131.606 (6.23)***	-1.965 (-6.77)***	-0.000 (-1.66)*	-0.373 (-1.26)	0.162 (0.31)	3.307 (6.72)***

Note: *, **, *** are significant at the 10%, 5%, and 1% levels, respectively.

Table 3. Results estimation all countries combined with PR index

Industry	Patent Right Index								
	ln GDP	ln GDPVN	ln POP	ln POPVN	ln DISTANCE	REER	COVID	FTA	PR
A - Export	0.000	1.548	0.000	3.005	-0.000	-0.000	-0.033	-0.000	-0.076
All products	(2.27)**	(223.21)***	(2.16)**	(46.87)***	(-1.05)	(-1.48)	(-27.07)***	(-0.13)	(-100.26)***
Food and live animals	0.957	1.372	1.001	-5.835	-1.049	-0.000	-0.044	0.086	0.053
	(4.8)***	(2.29)**	(8.82)***	(-1.35)	(-7.5)***	(-4.41)***	(-0.58)	(0.72)	(0.90)
Beverages and tobacco	0.970	0.163	0.817	6.957	-2.013	-0.000	-0.236	0.817	0.192
	(3.35)**	(0.08)	(5.81)***	(0.43)	(-6.63)***	(-1.83)*	(-0.95)	(1.95)*	(0.77)
Crude materials, inedible, except fuels	0.954	-0.323	1.288	8.821	-1.475	-0.000	-0.230	-0.104	-0.523
	(4.24)***	(-0.18)	(10.8)***	(0.62)	(-5.72)***	(-0.04)	(-1.27)	(-0.3)	(-2.66)***
Mineral fuels, lubricants and related materials	1.112	-1.050	1.235	-0.063	-2.496	-0.000	-0.832	1.080	-0.241
	(2.29)**	(-0.2)	(5.07)***	(-0.00)	(-5.71)***	(-2.13)**	(-1.37)	(2.21)**	(-0.55)
Animal and vegetable oils, fats and waxes	0.461	11.973	0.671	-75.190	-0.989	-0.000	0.397	1.863	-0.084
	(0.89)	(3.88)***	(2.36)**	(-3.01)***	(-2.16)**	(-3.48)***	(1.31)	(4.16)***	(-0.17)
Chemicals and related products, n.e.s.	0.274	2.541	0.950	-6.563	-1.285	0.000	0.046	0.482	-0.062
	(1.29)	(3.27)***	(8.32)***	(-1.04)	(-8.27)***	(0.37)	(0.34)	(2.73)***	(-0.54)
Manufactured goods classified chiefly by material	0.421	1.666	0.881	0.886	-1.021	-0.000	-0.008	0.331	-0.051
	(2.34)**	(2.83)***	(8.18)***	(0.19)	(-6.16)***	(-1.45)	(-0.12)	(2.39)**	(-0.84)
Machinery and transport equipment	0.837	3.885	1.097	-7.634	-0.811	-0.000	-0.024	0.527	0.292
	(3.69)***	(3.29)***	(7.30)***	(-0.81)	(-3.2)***	(-3.06)***	(-0.18)	(1.66)*	(1.70)*
Miscellaneous manufactured articles	1.255	-1.610	1.065	21.667	-0.748	-0.000	-0.261	-0.097	0.107
	(3.99)***	(-0.81)	(6.53)***	(1.48)	(-3.17)***	(0.89)	(-2.41)**	(-0.53)	(1.28)
Commodities and transactions not classified elsewhere in the site	0.851	-26.534	0.525	209.630	-1.256	0.000	0.550	0.222	-2.102
	(2.7)***	(-8.62)***	(3.34)***	(7.98)***	(-4.52)***	(0.85)	(1.33)	(0.58)	(-7.11)***
B - Import	0.000	0.671	0.000	7.440	-0.000	-0.000	-0.078	-0.000	-0.055
All products	(1.19)	(44.25)***	(1.85)*	(51.52)***	(-1.38)	(-0.92)	(-25.19)***	(-0.47)	(-32.62)***
Food and live animals	0.255	-0.649	0.827	16.247	-0.436	-0.000	-0.101	0.454	-0.145
	(0.84)	(-0.42)	(3.79)***	(1.44)	(-0.92)	(-0.93)	(-1.00)	(1.74)*	(-1.16)
Beverages and tobacco	0.07	-2.011	0.967	20.753	-0.301	0.000	-0.193	0.291	0.056
	(0.02)	(-1.39)	(4.7)***	(1.86)*	(-0.63)	(2.74)***	(-0.99)	(1.07)	(0.24)
Crude materials, inedible, except fuels	-0.291	1.804	0.598	-2.292	-0.313	-0.000	-0.254	-0.050	-0.077
	(-0.94)	(1.88)*	(4.32)***	(-0.31)	(-0.97)	(-1.57)	(-1.49)	(-0.21)	(-0.58)
Mineral fuels, lubricants and related materials	1.813	-2.341	1.373	15.014	-3.047	0.000	0.286	0.620	0.200
	(2.77)***	(-1.02)	(4.03)***	(0.81)	(-3.99)***	(4.07)***	(0.67)	(0.99)	(-0.8)
Animal and vegetable oils, fats and waxes	0.294	-2.460	0.719	23.912	0.045	0.000	0.482	0.642	-0.697
	(0.69)	(-0.97)	(3.56)***	(1.09)	(0.08)	(1.78)*	(1.65)*	(2.42)**	(-1.5)
Chemicals and related products, n.e.s.	1.143	0.394	1.036	0.495	-1.146	0.000	-0.012	0.104	0.500
	(3.18)**	(0.54)	(7.08)***	(0.09)	(-2.98)***	(0.18)	(-0.14)	(0.83)	(0.45)
Manufactured goods classified chiefly by material	1.086	-1.891	1.403	16.163	-1.467	0.000	-0.422	-0.128	0.020
	(3.86)***	(-1.61)	(8.8)***	(1.73)*	(-5.32)***	(0.41)	(-2.07)	(-0.37)	(0.11)
Machinery and transport equipment	1.606	-1.166	1.422	13.153	-1.541	0.000	-0.118	-0.207	0.135
	(3.82)***	(-1.37)	(5.17)***	(1.85)*	(-3.56)***	(1.9)*	(-0.61)	(-0.67)	(0.205)
Miscellaneous manufactured articles	1.514	-1.847	1.302	26.270	-1.688	-0.000	-0.314	-0.597	-0.205
	(4.94)***	(-1.74)*	(5.12)***	(3.45)***	(-5.34)***	(-1.76)*	(-1.67)*	(-1.79)*	(-1.18)
Commodities and transactions not classified elsewhere in the site	2.298	-21.020	1.398	160.981	-1.990	-0.000	-0.303	0.187	-1.274
	(9.17)***	(-7.06)***	(10.03)***	(7.03)***	(-6.98)***	(-1.84)*	(-1.09)	(0.36)	(-4.89)***

Note: *, **, *** are significant at the 10%, 5%, and 1% levels, respectively.

As to table 2, when classifying by sectors, the results show that the impact of IPRI is stronger in sectors, but the number of industries is significant at 5% in export markets only 3/10 (Raw materials, machinery and means of transport). For exports, when IPRI increases, it will increase exports of raw products, but reduce processed goods, increasing intellectual property protection reduces the ability to imitate for high technology, so the industry is not knowledge-intensive, exports significantly to partner countries, however, the industry requires research and development to decrease, reducing the ability to export. For imports, the market expansion effect is significant for all commodities, when classified, there are 4 affected sectors (Raw materials, transport machinery, oils, fats, animal waxes, etc.) at the 10% significance level. If IPRI is strong, with raw goods, to meet domestic net demand, Vietnam must increase imports; increase in export volume because domestic innovation is promoted or foreign enterprises replace exports to Vietnam with patents and FDI thereby increasing production, surplus of goods creates favourable conditions for export. For machinery, means of transport and spare parts, imports decreased because foreign enterprises owned patents increased monopoly, domestic people's demand decreased due to high input costs; reduce exports because this item requires high technology, domestic enterprises cannot imitate to produce, the amount of surplus goods decreases.

Table 3 shows the results that the patent index, which represents the strength of a country's patent law, has a negative significance impact at 1% on both dimensions of trade in all goods. When separating sectors, PR negatively affects 2 sectors exporting raw materials and positively affects machinery and means of transport. However, the degree of influence is not large, this result is consistent with Park and Lippoldt (2003) when studying export markets in developing and emerging countries, the strength effect occurs depending on the conditions of the country, market segment. If the product has few close substitutes and the technical absorptive capacity is weak, the company will reduce the quantity supplied and increase the price of Smith (2001), high priced products sold in domestic market, reducing the amount of exports. When exporting, they will have to face price competition. However, for high-tech products, Vietnam's demand is not large, the strategy of increasing product prices is not effective, excess products and therefore exports to foreign markets still account for a large amount. For imports, in addition to the dominant effect in all goods, a strong patent environment will encourage a firm to serve a foreign market with a licensing, FDI instead of exporting of goods, so the received country can reduce the amount of imports.

Studies on the IPRI and PR indexes show opposite results when it comes to trade, possibly due to the way they are measured. IPRI includes investment climate, investment complexity, level of intellectual property protection, while PR is an indicator of patent law strength. Therefore, an increase in IPRI will promote foreign enterprises to invest in the country due to a harmonized environment, reduce costs, and promote national trade. Increased PR represents incentives for owners, creating temporary monopolistic opportunities for both foreign and domestic firms (Maskus and Penubarti, 1995; Fink and Primo Braga, 2004), reducing trade by leveling up patents and FDI instead of exports (Fink and Primo Braga, 2004).

The results show that, firstly, the number of affected sectors is still limited, partly due to the limitation of research when disaggregating only 10 fields (less than the previous study), the limitation of Vietnam when the ownership Intelligence has not yet had a clear effect on trade. Second, the raw product industries are more influential than the high-tech industries. Maskus and Penubarti (1995) have similar results, separating the industry into three groups of sensitivity to patent law: high-sensitive (R&D intensive, and high piracy protection); low-sensitive; and other industries, the impact of IPRs is larger and more significant for low-sensitive industries than for high-sensitive industries, as relative to greater market power the effect or interactions between trade and FDI decisions in high-sensitive industries. In addition, studying component indices (e.g. copyright and trademark protection) will be more sensitive to the lower group of patent sensitivities in developing countries.

4.2.2. Developing and developed countries

The study assesses the impact of the IPR on imports and exports at different levels of development. By disaggregating the data into developed countries - countries that invest heavily in R&D, and developing

countries that lack technological capabilities mainly receive technology transfer. Therefore, the authors expect the effect of IPR to be more obvious and significant than that of developed countries.

Table 4 presents the data set estimation results for developed countries. Overall, IPRI has a positive effect on imports and exports at the 1% level. IPR is meaningful for exports in 3 areas (raw materials, machinery and means of transport), when increasing intellectual property protection will help expand the market for raw materials, but will reduce the amount of machinery exports in general. For imports, the effect of expanding the market for all goods is due to the prominent impact of 2 categories (oil, fat, animal wax). For developing countries, table 5, increasing intellectual property helps boost trade by 1% in all goods, increases exports to these countries in 2 industries (chemicals), affects to 3 industries (raw materials, machinery and vehicles).

The results show that increased protection of intellectual property will promote trade in developing countries larger than developed countries, which is different from expectations, but may be due to bias in the data set, mainly developed countries, or because Vietnam has gradually become an important trading partner with developed countries, the IPRI index does not affect as many trade decisions as developing countries. The number of industries affected with exports will be more than in developed countries, but with imports will be more in developing countries, because developed countries will invest in production in Vietnam and export goods. Therefore, IPRI affects investment decisions of developed countries, while a strong IPRI will cause Vietnam to import goods that are less affected by intellectual property rights. The trade-enhanced sectors are still raw industries that have not undergone complicated refining processes, however, when the IPRI index is increased, it will limit the export of machinery, means of transport and spare parts to developed countries, import restrictions from developing countries.

This result is not the same as previous studies, however, the target audience of the previous authors is mainly developed countries, the first developing country study is China (the country with a large market size). the second largest market in the world), while Vietnam is still a developing country that mainly depends on agriculture, industry has increased but not high, export products are mainly raw products. chemicals are only meaningful to developing countries, consumer imports are still high and mainly manufactured products come from developed countries.

Table 4. Results estimation with IPRI: Developed countries

Industry	International Property Rights Index - Developed countries								
	ln GDP	ln GDPVN	ln POP	ln POPVN	ln DISTANCE	REER	COVID	FTA	IPRI
A - Export									
All products	0.000 (0.48)	1.624 (228.66)***	0.000 (1.13)	1.272 (21.86)**	0.000 (0.02)	-0.000 (-0.07)	-0.025 (-15.94)***	-0.001 (-0.22)	0.116 (118.11)***
Food and live animals	0.734 (2.97)***	1.163 (2.13)**	1.239 (13.46)***	-4.940 (-1.09)	-0.633 (-2.79)***	-0.000 (-0.54)	-0.086 (-0.82)	0.102 (0.67)	0.050 (0.55)
Beverages and tobacco	0.689 (1.69)*	0.179 (0.08)	1.300 (6.33)***	14.372 (0.9)	-0.734 (-1.99)**	0.000 (2.58)**	-0.607 (-1.42)	1.102 (2.19)**	-0.611 (-0.09)
Crude materials, inedible, except fuels	0.250 (0.59)	-1.603 (-0.6)	1.429 (9.72)***	10.992 (0.56)	-1.926 (-3.92)***	-0.000 (-0.91)	-0.350 (-0.93)	0.194 (0.37)	1.031 (1.8)*
Mineral fuels, lubricants and related materials	0.840 (1.07)	-4.012 (-0.36)	1.668 (4.25)***	14.480 (0.17)	-2.233 (-3.43)***	0.000 (1.27)	-1.555 (-1.13)	1.938 (1.82)*	1.099 (1.26)
Animal and vegetable oils, fats and waxes	1.224 (1.52)	3.309 (0.95)	1.247 (3.5)***	-3.908 (-0.13)	-1.666 (-2.3)**	0.000 (1.5)	-0.159 (-0.31)	1.864 (3.15)***	-1.026 (-1.13)
Chemicals and related products, n.e.s.	0.840 (3.11)***	1.635 (1.44)	1.244 (9.79)***	-2.262 (-0.24)	-0.824 (-1.88)*	0.000 (4.35)***	-0.141 (-0.61)	0.811 (2.79)***	0.269 (0.64)
Manufactured goods classified chiefly by material	0.692 (3.09)***	0.644 (0.81)	1.206 (14.92)***	6.241 (0.97)	-0.795 (-2.17)**	0.000 (-0.14)	-0.017 (-0.14)	0.478 (2.84)***	0.044 (0.38)
Machinery and transport equipment	0.989 (4.71)***	3.650 (2.97)***	1.403 (11.58)***	2.368 (0.24)	-0.385 (-1.05)	0.000 (5.29)***	-0.001 (-0.01)	0.795 (2.10)**	-0.875 (-2.78)***
Miscellaneous manufactured articles	1.357 (7.02)***	-1.008 (-0.84)	1.452 (13.44)***	15.676 (2.37)**	-0.435 (-1.23)	0.000 (3.26)***	0.335 (-2.71)***	0.215 (1.04)	-0.047 (-0.23)
Commodities and transactions not classified elsewhere in the site	1.396 (2.46)**	-25.843 (-5.81)***	0.672 (5.67)***	163.367 (4.33)***	-1.442 (-1.73)*	0.000 (1.17)	0.464 (0.76)	0.343 (0.58)	4.429 (8.8)***
B - Import									
All products	-0.001 (-0.81)	0.716 (33.28)***	0.000 (0.98)	6.0996 (34.78)***	-0.000 (-0.33)	-0.000 (-0.61)	-0.076 (-17.85)***	-0.001 (-0.41)	0.114 (39.13)***
Food and live animals	1.284 (2.56)**	-2.775 (-1.1)	0.716 (3.26)***	28.354 (1.65)*	-0.826 (-1.22)	0.000 (1.65)	-0.151 (-1.27)	0.336 (1.38)	0.257 (0.76)
Beverages and tobacco	0.306 (0.44)	-0.979 (-0.66)	1.129 (4.12)***	17.572 (1.29)	-0.901 (-1.04)	-0.000 (-2.07)**	-0.053 (-0.22)	0.055 (0.19)	0.015 (0.03)
Crude materials, inedible, except fuels	0.473 (1.05)	0.580 (0.46)	0.930 (5.02)***	3.164 (0.29)	-0.469 (-0.8)	0.000 (0.43)	-0.392 (-1.95)*	0.341 (1.29)	0.341 (1.05)
Mineral fuels, lubricants and related materials	2.131 (2.26)**	-5.929 (-1.83)*	1.928 (8.28)***	41.872 (1.72)*	-3.460 (-4.25)***	0.000 (3.43)***	1.072 (1.36)	-0.640 (-0.59)	1.600 (2.54)
Animal and vegetable oils, fats and waxes	0.932 (1.14)	-3.736 (-1.06)	0.497 (2.16)**	22.911 (0.82)	0.843 (0.8)	0.000 (2.15)**	0.337 (0.95)	0.415 (1.26)	1.712 (2.19)***
Chemicals and related products, n.e.s.	0.232 (0.38)	0.267 (0.34)	0.963 (4.07)***	5.997 (0.96)	-2.811 (-4.24)***	-0.000 (-13.93)***	0.019 (0.19)	0.030 (0.18)	-0.336 (-1.52)
Manufactured goods classified chiefly by material	0.714 (2.14)**	-0.389 (-0.28)	1.282 (8.07)***	8.550 (0.75)	-2.393 (-3.59)***	-0.000 (-2.55)**	-0.468 (-2.78)***	0.102 (0.4)	-0.017 (-0.09)
Machinery and transport equipment	0.777 (1.15)	-1.254 (-0.93)	0.982 (3.57)***	15.468 (1.51)	-3.541 (-4.76)***	0.000 (1.57)	0.074 (0.52)	-0.376 (-1.30)	0.070 (0.24)
Miscellaneous manufactured articles	1.083 (2.94)***	-0.424 (-0.46)	0.959 (5.76)***	13.527 (2.44)**	-3.078 (-4.03)***	0.000 (0.81)	-0.048 (-0.25)	-0.435 (-1.18)	0.195 (0.63)
Commodities and transactions not classified elsewhere in the site	2.036 (3.17)***	-24.021 (-6.15)***	1.192 (8.49)***	152.169 (6.06)***	-2.595 (-6.01)***	0.000 (1.95)*	-0.171 (-0.76)	0.387 (0.68)***	3.769 (6.04)***

Note: *, **, *** are significant at the 10%, 5%, and 1% levels, respectively.

Table 5. Results estimation with IPRI: Developing countries

Industry	International Property Rights Index - Developing countries								
	ln GDP	ln GDPVN	ln POP	ln POPVN	ln DISTANCE	REER	COVID	FTA	IPRI
A - Export									
All products	0.000 (1.95)**	1.608 (314.1)***	0.000 (3.62)***	1.403 (31.90)***	-0.000 (-0.83)	-0.000 (-1.76)*	-0.029 (-17.68)***	0.001 (0.43)	0.118 (101.03)***
Food and live animals	1.016 (3.31)***	1.696 (1.22)	0.837 (3.93)***	-5.899 (-0.65)	-1.077 (-3.54)***	-0.000 (-4.16)***	-0.031 (-0.29)	0.116 (0.58)	-0.164 (-0.383)
Beverages and tobacco	1.526 (4.93)***	0.369 (0.09)	0.725 (4.95)***	-0.247 (-0.01)	-2.109 (-5.13)***	0.000 (0.80)	0.173 (0.46)	1.041 (2.95)***	-0.713 (-0.60)
Crude materials, inedible, except fuels	1.293 (2.92)***	2.809 (1.65)*	1.165 (6.39)***	-22.943 (-1.93)*	-1.272 (-2.61)**	0.000 (0.58)	-0.030 (-0.26)	-0.412 (-0.82)	0.349 (1.13)
Mineral fuels, lubricants and related materials	1.323 (1.72)*	1.758 (0.39)	1.180 (3.18)**	-25.513 (-0.76)	-2.596 (-3.24)***	-0.000 (0.28)	-0.360 (-0.68)	1.693 (3.58)***	-0.448 (-0.67)
Animal and vegetable oils, fats and waxes	-0.146 (0.20)	19.771 (5.16)***	0.341 (0.79)	-136.049 (-4.23)***	-0.481 (-0.65)	-0.000 (-2.47)***	1.005 (2.57)*	2.107 (2.87)**	-0.055 (-0.05)
Chemicals and related products, n.e.s.	-0.368 (-0.63)	4.005 (3.75)***	0.557 (1.88)*	-18.915 (-3.04)**	-0.947 (-2.28)**	0.000 (0.30)	0.084 (0.74)	0.217 (0.84)	0.459 (1.81)*
Manufactured goods classified chiefly by material	0.052 (0.17)	3.127 (3.70)***	0.567 (3.34)***	-8.055 (-1.54)	-0.870 (-2.51)**	-0.000 (-1.75)*	-0.062 (-0.61)	0.083 (0.39)	0.164 (1.07)
Machinery and transport equipment	0.510 (1.18)	4.565 (2.14)**	0.735 (2.45)**	-11.778 (-0.75)	-0.561 (-1.06)	-0.000 (-2.40)**	-0.135 (-0.91)	0.173 (0.86)	-0.258 (-0.87)
Miscellaneous manufactured articles	0.930 (1.97)*	-2.447 (-0.55)	0.819 (3.17)***	32.603 (0.96)	-1.037 (-2.16)**	-0.000 (-0.47)	-0.421 (-1.42)	-0.449 (-1.54)	0.054 (0.27)
Mommodities and transactions not classified elsewhere in the sitc	0.002 (0.01)	-25.416 (-6.09)***	0.329 (1.22)	160.493 (5.85)***	-1.395 (-3.37)***	0.000 (0.402)	0.333 (1.01)	-0.017 (-0.04)	6.363 (9.49)***
B - Import									
All products	0.001 (1.66)*	0.683 (693.2)***	0.001 (2.09)**	6.368 (790.51)***	-0.001 (-1.60)**	-0.000 (-1.16)	-0.081 (-38.57)***	0.000 (0.15)	0.119 (144.92)***
Food and live animals	-0.191 (-0.55)	1.719 (2.34)**	0.792 (1.91)*	-1.534 (-0.31)	0.156 (0.22)	-0.000 (-1.06)	0.074 (0.66)	0.787 (1.63)	0.095 (0.45)
Beverages and tobacco	0.052 (0.11)	-4.505 (-1.44)	0.446 (1.38)	32.292 (1.47)	1.019 (1.41)	0.000 (3.16)***	-0.285 (-0.86)	0.427 (0.74)	0.430 (0.76)
Crude materials, inedible, except fuels	-0.834 (-1.4)	2.647 (1.60)*	0.226 (1.48)*	-10.607 (-0.70)	0.190 (0.43)	-0.000 (-0.74)	-0.362 (-0.92)	-0.568 (-0.98)	0.815 (2.25)**
Mineral fuels, lubricants and related materials	2.603 (3.23)***	-0.215 (-0.08)	0.993 (2.67)***	-7.379 (-0.29)	-1.713 (-1.24)	0.000 (6.19)***	0.129 (0.21)	1.550 (5.42)***	-0.686 (-0.93)
Animal and vegetable oils, fats and waxes	0.256 (0.53)	-0.328 (-0.08)	0.734 (2.03)**	-6.435 (-0.21)	0.632 (0.73)	0.000 (2.16)*	0.821 (1.39)	0.624 (0.77)	0.822 (0.68)
Chemicals and related products, n.e.s.	1.499 (3.43)***	1.195 (0.69)	1.065 (6.75)***	-7.971 (-0.57)	-0.901 (-1.70)*	0.000 (1.53)	0.061 (0.38)	0.272 (1.27)	0.056 (0.16)
Manufactured goods classified chiefly by material	1.233 (3.58)***	-3.951 (-2.20)**	1.525 (6.15)***	25.373 (2.04)**	-1.638 (-4.5)***	0.000 (2.04)**	-0.511 (-1.04)	-0.666 (-0.74)	0.504 (1.05)
Machinery and transport equipment	2.123 (3.21)***	-0.445 (-0.56)	1.949 (4.23)***	10.669 (1.12)	-2.293 (-3.30)***	0.000 (1.38)	-0.229 (-0.49)	0.049 (0.07)	-0.874 (-2.26)**
Miscellaneous manufactured articles	1.693 (2.85)***	-2.734 (-1.48)	1.729 (4.06)***	28.863 (2.81)***	-2.518 (-4.14)***	-0.000 (-0.87)	-0.648 (-1.58)	-0.950 (-1.10)	0.409 (0.79)
Mommodities and transactions not classified elsewhere in the sitc	2.198 (6.79)***	-15.199 (-3.44)**	1.562 (7.84)***	98.3903 (2.77)***	-2.503 (-4.44)***	-0.000 (-1.39)	-0.699 (-0.99)*	-0.490 (-0.46)	2.893 (3.53)***

Note: *, **, *** are significant at the 10%, 5%, and 1% levels, respectively.

As to our limitation, the proposed IPR policies in promoting trade in Vietnam can serve as a reference for development policies in other major developing countries, especially those with technology-intensive production capacity is increasing. However, the empirical evidence on Vietnam should not be automatically applied to all developing countries due to differences in the extent and extent of reforms. In addition, the study has confirmed that the unclear relationship between trade flows and intellectual property protection in Vietnam is due to various complex interactions, but the interactions have not been specified. this work. Therefore, the article proposes with future research in elucidating the complex interactions that are trade between the two parties, FDI, licensing and protection of intellectual property rights. At the same time, further studies may use more firm-level data, industry-level data, or further sub-sectors to draw firmer conclusions about the commercial impact of title protection.

5. Conclusion

The protection of intellectual property rights in Vietnam was started in the 1980s and has been further improved thanks to the awareness of the importance of intellectual property protection in international trade. The study has gone from analyzing the relationship between IPR and trade by theories with four main effects and by empirical studies, using a quantitative model to concretize this effect in Vietnam. From the model results, the research team has some main conclusions as follows. First, intellectual property protection and trade volume have an ambiguous relationship, depending on complex interactions between local market demand, the degree of imitation by the importing country, FDI demand and patents and the nature of trade barriers. Specifically, in the Vietnamese market, when increasing the IPRI index, it will create a favorable investment environment, increase competitiveness and promote trade, when increasing PR, it will be easier to create monopolies and grant patents, FDI instead of exports, then reduce trade volume. Secondly, the influence of the IPR index on Vietnam's industries is limited, mainly affecting the raw industry that requires little R&D investment and low patent protection. Third, increasing IPRI will increase the amount of trade with developing countries than with developed countries, but the number of industries affected is more when exporting to developed countries and importing more from developing countries.

Research results show that in order to promote trade, Vietnam needs to take measures to strengthen intellectual property rights along with development policies, application of science and technology as well as investment in research and development to promote knowledge-intensive industries that require high-quality human resources. We, therefore suggest:

Firstly, promote innovation in information and communication activities in order to raise society's awareness of intellectual property, thereby encouraging creative activities and creating valuable intellectual property, encouraging technology transfer activities. Besides, it is necessary to gradually introduce intellectual property subjects and intellectual property majors into university training programs; bringing intellectual property knowledge into the general education curriculum.

Secondly, perfecting and promoting the implementation of preferential policies, supporting enterprises to transfer the right to use intellectual property, perfecting the law on intellectual property transactions and the mechanism of benefit sharing among groups of stakeholders for creative results. Completing a policy of balancing interests in order to reasonably and satisfactorily handle the relationship between subjects related to intellectual property such as patent owners and the community.

Thirdly, increasing investment and improve investment efficiency for the development of intellectual property activities, promote investment in modernization of technological resources to serve the establishment of an Intellectual Property Development Support Fund to promote creative activities, support the application and transfer of intellectual property.

Fourthly, improving the level of human resources for intellectual property through innovation and promotion of training and fostering of professional human resources in intellectual property. Completing standards of professional qualifications and recruitment conditions for positions that directly handle business in intellectual property management agencies.

Finally, it is necessary to strengthen and proactively integrate and cooperate internationally in the field of intellectual property, expand and develop the depth of cooperation. Support with major intellectual property partners including bilateral and multilateral perspectives in enforcement. Exchange experiences and share knowledge with countries around the world on commercialization of intellectual property. Actively and more actively participate in international forums to negotiate and build international intellectual property institutions and sign bilateral agreements on intellectual property content.

6. Appendix

Table A

Definitions of variables. This table defines both the dependent and independent variables and the control variables that we examine.

Variable		Definition	Expectation	Source
Dependent variable				
Export	$\ln(EX_{jk})$	The logarithm of Vietnam's exports to the country k		UN Comtrade
Import	$\ln(IM_{jk})$	The logarithm of Vietnam's imports to the country k		UN Comtrade
Independent variable				
GDP per capita in Vietnam	$\ln(GDP_j)$	Logarithm GDP per capita in Vietnam	+	WorldBank
GDP per capita in partner countries	$\ln(GDP_k)$	Logarithm of GDP per capita in the partner	+	WorldBank
Population of Vietnam	$\ln(POP_j)$	Logarithm of population in Vietnam	+	WorldBank
Population of partner countries	$\ln(POP_k)$	Logarithm of population in partner	+	WorldBank
Distance between Vietnam and partner countries	$\ln(DIS_{jk})$	Logarithm of the distance between Vietnam and its partner country	-	http://vietnam.distanceworld.com
Squared exchange rate	$OERsq$	The squared nominal exchange rate of the partner country's currency against the US dollar	+/-	WorldBank
FTA dummy variable	FTA	Equal to 1 if Vietnam and partner country k join a trade agreement	+	Trung tâm WTO và Hội nhập - VCCI
COVID dummy variable	$COVID$	Equal to 1 if the year in question is the year affected by the COVID-19 pandemic	-	Worldometer
Intellectual property rights index	IPR	International Property Right Index or Patent Right Index	+/-	De Soto (2020)

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THE IMPACT OF ELECTRONIC WORD-OF-MOUTH ON TOURISM DESTINATION CHOICE INTENTION

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ABSTRACT

The main purpose of this study is to investigate the impact of electronic word-of-mouth (eWOM) on the intention of tourism destination choice for Vietnamese visitors to Da Lat. For this purpose, a conceptual model was developed based on the Information Adoption Model (IAM), Model of Fan & Miao (2012) and M.K Cheung (2012). The hypotheses are empirically tested using survey data obtained from adolescents in Ha Noi, the capital of Vietnam. The regression results show support for all our hypotheses. The findings illustrate that three out of five facets of materialism are significant predictors of intention to destination choice. Visitor expertise is found to be negatively related to eWOM adoption and other facets including visitor involvement, eWOM quantity, source credibility, eWOM quality are found to have positive impacts on eWOM adoption. Besides, eWOM adoption has a direct influence on intention to destination choice. Finally, research findings, implications for managers and policy makers and suggestions for future research are also discussed.

Keywords: Electronic word-of-mouth, intention to destination choice, Information Adoption Model (IAM)

1. Introduction

1.1. The rationale of the study

The Covid outbreak has had a significant impact on Vietnam's economy, especially tourism. After many years of continuous impressive growth, in 2020, for the first time, Vietnam recorded a sharp decline: 44% in the number of domestic and international tourists². Identifying variables influencing tourist destination selections might aid tourism in fast recovering in the new normal. Meanwhile, industry 4.0 has been bringing profound and fundamental changes not only in a global context but also in the perspective of Vietnam. During the technological revolution, word of mouth (WOM) has evolved into a new form of communication is electronic word of mouth (eWOM). Whereas WOM initially referred to the idea of person-to-person conversation between consumers about a product (Sen and Lerman, 2007), the worldwide spread of the internet brought up a less personal but more ubiquitous form of WOM, the so-called electronic WOM (eWOM) (e.g. Brown et al., 2007; Davis and Khazanchi, 2008; Godes and Mayzlin, 2004; Kiecker and Cowles, 2001; Xia and Bechwati, 2008). eWOM can be defined as “any positive or negative statement made by potential, actual, or former customers about a product or company which is made available to multitude of people and institutes via the Internet” (Hennig-Thurau et al., 2004). Indeed, eWOM is a valuable source of information for travelers looking for destination information, and it aids in their decision-making process when purchasing tourist items or services online. Consumers use eWOM as one of the most important sources of information to make purchase decisions (Tsao, W.C., Hsieh, M.T., 2015). There has been a lot of studies on eWOM communications conducted in China, Taiwan, South Korea, Germany and USA (Ismagilova, 2016). Numerous research has been undertaken in order to determine its impact on behavioral patterns, travel aspirations, and buying intentions. However, these studies have not considered the persuasiveness of eWOM in detail and how it is affected by social media (Ismagilova, 2016) that deals with travelers' intentions to follow eWOM and their reliance on its source, especially to countries that are less developed in terms of Internet access (Hennig Thuraru, 2004). Therefore, this topic was chosen with the aim

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² Data from Vietnam National Administration of Tourism, accessed August, 26, 2021

to partly understand and develop the tourism industry in Vietnam. To be more specific, Da Lat, the city of flowers is chosen to tackle the research for the reason that Da Lat is one of the most favorite tourist cities in Vietnam with its pleasant climate and beautiful scenery, which are likely to attract tourists through the media and eWOM. The research begins with a review of the literature on customer's intention for engaging in electronic word-of-mouth (eWOM) communication. Using the Information Adoption Model (IAM), Model of Fan & Miao (2012), M.K Cheung (2012) as a based framework for discussion, the research developed and identified five elements that affect customers' intention. The importance of these motives for eWOM communication is then tested via multiple regression analysis using a sample of over 200 consumers. The paper concludes with discussion of findings, implications and recommendations for future research.

1.2. Literature review

1.2.1. WOM and eWOM

The term word-of-mouth has been studied in several industries and revealed different results. In 1967, Johan Arndt was the pioneer in the study of word of mouth (WOM) gave the following definition of WOM as that "Transmission direct verbal communication between a receiver and a person communication related to a brand, product or service and the receiver perceives that the person's messages sent of a non-commercial nature."

In the context of tourism, WOM can play a particularly important role for service organizations, as intangibility makes the pre-purchase trial of services impossible. WOM is particularly important when services are complex or have high-perceived risk (Zaithaml,1996) because it is seen as a highly credible information source as the sender is usually independent of the organization providing the service and is not seen to gain directly from advocating the service (Silverman, 2001).

With the innovative advancement, increasing numbers of travelers are using the internet to seek destination information and to conduct transactions online. Despite the increasing importance of online communications in the tourism industry, a few studies addressed the role of eWOM in a tourism destination choice (Litvin et al., 2008; Park and Gretzel, 2007; Zhu and Lai, 2009). Specifically, Litvin et al. (2008) discussed online interpersonal influence, or eWOM, as a potentially cost-effective method for marketing hospitality industry, as well as some of the emergent technological and ethical challenges that marketers face as they try to harness new eWOM technology. They defined eWOM as all informal interactions addressed towards customers via internet-based technology connected to the consumption or qualities of certain goods and services, or their sellers. This involves both producer-to-consumer and consumer-to-consumer communication - both essential components of the WOM flow and separate from interactions via mass media (Litvin et al., 2008). Zhu and Lai (2009) studied how the online information influences the tourism destination choice. They found that the quantity of the online reviews and the tourists' blogs correlate significantly with the actual tourist reception population, but comments grades and the volume of travel consultation do not correlate significantly with tourist reception population. Park and Gretzel (2007) used a qualitative meta-analysis to examine success variables for destination marketing websites. They suggested a unified framework of regularly used web site success elements, which included nine factors: information quality, ease of use, responsiveness, security/privacy, visual appearance, trust, interactivity, personalization, and fulfillment, which resulted from the analysis.

In this research, eWOM can be understood as the knowledge exchange through online and public platforms (Charo et al., 2015). eWOM may consist of different elements including sender, messages, receiver, and information channels (Lasell, 1948; Hovland et al, 1949; Mc Guire, 1985), in which senders refer to people who provide information by text, images, videos through experiences while message is the content of information transmission to the receivers. Besides that, receivers are those who are in need of information (Lasell, 1948). Extant research in marketing and this study will focus on these elements.

1.2.2. Tourism destination choice

Destination choice has always been one of the popular research topics in tourism academic field (Crompton, 1977; Woodside & Lyonski, 1989; Um & Crompton, 1990; Crompton, 1992; Keating & Kriz,

2008; Ahn, Ekinci, & Li, 2013, etc.), as it is of crucial importance to destination marketing organizations (DMOs).

By definition, destination choice is a tourist's decision on which destination to travel from multiple alternatives. However, researchers often see consumers' decision making as a sequential process, which involves several steps from need recognition, information search, evaluation and comparison of products, and then to final purchase decision (Kotler, 1997, Schiffman & Kanuk, 1997; Solomon, 1996). In the tourism industry, tourists' destination choice is also a sorting out process, which contains a series of steps, including obtaining passive information, initial choice considering situational constraints, evaluation of an evoked set, active information searching and the final destination selection (Um & Crompton, 1990). According to the study of Sirakaya and Woodside (2005), the destination choice depends on the nature of interaction between these variables: (1) internal variables (attitudes, values, lifestyle, image, motivation, life cycle, risk reduction, etc.), (2) external variables (pull factors of the destination, family, friends, culture, reference groups, etc.), (3) the nature of the intended trip (holiday, size, distance, duration of trip, etc.), and (4) travel experiences (mood and feelings during the trip, post-purchase evaluations, etc.) eWOM, or electronic word of mouth, is a powerful pull factor to the decision making process of tourists; however, it has received little research. As an important determinant of human behaviors and business practices in the modern age, eWOM has received substantial attention in a great number of product purchasing studies, but the research of eWOM effects is still at its infancy in the tourism field. So far few studies have paid attention to the specific effect of eWOM on tourists' destination choice (Zhu and Lai, 2009; Park and Gretzel, 2007; Litvin et al., 2008)

2. Theoretical framework

2.1. The Theory of Persuasive Communication (McGuire, 1985)

McGuire (1985) is an American sociologist, in his research, he has shown that to have communication activities capable of persuading subjects to receive information to change perceptions, attitudes, and behaviors, they must approach, attract attention, and have a relationship with the receiver to help them understand the message. From that awareness, they will adjust their behavior, thereby accepting, making decisions and accepting behaviors in life. In addition, McGuire also points out 4 factors that ensure successful message transmission including credibility of source, message, transmission channel, and receiver. These factors will have an impact on the effectiveness and success of the message conveyed to the recipient.

2.2. Theory of Planned Behavior (Ajzen, 1991)

The Icek Ajzen (1991) has pointed out the relationship between belief and attitude and their relationship with intention. The TPB assumed that belief, attitude, intention and behavior are the purposes of persuasive communication (Ajzen, 1991). For customers purchasing under the influence of eWOM, the arguments of the information must point towards beliefs that will lead to changes in the behavior and intentions of information recipients.

Based on the theoretical review and the above discussion, this research chose to combine the following original theory on the impact of electronic word of mouth EWOM on intention to choose a tourism destination. McGuire's (1985) persuasive communication theory underpins the theory of eWOM, which explains the factors of eWOM on persuasive communication effectiveness. Besides, the theory of planned behavior of Ajzen (1991) serves as the basis to explain consumer behavior of customers.

2.3. Empirical model

2.3.1. Information Adoption Model - IAM (Sussman & Siegal, 2003)

Information Adoption Model (IAM) was pointed out by Sussman & Siegal in 2003 and it can explain how individuals adopt information to change their intentions and behaviors within the computer-mediated communication platforms. The IAM model evolved from both the Technology Acceptance Model (TAM) (Davis, F. D, 1989) and the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986). Based on TAM, IAM assumed that the usefulness of information has a significant effect on the information adoption. On the

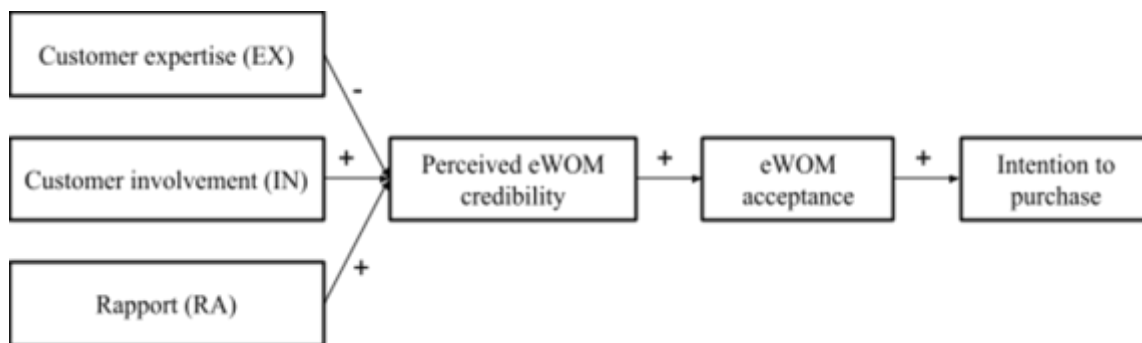
other hand, developed from ELM, IAM gave a prediction that the information usefulness is directly associated by the argument quality and the source credibility, which can be described as follow:



The IAM model has been applied in several studies about eWOM, for example Chueng et al. (2008); Shu & Scott (2014),... Specifically, Chueng et al. (2008) used IAM when studying the adoption of online opinions in online customer communities; whereas, Shu & Scott (2014) focused on the influence of social media on Chinese students' choice of an overseas study destination.

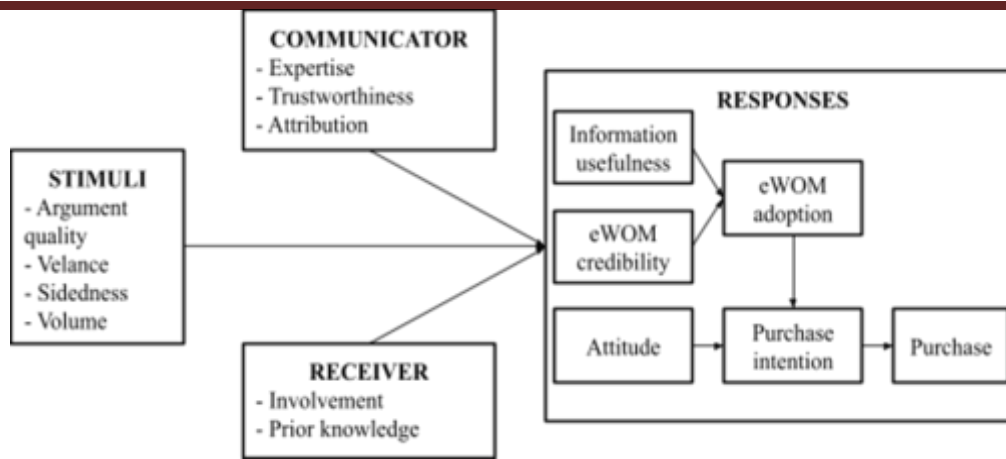
2.3.2. eWOM Model of Fan & Miao (2012)

Yi-Wen Fan and Yi-Feng Miao conducted a study about the influence of electronic word-of-mouth (eWOM) on electronic products purchase intention. They built a model including three variables affecting perceived electronic word-of-mouth credibility and electronic word-of-mouth acceptance, which are customer expertise, customer involvement and rapport. By applying ELM to analyze data collected from 116 customers who used to online purchase electronic products in Taiwan, the research show that: customer expertise has negative effect, but customer involvement and rapport have significantly positive effects on perceived electronic word-of-mouth credibility, moreover, perceived electronic word-of-mouth credibility positively electronic word-of-mouth acceptance and intent to purchase. However, this study has some limitations when analyzing with a small sample size and focusing on a particular city. In addition, the purchase intention is affected by many other characteristics of eWOM besides the ones mentioned.



2.3.3. eWOM Model of Cheung and Thadani (2012)

Ph.D Christy M.K. Cheung sustains a passionate interest in developing models relating to eWOM. In 2008, Cheung et al. published the study “The impact of Electronic Word-of-Mouth: The adoption of online opinions in online customer communities” with a conceptual model which demonstrated two positive influences of source credibility and eWOM quality on eWOM acceptance. Two years later, she and her partner Dimple R.Thadani proposed a theory frame about key factors in social media. According to this research work, electronic word-of-mouth comprises 4 main factors: communicator, receiver, stimuli and response. Developed from these two previous studies, Cheung and Thadani in 2012 continued to announce a more comprehensive eWOM and purchase intention model. Although this model is evaluated as the most thorough eWOM model ever, the limitation of the study is that it only stops at the theoretical model and has not been analyzed experimentally.



3. Research method

3.1. Hypothesis development

Online word-of-mouth (eWOM) can be known as the information, discussion related to the products being transmitted to the customers via mass media, so the theoretical basis for this research has been Persuasive communication theory. This study chooses persuasive communication theory (McGuire,1985) and Theory of Planned Behavior (Ajzen,1991). In addition, based on the empirical model of Sussan & Siegal, 2003; Fan & Miao (2012) and M.K Cheung et al.2012, through research purpose and research question our conceptual model is aimed to resolve two main relationships: (1) the impact of 5 components of online word-of-mouth on eWOM adoption; (2) the relationship between eWOM adoption and intention of destination choice Da Lat.

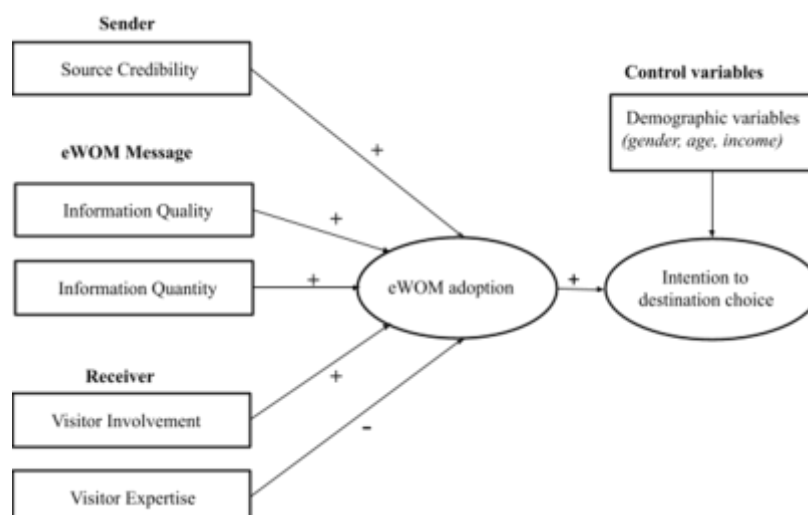
The model includes:

Five independent variables, divided into three groups: group 1 includes a factor relating to the sender; group 2 mentions two characteristics of the message, and group 3 considers features of the receiver.

Two dependent variables are the eWOM adoption and intention to destination choice.

According to the IAM of Sussman & Siegal (2003), the two characteristics, source credibility and information quality, were shown to predict intention to behave. While the source credibility can be understood as to which it is perceived as credible or practical via evaluated reliability of media (including social networks, websites, etc.) and the relationships with senders, information quality is defined as the extent to which a customer perceives an offer or evaluation as effective or trustworthy, reliable, or accurate (Sussman & Siegal 2003).

Conceptual model: The relationship between eWOM and intention to tourism destination choice among Vietnamese visitors



In the online environment, information can be generated by most network users; hence, the quality and credibility of information are increasingly being more critical (Xu, 2014). The credibility can lead to more belief in the truthfulness of the message sent; whereas, the quality of eWOM information will provide a great number of useful knowledge to the readers. In fact, these previous studies have shown that the quality of online reviews has a positive impact on the purchase intention of consumers (Park et al., 2007). Based on the information acceptance model, this study sets the expectation that the source credibility and information quality can lead to the usefulness of the information and then positively affects the information adoption and purchase intentions. This study tests the following hypotheses in the context of intention to destination choice:

H1: The source credibility is positively associated with eWOM adoption.

H2: Information quality is positively associated with eWOM adoption.

Information quantity also has been considered as having a positive relationship with eWOM adoption. The main reason probably was that the amount of information on eWOM significantly correlated with its impacts on human behavior. When a consumer seeks online reviews, the number of eWOM makes opinions more diverse (Cheung & Thadani, 2010). The number of eWOM represents the popularity of a product. Reading many reviews by others can reduce consumer anxiety when deciding to buy because consumers believe that many others have also bought these products (Chatterjee, 2001). Moreover, Park et al. (2007) provide evidence that the number of eWOM positively affects consumer adoption of eWOM information. Depending on the above discussion, the hypothesis is suggested:

H3: Information quantity is positively associated with eWOM adoption.

Regarding the receivers, there have been 2 such variables as visitor involvement and visitor expertise affecting eWOM adoption. Visitor involvement refers to the degree of identification and interest of the receiver in a product or service (Cheung and Thadani, 2010). Customers with high involvement will have motivation to read more evaluations and recommendations (Fan & Miao, 2012). Zaichkowsky (1985) discovered that if the level of involvement was low, little of information can be received enough to make them aware, and reverse. Therefore, it is expected that the more involvement visitors have, the more self-motivated they are to go online and search for information, which indicates their genuine belief in eWOM and high adoption of eWOM information.

H4: Visitor involvement is positively associated with eWOM adoption.

On the other hand, customer expertise may have a negative impact on eWOM adoption. Regarding definition, expertise can be understood as customers' understanding, judgment, and knowledge in a particular area or product (Ohania, 1990). In the context of tourism, customer expertise can be understood as visitor expertise which includes two main factors: visitor knowledge and visitor experience. According to Basal and Voyeur (2000), the more knowledgeable customers are in a product, the more confident they will be to determine purchasing a product without needing to find much other consultation. Petty and Cacioppo (1986) also believed that available knowledge and experiences of customers will help them to decide the purchase and this was called the central route. Therefore, knowledgeable visitors have a tendency to choose destinations based on their own expertise without participating in eWOM, which negatively affects their eWOM adoption.

H5: Visitor expertise is negatively associated with eWOM adoption.

Of the six variables, eWOM adoption is the only one to have a direct effect on the intention of destination choice. eWOM adoption is a psychological act that affects online users through social norms or reviews/comments in the online environment (Fan & Miao, 2012). Blackwell (1995) conducted research on consumer action from the perspective of consumer purchase decision-making process, which showed consumer behavior includes the following five steps: demand confirmation, information search, evaluation, selection and disposal of purchase decision after purchase. Schiffman & Kanuk (2000) believes that consumer purchase intention plays a measurable role in the possibility of consumer purchasing behavior. Compared to traditional word-of-mouth, electronic word-of-mouth has more power, for example, Tseng,

Kuo & Chen (2013) also proved that electronic word-of-mouth has a significant effect on purchase intentions regardless of the type of virtual community, and this study found that positive electronic word-of-mouth is positively related to purchase intentions and has a greater effect on purchase intentions than ads. Based on the conclusions of the above scholars, it is believed that before the actual purchase behavior, consumers will reduce the perceived risk of products through electronic word-of-mouth, thus resulting in the purchase intention. Once the eWOM adoption exists, the purchase intention will increase (Fan & Miao, 2012).

H6: eWOM adoption is positively associated with the intention of destination choice.

This study focuses on examining the relationship between five facets of eWOM and eWOM adoption to intention to destination choice. It also has some control variables to the model (i.e. geographic distance, cultural distance, and political & social stability) to control their impact.

In order to test hypothesis relationships, this research collected visitors' survey data. In the following sections, it will discuss the sample and measures used in this study. The study uses mixed methods including qualitative research methods to explore the scale and quantitative research methods to analyze the impact of electronic word of mouth on the adoption of eWOM information: A case study for Hanoi citizens when having an intention to Da Lat.

3.2. Sample and data collection

The survey was conducted among gen Y and gen Z generations in Hanoi, the capital of Vietnam. These two groups of people were chosen to ensure the necessary conditions for participating eWOM (e.g. the regular exposure to the Internet). Moreover, because travelling brings new experiences, which is especially important to young people, they take great interest in tourism. Respondents were expected to be diverse in terms of gender, age, and income levels in order to assure the sample's diversity.

In the process of the survey, the study received 216 valid responses out of 225 ones sent back. In the sample, there were slightly more females (59.3%) than males (40.7%). The dominant age group was people from 18 to 24 years old (74.5%). Approximate 58% of the respondents earned an average monthly income of up to VND 3 million. The sample included 87.5% of people travelling for relaxing purposes, which match with the research objectives. The demographic profile of the respondents is presented in following table.

Table 1: Demographic profile of respondents

Characteristics		Frequency	% of Total
<i>Gender</i>	Male	88	40.7
	Female	128	59.3
<i>Age group (years)</i>	<18	16	7.4
	18 - 24	161	74.5
	>24	39	18.1
<i>Income</i>	<3.000.000	126	58.3
	3.000.000 - 5.000.000	43	19.9
	>5.000.000	47	21.8
<i>Purpose of traveling</i>	Leisure	189	87.5
	Business and others	27	12.5

3.3. Measure and questionnaire development

All scales used for variables in the model are designed in the form of Likert scale with 5 levels from “1-strongly disagree” to “5-strongly agree”. The scale is a collection of a set of referenced questions adjusted from previously published studies to increase the reliability and validity of the scale. Specifically, the scale of “sources credibility” and “information quality” based on Le Minh Chi & Le Tan Nghiem (2018), “visitors involvement” and “visitor expertise” based on previous scale of Fan & Miao (2012), Pham Thi Minh Ly (2016), the scale to test “eWOM adoption” according to Fan & Miao (2012), Pham Thi Minh Ly (2016) and Le Minh Chi (2018). Finally, the dependent variable “destination choice intention” is modeled according to the scale of Kassem et al (2010). The scale includes 20 items measuring five variables regarding eWOM (4 items for “sources credibility”, 2 items for “information quality”, 2 items for “information quantity”, 4 items measuring “visitor involvement”, 4 items for “visitor expertise”, 4 items for “eWOM adoption”) and 3 items measuring tourism destination choice intention. About the dependent variable, there are 3 items to measure intention to destination choice.

To collect data for the study, the questionnaires were developed on the basis of all the scale items measuring the constructs in the research model. In addition, the questionnaire also included some demographic questions such as gender, age, monthly income, and purpose of travel. In the process of designing the questionnaire, consultations with translation experts and a number of marketing scholars were also carried out in order to limit language, cultural or ideological problems when translating from English to Vietnamese.

3.4. Data analysis

The study did several regression analyses with eWOM adoption as the dependent variable in the first regression run to assess the presented hypotheses. The independent variables in Model 1, the control model, are gender (dummy variable: female = 1, male = 2), age (dummy variable: 18 = 1; 18 - 24 = 2; > 24 = 3), and income (dummy variable: VND 3mil = 1, VND 3mil - VND 5mil = 2; > VND 5mil = 3). In Model 2, in addition to the control variables, five factors are *Source credibility*, *eWOM quality*, *eWOM quantity*, *Visitor involvement* and *Visitor expertise* were added. In the second regression run with Intention to destination choice as the dependent variable, the study added all the independent variables from the first regression run and the intermediate variable is *eWOM adoption*. Then, the research assessed the reliability and validity of the scales used in this study before testing the hypotheses relationships. Specifically, Cronbach's alpha was determined for each scale to test the scale of reliability. The study used exploratory factor analysis (EFA) on all of the scale items measuring independent variables, and on the scale items measuring the dependent variable separately to test the scale's convergent validity and discriminant validity.

4. Results and discussion

4.1. Results

4.1.1. Scale reliability tests and validity assessment

The study employed EFA (PCA with Varimax rotation) and a reliability test using Cronbach coefficient alpha to evaluate the scales used in this study. Due to low item-total-correlations, low squared multiple correlations (< .30), and/or confusing loading patterns (loaded highly on several factors or on the wrong factor), one item measuring the '*eWOM quantity*' facet and one item measuring the '*eWOM quality*' facet were dropped during the EFA and Cronbach's alpha analysis. The final EFA results clearly proved the scales utilized in this study's convergent and discriminant validity. Specifically, EFA was carried out on the items that measured five independent variables. As expected, a five-factor solution emerged, explaining 79.57% of the total variance. EFA was also run on the items measuring the dependent variables (*i.e. eWOM adoption and Intention to destination choice*), and one factor emerged, explaining 74.60% (*eWOM adoption*) and 84.41% (*Intention to destination choice*) of the total variance. On the designated factor, the scale items were highly loaded while the others were lowly loaded.

Table 2: Descriptive statistics and factor loadings for scale items (n = 216)

Constructs and the scale items	Mean	S.D.	Factor loadings
Visitor involvement (alpha = .812)			
I have an interest in reading eWOM information about Da Lat	3.96	.89	.716
Participating in eWOM (both reading and writing) about Da Lat is my habit and hobby.	4.09	.88	.802
I find it important to select eWOM information about Da Lat before making decisions.	4.04	0.86	.754
I appreciate when I am given eWOM information about Da Lat	3.96	.89	.718
eWOM quantity (alpha = .874)			
I am attracted to places with a large number of reviews like Da Lat	4.18	1.00	.859
I believe products/service of Da Lat with high quality attracts customers to comment	4.21	.98	.865
Source credibility (alpha = .889)			
I believe in online information about Da Lat provided by those close to me	4.47	.73	.675
I think that senders have experienced Da Lat destinations	4.49	.73	.764
I searched for information about Da Lat on the popular website	4.41	.81	.828
I was attracted to the information about Da Lat of people with similar tastes, habits and consumer experiences.	4.39	.86	.825
Visitor expertise (alpha = .963)			
I have a lot of knowledge about Da Lat attractions	2.28	1.46	.921
I have a lot of experience travelling to Da Lat	2.18	1.46	.909
I have a lot of experience in selecting useful information online about Da Lat.	2.33	1.46	.928
I make the decision to choose Da Lat as a destination mainly based on my own understanding rather than through the information given by other visitors.	2.28	1.40	.920
eWOM quality (alpha = .784)			
I think the information about Da Lat I received or found is credible	3.71	.81	.862
I think the information about Da Lat is objectively sent by the sender	3.75	.87	.830
eWOM adoption (alpha = .828)			
I agree with eWOM information about traveling to Da Lat.	3.73	.89	.823
Information from eWOM gives me confidence to choose Da Lat as a travel destination	4.05	.84	.898
Information from eWOM motivates me to choose Da Lat as a travel destination.	3.94	.87	.868
Intention to tourism destination choice (alpha = .907)			
Under this effect, I predict I will visit Da Lat in the future	4.13	.98	.928
I would visit Da Lat rather than any other tourism destinations	3.99	1.01	.901
If everything goes as I think, I will plan to visit Da Lat in the near future.	4.11	1.00	.927

The Cronbach alpha was analyzed for each scale, ranging from .756 (for intention to destination choice) to .963 (for visitor expertise). These results demonstrated an acceptable level of reliability with coefficient alphas exceeding .60 (Hair et al., 1998). Table 2 shows the results of EFA, Cronbach's alpha, and descriptive analysis.

Correlations are also checked among the constructs used in this study. There was no multicollinearity problem found since all bi-variate correlations were less than .25. All facets of eWOM were found to be

significantly correlated with the dependent variable (eWOM adoption). Specifically, correlations between eWOM adoption and the Source credibility facet ($r = .686, p < .01$), the eWOM quantity facet ($r = .662, p < .01$); correlations between intention to destination choice and the Source credibility facet ($r = .639, p < .01$), the eWOM quantity facet ($r = .615, p < .01$). The correlation between eWOM adoption and Intention are also significant ($r = .709, p < .01$).

4.1.2. Regression results

Table 3: Regression results

Dependent variable: EWOM adoption

	M1 β (standardized)	M2 β (standardized)
Independent variables		
Gender	0.109	0.081
Age	0.317***	0.142**
Income	-0.068	-0.022
eWOM quality		0.12**
Source credibility		0.3***
Visitor involvement		0.146**
eWOM quantity		0.349***
Visitor expertise		-0.135**
R ²	0.1	0.691
Adjusted R ²	0.087	0.679
R ² change		0.592
F	7.812***	57.937***

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$

The study carried out two regression models (M1, M2) with *eWOM adoption* as the dependent variable. All two regression models were respectively found to be important: $F = 7.812, p < .001$; $F = 57.937, p < .001$. Model 1 made up 10% of the variance in the data. The figure was 69.1% for Model 2. The regression results claimed that only *age* contributed positively towards *eWOM adoption* ($\beta = .317, p < .001$) in Model 1. The regression results demonstrated a significant contribution of *Source credibility*, *eWOM quality*, *eWOM quantity*, *Visitor involvement* and *Visitor expertise* in Model 2, lending support to H1, H2, H3, H4 and H5. Among these five predictors, *eWOM quantity* consistently showed the strongest impact, followed by *Source credibility*, *Visitor involvement* and then *eWOM quality*. *Visitor expertise* is the only one that contributed negatively towards *eWOM adoption*. The results of hypothesis testing are summarized in Table 3.

Table 4: Regression results*Dependent variable: Intention to destination choice*

	M1	M2
	β (standardized)	β (standardized)
Independent variables		
<i>Gender</i>	0.082	0.002
<i>Age</i>	0.188*	0.004
<i>Income</i>	-0.065	-0.028
<i>eWOM quality</i>		0.235***
<i>Source credibility</i>		0.120*
<i>Visitor involvement</i>		0.193***
<i>eWOM quantity</i>		0.219***
<i>Visitor expertise</i>		-0.206***
<i>eWOM adoption</i>		0.166*
<i>R²</i>	0.034	0.679
<i>Adjusted R²</i>	0.020	0.665
<i>R² change</i>		0.645
<i>F</i>	2.479	48.322***

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$

The study also performed a regression model with *Intention to destination choice* as the dependent variable and *eWOM adoption* as the independent variable, the other independent variables are the same. Only the second regression model was found to be significant: $F = 48.322$, $p < 0.01$. Model 1 accounted for 3.4% of the variance in the data. The figure was 67.9% for Model 2. The regression results showed that only *age* contributed positively towards *Intention to destination choice* ($\beta = .188$, $p < .05$) in Model 1. The regression results demonstrated a significant contribution of *Source credibility*, *eWOM quality*, *eWOM quantity*, *Visitor involvement* and *Visitor expertise* and especially is *eWOM adoption* in Model 2, lending support to H6. The regression results also show that five predictors from the second regression run also have an impact on *Intention to destination choice*. Among these six predictors, *eWOM quality* consistently showed the strongest impact, followed by *eWOM quantity*, *Visitor involvement*, *eWOM adoption* and then *Source credibility*. *Visitor expertise* is the only one that contributed negatively towards *Intention to destination choice*. The results of hypothesis testing are summarized in Table 4.

4.2. Discussion

The impact of eWOM on tourists' destination choice has been discussed among many researches of developed countries; however, it has not been clearly implied in those developing countries, which in this research is a case study of Da Lat, Vietnam. This study proposed and tested an extended IAM theory with 3 extra facets of eWOM adoption which then leads to the intention of destination choice to Da Lat. Six hypotheses were tested and all of them were supported with 5 positives and 1 negative. It is noticed that the internet has greatly empowered consumers in their ability to gather and disseminate product-related information. Today, consumers can easily access peer-generated product information around the globe and can also influence numerous consumers by voicing their own experiences (Ward and Ostrom, 2003).

Researchers who are aware of this new phenomenon call for new knowledge to understand consumer behavior in virtual communities and, more importantly, how organizations can use this knowledge (Laroche, 2010). This research attempts to explain eWOM influences on the process of a tourism destination choice. IAM, Fan & Mao, and M.K Cheung (2003) provide a conceptual framework of the process of decision-making on a tourism destination. According to findings, eWOM among tourists has a significant impact, especially information quantity on information adoption, which also has a direct impact on the tourism destination choice to Da Lat. This can be explained by the crowd effect among the youth, which means that the more information about the place, the more reliable it is. In addition, in this study, source credibility was also found to be an influential factor. In fact, social media users often receive eWOM information from friends in their “friend list” and so they tend to perceive this information as clear, understandable and trustworthy. In the tourism industry, it is difficult to verify the authenticity of information without actually going to the place, so eWOM quality was the least influential of the five included. In contrast, the finding regarding the negative impact of visitor expertise suggests that more experiences allow travelers to decide on their own without relying on others' opinions on the Internet.

The findings of this research offer important implications for tourism managers that will be discussed in the next section. It is important to say that positive WOM and eWOM play an important role in increasing tourists' travel intentions, creating a favorable image of the destination, and reducing promotional expenditures. Tourism managers need to acquaint themselves with the phenomenon of virtual worlds. Virtual worlds offer an inspiring perspective for enhancing the quantity and quality of tourism activities through collaborating with tourists.

The main limitation of this study is that, although five factors were selected as the predictors of eWOM adoption, only three were shown to have a significant influence. This might be because young visitors usually notice the quantity more, and ignore normative attributes. As another limitation, the study focuses on surveyed adolescents in Hanoi, who are exposed to the Internet a lot, and measuring the effects of eWOM on a particular destination, so the following studies could conduct a survey in other groups of people so that the research results will be higher and can also compare the difference in the effects of word of mouth electronically to another city's destination choice intention. Besides, the study can only measure the level of the influence of 6 factors of eWOM on the tourism destination choice of Vietnamese people. In fact, eWOM is also configured by many other factors, including cultural desire, cross-culture differences, etc. Therefore, further studies can build models to measure the influence of more elements on the intention of destination choice.

5. Conclusion

According to the findings of this study, there are certain improvements that may be made to improve the positive effects of eWOM on the tourism industry. The results revealed that quantity had the greatest impact on destination choice intention, implying that the more people who mention the location through reviews and feedback on social media, the better the performance is. For example, we can use social media to generate more debate subjects about locations in order to draw more participants, or we can develop controversial content that generates several streams of perspectives, incentivizing viewers to visit the location to check. Certain marketing strategies, such as promotional gifts for customers who publish legitimate and highly constructive evaluations, can also be utilized by travel firms to increase the number of customer reviews.

Secondly, boosting the credibility of sources and the quality of information can promote tourism. Vietnam has already built a tourism-related electronic information channel called "Vietnam.travel/home" where visitors may find the most detailed, particular, intuitive, and vivid information. What needs to be done now is to improve reliability and provide real-time travel experience sharing using visual aids such as VR, AR, 360, etc., which will give individuals a sense of security while making decisions.

Finally, visitors' involvement should also be focused. As shown in the study, customers will have a greater need to search for eWOM of the destination they chose when they feel attracted by the service and

quality of that destination. Therefore, in order to increase the participation of tourists, travel companies should carefully research their different customer groups, then build up marketing campaigns targeting the exact insight of the most potential group via surveys and PR campaigns on social networking platforms.

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FINANCIAL INTEGRATION AND ECONOMIC GROWTH: EVIDENCE FROM VIETNAM

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ABSTRACT

As one of the most important economies in SouthEast Asia, Vietnam has experienced remarkable economic growth and development in the past two decades. As such, Vietnam has been able to maintain discipline and success in its financial integration with the region and the world over the past several years. Financial Integration (FI) has been a topic of discussion among many governments, including the Vietnamese government. Although the theoretical effects of financial liberalization on economic growth are predominantly positive, the empirical evidence regarding the importance of Financial Integration is somewhat mixed. Many empirical and theoretical works affirmed that financial integration could help countries to increase their growth rate and ameliorate their life quality. This study was conducted by using the VAR model and examining annual aggregated data using an econometric technique to identify whether financial integration fosters Vietnamese economic growth, therefore providing further evidence on the relationship between financial integration and growth in Vietnam. The Cobb-Douglas production function is used to establish and explore the relationship between financial integration and economic growth in Vietnam. With a relatively small annual data sample in 20 years, from 2000 to 2020, the VAR model is used to determine the long-term co-integration between financial integration and economic growth in Vietnam. Findings from this paper indicate a short-term co-integration between financial integration and economic growth in Vietnam. Specifically, the results of the study show that financial integration has a positive effect on economic growth in Vietnam with an optimal lag of 1 year. In addition, the study also shows that, in the long run, the variable financial integration has a negligible effect on economic growth. The bidirectional causality between financial integration and economic growth in Vietnam is also confirmed using the Granger causality test.

This paper sheds new insights on a better evaluation of the past and present theorizing on the subject of financial integration and economic growth; especially, in Vietnam.

Keywords: Cobb-Douglas; economic growth; financial integration; VAR model; Vietnam

1. Introduction

Over the past two decades, Vietnam has made significant inroads into the global market in the past two decades. According to World Bank, the average real GDP per capita growth in Vietnam was 10.37% over the period 2000-2020. Yang (2012) argues that financial integration facilitates capital flows, which results in a more efficient allocation of capital and the ability to spread international risk. International financial integration is a very old phenomenon with origins dating back to the late 19th century, specifically 1870. At that time, financial markets needed new global markets for investment and to find more funding sources. Financial integration is a process of removing all market-based restrictions on capital movement across borders, as well as discrimination in legal, regulatory, and taxation matters. As a result, it may result in a better allocation of resources, a more diverse risk profile, technological spin-offs, a more developed financial system, and improved investment rates and growth (Mougani, 2012). In the past several decades, the relationship between financial integration and economic growth has always been of particular interest among researchers. This raises the question whether financial integration plays a positive role in enhancing economic growth in Vietnam. What we know about this relationship is largely based upon empirical studies that investigate how various

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growth processes made possible by finance. In general, since panel data is generally used at an aggregate level, past research has been conducted to identify typical influences of finance on economic growth or vice versa. Previously, empirical studies examined this important link using panel data of many nations at the aggregate level (Anwar and Cooray 2012; Edison et al. 2002; Gourinchas and Jeanne 2006; Imbs 2006; Kose et al. 2003; Lane and Milesi-Ferretti 2003; Menyah et al. 2014). Other papers employed financial market time-series data for a single country (Cheung et al. 2005; Girardin and Liu 2007; Guiso et al. 2004; Peia and Roszbach 2015; Duc Hong Vo et al 2020). Limited studies are found to have used time-series analysis at the aggregate level (e.g., Ang (2008b, 2010); and (Anwar and Sun 2011)). (Naguib, 2015; Prasad, Rogoff, Wei, & Kose, 2003) found mixed evidence on the relationship between financial integration and economic growth. Meanwhile, some economists say that the consequences of integration on economic growth are positive.

Honig (2008) and Mougani (2012) using the ARDL approach to cointegration during the period worldwide. There has also been evidence that foreign capital inflow is a factor likely to mobilize technology, promote specialization in production, raise capital allocation, and thus stimulate economic growth, according to Obstfeld (1994), Acemoglu and Zilibotti (1997), Bailiu (2000), Honig (2008), Klein and Olivei (2008). Thereby, foreign investors flocked to emerging markets as a result of their opening, which increased capital flows to them. By liberalizing the emerging markets, Henry (2000) proposes that foreign investors increased the liquidity on the financial markets, reduced the costs of loans, made certain projects more profitable and led to increased economic activity. Also the study of Mensi and al (2010) shows a positive and stable relationship between financial integration and economic growth. In their opinion, this liberalization of the capital markets promoted the integration of developing economies. Duc et al (2020) study the effect of financial integration on economic growth in a specific country, which is China. Their research implies that greater financial integration and globalization impose a potential risk on the Chinese economy by limiting economic growth. Others argue that financial integration does not promote economic gains, that is, it does not have significant effects on economic growth as demonstrated by Rodrick (1998) and Kraay (1998). This positive relationship is valid only under certain conditions and countries need to lift some strategies to stimulate the real economy.

In general, according to previous researches, financial integration facilitates the flow of capital from one market to another as it increases the efficiency of the market. Globalization has impacted the economy in multiple ways: by facilitating global trade, freeing up more capital, reducing exchange controls, and establishing currencies' convertibility, which has increased economic activity.

Although financial integration may contribute to economic growth was partly acknowledged, the finance-growth nexus is still poorly understood and impractical in Vietnam. To the best of our knowledge, there are limited empirical studies analyzing the impact of financial integration and economic growth, particularly in Vietnam. Therefore, this paper sheds new insights by examining whether financial integration promotes economic growth in Vietnam over the period 2000-2020. This paper further investigates whether the relationship depends on the level of financial and economic development. These questions raise important issues both from a theoretical and a policy perspective. More specifically, this paper contributes to the existing literatures in two-folds. Firstly, our empirical analysis shed new insights on the critical issue whether financial integration matters for economic growth by using a specific measurement index for financial integration. Secondly, the vector autoregression (VAR) used to fit in the context of Vietnam by further exploring the previous studies with an eye on the policy lessons for today.

This paper is classified into four sections. Section one provides introduction. Following this introduction, a theoretical framework on the finance-growth nexus and the growth effect of financial integration is examined in Section 2. In Section 3, research method and data including are discussed. Section 4 reports the empirical results and discussions of the main findings.

2. Theoretical framework

2.1. Financial integration and economic growth

Previous empirical studies on the impact of financial integration have been widely discussed worldwide. However, there are still many conflicting opinions regarding the relationship between financial integration and economic growth.

According to Brouwer and Allan (2005), financial integration is the process of more integration between financial markets and other economies. It is considered as a process of unifying markets and enabling convergence of risk across the markets (Kang, 2009). When there are competitive capital markets, it eliminates barriers to capital movement and leads to gains in investment and saving (Mongelli, 2002). However, there is no universal definition for financial integration.

By examining a variety of factors, Schularick and Steger (2010) examined financial integration between 1880 and 1914, including financial development, institutional quality, trade integration, political integration, and financial integration. However, the authors failed to examine the impact of financial globalization on growth econometrically for a percentage of countries. Schularick and Steger (2006) examined evidence from 24 developed and developing countries from the first era of financial globalization over the period 1880-1912 in order to investigate the link between financial integration and growth. Their research suggests that closer financial integration could help the Asian region to take advantage of its regional markets. During the 1990s and 1998, Epaulard and Pommeret (2005) simulated 32 developing and emerging economies using a theoretical model. Based on their findings, financial integration is responsible for about 0.3 percent of additional economic growth each year.

On one hand, according to some preliminary work which was carried out several years ago, the relationship between financial integration and economic growth is positive (Levin and Zervos, 1998; Levine et al, 2000; Levin, 2005; Yang, 2012; Osada & Saito 2010; Schularick & Steger, 2010; Schularick & Steger, 2006; Epaulard & Pommeret, 2005; Prasad et al., 2003). The empirical studies suggested that financial integration had a positive effect on growth under certain conditions, including good financial system, higher level of economic development, and macroeconomic policies. For instance, Osada and Saito (2010) collected a panel data of 83 countries from 1974- 2007 to examine the effects of financial integration on growth. Their study found financial integration had an indirect effect on growth through its impact on the other determinants of growth, including international trade and the development of domestic financial markets. Therefore, capital flows, including FDI can help transfer advanced technology to the developing countries. This can have a significant impact on productivity growth. Especially, a well-developed financial system can efficiently allocate capital resources to productive users. On that basis, it enhances economic development. According to an extensive literature review, financial development plays a significant role in economic growth and development. This effect is manifest through two distinct channels: (i) capital accumulation and (ii) total factor productivity (TFP) (Ang 2008; Anwar and Sun 2011; Arestis et al. 2014; Greenwood and Jovanovic 1990; Gurley and Shaw 1955; King and Levine 1993). In a financial development context, financial integration can take either the capital accumulation or the TFP channel form. Capital accumulation through foreign direct investment or foreign debt can be affected by world economic integration. Regulations on financial integration directly and indirectly impact the TFP channel by tonnage-factor pricing, the incentive of international financial innovation, or the participation of foreign or domestic investors in the national or global market. Economic growth and development are therefore influenced by financial integration.

As relates to financial development, the literature developed on the basis of financial depth and financial stability to extend concepts like financial liberalization, financial inclusion, and financial integration. As international economics has developed, the abstract notion of "integration" (economic integration or financial integration) has emerged. Financial integration is largely investigated in terms of financial globalization or financial liberalization at the aggregate level (Ang, 2008; Anwar and Sun, 2011; Bekaert et al., 2005; Bussière and Fratzscher, 2008; Dreher, 2006; Dreher et al., 2008; Eichengreen et al., 2011; Gourinchas and Jeanne, 2006; Gygli et al., 2019; Levine et al., 2000; Wolde-Rufael, 2009).

Many studies find a link between financial integration and growth. However, these papers also indicate the complexity of the finance–growth nexus. An example is Ang's (2008) interpretation of the complex relationship between financial development and economic growth in Malaysia. Finance promotes economic growth in Malaysia. However, regulations from the Malaysian governments on its financial system negatively affect national economic growth. The study by Anwar and Sun (2011) on the Malaysian financial system indicates that the development of the financial sector has contributed positively to the capital stock of Malaysia

but has not sustained economic growth. In their cross-country analysis, Bussière and Fratzscher (2008) highlight that countries benefit immediately after liberalizing their financial systems. Consequently, economic growth will not increase as quickly as originally thought and may even decrease in the medium and long term. The relationship between financial integration and welfare gains in developing countries is confirmed by Gouinchas and Jeanne (2006). Among the measures of causality between finance and growth in Kenya, Woolde-Rufael (2009) found a bidirectional causal relationship between domestic credits and economic growth, as well as liquid liabilities and economic growth. By drawing upon the analyses of Dreher (2006) and Dreher et al. (2008), Gygli et al. (2019) extend a dataset on globalization indices and show that globalization including financial globalization promotes economic growth. When studying the relationship between international financial markets and economic growth, Hali J. Edison et al. (2002) looked at 57 countries over the past 20-25 years using a variety of statistical methods. The data do not support the view that international financial integration will promote economic growth, even when controlling for specific economic, financial, institutional and policy characteristics.

According to Schularik and Steger (2010), the authors investigated financial globalization over the period 1880- 1914 by analysing several factors, including financial development, institutional quality, trade integration, political integration, and financial integration. However, the authors did not examine econometrically for a cross-section of countries whether financial globalization could enhance growth. Schularick and Steger (2006) investigated the nexus between financial integration and growth by examining the evidences from the first era of financial globalization over the period 1880-1912 from 24 developed and developing countries. Their findings suggested that closer financial integration may allow the Asian region to take advantage of regional markets. According to Epaulard and Pommeret (2005), the authors calibrated a theoretical model of 32 developing and emerging economies over the period 1990- 1998. Their results confirmed that financial integration leads to about 0.3 percentage of additional economic growth per year. However, Edison et al. (2002) and Prasad et al. (2003) investigated the relationship between financial integration and growth. The authors collected the data over 20-25 years from 57 countries by constructing a variety of measures of international financial integration. Their findings suggested after controlling for specific economic, financial, institutional and policy characteristics, financial integration did not promote growth. Edwards (2001) examined the effects of capital mobility on growth by using a cross-country data of 61 countries over the period 1981-1990. The results confirmed a positive relationship between capital account openness after a certain level of development. However, their studies found capital account openness in an economy with a low level of financial development may have a negative effect on growth. Recent empirical studies found there is a positive relationship between openness and economic growth (Bekaert Harvey, Edwards, 2001). Juraev (2013) used different methods to & Lundblad. 2001; examine trade openness, financial and equity market development. Their findings suggested countries with high current account surplus are better under financial integration, especially with less inflation and less strict rule of law. In addition, the empirical studies suggested financial integration helps facilitate risk diversification, promote efficient resource allocation, financial system development, investment rates and boost growth (Prasad et al., 2003; King & Levine, 1993). Therefore, it could improve access to financial services and help rebalance growth by strengthening domestic demand. However, the empirical studies suggested contradictory conclusion about the impact of financial integration on growth (Mougani 2012; Edison et al., 2002; Stiglitz, 2000; Bhagwati, 1998). There was no robust impact of financial openness on growth. The results concluded capital controls are not correlated with the long-term economic performance. Their findings suggested controversial results of the earlier studies that may partly result from measurement error in capital account variables, time periods, and methods (Eratzschet & Bussiere. 2004; Edison et al., 2002; Edison, Michael, Luca, & Slok. 2004). Therefore, financial instability might impact on the economy resulting in a substantial reduction in growth (Park & Lee, 2011). Kose, Prasad, Rogoff, and Wei (2009) employed the GMM method to estimate the effects of various measures of financial openness on growth. They examined some variables that influenced growth, including population growth, years of schooling, inflation rate, trade openness, and institutional quality. Their results suggested the openness on growth vary substantially depending on the effects of financial type of external assets and liabilities. This implies that if financial integration contributed to growth, the effects would depend

on certainties of capital flows or other factors, including the domestic institutional framework (Alfaro, Chanda, Kalemli-Qzcan, & Sayek, 2004).

By contrast, Robinson (1979) argues that financial developments do not bolster economic growth. In broad terms, the development of the financial markets passively reacts to economic growth by increasing the demand for financial products. The economy will not grow as fast as initially estimated in the medium and long run, and even contract slightly. In developing countries, figures from Gourichas and Jeanne (2006) confirm the link between financial integration and economic growth. Welde-Rufael (2009) examines the causal relationship between finance and growth in Kenya and finds a bidirectional causal relationship between domestic credit and economic growth as well as liquid liabilities and economic growth. On the basis of the analyses by Dreher (2006) and Dreher et al. (2008); Gygli et al. (2019) extend a dataset on globalization indices and consider that globalization involving financial globalization enhances economic growth. Theoretically, financial integration can be considered as an aspect of financial development. The concept of “integration” is relatively closed to “liberalization”. However, the process of integration implies the expansion of the domestic market to global financial systems. The term of liberalization, on the other hand, expresses how dynamic the market can be. Financial integration emphasizes a level of a globalized financial system, and financial liberalization suggests a free-regulated financial system. In particular circumstances, financial integration and financial liberalization can be used as alternatives. A globalized financial system requires limited or free regulations, and in turn, a limited-regulate financial market encourages a globalized financial system. On these bases, current theories do not support a clear direction of the influence of financial integration on economic growth and development.

For Vietnam, there was hardly any well-grounded study on this issue. However, these issues have attracted considerable attention from some academics and practitioners. Vuong Quan Hoang, Tran Chi Dung (2010) analyzes the role of the financial system in economic growth and sustainable development through emphasizing the role of FDI in growth theories. In addition, the study also examines the financial system in a transitional economy and its support for SME development. The authors' research has also conducted an overview of related studies abroad, reaching the general conclusion that the development of the financial system has a positive meaning to economic growth.

Nguyen Duc Hung et al (2013) conducted a study with the goal of determining the factors that promote the development of the financial system and testing economic freedom, capital account liberalization or trade liberalization. promoting the development of the financial system in the period 1996-2012. Research using the VECM model, the results show that the trade openness in Vietnam is strongly influenced by financial liberalization.

Phan Khoa Cuong et al. (2016) used the error correction vector model (VECM) to study the short-term and long-term impacts of financial integration on economic growth of Vietnam in the period 1996-2014. The research results show that both in the short and long term, financial integration has a positive impact on economic growth. Similarly, credit to the private sector also positively affects economic growth both in the long run and the short term. In the long run, credit to the private sector has a positive effect and the ratio of investment in the economy to GDP has a negative impact on economic growth. Meanwhile, in the short term, apart from financial integration, only credit to the private sector has an impact on economic growth and this impact is positive. In addition, the research results also show that if the economy is deviated from the long-run relationship, it will take a long time to return to equilibrium. Investment in the economy/GDP only affects economic growth in the long run but has a negative effect while trade openness has no impact on economic growth either in the short term or in the long run. The above results show that financial integration promotes economic development, contributing to poverty reduction in Vietnam in the period 1995-2014. This proves that the Government of Vietnam has quite appropriate policies and takes advantage of the benefits that financial integration brings. From the research results found, the authors make some policy recommendations as follows: First of all, the Government needs to have many preferential policies for foreign investors when investing in Vietnam in order to earn profits. attract FDI capital. In addition, the Government also needs to create conditions for the private sector to access loans. In addition, the Government needs to apply policies to improve

investment efficiency in the economy. Besides the positive side, financial integration will lead to instability of the macro economy (Mougani, 2012). Therefore, a very important issue is that the Government needs to apply policies to strengthen and develop the financial-banking system, ensuring financial security when Vietnam's financial integration process becomes more and more extensive. region and the world.

Research by Vo Xuan Vinh and Vo Huy Phong (2017) shows that the expansion of international financial integration and international trade integration help promote faster economic growth. In contrast, institutional factors such as the rule of law and the degree of corruption control have no direct impact on economic growth. Research results show that perfecting the institution is a condition for better taking advantage of growth opportunities from the expansion of international financial integration and international trade integration.

However, these results do not imply that economic openness is not associated with economic success. Indeed, international financial integration is positively associated with real GDP per capita, educational attainment, development of the banking sector, development of the stock market, and the legal and order tradition of the country, and government integrity (low level of government corruption). As such, successful countries are generally open economies. Overall, the team found that although international financial integration is associated with economic success (high GDP per capita and strong institutions), the data do not support the view that international financial integration much economy stimulates economic growth.

Apparently, the results are different in each study. However, the findings may depend on the different approaches and methodologies used, including the countries and period of studies (Yang, 2012; Schularick & Steger, 2006). Likewise, the literatures had limited evidences to establish a relationship between financial integration and growth due to the complexity of measuring financial integration across nations. Therefore, it is difficult to estimate its impact on the economy (Edison et al., 2002).

The authors confirm the important role of financial development and the Vietnamese government regulations on the financial system in the process of economic growth and development in Vietnam. An overview of the finance–growth nexus with a particular focus on Vietnamese highlights and interests was conducted for this paper. First, there is no clear empirical evidence of the growth effect of financial integration in Vietnam, especially at the aggregate level. Second, current solutions to enhance financial integration along with economic development in Vietnam are inconsistent. These gaps encourage us to empirically explore the growth effect of financial integration in Vietnam at the aggregate level. As such, in this paper, we employ the recently updated data on financial integration.

2.2. *Financial Integration and Macroeconomic Policy*

The fact that financial integration could impact macroeconomic conditions in Asia has been discussed in several researchs. According to Cowen, Salgado, Shah, Teo, & Zanello (2006), this improved economic growth, which attracted more business. Additionally, by stabilizing consumption, macroeconomic forecasts became more accurate. Consequently, policies being enacted will be more effective (Richard, 2002). Although the Asian financial crisis in 1997 led to significant short-term growth sluggishness, it did not lead to a severe slowdown of growth. Financial integration will cause increased volatility of capital flows (Poonpatpibol, Tanboon, & Leelapornchai, 2006) as cross-border links improve (Poonpatpibol, Tanboon, & Leelapornchai, 2006). In some emerging market economies, capital account openness can increase vulnerabilities and crisis. As a result, increasing financial cooperation was instrumental in mitigating the risks associated with regional integration (Chaipat, Surach, & Pornnapa, 2006). Furthermore, a range of econometric techniques and datasets were used to analyze the relationship between financial development and growth. Using a variety of variables from other studies, the authors analysed the correlation between financial depth and growth, including GDP per capita, total productivity, and capital stock (Estrada, Park, & Ramayandi, 2010; King & Levine, 1993). A notable decline in the correlation between financial development and economic growth has been recorded since the Asian crisis (Estrada and others, 2010).

3. Research method

3.1. Model Specification

We based on the work on real wealth measurement method "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004" developed by Lane and Milesi-Ferretti in 2006 for 145 countries in the period from 1970 to 2004. From there, a formula is given to calculate the level of real financial integration (FI) in Vietnam. In addition, the collected data is time-series data, we propose a VAR model for research, which is specifically defined as follows:

$$GDP_t = A_1 + \sum_{i=1}^p \alpha_i GDP_{t-i} + \sum_{i=1}^p \beta_i IFI_{t-i} + U_{1t} \quad (1)$$

$$IFI_t = A_2 + \sum_{i=1}^p \gamma_i GDP_{t-i} + \sum_{i=1}^p \theta_i IFI_{t-i} + U_{2t} \quad (2)$$

Where:

GDP_t: is the variable indicating per capita income at time t, determined through

IFI_t: is the financial integration index variable at time t, determined through the formula

$$IFI_t = \frac{DIA_t + DIL_t + PIA_t + PIL_t + OIA_t + OIL_t}{GDP_t}$$

Vector Autoregression Model, also known as VAR model, is a unidirectional autoregression model, which predicts and estimates each equation of a time series, according to the lags of the variable and all other variables. The authors propose to use the VAR model in this case for the following reasons. All the variables in the model are collected as time series data, leading to the possibility of autocorrelation in the model and inaccurate estimation results. The VAR model can overcome and deal with those problems. Moreover, using the VAR model is very beneficial in looking at causal relationships as well as dynamic relationships between economic variables. This can hardly be estimated for the conventional classical model and is also one of the advantages that make the VAR model more and more popular. From there, it is easy to draw conclusions as well as policy implications for future orientation.

Based on the proposed research model, the authors use Eviews software to regress the VAR model to test the stationarity and measure at different lags, the relationship of the variables will be like any. Continue using Eviews software review:

- Model estimation and Granger causality test.
- Detect model defects.
- Check the stability of the VAR model.
- Evaluation of shock in the model through IRF push response function and variance decomposition.

3.2. Research hypothesis

Based on domestic and international studies, expectations about the relationship between international financial integration and economic growth, the authors expect a positive relationship between the two variables IFI and GDP, which means the correlation coefficient positive.

Meaning: When IFI increases, GDP growth increases.

3.3. Data source

After researching various methods of measuring international financial integration, we decided to use the formula to measure real financial integration developed by Lane and Milesi-Ferretti (2006), the real IFI level of Vietnam at year t (IFI_t) is calculated according to the formula:

$$IFI_t = \frac{DIA_t + DIL_t + PIAt + PIL_t + OIA_t + OIL_t}{GDPT}$$

Where:

Table 1. Summary of measurement criteria and data sources

No.	Variable	Symbol	Data source
1	Direct Investment Assets (million USD)	DIAt	Balance of Payment (IMF)
2	Direct Investment Liabilities (million USD)	DILt	Balance of Payment (IMF)
3	Portfolio Indirect Assets (million USD)	PIAt	Balance of Payment (IMF)
4	Portfolio Investment Liabilities (million USD)	PILt	Balance of Payment (IMF)
5	Other Investment Assets (million USD)	OIA_t	Balance of Payment (IMF)
6	Other Investment Liabilites (million USD)	OILt	Balance of Payment (IMF)
7	Gross Domestic Product (million USD)	GDPT	World Development Indicators (World Bank)

Following are the results of the calculation of the IFI index of Vietnam in the period 2000-2020 by our research team:

Table 2. Vietnam's international financial integration index from 2000-2020

Year	IFI
2000	12.3891177159082
2001	8.45948657798232
2002	2.40131606944875
2003	1.35339060686812
2004	6.02493782389939
2005	7.78196538072715
2006	9.53418905107083
2007	16.6015570245972
2008	11.6886557600119
2009	17.5222936528423
2010	19.1086566517396
2011	15.0494942407586
2012	14.6528043374369
2013	17.0656783085985
2014	12.3459320909652
2015	16.5549660802693
2016	11.0412230334777
2017	17.9614014216971
2018	13.0286365630929
2019	13.7140459994024
2020	9.62831906107995

4. Results and discussion

4.1. Results

4.1.1. Stationarity test

Table 3. Table of stationarity test results

Variable	t observed	t critical			P_value	Conclusion
		1%	5%	10%		
GDP	1.561475	-3.8086	-3.0207	-2.6504	0.9988	Unstational
IFI	-1.360957	-3.8315	-3.0300	-2.6552	0.5788	Unstational

Hypothesis H1 in the model is rejected, the values of both GDP and IFI variables in the model are non-stationary series, which means: when mean, variance, covariance (at different lags) will change no matter what time the string is defined.

Fixing method: use variance of order 1 for both variables above.

Table 4. Stationarity tests of variables on first difference

Variable	t observed	t critical			P_value	Conclusion
		1%	5%	10%		
D(GDP)	-3.2082	-3.8574	-3.0404	-2.6606	0.0363	Unstational
D(IF1)	-6.3075	-3.8315	-3.0300	-2.6552	0.0001	Unstational

Therefore, we can use the above data set to study a process. The VAR model is suitable to further estimate the effect of D(GDP) on D(IF1).

4.1.2. Determine the optimal delay

Determining the optimal delay is essential for estimating the VAR model. If the delay is too large, leading to a large estimated parameter, the sample size must be large enough. If the lag is small, the model may miss the VAR model's significant variables to determine the best lag. The optimal delay is selected based on the criteria of LR, AIC (Akaike), p-value, and through testing the VAR model at different delays.

There are many methods to choose the optimal delay for the VAR model. This paper uses the Lag order selection Criteria method to find the appropriate delay for the model. The results are presented in the following table:

Table 6. Latency test results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-124.13	NA*	69043.37	16.8179	16.9122*	16.8168
1	-119.97	6.6699	68222.82*	16.7954	17.0786	16.7923
2	-117.20	3.6832	83916.29	16.9604	17.4324	16.9553
3	-112.22	5.3203	81588.8	16.8287	17.4895	16.8216
4	-106.70	4.4133	82725.1	16.6264*	17.4761	16.6174*
5	-105.01	0.8999	174435.3	16.9348	17.9733	16.9237

From the table of results above, we can see that 4 is the optimal delay of the model due to two proposed criteria: Akaike information criterion (AIC: Akaike information criterion), Hanan - Quinn information criterion (HQIC: Hanan) - Quinn information criterion). Hence, 4 is the delay used to estimate the model.

4.1.3. Model estimation and Granger causality test

Granger Wald Test causality is used to answer the question of whether each independent variable at all its lags and whether the whole model can explain the change of the dependent variable. The null hypothesis of the Granger test is that the correlation coefficient between the independent variable and the dependent variable is 0, so the independent variable cannot explain the change in the dependent variable, or there is no impact of the independent variable on the dependent variable. dependent. P_value is used to evaluate whether the effect of the independent variable on the dependent variable is present or not. If the P-value is greater than 5%, the null hypothesis cannot be rejected, that is, there is no impact of the independent variable on the dependent variable, And vice versa, if the P_value is less than 5%, then the null hypothesis H0 is rejected. there is an effect of the independent variable on the dependent variable.

a) Estimate the model with an optimal delay of 4

Table 7. Estimated results $D(GDP)$ with a lag of 4

Variable	Latency	Estimated coefficient	Standard deviation	P_value	The trend affects the variable $D(GDP)$ at the significance level of 5%
D(GDP)	1	0.37335	0.31904	0.2614	Unreliable
	2	-0.57785	0.39765	0.1682	Unreliable
	3	-0.08937	0.33071	0.7909	Unreliable
	4	0.21348	0.33217	0.5308	Unreliable
D(IFI)	1	6.26800	5.77463	0.2961	Unreliable
	2	-2.66539	6.06496	0.6670	Unreliable
	3	-0.79708	4.65302	0.8664	Unreliable
	4	7.75561	3.92081	0.0679	Unreliable
Degrees Of Freedom		149.9002	79.06833	0.0788	Unreliable

Table 7. Estimated results $D(IFI)$ with a lag of 4

Variable	Latency	Estimated coefficient	Standard deviation	P_value	The trend affects the variable $D(IFI)$ at the significance level of 5%
D(GDP)	1	0.00167	0.02559	0.949	Unreliable
	2	-0.03203	0.02128	0.1545	Unreliable
	3	-0.02162	0.02138	0.3291	Unreliable
	4	-1.07255	0.37161	0.012	Unreliable
D(IFI)	1	0.09335	0.39029	0.8144	Unreliable
	2	0.31189	0.29943	0.3152	Unreliable
	3	0.15957	0.25231	0.5373	Unreliable
	4	12.93692	5.08816	0.0235	Concurrent
DF		0.00167	0.02559	0.949	Unreliable

Since the study focuses on assessing the impact of the variable $D(IFI)$ on $D(GDP)$, we will focus on analyzing the equation with $D(GDP)$ as the dependent variable, $D(IFI)$ as the independent variable in the VAR system.

From the resulting estimation table $D(GDP)$, all the coefficients that estimate the impact of $D(IFI)$ on $D(GDP)$ are unreliable, so it is not possible to show the impact of $D(IFI)$ on $D(GDP)$ as the purpose of the study. Therefore, choosing a lag of 4 is not suitable for model estimation.

b) Estimate the model with an optimal lag of 1

Returning to table 5 results of determining the optimal delay. At latency 1, we see that the AIC and HQ values are only low after latency 4, besides, latency 1 is selected based on the final prediction error statistical criteria (FPE: final prediction error). Therefore, this study uses a lag of 1 to estimate the model and perform other tests.

Estimated results of D(GDP):

Table 8. Estimated results D(GDP) with a lag of 1

Variable	Latency	Estimated coefficient	Standard deviation	P_value	The trend affects the variable D(GDP) at the significance level of 5%
D(GDP)	1	0.40511	0.19095	0.0417	Concurrent
D(IF1)	1	6.67185	2.83561	0.0249	Concurrent
DF		75.26966	26.37314	0.0075	

Estimated results of D(IF1)

Table 9. Estimated results D(IF1) with a lag of 1

Variable	Latency	Estimated coefficient	Standard deviation	P_value	The trend affects the variable D(IF1) at the significance level of 5%
D(GDP)	1	0.00860	0.01545	0.5819	Unreliable
D(IF1)	1	-0.38467	0.22948	0.1034	Unreliable
DF		-0.96373	2.13432	0.6546	

Then, we Interpret coefficients and compare with expectations:

+ In theory: D(GDP) affects itself by a positive regression coefficient, that is, the period after economic growth is stronger than the previous period. This can be seen clearly because the economic growth of the previous period will create momentum for stronger growth in the following year. When the economy grows, actors in the economy such as businesses or individuals and households are more optimistic about the economy in the next year. From there, spending and investment will increase more, causing GDP to increase.

D(IF1) affects the variable D(GDP) by a positive regression coefficient, meaning that the higher the level of HNTC in Vietnam, the stronger the economic growth, and the increase in per capita income.

+ Actual estimated results: With a lag of 1, in the absence of other factors, when the variable D(IF1) increases by 1%, D(GDP) increases by 6.67%

c) Granger causality test

In the model, Granger causality test is used to answer the simple question of whether or not the change in D(GDP) occurs by D(IF1) and vice versa.

Table 10. Results of Granger causality test

Hypothesis H ₀	Chi-sq	Prob.	Conclusion
Lagged variable D(IFDI) has no effect on D(GDP)	5.536048	0.0186	Reject H ₀
Lagged variable D(GDP) has no effect on D(IFDI)	0.309478	0.5780	Do not reject H ₀

From the Granger test, we see that two variables D(IFDI) have a one-way effect on the variable D(GDP).

4.1.4. Measuring the stability of the model

The stability of the model was evaluated by unit root test. The VAR model is considered stable when all the solutions of the characteristic equation are actually in the unit circle or the computed modulus values are less than 1. The results of the test are shown through the following chart:

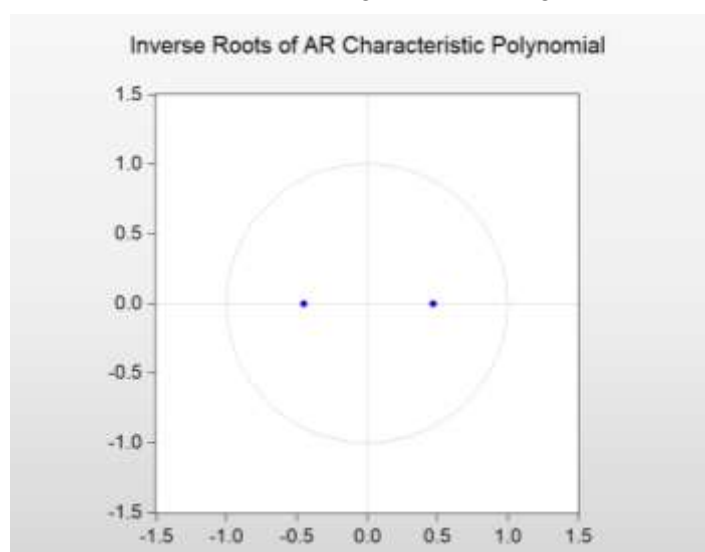


Figure 1. Stability chart

The unit root test shows that all the solutions of the characteristic equation are indeed in the unit circle, thus both VAR models are stable. A stable VAR model is a necessary condition for it to be expressed as an absolute summable infinite moving average, or in other words a necessary condition for the VAR model to be estimated.

4.1.5. Test for residual defects

- Autocorrelation test at each delay

The results of the autocorrelation test by the Lagrange multiplier test (LM) are shown in the following table:

Table 11. Autocorrelation test results

H₀: No autocorrelation in the model			
Sample: 2000 2020			
Included observations: 19			
Lag	LM-Stat	Prob.	Conclusion
1	0.741956	0.5721	Do not reject H ₀
2	0.762269	0.5593	Do not reject H ₀
3	0.846590	0.5086	Do not reject H ₀
4	0.811140	0.5295	Do not reject H ₀
5	0.508770	0.7297	Do not reject H ₀

According to the results in Table 11, the statistical hypothesis “H0: There is no serial autocorrelation in the model” cannot be rejected at all lags from 1 to 5. Thus, the autocorrelation test shows that VAR model does not have residual autocorrelation defect.

Table 12. Distribution test results of random errors

H₀: The random error follows the normal distribution			
Sample: 2000 2020			
Included observations: 16			
Variable	Jarque-Bera	Prob.	Conclusion
D(GDP)	1.212157	0.5455	Do not reject H ₀
D(IF1)	0.810033	0.6670	Do not reject H ₀
Population	2.022190	0.7317	Do not reject H ₀

The results of the Jarque-Bera test in Table 12, the null hypothesis H0 show that the residuals of the model have constant variance. Thus, the statistical tests of the VAR model will be reliable.

4.1.6. Evaluation of shock in the model through IRF push response function and variance decomposition

The implementation of Granger causality test has not been able to clarify the full impact of the variable HNTC on economic growth. We can only see that HNTC has an impact on economic growth, but we have not yet assessed its impact. To clarify the extent of this impact, the research team performed IRF (Impulse Response Function) analysis of the variables. The IRF push response function is one of the important functions of the VAR model. The IRF shows how the remaining variables in the model will react to a shock to a given variable in the model. The research team will analyze and evaluate the IRF push-response function that will show the impact over time of the shock in D(IF1) to D(GDP).

a) IRF push response function

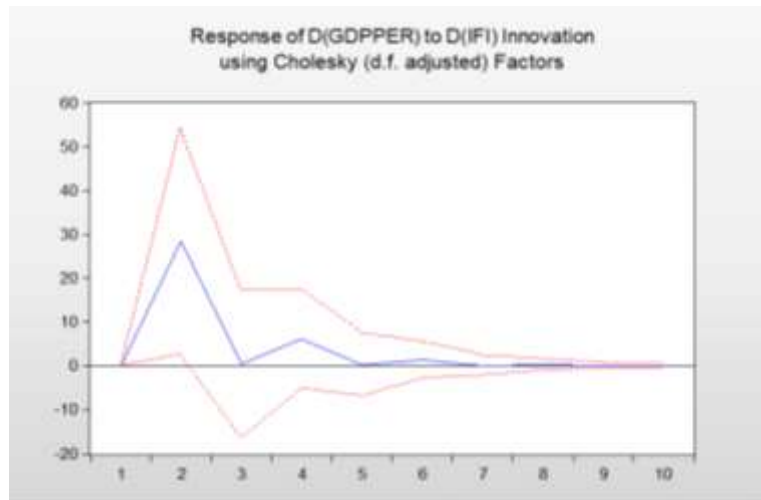


Figure 2. IRF analysis chart

The results from Figure 2 show that the response of D(GDP) to a one standard deviation change in the variable D(IF1) is quite clear in the early periods. When D(IF1) started to increase, D(GDP) increased rapidly in the following year. However, the following year, the growth rate slowed down a lot, and the same cycle of growth and decline was repeated in the following years. In general, in the short term, HNTC will promote strong economic growth. However, in the long run, the impact of economic integration on economic growth is not too significant.

To explain this problem, the research team believes that there are short-term benefits and long-term difficulties of HNTC for economic growth in Vietnam. In the short term, HNTC promotes the transfer of capital from other countries into Vietnam, which immediately causes rapid GDP growth in a year or two. However, in the long-term, HNTC in our country has brought difficulties to hinder economic growth.

b) Variance decomposition

Decay of variance is used to analyze the significance of shocks in variables to explain the variability of a variable in the model. When estimating a dependent variable, we have a total error that includes the error explained by the independent variables and the error not explained by the model. The coefficient of variance decay at a certain lag of the independent variable relative to the dependent variable indicates how much of the change in that independent variable contributes to the change in the dependent variable in the model.

Decay of variance allows to evaluate the relative time importance of shocks to the volatility of the variables D(IFDI) and D(GDP) in the model. The results of the decomposition of variance are presented in the table:

Table 13. Variance decomposition results

Period	D(IFDI) on D(GDP)	D(GDP) on D(IFDI)
1	1.261870	0.000000
2	2.991271	20.46592
3	2.923390	19.79033
4	2.987814	20.42337
5	2.984664	20.39196
6	2.987556	20.42009
7	2.987411	20.41863
8	2.987542	20.41990
9	2.987536	20.41983
10	2.987542	20.41989

Table 13 shows that the shock from D(IFDI) can explain from 1.26% to 2.99% change in D(GDP).

According to the VAR model, D(IFDI) has an effect on D(GDP) at a lag of 1. Hence, from the table we see that the squirrel of D(IFDI) explains about 1.26% of the change in D(GDP).

4.2. Discussion

This paper examines the impact of financial integration on economic growth in Vietnam over the 2000-2020 period.

The purpose of the study is to examine the influence of financial integration on real economic growth in Vietnam, expressed through the dependent variable of GDP and the independent variable IFDI. The research model shows some results as follows:

The findings shows that financial integration has a positive and significant effect on economic growth in in international capital flows. The results are consistent with the existing literatures, including Juraev (2013) ; Estrada et al. (2010); King and Levine (1993); Levine and Zervos (1998); Angkara and Gamini, 2018). Specifically, our control variables have the expected signs and significances supporting the robustness of the results. Moreover, we examine the results of the VAR model to support our study. The results suggest a significant positive relationship between financial integration and economic growth in Vietnam. The results further suggest that financial integration could enhance economic growth clearly in the short and medium term.

To be more specific:

Firstly, from the residual defect tests, we can see that the data used in the article is appropriate, the conclusions in the model can be trusted.

Second, the model estimation results show that GDP is only affected by IFDI and GDP itself at certain lags.

Thirdly, the results of Granger's test show that the variable IFI has an impact on the GDP variable in the long run. Therefore, the variable IFI can be used to forecast future GDP. However, due to statistical limitations, the number of observations collected is not large enough and the delay selected in the model is high, so the VAR model cannot be used to accurately forecast future GDP.

Fourth, the results of the analysis of the push response function and the variance decomposition of the impact of the shock D(IFI) on D(GDP) show that in the short run, the shock of D(IFI) has a positive effect on D(GDP) is relatively clear, while in the long run the shock D(IFI) affects D(GDP) not so obviously.

4.3. Conclusion

By using Eviews 10 software to estimate the VAR model with a delay of 1 in combination with causality testing, analysis of the push response function and variance decomposition around the research paper, we have partly achieved the original goal of the author's group. Specifically, the results of the study show that financial integration has a positive effect on economic growth in Vietnam with an optimal lag of 1 year. In addition, the study also shows that, in the long run, the economic integration variable has a negligible effect on economic integration. That means economic integration brings some difficulties that hinder economic growth. Therefore, in order to stabilize Vietnam's macroeconomy in the context of deep integration with other countries in the world, the government needs to have appropriate policies to overcome the shortcomings of the special financial integration, especially with FDI inflows (which account for the highest proportion of total foreign assets and liabilities) to make financial integration not only promote economic growth in the short term but also in the long term.

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ONLINE KEY OPINION LEADERS' INFLUENCE ON HCMC UNIVERSITY STUDENTS' CHOICES OF FOREIGN LANGUAGE COURSES

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ABSTRACT

The need to enroll in language courses has been on the rise, especially among university students who consider language ability an advantage for their job-seeking after graduation. At the same time, the prevalence of social networking sites with the emergence of Key Opinion Leaders (KOLs), in particular, has significantly impacted the way university students adopt information about language courses. This research aims to investigate the influence of KOLs on university students' purchase intention of language courses. For this purpose, a conceptual model is developed based on IAM, explaining the relationship among 6 variables namely Needs of Information, Perceived Message Quality, Perceived Usefulness of Information, Information Adoption, and Purchase Intention. The data is collected from 191 university students who are exposed to the presence of KOLs on social platforms. After applying SEM, the model is validated, confirming that Needs of Information and Perceived Message Quality together contribute to the Perceived Usefulness of Information which positively affects Information Adoption. Consequently, the extent to which information is adopted affects the purchase intention of university students. Finally, implications and recommendations from the reach results are also included.

Keywords: KOL, Foreign language, education, HCM.

1. Introduction

Languages, for the most part, have been paid much attention to their impacts on human lives. It can be said that a person is fluent in a language when he or she can communicate with aboriginals using that language (Fromkin, V. et al., 2018). Language is one of the most important means of communication. Without languages, people cannot understand each other, hence nothing can be done or invented.

Recently, the tendency of globalization has pushed the limits of personal growth, allowing oneself to be exposed to different economic and cultural contexts. During this journey to fulfill one's potential, the very first mission would be removing the difficulties arising from differences in languages. In other words, it is to learn foreign languages. However, languages vary greatly in a lot of aspects: pronunciation, writing, grammar, and so on. In these aspects, different languages will have different rules, depending on culture and time. Hence, learning a language while not being a native speaker, is extremely difficult.

Thriving on everyone's desire to learn another language, many foreign language courses have been developed and introduced to help students overcome obstacles on his or her journey to study a foreign language. However, the appearance of multiple courses leads to the confusion of the students regarding the courses' quality, purposes, pace, knowledge, etc.

The 21st century has witnessed a powerful transformation to the technology era. A similar phenomenon has also happened in Vietnam. The introduction of the Internet, which led to the creation of many websites, has given way to both offline and online language courses. The most significant advantage of these websites is being a platform to communicate and advertise foreign language courses to prospective

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learners. As a result, the decision-making process, such as the choice of courses, is affected by many factors, especially social media-related ones.

With the rapid development of the Internet and social media, the KOLs (short for Key Opinion Leaders) appear as people with the ability to influence followers. When it comes to the matter of choosing foreign language courses, KOLs also have significant impacts on the students. Subsequently, studying how KOLs influence language learners' choice of courses will give insight into their demands, assumptions, prejudice, etc. However, currently in Vietnam, KOLs have not been utilised to their fullest to promote the foreign language courses, as there have been many attempts, but mostly for the KOLs' personal courses or their media platforms. As a result, conducting this research can help us devise a suitable starting point for language centers to start developing marketing campaigns that involve KOLs and the advantages they can bring to the promotion of the foreign language courses.

Overall, the availability of various languages, the demand to approach foreign language courses, the powerful appearance of KOLs and the lack of research into this topic in Vietnam have contributed to the necessity to investigate how KOLs influence HCMC University Students' Choices of Foreign Language Courses via Online Channel. Furthermore, from the findings, the author attempts to propose suitable solutions for the educators to improve the reach of their courses to the students via the KOLs' channel of information.

The overall goal of this study is to identify and assess the degree to which each factor related to KOLs influences, via online channels, the choices of foreign language courses in HCMC. After that, some recommendations are made to increase the attractiveness of foreign language courses.

The specific goals are as follows:

- A theoretical overview of KOLs influences via online channels in HCMC choices of language courses.
- Proposing a model to analyze the factors related to KOLs affecting choices of language courses.
- Raising some recommendations to make foreign language courses more attractive to improve the number of learners.

1.1. Methodology

In terms of data collection method: The team collects data through online survey sheets. All of them were collected online via Google Form. The team built the questionnaire firstly based on the reference of the scale measurements of previous studies. To ensure validity and comprehensiveness, the team modified the scale based on the comments of the group of 10 participants in a pretesting session. After the session, the official questionnaire was ready to be distributed to gather responses and data for this research.

In terms of data processing and analysis method: The team analyzed the collected data through the following steps: Use descriptive statistics of the survey sample and testing the model by Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM). The tools used for data analysis are SPSS and AMOS software.

2. Literature review

It has been a consensus that communication is something vital to the foundation of a distribution channel (Mohr, & Nevin, 1990). It serves as a means of transmitting information between groups of consumers or individuals (Frazer & Summers, 1984). The marketing industry has created a term for this method of information transmitting called Word-of-mouth (WOM). Subsequently, along with the rapid advancement of the Internet, the term Electronic Word-of-mouth (eWOM) was born to describe this communication through means of Internet-connected devices and users.

Due to the advance of the digital era, marketing through KOLs has become a business phenomenon. This can also be viewed as a form of eWOM. Multiple researchers have looked into the effect of these KOLs and the information they deliver on the purchase intention of their followers and other consumers. With distinctive features, the new approach is transforming the economy by orienting consumers to consider their

selections based on the feedback from the public, before making a purchase. Therefore, companies need to have a complete understanding of KOL marketing to use this method successfully and rocket the level of brand awareness in customer perception.

In research written by Yu Wang (2018), it has stated that three factors from the KOL, including message quality, source credibility, and tie strength with receivers, have a tremendous effect on customers' purchase intention, along with customers' factors such as confirmation with prior belief and trust toward the sites.

2.1. Consumer behavior

Consumer buying behavior itself is a complex, dynamic concept that cannot be easily defined (Blackwell et al, 2006), hence, there have been numerous definitions explaining this issue in different ways.

Walters and Gordon Paul (1970) described it as the process whereby consumers make decisions of whether to buy and what, when, when, where, how, and from whom to purchase. Alternatively, the definition proposed by Engel and Blackwell (1982) states that consumer behavior is the set of actions to obtain, use, and dispose of economic goods and services, including the pre-decision process and its determinants. Furthermore, Stallworth (2008) considers the action motives by defining consumer behavior as a set of activities that involve the purchase and use of goods and services which resulted from the customers' emotional and mental needs and behavioral responses.

Despite differences in definitions, it is agreed upon that consumer behavior involves the process of how consumers make their consumption decisions, regarding whether, what, when, where, how, and from whom to buy to satisfy their needs and wants.

2.2. Theory of Reasoned Action

In 1975, Ajzen and Fishbein proposed the Theory of Reasoned Action, with its root in social psychology. Attempting to explain the connection between human attitude and behavior, this model has been used in its original form such as in Gefen & Straub (2000) or conjunction with other variables based on the context of the research, for example, Vijayarathy (2002), Van der Heijden, Verhagen, & Creemers (2003), J. Zhu (2005). Visual representation of this model is as follow:

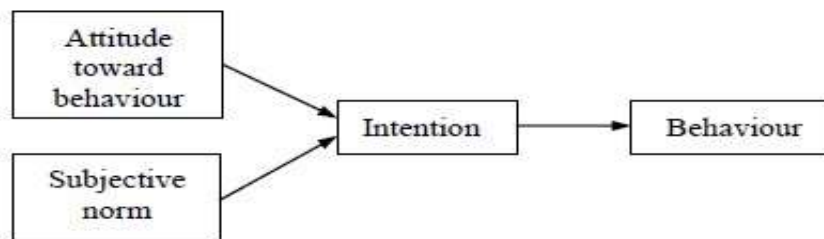


Figure 1. Theory of Reasoned Action.

Source: Ajzen and Fishbein, 1975.

As the model suggested, Human Behavior is influenced by Intention. Intention, in turn, is influenced by Human's Attitude toward behavior and subjective norms. In addition, this model also proves that attitude and subjective norms cannot have a direct influence on behavior. However, they can indirectly affect it through the means of Intention.

Consequently, this model is utilized to predict human behavior based on their attitude toward said behavior and subjective norms.

2.3. Technology Acceptance Model (TAM)

This model is proposed by Davis (1989) as an extension of the TRA with additional elements. The TAM model is as depicted in the following graph:

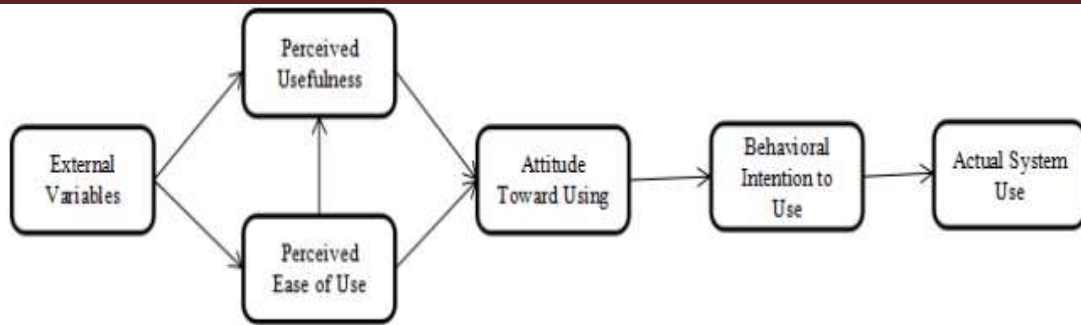


Figure 2. Technology Acceptance Model.

Source: Davis, 1989.

In this model, Davis (1986) added Perceived usefulness and Perceived ease of use as the factors that result from External Variables and affect Attitude towards using. Perceived usefulness is defined as “the prospective user’s subjective probability that using a specific application system will increase his or her job performance within an organizational context”, while Perceived ease of use is “the degree to which the prospective user expected the target system to be free of effort.”

This model is used to describe how the user’s acceptance of information systems and technology can be determined by his or her intention, attitude toward using, and other external factors.

2.4. Elaboration likelihood model (ELM)

Petty and Cacioppo developed the Elaboration Likelihood Model (ELM) in 1982. This model aims at creating a dual-pathed process theory striving to describe the change in attitude.

They authors found that there are two channels, used individually or in combination with one another, to reflect the elaboration, or effort to process the information received, of the recipients. First of all, there is the Central route. This is the route when elaboration is high and the receiver of the message will use a higher amount of effort in order to process and understand the information. As a result, the receiver will base the subsequent action based on his or her careful consideration of the information received. On the other hand, the Peripheral route is only used when the recipient of the message will reach their decision based on a few simple cues related to the information, without thorough thought on it, indicating a low level of elaboration. As a result, the ELM states that the information’s quality will decide the informational influence on the recipients.

The graph for this model is as follow:

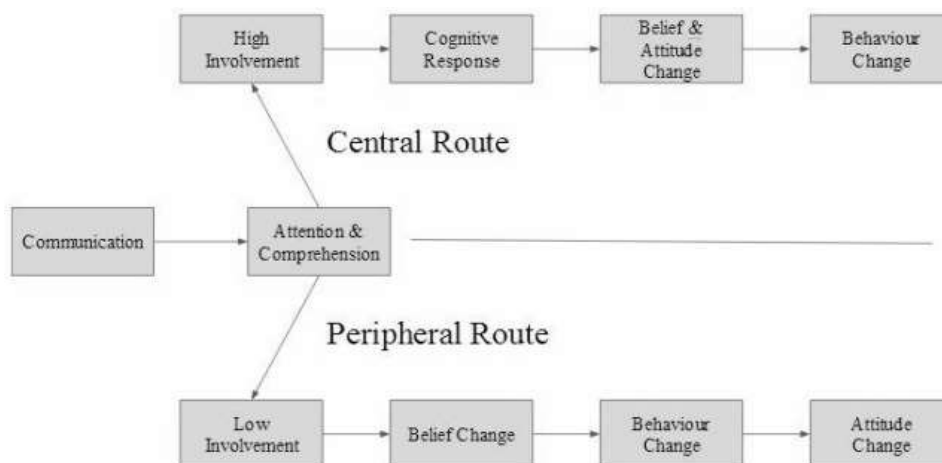


Figure 3. Elaboration Likelihood Model.

Source: Petty and Cacioppo, (1982).

2.5. Information adoption model (IAM)

Devised in 2003 by Sussman et al., the IAM model is a further extension of the TAM along with the dual-process model of information influence such as the ELM (Elaboration Likelihood Model).

Integrating both of these models, Sussman et al. (2003) created the IAM model, with the Argument Quality as the central route and Source Credibility as the peripheral route, along with the perceived usefulness of information as a mediator to their effects on Information adoption. The IAM model can explain how each individual adopts information, which in turn affects their behaviors and intentions in the current days with advanced computers and technology as the main communication system. The model is visually depicted as below:

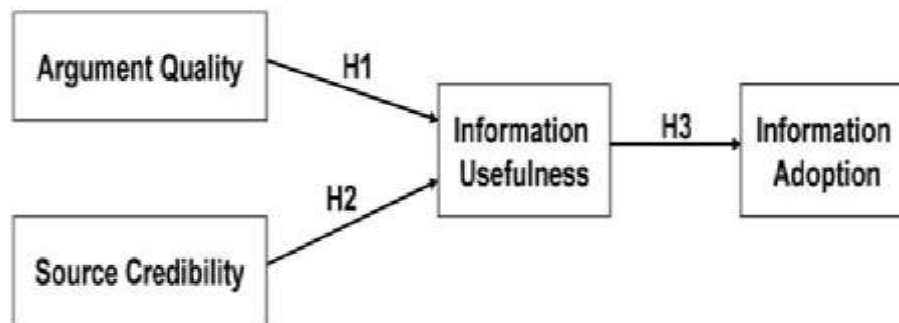


Figure 4. Information Adoption Model.

Source: Sussman et al, 2003.

Various empirical research adopted the IAM model into studying the contributors of eWOM's influence on consumer behavior. Despite all originating from the IAM model, some researchers can use *the original model as* Christy, Matthew & Neil (2008). This study uses IAM to examine factors influencing the online consumer reviews acceptance and adoption of information seekers in online communities. In this study, Argument Quality was measured by four dimensions including Relevance, Timeliness, Accuracy, and Comprehensiveness. Meanwhile, Source Credibility was composed of two dimensions, namely Source Expertise and Source Trustworthiness. From the results from 154 responses, the study concluded that comprehensiveness and relevance were key determinants of information adoption as they were the two most effective components of argument quality.

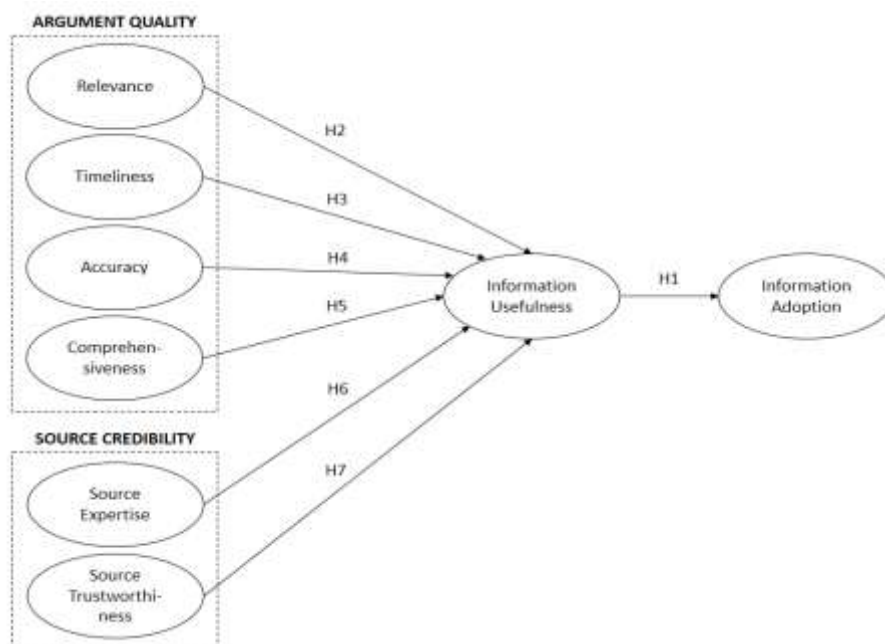


Figure 5. Christy, Matthew & Neil's research model.

Source: Christy, Matthew & Neil (2008).

3. Research model and Hypotheses

3.1. Research model

The authors build the model and the questionnaire based on the study of C.-W. Chen et al., (2011). The model absorbed the independent variables that C.-W. Chen et al., (2011) research illustrated: Perceived Message Quality, Source Credibility, Message Credibility, and Perceived Usefulness of Information. The authors made some adjustments to maximize the results of the research. In detail, compared to the C.-W. Chen et al. (2011) model, the author dropped Recommendation Consistency and Confirmation of Prior Belief and added one variable: Needs of information because these variables fail to show any influence on the other variables.

3.1.1. Needs of Information – NI

Needs of information, which can be defined as the urge to obtain advice on resolving problems, is among the important factors initiating eWOM engagement (Sundaram, Mitra, and Webster, 1998). This concept used as “opinion-seeking” was regarded as one of the aspects of eWOM behavior online (Chu and Kim, 2011). While Hennig Thurau et al. (2004), and Wolny and Mueller (2013) mentioned this notion under the name “advice-seeking” and considered it one of the motivators of eWOM.

It was emphasized by Flynn et al. (1996) that consumers with high needs of information are likely to search for information from others before purchasing. Furthermore, it was indicated that people who seek information on social media tend to find such information useful for their decision-making (Erkan & Evans, 2016). Therefore, this research includes Needs of Information as one of the determinants and hypothesizes that it is positively correlated to the perceived usefulness of the information.

3.1.2. Source Credibility – SC

After the consumers receive messages from KOL, they will reevaluate comprehensively the significance of that information regarding KOL credibility (Wang, 2019). Opinion leaders such as bloggers must have credible reliability to be trusted by others (Johnson and Kaye, 2004), and therefore the more credibility that the KOL has from followers, the more credible KOL will be to new users (Metzger, Flanagin and Medders, 2010). The quality of the message therefore should be based firstly on how credible the KOL is.

In this research, the authors decided that three factors directly affect source credibility, which were expertise, trustworthiness, and product involvement. Trustworthiness and expertise, through the process which makes customers feel more confident and takes fewer risks in their decision, can undoubtedly contribute to the credibility of opinion leaders (Lord and Putrevu, 2009). During a long time involved in these products and services, KOL is perceived to be the person who understands the most about the features and usability of the product (Li et al., 2018). In essence, the KOL who has all three of these characteristics is highly easier to gain trust from online users compared to the person that lacks the sign of expertise, trustworthiness, and product involvement. Through the survey, the authors examine whether Source Credibility affects the usefulness of information or not.

3.1.3. Message Credibility – MC

At first glance, some people may think message credibility can be determined easily by its content solely. Message credibility can be affected by expertise, liking, trustworthiness, and similarity (Bo Feng and MacGeorge, 2010) again stating the importance of non-content factors to message credibility.

3.1.4. Perceived Message Quality – PMQ

Message quality, or strength of the message, in other words, plays an important and irreplaceable role in customers' decision-making. Petty, Cacioppo & Goldman (1981) stated that while strongly logical statements direct receivers to desirable reactions, people perceive weak and moderate ones as unbelievable and doubtful. Besides, various research has been done to point out the considerable effect of message quality on source credibility (C.-W. Chen et al., 2011; M. Y. Cheung et al., 2009). Normally, people will judge the

quality of a message based on the combination of many factors such as content, format, accuracy, timeliness, etc. (Doll & Torkzadeh, 1988).

For the case of customers, when choosing a product, if the related provided message makes them feel informative, they are more likely to concern and even purchase products or services (Olshavsky, 1985). Similar results also happen with the eWOM context. However, in eWOM, it is the online review that remarkably affects purchase intention (Lee and Shin, 2014; Park et al., 2007).

3.1.5. Perceived Usefulness of Information – PU

Perceived message usefulness is defined based on people’s subjective feelings about the usefulness of a message or information (C. M. Cheung et al., 2008). It is the core estimator for the process of adopting information (Davis, 1989; Sussman and Siegal, 2003) and supporting purchase decisions (Lee and Koo, 2015; K.-T. Lee & Koo, 2015).

In the eWOM context, the perceived usefulness of eWOM information also proves its influences on customers’ purchase intention (Cheung and Thadani, 2012). The clearest results can be witnessed from social media when customers approach and adopt a wide range of eWOM messages (Chu and Kim, 2011).

3.1.6. Information Adoption – IA

Information adoption is defined as how people accept the information or content after evaluating its credibility (Wei Zhang & Watts 2008). Based on other research utilizing IAM, the information adoption can have a positive effect on the purchase intention of consumers on social media (Erkan & & Evans, 2016; Gunawan & Huarng, 2015)

3.1.7. Purchase Intention – PI

Purchase intention refers to “an individual’s conscious plan to make an effort to purchase a brand” (Spears and Singh, 2004). This factor is considered to have sufficient influence on the consumers’ purchase behavior, which is the probability that these consumers would buy a certain product and service. As a result, Morwitz (2014) proposed that a consumer’s purchase intention can be utilized to predict his or her decision whether or not to purchase goods and services.

To fit the context of this research, purchase intention will be defined as the online platform users’ intentions to sign up for the foreign language courses promoted by the KOLs.

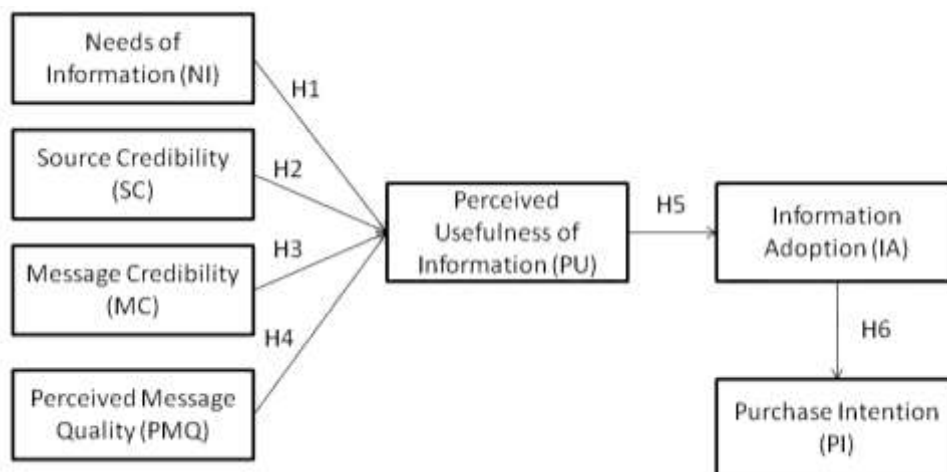


Figure 6. This research’s model.

Source: compiled by the authors, 2021.

3.2. Research Hypotheses

H1: On online platforms, needs of information affect the Perceived Usefulness of Information positively.

H2: On online platforms, the Source Credibility of consumers affects the Perceived Usefulness of Information positively.

H3: On online platforms, Message Credibility affects the Perceived Usefulness of Information positively.

H4: On online platforms, the Perceived message Quality of KOLs affects the Perceived usefulness of Information positively.

H5: On online platforms, the Perceived Usefulness of Information affects Information Adoption positively.

H6: On online platforms, Information Adoption affects the purchase intention positively.

Table 1. Variables and measures.

Variable	Factor	Contents	Reference	Orientation
Needs of information (NI)	NI1	When considering a course, I like to take into account the KOL's content I have watched or read.	Chu and Kim (2011)	+
	NI2	If I have little experience with a course, I often search for the content of this KOL.		
	NI3	I frequently gather the information provided by this KOL before signing up for a course.		
	NI4	I usually apply the information provided by this KOL to pick out the course that fits me.		
Perceived Message Quality (PMQ)	PMQ1	The content given by KOL is relevant to the foreign language courses.	Doll and Torkzadeh (1988); Delone and McLean (2003); C. M. Cheung et al. (2008)	+
	PMQ2	The content given by KOL contains carefully checked and correct information..		
	PMQ3	The content given by KOL is comprehensive.		
Source Credibility (SC)	SC1	The KOL is knowledgeable on this topic	Chu and Kim (2011)	+
	SC2	The KOL is credible		
	SC3	The higher the reputation that the KOL has, the stronger the intention I want to sign up for the courses that KOL recommends		
	SC4	I think it will be more credible if KOLs also use the products they promote		
Perceived Usefulness of Information (PU)	PU1	The information raised by KOLs is helpful	C.-W. Chen et al. (2011); Sussman and Siegal (2003)	+
	PU2	I think that the information from this opinion leader can increase my understanding of the Foreign language Courses.		
	PU3	The information raised by KOLs is demonstrated so simply and logically that you can easily acquire it	Added questions after pretesting	
	PU4	The content is up-to-date		

Message Credibility (MC)	MC1	The information raised by KOLs is helpful	C.-W. Chen et al. (2011); Sussman and Siegal (2003)	+
	MC2	I think that the information from this opinion leader can increase my understanding of the Foreign language Courses.		
	MC3	The information raised by KOLs is demonstrated so simply and logically that you can easily acquire it.	Question added after pretesting	
Information adoption (IA)	IA1	The information raised by KOLs is helpful	C.-W. Chen et al. (2011); Sussman and Siegal (2003)	+
	IA2	I think that the information from this opinion leader can increase my understanding of the Foreign language Courses.		
	IA3	The information raised by KOLs is demonstrated so simply and logically that you can easily acquire it	Question added after pretesting	
Purchase intention (PI)	PI1	It is very likely that I will choose the course recommended by the KOL	Coyle and Thorson (2001)	+
	PI2	I will keep in mind the centers recommended by the KOL the next time when I need such kind of course		
	PI3	I will look up more information online about the course after being recommended		
	PI4	I will recommend the courses to my friends.		

Source: compiled by the authors.

4. Results

4.1. Data analysis

For this study, Ho Chi Minh city is selected to collect samples. The first reason why the team chose HCMC is that it is among the ranks of top cities in Vietnam. Ho Chi Minh City is the largest economy in Vietnam, with its GDP, accounting for nearly one-fourth of the nation. It is also the place that attracts the most proportion of FDI (Trang tin Điện tử Đảng bộ thành phố Hồ Chí Minh, 2021). Secondly, citizens in HCMC get used to accessing the Internet and social media in their daily lives for various purposes such as searching for information, entertaining, learning, etc. Hence, the term KOLs is more familiar to HCM's residents. Lastly, the number of university students in HCMC is 520.981 in 2019, according to the General Statistic Office of Vietnam, which means that it ranks second on the list of university students in Vietnam.

In case the study uses Exploratory Factor Analysis (EFA), the ratio between the number of samples and measurement variables would be 5:1 (Dinh Tho 2014). Applying this to the situation of the study, the sample size must be 180. Hence, there are at least 180 responses that must be collected via the Google form.

The survey was opened from August 18th 2021 to September 10th 2021 by a direct link to our Google Form interface. Due to Covid-19, it was difficult for authors to communicate with students whose school is located outside of Binh Thanh district. We had asked for help from our friends to diversify our responses as much as possible. After nearly two months, we received a total of 415 raw forms.

4.1.1. Scale reliability analysis

This research applied the approach of Nunnally (1978), Peterson (1994), and Slater (1995), which deemed that the acceptable Cronbach's alpha for the overall measurements and individual Corrected item - Total correlation are 0,6 and 0,3 respectively. According to the aforementioned criteria, all measurements are qualified.

4.1.2. Exploratory Factor Analysis

The two commonly used methods of rotation are Varimax and Promax, the former of which is applied in this research. According to Finch (2006), regardless of the correlations among factors, two approaches show equal effectiveness in identifying the underlying factor structure, hence, researchers can choose the rotation method that they deemed suitable. The conditions for measurements to be kept are:

- (1) Factor loading is greater than 0,5. If an observed variable appears simultaneously in two groups in the component matrix with an absolute difference in loading factors higher than 0,3, then it is retained, otherwise eliminated;
- (2) Kaiser-Meyer-Olkin or KMO is between 0,5 and 1;
- (3) Bartlett test is significant;
- (4) Percentage of variance is over 50%;
- (5) Only factors whose Eigenvalue is higher than 1 would be retained.

The EFA is applied separately to independent factors (NI, PMQ, SC, and MC) and dependent factors (PU, IA, and PI), totaling 5 times. In terms of independent factors:

- (1) Only SC4 is omitted as its loading factor is lower than 0,5.
- (2) KMO is 0,913 with a significance value of 0,00.
- (3) Two factors having Eigenvalue are higher than 1, explaining more than 64,072% of the variability in the original observed variables (Appendix B Table B.8).
- (4) Regarding dependent factors, none of the observed variables are eliminated (Appendix B Tables 9 to 11).

The final remaining variables are presented in table 3.8 and restructured (table 3.9).

Table 2. Rotated component matrix.

Variable	Component				
	1	2	3	4	5
SC2	0,807				
SC1	0,775				
MC1	0,761				
MC2	0,753				
PMQ3	0,740				
PMQ2	0,731				
MC3	0,639				
PMQ1	0,584				
SC3	0,523				
NI2		0,896			
NI4		0,794			
NI3		0,775			
NI1		0,766			
PU3			0,876		
PU1			0,840		
PU2			0,835		
PU4			0,835		
IA3				0,910	
IA2				0,879	
IA4				0,870	
IA1				0,794	
PI4					0,841
PI2					0,827
PI1					0,759
PI3					0,675

Source: Compiled by authors on SPSS, 2021.

Table 3. Revised factors after Cronbach's Alpha test and EFA.

Factor	Observed variables	Explanation
PMQ	SC2, SC1, MC1, MC2, PMQ3, PMQ2, MC3, PMQ1, SC3	Perceived Message Quality
NI	NI1, NI2, NI3, NI4	Needs of Information
PU	PU1, PU2, PU3, PU4	Perceived Usefulness Of Information
IA	IA1, IA2, IA3, IA4	Information Adoption
PI	PI1, PI2, PI3, PI4	Purchase Intention

Source: Compiled by authors on SPSS, 2021.

Thus, after performing EFA, Figure 3.1 would be the new model for the following result.

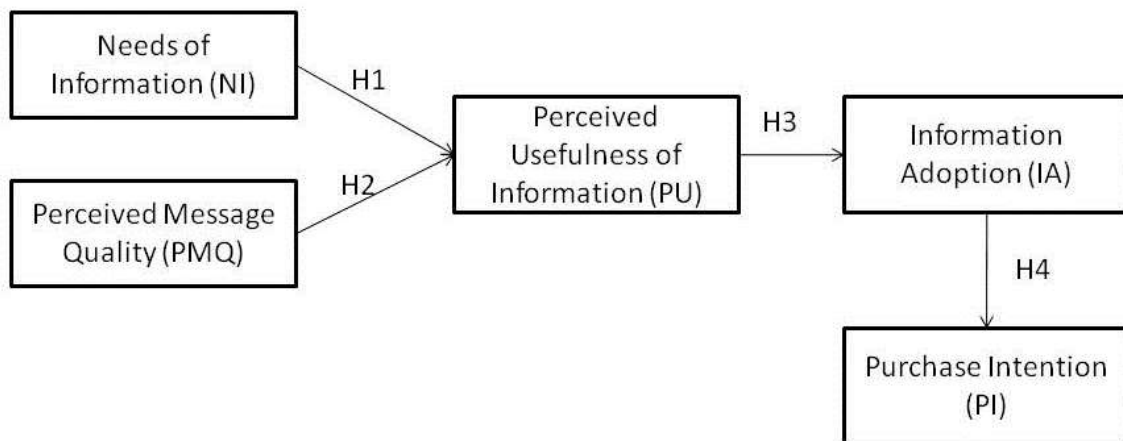


Figure 7. New model.

Source: compiled by the authors, 2021.

Furthermore, the hypotheses for this research will be as follows:

H1: On online platforms, needs of information (NI) affects Perceived Usefulness of Information (PU) positively.

H2: On online platforms, Perceived Message Quality (PMQ) affects Perceived Usefulness of Information (PU) positively.

H3: On online platforms, Perceived Usefulness of Information (PU) affects Information Adoption (IA) positively.

H4: On online platforms, Information Adoption (IA) affects Purchase Intention (PI) positively.

4.1.3. Confirmatory Factor Analysis

After the EFA, the authors used the resulting manifest variables to perform the Confirmatory Factor Analysis (CFA). Five goodness-of-fit measures are utilized in this study to test the structural model, including the ratio of chi-square value to degrees of freedom, goodness of fit index (GFI), comparative fit index (CFI) and root mean square error of approximation (RMSEA), and TLI (Tucker-Lewis Index).

Furthermore, to improve the model fit, variables that have the highest standardized correlations would be removed from the model.

The CFA model and results are as follow:

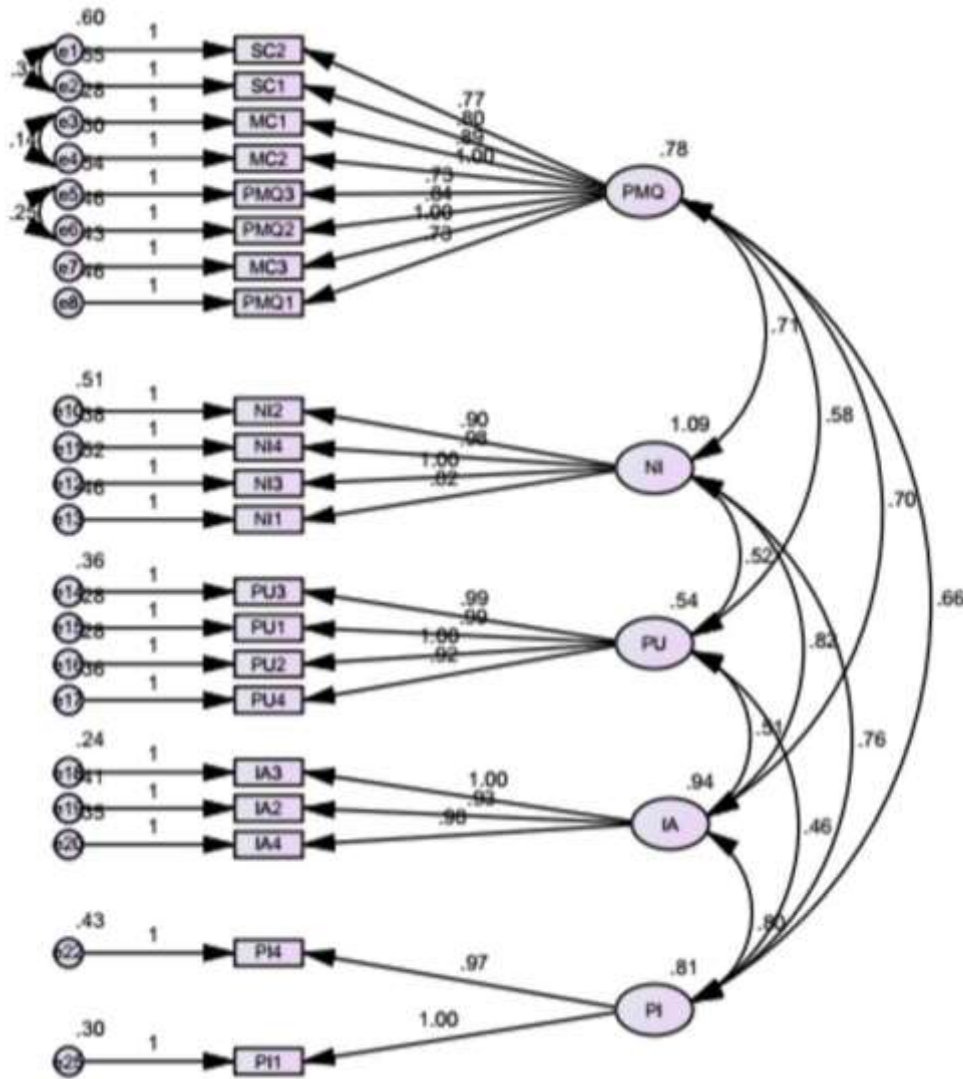


Figure 8. Confirmatory Factor Analysis (CFA) model.

Source: Compiled by authors on AMOS, 2021.

Table 4. Confirmatory Factor Analysis (CFA) result.

Chi-square/df	GFI	CFI	TLI	RMSEA
2,19	0,842	0,933	0,920	0,079

Source: Compiled by authors on AMOS, 2021.

According to Hair et Al (2010), our model has a good Model fit. Specifically, Chi-square/df = 2,19 < 5; CFI = 0,933 > 0,9; TLI = 0,92 > 0,9; RMSEA= 0,079 < 0,08. However, due to the limitation of our sample size, it is difficult for this research's GFI to be larger than 0,9. According to Baumgarner and Homburg (1995) and Doll, XIA, and Torkzadeh (1994), if such a case occurs, GFI that is larger than 0,8 would also be acceptable. Consequently, our model's GFI is acceptable as it is 0,842.

4.1.4. Structural equation modeling

After we have the CFA model, the authors perform the Structural Equation Model (SEM) to have the final estimates of the structural relationship between the variables and latent constructs. SEM is a combination of both factor analysis and multiple regression analysis. The alpha level is set at 0,05, thus any hypothesis with p-value larger than alpha level (0,05) would be eliminated. The model and result are as follow when calculated on AMOS 20:

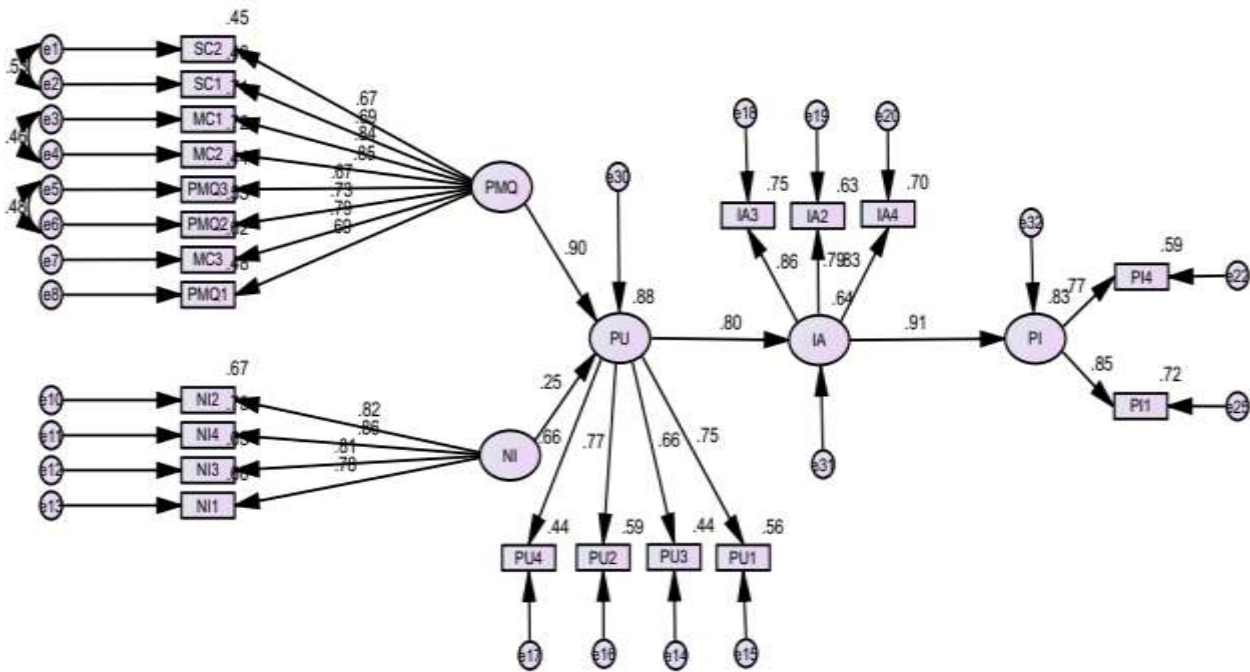


Figure 9. Structural Equation Modeling (SEM) model.

Source: Compiled by authors on AMOS, 2021.

Table 5. Structural Equation Modeling (SEM) result.

			Standardized Estimates	Unstandardized Estimates	Standard Error	T-values	R-squared	Result
PU	<--	PMQ	0,903***	0,662	0,059	11,269	0,88	Supported
PU	<--	NI	0,255***	0,160	0,033	4,915		Supported
IA	<--	PU	0,8***	1,091	0,110	9,931	0,64	Supported
PI	<--	IA	0,911***	0,881	0,07	12,669	0,83	Supported

***: $p < 0,001$

Source: Compiled by authors on AMOS, 2021.

The table above indicates that all four hypotheses are significant as their P values are all less than 0,05.

4.1.5. Testing hypotheses

H1: On online platforms, needs of information (NI) affects the Perceived Usefulness of Information (PU) positively.

According to the table, the R-squared between NI and PU is 0,88, which means 88% of the variability of PU can be explained by PMQ. Meanwhile, the standardized estimate is 0,255 with t value = 4,915 and p-value < 0,0001, so NI has a positive impact on PU. Thus, H1 is supported.

H2: On online platforms, Perceived Message Quality (PMQ) affects Perceived Usefulness of Information positively.

According to the table, the R-squared between PMQ and PU is 0,88, which means 88% of the variability of PU can be explained by PMQ. Meanwhile, the standardized estimate is 0,903 with t value = 11,269 and p-value < 0,0001, so PMQ has a significant positive impact on PU. Thus, H2 is supported.

H3: On online platforms, Perceived Usefulness of Information (PU) affects Information Adoption (IA) positively.

According to the table, the R-squared between PU and IA is 0,64, which means 64% of the variability of PU can be explained by IA. Meanwhile, the standardized estimate is 0,8 with t value = 9,931 and p-value < 0,0001, so PU has a significant positive impact on IA. Thus, H3 is supported.

H4: On online platforms, Information Adoption (IA) affects Purchase Intention (PI) positively.

According to the table, the R-squared between IA and PI is 0,83, which means 83% of the variability of PI can be explained by IA. Meanwhile, the standardized estimate is 0,911 with t value = 12,669 and p-value < 0,0001, so IA has a significant positive impact on PI. Thus, H4 is supported.

4.1.6. Bootstrapping test

After performing the SEM, the authors utilized the bootstrap test to verify the biases of the model. Bootstrapping was proposed in 1979 by Bradley Efron. It will resemble the given dataset to create new simulated datasets and indicate whether the original data set was biased. For the data set to be free from bias and usable, the Critical Ratio should be smaller than 2.

The result of Bootstrapping, with 200 samples, is as follows:

Table 6. Bootstrapping result.

			SE	SE-SE	Mean	Bias	SE-Buas	C.R
PU	<--	PMQ	0,82	0,004	0,667	0,005	0,006	0,83
PU	<--	NI	0,58	0,003	0,162	0,002	0,004	0,5
IA	<--	PU	0,124	0,006	1,092	0,001	0,009	0,11
PI	<--	IA	0,064	0,003	0,884	0,003	0,005	0,6

Source: Compiled by authors on AMOS, 2021.

5. Conclusion and Recommendations

5.1. Conclusion

The result from EFA was that six independent variables were reduced and restructured, resulting in the final four explanatory factors namely Perceived Message Quality (PMQ), Needs of information (NI), Perceived Usefulness of Information (PU), and Information Adoption (IA).

This final model was confirmed to be able to explain the mechanism of how KOLs affect the choice of foreign language courses of university students in HCMC. The results are illustrated as follows:

(1) Perceived Usefulness of Information (PU) is significantly influenced by Needs of information (NI) and Perceived Message Quality (PMQ). To be specific, both NI and PMQ affect PU positively, which correlates with the expected signs.

(2) Information Adoption (IA) is positively affected by Perceived Usefulness of Information (PU), which correlates with the expected signs.

(3) Purchase Intention (PI) is positively affected by Information Adoption (IA), which correlates with the expected signs.

In conclusion, this research's findings are as follows:

(1) Needs of information (NI), Perceived Message Quality (PMQ), Perceived Usefulness of Information (PU), and Information Adoption (IA) are the determinants of KOLs' impacts on consumers' choice of foreign language courses.

(2) The results show that the influence of information from KOLs not only depends on the characteristics of the information itself but also consumers' needs of information. They both have an

indirectly important role in purchase intention; they, therefore, should be evaluated together while considering the influence of KOLs on consumers' choice of courses.

These findings align with results from previous literature. In particular, perceived message quality positively correlates with perceived usefulness of information as suggested by C.-W. Chen et al. (2011). In addition, our research proves that needs of information are a significant determinant of perceived usefulness of information, which is in line with Chu & Kim (2011) and Erkan & Evans (2016). Moreover, the positive relationship between perceived usefulness and information adoption is confirmed, sharing the same result with Christy, Matthew & Neil (2008). That information adoption positively impacts the purchase intention of consumers was earlier demonstrated in Wang (2015) and Erkan & Evans (2016). However, unlike previous research, constructs of source credibility and message credibility in this result after EFA are combined with those of perceived message quality. One possible explanation is that the number of responses is not large enough to produce a significant distinction among factors, leading to the grouping of three explanatory factors mentioned above.

5.2. Recommendation

With the rapid development of the internet, online communities where topics related to online shoppings are widely discussed are emerging. With the overwhelming amount of information, it is not always an easy task for individuals to differentiate between falsified and correct information. Thus, the role of KOLs as a source of public information is becoming more and more critical as a great number of customers are inclined to believe messages from KOLs. Realizing that trend, many companies develop an interest in using the image of KOLs as a cost-effective marketing method besides the traditional tactics.

Under this circumstance, the authors provide some practical suggestions for educational companies offering foreign languages courses illustrated as follows.

5.2.1. Educational companies need to identify the opinion leaders in the virtual platforms by analyzing the target learners.

According to the result of this study which shows that KOLs have a positive influence on university students' purchase intention, we suggest that educational businesses consider KOLs an alternative marketing tactic besides the traditional methods such as online advertisements. Firstly, educational businesses can promote their teachers can work as KOLs to promote their courses. Secondly, the budget is more generous, educational businesses can consider collaborating with available language KOLs.

However, spending excessively on KOLs does not guarantee success. To maximize the benefits from KOLs, educational businesses need to consider the following aspects. Firstly, the KOLs' image should align with the brands' values. Contradictions between what KOLs actually do and what they say about language courses cause inconsistency, reducing the quality of the message delivered. Secondly, instead of a glamorous public figure who is widely known but lacks close interactions with the audience, learning courses should choose KOLs who truly have frequent sharings and expertise about learning languages. Information from these KOLs is more likely to be perceived as true advice instead of a sponsored advertisement. If a KOL appears to be too commercialized, the audience may become doubtful of the message quality delivered by this KOL. Finally, as KOLs exert a certain amount of influence on the purchase intention, businesses should avoid bad impressions while collaborating with KOLs.

5.2.2. Educational companies should consider different factors of the customers

Although the results of this study reveal reliable determinants affecting university students' choice of foreign language courses, they are not universally applicable for every case. This stems from the fact that this study only focuses on university students (normal aging from 18 to 22 years old) in HCMC. Customers' variety in terms of ages, locations may contribute remarkable changes to the determinants of their foreign language courses' selection. Therefore, the educational companies should take these differences into account to effectively and efficiently develop attractive courses satisfying the demands of target customers. Furthermore, the educational companies can conduct research to determine which factors impact their target

customers' choice of courses if possible. A better understanding of customers enhances the likelihood to become successful.

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THE IMPACT OF BRAND EQUITY ON CUSTOMER REPURCHASE INTENTION AT E-COMMERCE MARKETPLACES

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ABSTRACT

As the COVID-19 pandemic imposed a radical change on Vietnamese consumer's buying behavior toward online shopping, the players in the e-Commerce marketplaces (hereinafter referred to as e-Marketplace) industry have also shifted their strategy from competing on prices to competing on branding, with a view to retaining customers in such a competitive and low-switching cost environment. With a view to providing recommendations for e-Marketplace managers on this strategy, this research is conducted over 372 customers of major e-Commerce websites and applications to holistically analyze their repurchase intention forming process, under the consideration of brand equity and two mediator variables: perceived value and customer satisfaction. Using Structural Equation Model (SEM), the results accept the direct and positive effect of brand equity on repurchase intention, as well as reconfirm the mediator role of customer satisfaction in this relationship.

Keywords: brand equity, repurchase intention, perceived quality, customer satisfaction, e-Commerce

1. Introduction

In Vietnam, e-Commerce has risen in prominence, especially since the outbreak of Covid-19, when consumer behavior shifted away from traditional commerce and toward online shopping. According to a report by the Vietnam E-Commerce and Digital Economy Agency under the Ministry of Industry and Trade, the demand for shopping on e-commerce has increased sharply, and the degree of attachment to this form in the long run has also accreted rapidly.

Beside an increase in shopping frequency, Vietnamese consumers also spend more money on online purchases. Individuals' online shopping expenditure in 2020 experiences a rise, and it is anticipated that in 2025, this figure would be 600 USD, which is 2.5 times greater than that of 2020. (Vietnam E-commerce and Digital Economy Agency, 2021). This presents a positive sign for online businesses; however, to optimize profits, e-Marketplaces should pay special attention to customer repurchase intention since previous study has shown that if a company maintains 5% more of its consumers, profits will climb from 25% to 125%. To do so, executives must recognize that "the corporation produces the goods, but what the consumer buys is the brand" (Klein, 2001). One of the keys that customers use to differentiate various market suppliers is the brand. The more value the brand generates from the positive user response, the higher the brand equity becomes.

According to the iPrice Group's E-commerce Report Q3/2021, Shopee leads all multi-industry e-Marketplaces in terms of total visitors in Vietnam (57%), followed by Lazada and Tiki with 16% and 13%, respectively. With the goal of becoming Southeast Asia's second biggest e-commerce market by 2025, Vietnam is and will be a hotbed of rivalry for the industry's major companies. As a result, studying into the components of a brand is vital not only to assist businesses in establishing and maintaining a market position, but also provide recommendations for companies to retain consumers and encourage their continuous using the brand's products or services.

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Previous research has found a positive relationship between brand equity and customer repurchase intention (Bojei & Hoo, 2012; Huang et al., 2014). However, few studies analyze "brand equity" as a multi-dimensional concept and incorporate variables that are likely to mediate this relationship, such as perceived quality or customer satisfaction. Furthermore, recent e-commerce studies have focused a lot on the link between brand equity and consumer purchase intention (Civelek & Ertemel, 2019; Febrian & Vinahapsari, 2020), creating a research gap for the relationship between brand equity and consumer repurchase intention. Hence, this research will contribute to the literature by analyzing the impact of "brand equity" - as a multi-dimensional concept - on "repurchase intention" in the context of e-commerce, considering both mediating variables: perceived quality and customer satisfaction, to assess a bigger picture of consumer behaviors in online shopping.

2. Theoretical framework

2.1. Brand Equity

Aaker (1991) defines brand equity from a corporate perspective as "assets and liabilities associated with a brand, its name and symbol, which can increase or decrease the value of brand products or services". From the customer's perspective, Keller (1993) considers brand equity as "the impact of brand awareness on consumers' response to the marketing activities of that brand". Although many different approaches exist, brand equity is widely accepted as "the added value that a brand brings to a product" (Lassar et al., 1995).

2.2. Perceived quality

Zeithaml (1987) defined perceived quality as the consumer's abstract judgment or assessment of a product's intrinsic and physical attributes. Perceived service quality is also the difference in the process by which consumers compare their initial expectations with the perceived actual performance of the service (Grönroos, 1984). In this process, consumers will consciously and unconsciously evaluate the roles of that product or service, as well as relate to and compare with factors such as experience past purchases, substitute goods or services, or initially set criteria and expectations (Castleberry & McIntyre, 1992).

2.3. Customer Satisfaction

Satisfaction is the fulfilling response of consumers (Oliver, 2010) that comes from evaluating and comparing initial expectations with the product's actual performance (Kotler, 2011). Satisfaction can emerge immediately after a purchase experience and long-term once the user has used the product and reevaluated the overall experience (Anderson et al., 1994). In business, customer satisfaction plays a vital role in forming the intention to continue buying (LaBarbera et al., 1983). An increase in satisfaction leads to a high level of commitment, which in turn transfers into an intention to repurchase a product or reuse a service (Anderson & Srinivasan, 2003).

2.4. Repurchase Intention

Repurchase intention refers to the consumer's continuing usage of the current supplier's product in the future. Zineldin (2000) also gives a similar definition when claiming that repurchase intention is the customer's commitment to continue to attach with the brand. This intention represents the likelihood that consumers will continue to prefer the products or services of a particular brand, afterwards, repurchase or recommend the brand to others (Hellier et al., 2003).

2.5. Research hypotheses

2.5.1. Dimensions of the Brand Equity model

Brand awareness is the ability of customers to recognize or associate a brand with a particular product or service (Aaker, 1991). Since customers tend to consume familiar brands, brand awareness will increase the level of purchase, thereby increasing the profit and sales of the business (Baldauf et al., 2003). Therefore, it can be seen that brand awareness is a component that makes a brand successful.

Hypothesis H1: Brand awareness has a positive impact on Brand Equity.

Brand association will probably include thoughts, feelings, perceptions, images, experiences, beliefs, attitudes associated with the brand (Kotler & Keller, 2006), and anything associated with the brand in the customer's memory, thereby creating a distinctness for the brand (Aaker, 1991). Brand association positively reinforces brand equity (Bridges et al., 2000).

Hypothesis H2: Brand association has a positive impact on Brand Equity

Brand loyalty reflects a customer's commitment to a brand. Aaker (1991) believes that to manage brand equity effectively, businesses need to focus on maintaining brand loyalty.

Hypothesis H3: Brand loyalty has a positive impact on Brand Equity

2.5.2. Brand Equity and Repurchase Intention

Enterprises with high brand equity will have a strong emotional and psychological connection with customers, and this connection is the basis for establishing customer trust and preference for the brand (Buil et al., 2013). Specifically, the higher the brand awareness, the greater the trust of customers with the brand, and the more likely they will continue to buy products from the brand (Ahmad et al., 2016). Vahdati et al. (2014) also concluded that brand equity has a positive relationship with customers' purchase intention.

Hypothesis H4: Brand equity has a positive impact on Repurchase Intention

2.5.3. Mediating role of Perceived Quality in the relationship between Brand Equity and Repurchase Intention

Neal (1999) claimed that when users make a purchase decision, they will consider how to utilize the benefits and traits of that brand, so it can be concluded that the values created by the brand will strengthen the customer's perceived quality, thereby forming the basis for purchase intention. Furthermore, the more valuable a customer perceives a brand, the higher its brand equity and the stronger the customer's purchase intention becomes. Consequently, it can be expected that perceived quality plays a mediating role in the relationship between brand equity and customer repurchase intention.

Hypothesis H5: Brand equity has a positive impact on Perceived Quality.

Hypothesis H6: Perceived quality has a positive impact on Repurchase intention.

2.5.4. Mediating role of Customer Satisfaction in the relationship between Brand Equity and Repurchase Intention

According to Webster (2000), a strong brand will enhance a retailer's image and strengthen consumer confidence, which in turn transfers into user satisfaction and trust in the brand. Lassar et al. (1995) also suggested that brand equity increases customers' perception of the brand's utility - a factor closely linked with customer satisfaction. Finally, Kotler (2011) emphasizes that satisfaction will promote customers' repurchase intention, or to a greater extent, cause the customer to ignore the advertisement from the other brands and neither buy products from other suppliers. From the above arguments, satisfaction is expected as a mediating variable for the impact of brand equity on repurchase intention.

Hypothesis H7: Brand equity has a positive impact on Customer satisfaction.

Hypothesis H8: Customer satisfaction has a positive impact on Repurchase intention.

The proposed conceptual model is given in the following figure:

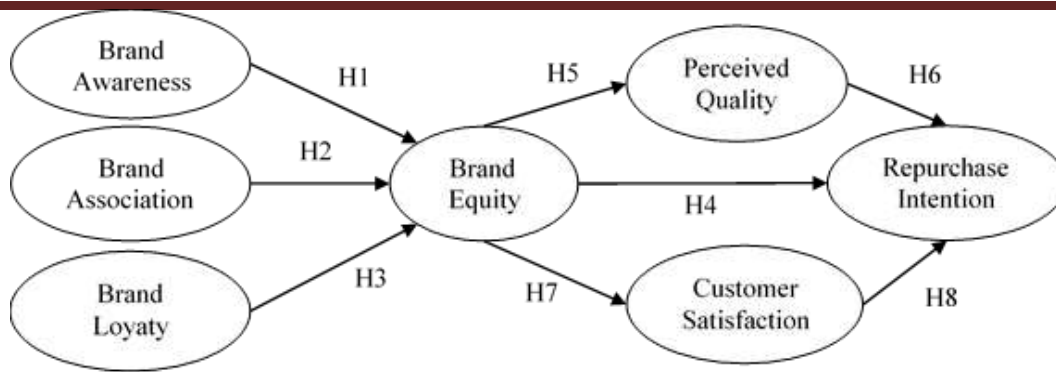


Figure 1. Conceptual Model

Source: Authors' proposal, 2022

3. Research method

3.1. Scale and Questionnaire Development

The scale is aggregated with 33 observed variables, including Brand Loyalty (BL) which is measured by 05 observed variables from Beig & Nika (2019); Brand Awareness (BAW), Brand Association (BA) and Customer Satisfaction (CS) measured by 06, 04, and 05 observed variables from Quan et al. (2020), respectively; Brand Equity (BE) scale adapted from the 4-item scale of Yoo et al. (2000); Perceived Quality (PQ) scale adapted from the 5-item scale of Jiang & Yang (2016); and Repurchase Intention (RI) which is measured by 04 observed variables from the scale of Holloway, Wang & Parish (2005).

The questionnaire is divided into three parts: part 1 contains 2 filter questions to select the appropriate subjects to be surveyed; part 2 contains 33 questions corresponding to 33 indicators on individual factors affecting the repurchase intention on e-Marketplaces, interspersed with 5 questions about the respondents' consumption habits; and part 3 contains 7 questions about the respondents' personal information. Before performing the official survey, the authors conducted a preliminary survey to evaluate the scale, accumulated feedback on the content and structure of the survey to adjust accordingly.

3.2. Sample and Data Collection

From December 23, 2021, to December 27, 2021, the research team performed a preliminary survey by distributing an online questionnaire to 34 individuals and directly interviewing 5 people to evaluate the comprehension of the questionnaire. Then, after adjusting the questionnaire and achieving appropriate Cronbach's Alpha value for all 7 groups of variables, the official survey was conducted from January 7, 2022, to January 12, 2022, by sending an online Google Form questionnaire to families and friends, as well as posting surveys on personal Facebook pages, Facebook groups and forum about e-Commerce, Facebook groups of students from various universities and clubs in Hanoi and Ho Chi Minh City. At the end, 423 responses were collected.

3.3. Data processing method

The data was cleaned using Excel 2016 and SPSS 20.0 after being appropriately collected. With an initial sample size of 423 observations, which meet the requirement of the suggested formula: $N = 5 * n = 33 * 5 = 165$ (where n is the number of observed variables). Then, 400 samples passed the filtering and 372 valid samples remained after eliminating inappropriate observations, such as those having only 1 answer for the entire questionnaire, having completely similar response for all questions in the same scale, or containing inconsistencies in the answers, etc.

Cronbach's Alpha reliability coefficient test and Exploratory Factor Analysis (EFA) were performed in SPSS 20.0 software to screen out scales from research concepts. Subsequently, Confirmatory Factor Analysis (CFA) was performed to evaluate the scale, and finally, analysis of the linear structural model SEM was used to test the research model. The SEM analysis was also able to check many related dependent

relationships between the variables observations with latent structures or between latent structures, from which to conclude research hypotheses through AMOS 24.0 software.

4. Results and discussion

4.1. Results

4.1.1. Descriptive Statistics

372 qualified responses were collected by questionnaire survey for analysis. Descriptive statistics of the survey sample are presented in the Table 1 below:

Table 1. The profile of sample

N = 372	Value	Frequency	Percent (%)
The most frequently used e-Marketplace	Shopee	317	85.2
	Tiki	30	8.1
	Lazada	25	6.7
	Other	0	0
Gender	Male	96	25.8
	Female	273	73.4
	Preferred not to say	3	0.8
Age	Under 18	42	11.3
	From 18 to 24	315	84.7
	From 25 to 40	13	3.5
	From 41 to under 60	2	0.5
Educational level	High school diploma or below	61	16.4
	College	2	0.5
	Undergraduate	307	82.6
	Postgraduate	2	0.5
Devices	Website on mobile phone	30	8,1
	Mobile app	319	85.5
	Personal computer	22	5.9
	Office computer	1	0.3
Marriage status	Single	362	97.3
	Married	10	2.7
Number of children	Not yet	364	97.8
	From 1 to 2	8	2.2
	3 or more	0	0

Average income per month	From 0 to 5 million (VND)	334	89.8
	Above 5 to 10 million (VND)	21	5.6
	Above 10 to 18 million (VND)	6	1.6
	Above 18 to 32 million (VND)	3	0.8
	Above 32 million (VND)	8	2.2

Source: Data processing results from SPSS 20.0, 2022

As the questionnaire can mainly reach out to students, the majority of respondents aged from 18 to 24, constituting a total of 84,7%. According to SimilarWeb, the largest number of users at Shopee, Lazada, and Tiki are in the 18-24 age group; meanwhile, these are the top 3 e-Marketplaces with the highest percentage of traffic share in the e-Commerce industry in Vietnam. Therefore, customers in the 18-24 age group can be regarded as typical and representative of the e-Marketplace customer's persona in Vietnam. In addition, according to the 2019 Population and Housing Census Report, this age group is mostly single (80.9%), and the proportion of people with a bachelor's degree (9.6%) is also higher than the national average (8.7%). Hence, it can be implied that the 18-24 age group respondents in the research sample are qualified to be representative of the research population.

4.1.2. Research Model Analysis Result

The Cronbach's Alpha reliability test results indicate that all the scales have reliable results and are acceptable ($\alpha > 0.7$). Through 6 times of the exploratory factor analysis (EFA), the observed variables such as BL3, CS2, PQ5, RI4, and BAW5 were respectively removed due to unsatisfactory indicators, such as loading factor being less than 0.5 and the difference in loading factor between two of the factor groups is less than 0.3. At the final turn of EFA, Bartlett's test had a Significance value below 0.05 and KMO = 0.907 (between 0.5 and 1); the Eigenvalue were greater than 1 (at 1.103), and seven groups of factors were extracted; the total variance extracted reached $65.337\% \geq 50\%$, thereby can explain 65.337% of the variation of the data. The factor loading of each observed variable in each factor group is also qualified at above 0.5, and the Cronbach's Alpha coefficient test again showed that the scales were reliable.

Brand Equity in this research is considered a multi-dimensional concept made up from the following dimensions: Brand Loyalty, Brand Awareness, and Brand Association. Therefore, CFA is required to demonstrate that the components are unidimensional and convergent on the only concept - Brand Equity. Convergence of the data is confirmed when considering that the weights in the table "Standardized Regression Coefficients" are all greater than 0.5 (Gefen et al., 2000). Besides, the Model Fit measurements provide a marginal fit representation of the data, specifically: CMIN = 675,607 with $p_value = 0.000 < 0.05$; $1 < CMIN/df = 2,060 < 3$; $GFI = 0.885 > 0.8$; $CFI = 0.923 > 0.9$; $RMSEA = 0.053 < 0.08$ (Hair et al., 2010).

Table 2 below summarizes the analysis results from AMOS 24.0 that assesses the convergence and discriminant validity of the model:

Table 2. Results of Composite Reliability, Convergent and Discriminant Validity testing

Model Validity Measures											
	CR	AVE	MSV	MaxR(H)	BAW	BL	BE	BA	CS	PQ	RI
BAW	0,819	0,533	0,304	0,83	0,73						
BL	0,794	0,437	0,495	0,805	0,457***	0,661					
BE	0,806	0,51	0,401	0,812	0,303***	0,633***	0,714				
BA	0,811	0,521	0,291	0,831	0,316***	0,539***	0,465***	0,722			

CS	0,819	0,533	0,509	0,834	0,481***	0,634***	0,618***	0,456***	0,73		
PQ	0,772	0,459	0,495	0,776	0,412***	0,703***	0,496***	0,522***	0,644***	0,677	
RI	0,846	0,649	0,509	0,876	0,551***	0,621***	0,548***	0,349***	0,713***	0,590***	0,805

(† p_value < 0,100; * p_value < 0,050; ** p_value < 0,010, *** p_value < 0,001)

Source: Data processing results from AMOS 24.0, 2022

All the measurement scales in the model reach the threshold value for composite reliability (CR > 0.7). Besides, most of the factors have AVE (Average Variance Extracted) values greater than 0.5, which is typically suggested by researchers, but except for two variables, BL (AVE = 0.437) and PQ (AVE = 0.459). However, since the overall composite reliability of the factor is better than the suggested level, the convergence value of the scales is still guaranteed even though the AVE of some variables are lower than 0.5 (Fornell & Larcker, 1981). Therefore, the convergence of two variables, BL and PQ, is still guaranteed. Meanwhile, the MSV (Maximum Shared Variance) coefficient of most scales is greater than the AVE on the same factor, and the Square Root of AVE is greater than Inter-Construct Correlations among each factor, so the convergence and discriminant validity of the scales are appropriate.

4.1.3. Results of SEM analysis

All hypotheses H1, H2, H3, H4, H5, H6, H7, and H8 are accepted. Factors such as Brand Awareness, Brand Loyalty, and Brand Association all positively impact Brand Equity, of which Brand Loyalty has the most significant effect. Repurchase Intention is directly influenced by all three factors, including Brand Equity, Customer Satisfaction and Perceived Quality. Among all the relationships of factors, hypothesis H7 has the highest standardized coefficient, implying that Brand Equity is one of the most important factors affecting Customer Satisfaction.

The hypothesis H9: Customer Satisfaction plays a mediated role in the relationship between Brand Equity and Repurchase Intention is accepted with significance, proving that satisfaction does mediate the impact of brand equity on customers' intention to repurchase. However, the hypothesis H10: Perceived Quality as a mediating variable in the relationship between Brand Equity and Repurchase Intention is rejected at the 95% confidence interval, meaning that perceived quality from the customer's perspective does not remarkably mediate the brand equity - repurchase intention relationship.

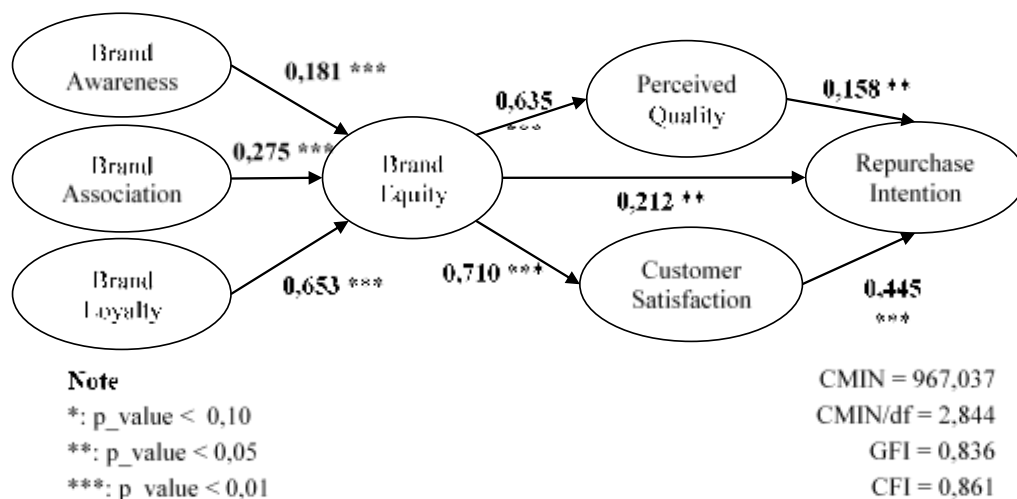


Figure 2. Research result model

Source: Data processing results from AMOS 24.0, 2022

4.2. Discussion

The mean of Brand Awareness is high implying that the customer's awareness on e-Marketplaces' brand such as Shopee, Lazada, and Tiki is developing with a positive sign. To keep it up, some recommendations are proposed below:

For e-Marketplaces: marketing activities such as distribution, promotion and personal selling should be focused to encourage the direct buying behaviour of customers (Huang & Sarigöllü, 2014). Particularly, first, it is necessary to increase the degree of distribution by utilizing the full potential of the distribution factor to increase brand awareness, especially for brands that are relatively low in terms of sales and advertising budget. In addition, e-Marketplace brand managers can increase customer awareness of the brand by providing content that attracts their attention amidst the fluctuation of consumers' needs and shopping habits. To do this, e-Marketplace managers should implement supplement applications (such as Lazada's Shoppertainment or Shopee's Shopee Food, etc.) to promote the usage of e-commerce, or utilize the development of social networking services such as Twitter or Facebook with great potential to increase brand awareness (Huang and Sarigöllü, 2014).

For those enterprises specialized in producing and trading products/services: utilizing the brand name of the e-Marketplaces to carry out Co-branding activities through promotions would be a potential strategy. More importantly, this should be implemented simultaneously with reinforcing customer satisfaction and reliability by combining products, quality, price, location and promotion through brand association; and effectively using of the strategic marketing activities (such as reduction of fixed allowances, sales and general publicity of products) during the initial time of market penetration of the Co-Brands (Kim et al., 2014).

The results specified that Brand Association has a positive and significant effect on Brand Equity. Therefore, e-Marketplaces enterprises should have a Management Trainee program to train young talented members to become valuable members of an organization, who will then recruit potential new members to create much value for the company (Porsfelt, 2001). Besides, contributions to society are also regarded as important from the customer's perspective. Hence, the corporation's leaders need to perform the CSR (corporate social responsibility), for example, supporting the consumption of agricultural products for farmers, establishing charitable funds to help disadvantaged people, etc., as research by Jones and Runyan (2013) pointed out that community experiences play a vital role in both online and offline environments.

Brand Loyalty is the factor that has the most substantial influence on Brand Equity. Therefore, E-Marketplaces managers need to put more effort into building brand loyalty through customer care, specifically about issues that customers are concerned about (Webb, 1999), since customer care is proven to have an advantage for building loyalty (Mao, 2010).

From the results, customer satisfaction mediates the relationship between brand equity and customer loyalty. In addition, customer satisfaction during the shopping process influences a wide range of purchasing decisions they will make in the future. Therefore, e-Marketplaces managers should pay attention to enhance the level of customer satisfaction via the following measures:

Firstly, invest in chat channels between customers and customer support teams of e-Marketplaces. When consumer issues and concerns are satisfactorily resolved, customer satisfaction improves significantly.

Secondly, continuously improve the quality of the website. It is necessary for the e-Marketplace to focus on designing the appropriate interactive features and interfaces to create customers' good experience when using the website, thereby creating customer satisfaction (Zhou et al., 2009).

Finally, e-Marketplaces need to welcome customer reviews and feedback by collecting information that consumers comment on and evaluate on social media platforms. Using customer feedback correctly and effectively will help customers feel that their recommendations are focused, thereby improving customer satisfaction.

The mediating role of Perceived Quality has been rejected, implying that with the recent innovation, new products are constantly being launched, making the product life cycle shorter. Therefore, consumers will

expect new products with more advanced features with a preferential price to feel that the return value is more significant than what they spend. Therefore, some recommendations for e-Marketplaces managers to improve the perceived quality of customers such as:

Firstly, it is necessary to maintain and improve the quality of goods and, at the same time, establish a reasonable and favorable price for consumers. Therefore, E-Marketplaces should control products for sale on their trading floors to avoid the penetration of poor-quality products that negatively affect customers' perceived quality.

Secondly, it is necessary to promote appropriate promotional activities to attract consumers' attention and motivate consumers to buy more. For example, e-Marketplaces can offer non-monetary promotions such as gift cards, points and coins to retain users and boost consumer demand to purchase on app. These promotions also provide incentives to customers to buy more often and in larger quantities, thereby encouraging them to repurchase and improve the customer's repurchase rates (Lewis, 2004).

Finally, it is necessary to improve the quality of delivery and, at the same time, provide a service that allows goods to be checked before receipt. Also, delivery process quality should be strengthened and developed so that the goods can reach consumers quickly, avoiding delays in delivery during major shopping holidays to enhance consumers' buying experience. Moreover, e-Marketplaces strategy makers should also ensure that goods are delivered carefully to the customers since otherwise damaged goods can affect their shopping experience.

5. Conclusion

The study has tested the multidimensional model of brand equity, concluding that brand equity is a multidimensional concept and strongly influences customer satisfaction, perceived quality, and intention to repurchase. In addition, the research results also confirm the mediating role of satisfaction in the relationship between brand equity and repurchase intention.

The study still has many limitations that should be acknowledged as follow. Firstly, due to the incapability to cover all demographic groups, the sample was insufficient and unrepresentative. Secondly, the online survey method presents several difficulties in managing and ensuring research's objectivity. Thirdly, due to time and cost limitations, it was impossible to draw random probability sampling; therefore, the non-probability sampling was chosen, so researchers could not evaluate if the population was well-represented. Finally, this research has not considered demographic factors in consumer behavior research. From the above limitations, later studies can incorporate cultural factors - which can make a difference in user behavior and how they perceive the brand's values - or simply overcome the study's limitations to achieve a greater level of completeness and objectivity. In addition, further studies can consider performing a longitudinal study to evaluate the relationship between variables at different time points and compare changes over time to discover new insights into the dynamics of customer behavior and gain a more holistic view of the issue.

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EVALUATION OF THE PERFORMANCE OF LOANS FOR CORPORATE CUSTOMERS OF COMMERCIAL BANKS IN THUA THIEN HUE DURING THE PERIOD OF COVID 19

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ABSTRACT

The research evaluates the effectiveness of lending activities to corporate customers of commercial banks in Thua Thien Hue province into two periods before the Covid-19 epidemic and during the Covid-19 epidemic. The research uses groups of criteria to evaluate the lending performance of 6 banks VietinBank, BIDV, MB Bank, Sacombank, NCB and Pvccombank with data collected in the period 2017-2020. The study found that in the period before the Covid-19 epidemic, VietinBank, BIDV, MB Bank, Sacombank, Pvccombank had good credit growth NCB had poor credit growth addition, the group of large and medium-sized banks have high credit quality and the group of small banks have many bad debts. During the period of the Covid-19 epidemic, credit growth of banks all decreased, the bad debt ratio did not change significantly due to the influence of the Government's policies to support businesses. However, banks tend to increase risk provisions.

Keywords: Lending activities, corporate customers, commercial banks, financial crisis, bad debt, evaluation criteria.

1. Make a problem

Starting from Wuhan (China), the Covid-19 epidemic has taken place from the end of 2019 until now and broke out in 218 countries and territories, causing comprehensive and far-reaching effects to all countries around the world, is still complicated. According to Worldmeters, as of December 31, 2020, there are more than 82.4 million people infected with Covid-19 and 1.8 million people have died, every day the world has hundreds of thousands of new cases, thousands of deaths and thousands of deaths. no sign of slowing down. The Covid-19 epidemic disrupted the supply chain of production and circulation of goods, the economy was stagnant, causing the global economy to fall into a serious recession, according to US investment bank JPMorgan Chase, gross domestic product. Globally, the global GDP has decreased by 15.6% in the first 6 months of 2020. The International Monetary Fund (IMF and FR) forecasts world gross domestic product (GDP) in 2020 at -4.4%, and -3 respectively. .7%, up 0.5 and 0.7 percentage points. According to the Asian Development Bank, China's growth is forecast to reach 2.1%, the United States down 3.5%, the euro area down 7.4%, Japan down 5.4%, In- Indonesia down 2.2%, Malaysia down 6.0%, Thailand down 7.8%, the Philippines down 8.5% and Singapore down 6.2%.

Vietnam is a country with an open economy and extensive international integration, which has also been affected by the Covid-19 epidemic. In the area of agriculture, forestry and fishery, the production of some perennial crops, main livestock products and shrimp production in 2020 increased significantly, bringing the growth rate of this area to 2.68%, higher than in 2019 (2.01%), the agricultural sector increased by 2.55%; the forestry sector increased by 2.82% and the fisheries sector by 3.08% (the respective growth rates of the industries in 2019 were 0.61%, 4.98% and 6.30%). In particular, the export of agricultural products increased sharply in the context of difficulties caused by the Covid-19 epidemic, rice export turnover for the first time reached more than 3 billion USD (USD), an increase of 9.3% compared to 2019 In contrast to the forest products industry, the picture of seafood exports is more gloomy when the export turnover in 2020 is only 8.4 billion USD, down 1.8% compared to the previous year. The industry and construction sector achieved the highest growth rate with 3.98%. The processing and manufacturing industry

continued to play a key role in leading the growth of the economy with an increase of 5.82%. The service sector, total retail sales of consumer goods and services decreased by 1.2% in the first 6 months of 2020 compared to the same period last year, but then recovered markedly with a 6-month growth rate. At the end of the year reached 6.2%, bringing the domestic trade sector up 2.6% for the whole year. In 2020, although the Covid-19 epidemic is under control in Vietnam, there are still complicated developments in the world, production, supply and trade activities, aviation, tourism, labor and employment are affected. Stagnation, interruption.

In the context of realizing the dual goals of the Prime Minister, both drastic and effective epidemic prevention and control, while focusing on economic recovery and development. Vietnam's economy is gradually recovering, the credit growth of the entire banking system by the end of 2020 will reach 12.13% compared to the end of 2019, contributing to meeting the capital needs of businesses. But the mobilized capital of credit institutions has a lot of surplus, while the loan demand of businesses shows signs of slowing down, besides the bad debt burden increases due to the impact of the Covid-19 epidemic. Currently, although banks have actively diversified their sources and reduced the proportion of loans, credit is still the core business, bringing a large source of revenue for the bank, accounting for 70-80%. Despite the negative impacts of the Covid-19 epidemic, the bank's profit in 2020 grew strongly compared to the previous year. To better understand the above issue and in more detail, we consider that a small part of commercial bank credit is lending to corporate customers.

On those bases, the research team wants to find out the current situation of commercial banks in lending activities to corporate customers in Thua Thien Hue province before and during the Covid 19 epidemic, thereby finding out the solutions bring practical efficiency, meet development and innovation requirements in the bank's lending decisions for corporate customers.

2. Research overview and research methods

2.1. Research overview

In Vietnam, a number of studies have been conducted to analyze the lending situation to corporate customers at commercial banks. For example, the graduation thesis of author Nguyen Thu Tra "Improving lending efficiency for corporate customers at Joint Stock Commercial Bank for Investment and Development of Vietnam - East Hanoi Branch" (year 2014). The author researches on the general theoretical bases of lending effectiveness for corporate customers, which introduces the concept, characteristics, and role of lending activities for corporate customers at a joint-stock commercial bank for the banking industry. economy, for customers and for banks. Through the forms of loan classification: purpose of using capital, lending method, loan term, form of guarantee, form of loan, characteristics of capital rotation. Next, the principles of conditions, processes, efficiency, the need to improve the efficiency of banks' lending to corporate customers, through groups of qualitative and quantitative indicators such as: Outstanding balance for customers For enterprises, the ratio of overdue loans, the ratio of bad debts, the ratio of bad debt / overdue debt. From the above theoretical bases, finding the results of coexistence and limitations, the author assesses the situation and solutions that banks have implemented to improve the efficiency of lending to business customers of the first joint stock commercial banks. Investment and Development of Vietnam- East Hanoi Branch. From there, some solutions and specific recommendations are given to improve the efficiency of lending to corporate customers in the coming time.

Nguyen Huu Manh Cuong (2015) analyzed "The situation of lending to corporate customers at a joint stock commercial bank for foreign trade in Vietnam" from 2012 to 2014 with financial leverage measured by the ratio total debt to total assets of the bank. This study applies the data collection method to estimate the research equation and the descriptive statistics method, the comparative method. Based on the collected data to summarize and describe the business lending situation at the bank. From the data that has been synthesized to analyze and evaluate, draw conclusions and experience through practice. Methods of investigation, survey: Used to collect information about business customers, the survey results allow identifying factors. The authors' research results found the previous period's financial leverage system, size,

assets, growth opportunities through credit tools. This shows that the systematizes the theoretical basis of commercial banks' lending to businesses in the market economy. Analyze the situation of lending to corporate customers at Joint Stock Commercial Bank for Foreign Trade of Vietnam to point out the achievements and limitations that still exist. On that basis, propose solutions to develop loans for corporate customers at banks.

Research topic for master's thesis by Bui Duc Tin (2014-2016) "Credit risk management to improve the efficiency of corporate lending at Vietnam Prosperity Joint Stock Commercial Bank - Quang Tri branch". The thesis uses the method of collecting data and information; comparative methods, descriptive statistics, data analysis for research. The thesis systematizes the theoretical and practical issues of credit risk management at VPBank Quang Tri branch. The study shows the current corporate credit situation of the bank, outlining the causes leading to corporate credit risk at the bank; internal influences and external influences. Since then, perfecting credit risk management, implementing solutions to improve efficiency for businesses: Completing and strictly following the lending process, spreading risks in corporate lending, establishing the research, analysis and risk forecasting department, complete the appraisal work in corporate lending; Strengthen the effectiveness of loan guarantee tools, strengthen post-lending inspection and supervision for businesses. Well perform the debt classification and use of credit risk provisions, strengthen the handling of problem debt.

2.2. Research methods

2.2.1. Sampling method and data collection

The main data source used for the research is collected mainly from annual reports, audited financial statements of commercial banks in Thua Thien Hue province. In addition, the group of authors also used information on articles and reference books.

After that, the authors collected more survey information about credit officers at 6 banks VietinBank, BIDV, MB Bank, Sacombank, NCB and Pvccombank on the management of funds mobilized from loans at selected banks. The total number of credit officers surveyed was 33.

2.2.2. Data processing method

On the basis of analysis from previous studies, the research team provides criteria to evaluate the effectiveness of lending activities to corporate customers as a basis for analyzing and evaluating the current situation of lending to corporate customers. business before and during the Covid-19 epidemic for the survey group of banks in Thua Thien Hue province

3. Research results

3.1. Evaluation of Growth Target Group

In the period of 2017-2019, the loan to deposit ratio (Loan to Deposit LDR) of banks MB, SacomBank, NCB, Pvccombank tended to increase while BIDV and VietinBank did not increase because the LDR ratio was close to the ceiling. (approximately 100%). Banks such as MB, SacomBank, NCB, Pvccombank have restrained the growth of mobilized capital compared to outstanding loans, that is, banks have increased their credit operating profit margins by restraining mobilization costs. capital mobilization, an increase in the LDR ratio is a trade-off and comes with a liquidity risk (the ability to protect itself against the risk of a sudden drop in deposit withdrawals), whose LDR is limited by According to the law, can not increase forever. As for BIDV and VietinBank, the LDR ratio decreased slightly but did not affect much. LDR ratio close to the ceiling and stable in the period 2017-2019 makes the profit margin of lending activities of BIDV and VietinBank grow, mobilized capital is used effectively Although LDR close to the ceiling is easy for banks to lose Liquidity risk when customers withdraw money in bulk, but BIDV and VietinBank are 2 of 4 main banks in Vietnam with great reputation in the banking sector, so both banks can still control liquidity risk. this. In the group of 6 banks mentioned above, NCB has the lowest LDR ratio, although a low LDR ratio means good liquidity, it does not mean that NCB is a safe bank, because safety depends on many types of risks. other risks such as term risk, credit quality, etc. In the case of NCB, this

bank has a large bad debt ratio and low LDR, which shows that the bank's lending performance is poor because it is not optimal. preferentially mobilized and loaned. The case of SacomBank and PVcomBank is similar to NCB, with a much lower LDR ratio than the other three banks, BIDV, VietinBank and MB.

During the Covid-19 epidemic period from the end of 2019 to 2020, the LDR ratio of large banking groups such as BIDV and VietinBank in 2020 decreased. LDR ratio depends mainly on 2 factors of mobilization and lending, in 2020 BIDV's credit growth rate is slightly higher than credit growth rate by 1.67% while in 2019 it is -0.33% and in 2018 is 0.96%, similar to the difference between deposit and credit at VietinBank is 2.37%, leading to a decrease in the LDR ratio of BIDV and VietinBank in 2020. According to the Department of Statistics of Thua Thien Hue province, in 2020, in the context that the world and domestic economies are heavily affected by the Covid-19 epidemic, the economy in the province is affected by most industries, especially impact on tourism, transportation, import and export activities, economic growth in the province in 2020 will reach a low level of 2.06%, the industry and construction sector will increase by 6.21% (in 2019 by 11.32%), tourism decreased by 0.79% (in 2019 increased by 7.39%). The impact of the Covid-19 epidemic on businesses has led to negative effects on the banking industry as banks' credit growth is very low and there is excess liquidity when credit demand decreases and bad debt risks increase when credit growth is low. enterprises face many difficulties to repay the principal and interest of the loans.

For medium-sized banks such as MB and SacomBank, the LDR ratio will increase sharply in 2020 by about 5%. While the signal growth of BIDV and VietinBank decreased, the growth signal of MB increased by 19.16%, leading to a strong shift in retail and loan growth of individual customers. As for SacomBank, the signal increased. Growth in 2020 did not change much compared to 2019 but capital mobilization growth in 2020 decreased by 6.77% (in 2019 it was 14.73%) increasing LDR ratio in 2020, saving capital mobilization costs and increasing credit margin.

Meanwhile, in the small group of banks NCB and PvcomBank, the LDR ratio tended to decrease, the most being PvcomBank, which decreased by approximately 11%. Similar to BIDV and VietinBank, credit growth in 2020 decreased sharply, but PVcomBank expanded liquidity when deposit growth in 2020 reached 27.57%. Different from the above 5 banks, NCB's credit growth in 2020 is negative (NCB's credit growth in 2020 is 0.96%), credit demand is low, so NCB's mobilization in 2020 is 0.81% and effective worst lending among 6 banks.

In the period 2017-2020, the ratio of outstanding loans of corporate customers to total mobilized capital of banks tends to decrease gradually. Based on Table 1, we can see that BIDV, VietinBank, and MB spend more than 50% of their mobilized capital to lend to businesses while the remaining 3 banks, SacomBank, NCB and PVcomBank, lend to individual customers. The main reason is that the ratio of outstanding loans to corporate customers is less than 40% of the total mobilized capital, in 2017 VietinBank spent 75.16% of the mobilized capital to lend to corporate customers the highest among banks, the ratio of corporate loans to capital was the highest. deposits at SacomBank only accounted for 28.29%. In the period before the Covid-19 epidemic, from 2017 to 2019, the LDR of business customers of BIDV, VietinBank and MB tended to decrease, showing that in this period banks tend to increase outstanding loans to individual customers, reduce the proportion of corporate loans in the coming time to minimize risks. For the remaining 3 banks, namely SacomBank, PVcomBank and NCB, corporate loans accounted for a low proportion in the loan balance structure, so the LDR ratio for business customers of SacomBank and PVcomBank was relatively stable in the period 2017-2019, although in 2019. This ratio at SacomBank has decreased but not significantly. LDR of corporate customers decreased because SacomBank increased deposits to meet personal credit growth in 2019, the bank always balanced outstanding loans from customers and mobilized capital. motion. As for NCB, capital mobilization growth has always been negative at -1% in 2018 and -3.44% in 2019, and annual corporate loan balance is always at a low level of 2.15% (in 2018). and 2.95% (in 2019) loan balance increased while deposits decreased, which is the reason why NCB's business loan LDR increased in the period 2017-2019 while the rest of the banks tended to decrease.

In 2020, the economy is heavily affected by the impact of the Covid-19 epidemic, industries face the risk of stopping production due to a shortage of raw material supply, non-essential businesses must close. At the door, businesses on the verge of bankruptcy increased, the demand for loans of enterprises decreased sharply, BIDV's corporate credit growth in 2020 was very low, only 6.26% and VietinBank's was 7.63%. In terms of total deposits, the LDR of BIDV's business plan in 2020 is 56.55% and that of VietinBank is 69.39%. Particularly for NCB and Sacombank, in 2020, the LDR of corporate customers will increase, specifically the LDR of NCB in 2020 will increase by 0.51% and that of Sacombank is 30.25%, increasing by 2.52%, although NCB's LDR ratio of corporate customers will increase. but loan balance growth is still low at 2.09% and deposit growth in 2020 is only 0.81%, showing that NCB's lending and growth efficiency is still very low and needs much improvement. As for Sacombank, credit growth in 2020 is quite good, LDR of corporate customers increases because Sacombank restrains deposit growth to increase profits in this difficult period.

Table 3.1. Ratio of outstanding loans to total mobilized capital of 6 commercial banks in Thua Thien Hue province in the period 2017-2020

Targets	Unit	Before the Covid 19 epidemic		During the Covid 19 epidemic	
		2017	2018	2019	2020
BIDV					
Outstanding loans for businesses	Million dong	2.238.450	2.511.996	2.726.366	2.897.168
LDR	%	90,99	90,23	90,49	89,12
LDR for businesses	%	62,33	60,78	58,59	56,55
VietinBank					
Outstanding loans for businesses	Million dong	2.194.238	2.313.845	2.475.587	2.664.538
LDR	%	102,10	101,83	101,85	99,68
LDR for businesses	%	75,16	72,26	71,51	69,39
MBBank					
Outstanding loans for businesses	Million dong	332.104	349.001	390.110	436.642
LDR	%	82,69	88,43	90,74	94,82
LDR for businesses	%	54,53	52,58	51,72	50,77
Sacombank					
Outstanding loans for businesses	Million dong	346.984	378.217	426.144	496.365
LDR	%	68,50	72,18	72,58	78,14
LDR for businesses	%	28,29	28,23	27,73	30,25
NCB					
Outstanding loans for businesses	Million dong	97.250	99.340	102.266	104.405
LDR	%	55,92	57,26	60,58	59,52

LDR for businesses	%	35,79	36,93	39,37	39,88
PVcomBank					
Outstanding loans for businesses	Million dong	113.711	137.386	143.564	164.767
LDR	%	66,69	67,97	68,97	58,28
LDR for businesses	%	34,01	35,41	33,45	30,09

(Source: Statistics from year-end reports of 6 commercial banks, Thua Thien Hue branches in the period 2017-2020)

3.2. Evaluating the group of profit targets

In general, during this period, the top middle and small banks are less affected by the Covid-19 epidemic than the big top banks like BIDV or Vietinbank. By 2020, although the rate of marginal interest income at banks has grown, it is still generally low, at banks such as BIDV or PvcomBank this rate is lower than in the 2017-2018 period before the pandemic. Covid-19 takes place.

Table 3.2. Profit ratio and profit margin ratio of 6 commercial banks Thua Thien Hue branch before and during the Covid19 epidemic

Unit: %

Targets	Before the Covid 19 epidemic		During the Covid 19 epidemic	
	2017	2018	2019	2020
BIDV				
Marginal rate of interest income	2,07	1,70	1,17	2,04
Profit rate	56,11	44,36	28,73	42,62
Vietinbank				
Marginal rate of interest income	0,63	0,66	0,52	0,74
Profit rate	21,30	22,09	11,15	15,57
MBBank				
Marginal rate of interest income	6,95	8,23	8,24	8,54
Profit rate	47,26	42,75	35,27	38,02
SacomBank				
Marginal rate of interest income	3,92	6,40	6,94	6,86
Profit rate	45,53	53,80	45,92	50,99
NCB				
Marginal rate of interest income	9,27	10,26	8,71	10,44
Profit rate	74,26	69,39	35,78	39,13
PVcomBank				
Marginal rate of interest income	9,76	9,42	6,90	8,01
Profit rate	82,10	82,14	60,43	68,71

(Source: Statistics from year-end reports of 6 commercial banks, Thua Thien Hue branches in the period 2017-2020)

3.3. Credit quality indicator group assessment

Provision rate

Based on Table 3, we can see that there is a large difference in the specific provision ratio for corporate customers at the rated banks. In the period 2017-2018, we see that the specific provision ratio for corporate customers at banks tends to increase. The largest specific provision ratio for corporate customers belongs to VietinBank. In 2018, the specific provision ratio for corporate customers of the large group of large banks decreased compared to last year, while the specific provision ratio for corporate customers at the

top middle and small banks increased compared to 2017. In general. During this period, mid- and small-sized banks adjusted the specific provision ratio for corporate customers to a high level to limit risks for the bank, while the large groups of large banks increased this ratio to help increase profits. profits for the bank. In the next period 2019-2020, due to the impact of the Covid-19 epidemic on the economy, the specific provision rates for corporate customers of all 6 banks will increase. In the context of a sharp increase in the risk of bad debts, banks have aggressively set up provisions for loans to corporate customers, increasing their resistance to the Covid-19 storm. Among the banks above, Vietinbank is the strongest bank in provisioning for corporate customers, this is not only a provision expense to ensure bad debts arising from Covid-19 but also a buffer to help the bank in the future. next year. The period of 2019-2020 is a difficult and challenging period for commercial banks in Hue branch as well as for the entire banking system and economy of Vietnam. The Hue branch commercial banks have complied with the State Bank's policies on supporting businesses, controlling bad debts to go up, as well as working with businesses to develop the economy for the whole country to reduce losses caused by The Covid-19 epidemic caused.

Table 3.3 Specific provision ratio of 6 commercial banks Thua Thien Hue branch before and during the Covid19 epidemic

Targets	Unit	Before the Covid 19 epidemic		During the Covid 19 epidemic	
		2017	2018	2019	2020
BIDV					
Enterprise-specific reserve fund	Million dong	29.696	31.917	36.188	46.190
Specific reserve ratio	%	81,89	66,52	75,85	90,59
Specific provisioning rate for enterprises	%	56,10	44,81	49,11	57,49
VietinBank					
Enterprise-specific reserve fund	Million dong	23.042	34.799	34.267	32.964
Specific reserve ratio	%	92,14	94,40	119,72	131,96
Specific provisioning rate for enterprises	%	67,83	66,99	84,06	91,85
MB					
Enterprise-specific reserve fund	Million dong	3.833	5.220	4.988	6.373
Specific reserve ratio	%	94,51	111,08	109,28	132,21
Specific provisioning rate for enterprises	%	62,33	66,05	62,29	70,78
SacomBank					
Enterprise-specific reserve fund	Million dong	4.278	5.192	5.716	7.898
Specific reserve ratio	%	26,42	64,49	69,26	93,66
Specific provisioning rate for	%	10,91	25,2	26,46	36,26

enterprises					
NCB					
Enterprise-specific reserve fund	Million dong	1.105	1.116	1.161	1.530
Specific reserve ratio	%	67,63	67,27	58,97	97,06
Specific provisioning rate for enterprises	%	43,28	43,39	38,33	65,03
PVcomBank					
Enterprise-specific reserve fund	Million dong	1.728	1.968	2.205	3.085
Specific reserve ratio	%	60,80	57,81	58,38	60,09
Specific provisioning rate for enterprises	%	31,01	30,12	28,31	31,03

(Source: Statistics from year-end reports of 6 commercial banks, Thua Thien Hue branches in the period 2017-2020)

Ratio of overdue debt, bad debt

In the years before the Covid-19 epidemic, the bad debt situation of banks in Thua Thien Hue province tended to decrease, when banks used many effective measures to manage credit risks and strengthen the inspection and management of enterprises using capital for the right purposes. During the Covid-19 epidemic period, from the end of 2019 to the end of 2020, the bad debt ratio increased, but these bad debt ratio numbers only partially reflect the actual situation, when the potential bad debt is hidden in the form of restructuring debt and debt keeping the same debt group. Bad debt situation may increase in the future when Circular 01/2020/Circular- State Bank of Vietnam (TT-NHNN) expires and bad effects of Covid-19 epidemic have had enough time to link up. go to the bank.

Table 3.4. NPL ratio of banks in the period before and during the Covid-19 epidemic

Unit: %

Targets	Before the Covid 19 epidemic		During the Covid 19 epidemic	
	2017	2018	2019	2017
BIDV				
NPL ratio of enterprises	1,95	2,12	1,86	2,51
Bad debt ratio	1,62	1,91	1,75	1,76
VietinBank				
NPL ratio of enterprises	1,60	1,96	1,53	1,99
Bad debt ratio	1,14	1,59	1,16	0,94
MB				
NPL ratio of enterprises	1,81	1,86	1,71	1,80
Bad debt ratio	1,01	1,19	1,06	1,05
SacomBank				
NPL ratio of enterprises	3,50	3,00	2,65	2,52
Bad debt ratio	4,67	2,13	1,94	1,70
NCB				

NPL ratio of enterprises	1,68	2,55	3,08	1,57
Bad debt ratio	1,68	1,67	1,93	1,51
PVcomBank				
NPL ratio of enterprises	3,00	2,78	2,80	3,31
Bad debt ratio	2,50	2,48	2,63	3,12

(Source: Statistics from year-end reports of 6 commercial banks, Thua Thien Hue branches in the period 2017-2020)

3.4. Overall assessment of lending efficiency for corporate customers at Hue branch banks through survey results of corporate customers and credit officers at the bank

The research team conducted the survey. The following results:

Table 3.5. Survey results of credit officers about the difficulties that businesses often face when applying for loans at banks

Numerical order	Criteria	Rating level				
		1	2	3	4	5
1	Enterprises borrow capital when there is no collateral or pledge	3%	0%	12%	76%	9%
2	The company's financial statements are not complete and transparent	3%	0%	6%	36%	55%
3	The business plan of the enterprise is not feasible	3%	0%	6%	64%	27%
4	The business does not fully meet the loan procedures	3%	0%	9%	52%	36%
5	Loan interest rates make businesses worried	3%	0%	6%	42%	48%

(1. Strongly disagree, 2. Disagree 3. Neutral, 4. Agree, 5. Strongly agree)

(Source: Author's statistics from the survey of bank credit officers)

Survey results show that up to 85% of credit officers out of 33 credit officers assessed the difficulties of enterprises on the criteria that enterprises borrow money when there is no collateral or pledge. Up to 64% of credit officers out of 33 surveyed credit officers said that they agree with the difficulties of enterprises when their business plans are not feasible. In addition, criteria such as incomplete and transparent financial statements of enterprises or enterprises that do not fully meet loan procedures or loan interest rates make businesses worry that credit officers are very similar. idea. Up to 52% to 55% of credit officers out of 33 surveyed credit officers showed that they agree and strongly agree on the above issues. It shows that the majority of credit officers agree and strongly agree on the difficult criteria that businesses often encounter when borrowing at banks.

Table 3.6. The results of the employee survey on the reasons why banks do NOT approve loans for businesses

Numerical order	Criteria	Rating level				
		1	2	3	4	5
1	Not in line with the bank's credit policy No collateral or collateral	0%	3%	15%	61%	21%
2	Financial reporting is incomplete and transparent	0%	3%	6%	58%	33%

3	The business plan of the enterprise is not feasible	3%	0%	6%	61%	30%
4	Low debt repayment capacity of the business	0%	0%	15%	39%	45%
5	Enterprises do not fully and properly submit loan procedures	3%	0%	6%	67%	24%
6	Businesses are evaluated, customer ratings are not good	3%	0%	6%	55%	36%
7	Not in line with the bank's credit policy No collateral or collateral	0%	0%	12%	52%	36%

(1. Strongly disagree, 2. Disagree 3. Neutral, 4. Agree, 5. Strongly agree)

(Source: Author's statistics from the survey of bank credit officers)

Based on the survey, we found that up to 91% of the 33 credit officers thought that the low repayment ability of the business was an important reason why the bank did not approve the loan. Criteria such as the company's non-conformance with the bank's credit policy and the lack of transparency in its financial statements are also the reasons for 20/33 approval of the surveyed credit officers. banks. Besides the criteria that enterprises do not have pledged or mortgaged assets; Enterprises fail to fully and properly submit loan procedures; Enterprises with bad customer ratings and ratings also account for an average rate when about 52% to 58% of credit officers out of 33 surveyed credit officers agree that is one of the reasons why businesses are not approved. loans. The remaining criterion is that the business plan of the enterprise is not feasible, accounting for 45% of the total 33 credit officers who strongly agree with this reason. So it can be seen that the criteria that we give to survey bank credit officers are the main reasons why businesses are not approved for loans.

Table 3.7. The results of the employee survey on the effectiveness of lending to corporate customers before and during the Covid-19 epidemic of the bank in Thua Thien Hue province

Numerical order	Criteria	Rating level				
		1	2	3	4	5
1	Your bank's performance in lending to corporate customers before the Covid-19 pandemic (2017-2018) was very good	0%	0%	6%	64%	30%
2	Your bank's performance in lending to corporate customers during the Covid-19 epidemic in the year (2019-2020) is not good	0%	0%	27%	42%	30%
3	Yourbank's business lending performance in 2020 tends to be good again	0%	0%	12%	58%	30%
4	You feel secure lending money to business customers in Thua Thien Hue province	0%	0%	15%	52%	33%
5	Do you feel that your bank should expand lending to businesses in the near future to recover business?	0%	0%	6%	58%	36%

(1. Strongly disagree, 2. Disagree 3. Neutral, 4. Agree, 5. Strongly agree)

(Source: Author's statistics from the survey of bank credit officers)

From the survey results table 3.7, it shows that the effectiveness of lending to corporate customers of commercial banks in Thua Thien Hue before the Covid-19 epidemic is good, accounting for 94% of the survey votes and the remaining 6% saying that the effectiveness of lending to corporate customers is good. normal is the assessment of 2 credit officers PVcombank and NCB. During the Covid-19 pandemic, up to

73% of credit officers thought that the effectiveness of lending to corporate customers was not good and 27% of credit officers assessed that the effectiveness of lending to corporate customers was not significantly affected by the Covid-19 epidemic. . In addition, 88% and 94% of credit officers commented that the effectiveness of lending to corporate customers in 2020 would be better and felt that the bank should expand lending to corporate customers in the coming time to recover business.

4. Conclusion

In the pre-Covid-19 period, the lending performance to corporate customers of BIDV, MB and Sacombank was quite good when the outstanding growth rate of corporate loans was good, and VietinBank had a high growth rate. loans were lower and stable, while PVcombank had a very high loan balance growth rate in 2018 but was unstable when the loan balance growth in 2019 dropped sharply, in addition, NCB was an inefficient bank when the loan growth rate dropped sharply. outstanding loan growth is always low.

The bad debt ratio of BIDV, VietinBank, MB and Sacombank is quite low, of which VietinBank has the lowest bad debt ratio, while PVcombank and NCB have a rather high rate of bad debt, need to strengthen handling. bad debt recovery and strengthen risk assessment.

During the Covid-19 pandemic, the growth of outstanding loans decreased significantly and the ratio of outstanding loans to mobilized capital decreased. The bad debt ratio tends to increase in all banks, but it has not been clearly shown in the data when the State Bank issued a circular to support businesses affected by the Covid-19 epidemic guiding the maintenance of bad debts. debt group, extending the repayment period, so these loans exist as high-risk potential debts and in the coming years the bad debt ratio will likely increase.

In order to improve the efficiency of business lending activities, banks need to implement solutions: improve the qualifications of staff, perfect marketing activities, implement preferential interest rate policies that are flexible and enhanced. quality of risk assessment.

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RESEARCH ON PEOPLE'S SATISFACTION WITH THE QUALITY OF PUBLIC ADMINISTRATIVE SERVICES: CASE AT THE PEOPLE'S COMMITTEE OF HUONG PHONG COMMUNE, HUE CITY, THUA THIEN PROVINCE

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ABSTRACT

Improving people's satisfaction with public services is a priority policy of the Government. This study measures people's satisfaction and analyzes the factors affecting this satisfaction at the People's Committee of Huong Phong commune, Hue city. Primary data is collected from 150 randomly selected service users. Research results show that the measure of people's satisfaction has high reliability. Factors affecting satisfaction include trust with civil servants, staff's service capacity, staff's service attitude, facilities, administrative procedures and standards service usage fee. This study has made some recommendations to improve people's satisfaction with public services in Huong Phong commune.

Keywords: satisfaction; service quality; public administration; Huong Phong commune.

1. Introduction

In the process of international integration, with the aspiration for prosperous and sustainable development, Vietnam has always consciously absorbed the knowledge and development experience in the fields of social life. In which the field of public administrative services is an indispensable one. "Public administrative services are law enforcement activities to serve the fundamental rights and obligations of organizations and citizens, performed by state administrative agencies or authorized organizations on the basis of provisions of law". Public administrative services deal with administrative procedures from environmental resources, to building permits, social policies, justice – civil status, etc., serving the interests of the community, regardless of class. equality, regardless of social status. The provision of public administrative services is a measure of the country's socio – economic development.

However, according to the Journal of State Organization, public administrative services in the state administration of Vietnam still have many limitations and shortcomings such as: Service provision has not been highly effective due to the lack of efficiency. complicated and troublesome in administrative procedures; the necessary information on the way and process of service implementation has not been clearly and transparently disclosed; many legal documents regulating administrative procedures are cumbersome, complicated, even confusing for people; inequality in access to public administrative services is still quite common; The professional capacity of civil servants and public officials responsible for service provision has many shortcomings and limitations, etc. Therefore, improving the quality of public administrative service provision is a task. necessary to close the gap between the quality of service delivery and the expectations of citizens' organizations when using services.

In order to improve administrative services in the direction of simplicity, publicity and convenience for people, on January 10, 2007 the Prime Minister issued Decision No. 30/QD-TTg approving the Scheme on Simplification of Procedures. administration in the fields of state management for the period 2007 – 2010. Following that, on June 22, 2007, the Prime Minister issued Decision No. 93/2007/QD-TTg promulgating the Regulation on implementation of the one-way mechanism. door, one-stop shop at local state administrative agencies. On March 27, 2021, the Prime Minister approved the Project on Renovating the

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implementation of the single-window, one-stop-shop mechanism in handling administrative procedures, No. 468/QĐ-TTg. Most recently, the Government has just issued Resolution No. 76/NQ-CP dated 15/7/2021 State administrative reform master program for the period of 2021 – 2030. Goals to 2030: Satisfaction level of people and businesses in handling administrative procedures reached at least 95%. At the same time, the State implements training and retraining projects to improve the capacity of the contingent of cadres and civil servants in handling citizens' requests and building spacious administrative offices with modern methods. modern information technology facilities to serve the people in the best way.

Huong Phong Commune People's Committee directly under Hue city, Thua Thien Hue province is one of the units that is not outside the general requirements of the whole country. The implementation of the above-mentioned guiding documents has significantly improved administrative procedures, brought about efficiency and benefits such as saving people's time and money, bringing closer to the agency. the right. However, there are still conflicting opinions and dissatisfaction about the problems and inadequacies of public service implementation or other troubles. Therefore, it is necessary to evaluate whether the process of innovating and improving the quality of services provided by the People's Committee of Huong Phong Commune will bring real satisfaction to the people and at the same time find out the influencing criteria. affect service quality. From there, propose solutions to improve and further improve the quality of public administrative services to create people's trust in state management agencies in general and Huong Phong Commune People's Committee in particular.

2. Research theoretical framework on people's satisfaction with the quality of public administrative services

2.1. Theoretical overview of people's satisfaction with public services

2.1.1. The concept of public administrative services

According to Nguyen Ngoc Hien (2006), public administrative service is a type of service associated with the state management function to meet the requirements of the people. Accordingly, public administrative service is a type of public service performed by state administrative agencies or authorized organizations to serve the basic rights and obligations of organizations and citizens.

This is a type of service associated with the state management function to meet the requirements of the people. These public service providers are public agencies or agencies established by the state authorized to provide public services or services. This function is performed through the implementation of direct service activities such as licensing, certificates, registration, notarization, civil status, etc.

According to Nguyen Van Dong (2017), compared with other types of public services, Vietnam's public administrative services have the following distinctive characteristics:

Firstly, the provision of public administrative services is always associated with the authority of legal authority, associated with the activities of state administrative agencies in the issuance of permits, birth certificates, birth certificates. people's letter (citizen identification); notarization, administrative handling and sanctioning, inspection, administrative inspection, etc. Since public administrative services are attached to the legal administrative authority of the state apparatus, this type of service can only be provided by implemented by state administrative agencies.

Second, serving the management activities of the State. Public administrative services themselves do not belong to the state management function, but are activities serving the management function, services that the State requires and encourages people to do to ensure order. self and social safety. The need to be provided with all kinds of services (for example, papers) is not the demand of citizens and organizations themselves, but from the mandatory regulations of the State.

Thirdly, public administrative services are non-profit activities, and the collection and payment of fees to the state budget is not intended to compensate for the loss of labor for the service provider itself, but to create fairness. between service users and non-service users.

Fourth, all citizens have equal rights to access and use these services as a service object of the government. The state has the responsibility and obligation to provide services to serve all citizens.

2.1.2. The concept of satisfaction with service quality

Service quality is defined in different ways. However, in essence, service quality is the customer's perception of the service of an organization or enterprise. According to Parasuraman et al. (1985) suggested that service quality is the gap between customer expectations and their perception when using the service. According to Edvardsson et al. (1994), service quality is a service that meets customers' expectations and satisfies their needs. According to Philip Kotler et al. (2005), service quality is defined as the ability of a service including overall durability, reliability, accuracy, ease of operation, ease of repair and other valuable attributes to perform its functions.

According to Kotler (2001), customer satisfaction is the degree of a person's sensory state resulting from a comparison of the results obtained from the consumption of a product or service with the customer's expectations. Expectations here are seen as human wishes or expectations, derived from personal needs, previous experiences and external information such as advertising, word of mouth information from family and friends.

The relationship between service quality and customer satisfaction is a topic that has been continuously discussed by researchers over the past decades. Numerous studies on customer satisfaction in service industries have been carried out. Some authors believe that there is an overlap between service quality and customer satisfaction, so these two concepts can be used interchangeably.

However, through many studies, service quality and customer satisfaction are two distinct concepts. Parasuraman et al. (1993). And Zeithalm and Bitner (2000) argue that customer satisfaction is affected by many factors such as product quality, service quality, price, situational factors, and personal factors.

Service quality and satisfaction are two different concepts, but closely related in service research (Parasuraman et al., 1988). Previous studies have shown that service quality is the cause of satisfaction (Cronin and Taylor, 1992; Spreng and Taylor, 1996). The reason is that service quality is related to service delivery, while satisfaction can only be assessed after using the service.

Customer satisfaction as an outcome, service quality as a cause, satisfaction is predictive and expected; Service quality is an ideal standard. Customer satisfaction is a general concept, expressing their satisfaction when consuming a service. Meanwhile, service quality focuses only on specific components of the service (Zeithalm and Bitner, 2000). Although there is a relationship between service quality and satisfaction, there are few studies focusing on testing the explanatory level of service quality components for satisfaction, especially for each service provider. specific service industries (Lassar et al., 2000). Cronin and Taylor tested this relationship and concluded that perceived service quality leads to customer satisfaction. Studies have concluded that service quality is an antecedent of satisfaction (Cronin and Taylor, 1992; Spreng, 1996) and a major factor affecting satisfaction (Ruyter and Bloemer, 1997).

In short, service quality is a factor that greatly affects customer satisfaction. If a service provider provides customers with quality products that satisfy their needs, that carrier has initially made customers happy. Therefore, to improve customer satisfaction, service providers must improve service quality. In other words, service quality and customer satisfaction are closely related, in which service quality is the first thing that determines customer satisfaction. The causal relationship between these two factors is a key issue in most customer satisfaction studies. If the quality is improved but not based on the customer's needs, the customer will never be satisfied with that service. Therefore, when using a service, if customers perceive the service as having high quality, they will be satisfied with that service. Conversely, if the customer perceives the service to be of low quality, dissatisfaction will appear.

Thus, service quality can be said as a factor affecting customer satisfaction. This can be illustrated by the following diagram:

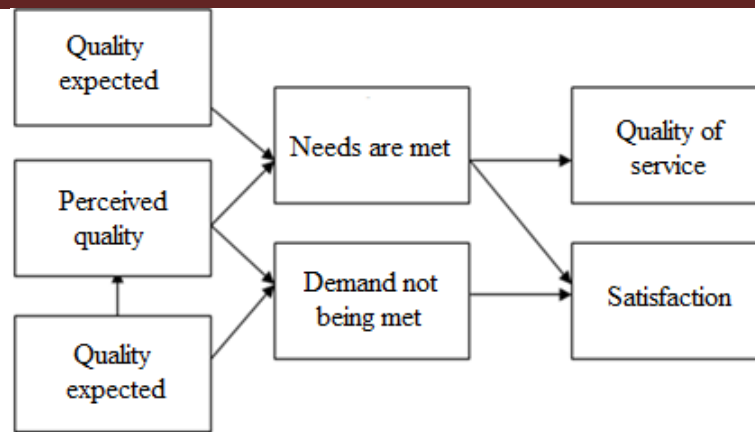


Figure 1. Relationship between service quality and customer satisfaction

Source: Spreng and Mackoy, 1996

2.2. Theoretical framework to study people's satisfaction in Huong Phong commune

On the basis of reference to previous research models, the author finds that each model has some characteristics suitable for the topic, because public administrative services are also a type of service like other types of services. , as evidenced by the collection of a service charge to the beneficiary. However, this is a specific type of service that the State forces people to use (for the purpose of the State's social management) and is a type of service that is not oriented towards profit but towards trust. People's opinions and satisfaction with the government. Therefore, it is possible to apply the customer satisfaction measurement model in business to the model to measure people's satisfaction when using public administrative services. Due to the specificity of the public administration field, the type of service is built on the basis of political institutions and legal documents, so the research model also has some adjustments to suit the same situation. with the study of the State's documents and policies on administrative reform and the actual situation in the locality.

Research using some components in service quality model SERVQUAL: Reliability, Service capacity, Infrastructure means together with 3 components: Service attitude (Le Ngoc Suong, 2011), Procedural process (Ngo Hong Lan Thao, 2016) and Service fees (Nguyen Hoang Nam, 2015) to build a research model on people's satisfaction with the quality of public administrative services at the Reception Department and return the results of Huong Phong Commune People's Committee as follows:

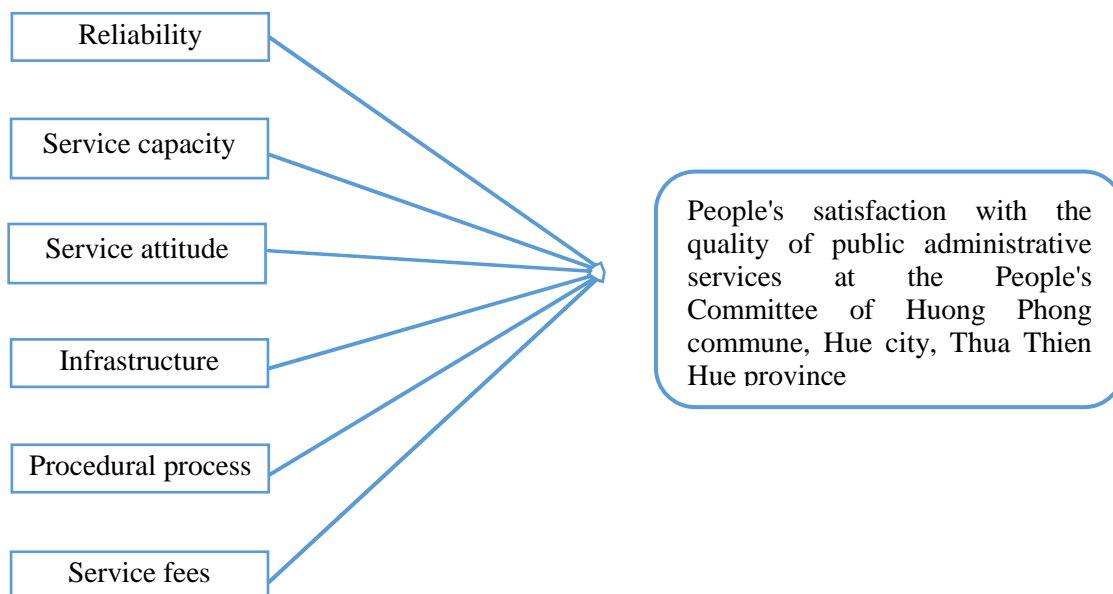


Figure 2. Model of People's satisfaction with public administrative services at the Receiving and Returning Department of Huong Phong Commune People's Committee

Source: Author's proposal, 2022

(1) *Reliability*: It is the expectation, the level of trust of the people about the implementation of the commitments of the state administrative agencies to them in the process of performing the function of providing public services.

(2) *Service capacity*: Including the ability, skills and expertise to successfully complete the assigned tasks, this is a very important criterion, demonstrating the decisiveness in public administrative services.

(3) *Service attitude*: Employees must have a friendly attitude, solve work in a timely manner and have a vivacious manner, enthusiastically solve people's questions, without causing inconvenience to people.

(4) *Infrastructure*: Are the equipment, tools and technical means equipped at the reception room - where people interact with civil servants representing administrative agencies.

(5) *Procedural process*: These are the regulations and steps to process documents in the correct order and procedures. Procedures must be clear, easy to understand, concise and reasonable.

(6) *Service fees*: An amount of money that an organization or individual must pay when being authorized by a state agency or organization to serve state management tasks specified in the List of fees promulgated together with the Ministry of Finance. by ordinance.



Figure 3. Office of Receiving and Returning Results in Huong Phong Commune

Source: Photo taken by the author

3. Research method

Primary data is collected by surveying directly and online through a questionnaire of people who have used public administrative services at the Receiving and Returning Department of Huong Phong Commune People's Committee. The author has conducted a survey of 150 samples using convenience non-random sampling method. For every 2 residents who go to the Receiving Department and return the results of using the service, 1 person will be selected for interview. Interview time is flexible.

The collected information will be processed by SPSS software. Then, conduct research, analyze and evaluate the values of the factors constituting the quality of public administrative services and the level of satisfaction through reliability analysis and exploratory factor analysis. In addition, the linear regression method is used to analyze the influence of factors on people's satisfaction when using public administrative services at Huong Phong Commune People's Committee.

The regression model has the form: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + e_i$.

In there:

Y: Dependent variable

β_0 : Intercept coefficient (Constant)

β_n : Partial regression coefficient (Dependency coefficient)

X_n: Independent variables in the model

e_i: Random independent variable (Residual)

4. Results and discussion

4.1. Characteristics of the study sample

The number of samples used for the formal study was 150 samples (Table 1). Of the 150 surveyed subjects, 80 are male (accounting for 53,3%) and 70 are female (accounting for 46,7%). The group of subjects under 30 years old includes 80 people (accounting for 53,3%); From 30 years old to under 45 years old, there are 40 people (accounting for 26,7%) and from 45 years old and above there are 30 people (20,0%). Among 150 surveyed subjects, 45 are Students (accounting for 30,0%); Farmers have 12 people (8,0%); There are 25 workers (accounting for 16,7%); Business, Trading has 33 people (accounting for 22,0%); Civil servants and public employees have 14 people (accounting for 9,3%) and 21 people working in other occupations (accounting for 14,0%). Among 150 surveyed subjects, 16 people have ever used social protection services (accounting for 10,7%); Justice and civil status have 63 people (accounting for 42,0%); The policy of people with meritorious services has 7 people (accounting for 4,7%); Cadastral, Land, and Environment have 17 people (accounting for 11,3%); Construction, Agriculture has 7 people (accounting for 4,7%) and using other public administrative services has 40 people (accounting for 26,7%).

Table 1. Characteristics of the study sample

Criteria	Frequency (Person)	Percent (%)	Cumulative Percent (%)
1. Gender			
Male	80	53,3	53,3
Female	70	46,7	100,0
2. Age group			
Under 30 years old	80	53,3	53,3
From 30 years old to under 45 years old	40	26,7	80,0
45 years old and up	30	20,0	100,0
3. Profession			
Student	45	30,0	30,0
Farmers	12	8,0	38,0
Workers	25	16,7	54,7
Business, Sales	33	22,0	76,7
Civil servants, Officials	14	9,3	86,0
Others	21	14,0	100,0
4. Type of public administration service ever used			
Social Protection	16	10,7	30,0

Justice, Civil Status	63	42,0	38,0
Policy of meritorious people	7	4,7	54,7
Cadastral, Land, Environment	17	11,3	76,7
Construction, Agriculture	7	4,7	86,0
Others	40	26,7	100,0

Source: Survey data processing results

4.2. Factors reflecting people's satisfaction with public services at Huong Phong Commune People's Committee

4.2.1. Evaluate the reliability of the scale

Before proceeding to the data analysis steps, the research conducted the step of testing the reliability of the scale through Cronbach's Alpha coefficient. Cronbach's Alpha must be performed first to remove irrelevant variables before exploratory factor analysis. The research uses a scale consisting of 6 independent variables: "Reliability", "Service capacity", "Service attitude", "Infrastructure", "Procedural process" và "Service fees". Through the test, we see that the coefficients of Cronbach's Alpha of the factors are all $> 0,6$ and none of the observed variables have total correlation coefficients $< 0,3$, so all observed variables are kept.

Before conducting exploratory factor analysis, the study needs to test KMO to see if this analysis is appropriate or not. The test is done through the consideration of KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) coefficient and Bartlett's Test. The results show that the coefficients KMO and Bartlett's Test are suitable for conducting exploratory factor analysis (KMO = 0,813; p-value Bartlett's Test $< 0,05$).

The results of exploratory factor analysis are shown in Table 2. EFA analysis results for independent variables show that: All observed variables with the same factor are in the same column, all have loading coefficients. $> 0,5$ should keep all observed variables unchanged. Therefore, factor analysis exploratory EFA for the independent variable has met the requirements, conducted to set up the variable representing the factors for correlation and regression analysis.

Table 2. Exploratory factor analysis

Observed variables	Factor					
	1	2	3	4	5	6
TDPV3	0,860					
TDPV1	0,859					
TDPV2	0,806					
TDPV5	0,792					
TDPV4	0,767					
CSVC2		0,818				
CSVC4		0,799				
CSVC3		0,798				
CSVC1		0,769				
CSVC5		0,747				
STC4			0,848			

STC3			0,820			
STC1			0,800			
STC2			0,675			
QTTT2				0,777		
QTTT3				0,744		
QTTT1				0,700		
QTTT4				0,696		
NLPV1					0,762	
NLPV4					0,721	
NLPV3					0,695	
NLPV2					0,604	
LPDV3						0,855
LPDV1						0,802
LPDV2						0,764

Source: Survey data processing results

- Factor 1 includes 5 observed variables: TDPV1, TDPV2, TDPV3, TDPV4, TDPV5. The study named this factor as “Service attitude” (TDPV).

- Factor 2 includes 5 observed variables: CSVC1, CSVC2, CSVC3, CSVC4, CSVC5. The study named this factor “Infrastructure” (CSVC).

- Factor 3 includes 4 observed variables: STC1, STC2, STC3, STC4. The study named this factor “Reliability” (STC).

- Factor 4 includes 5 observed variables: QTTT1, QTTT2, QTTT3, QTTT4. The study named this factor “Procedural process” (QTTT).

- Factor 5 includes 4 observed variables: NLPV1, NLPV2, NLPV3, NLPV4. The study named this factor as “Service capacity” (NLPV).

- Factor 6 includes 3 observed variables: LPDV1, LPDV2, LPDV3. The study named this factor “Service fees” (LPDV).

- The dependent factor includes 3 observed variables: SHL1, SHL2, SHL3. The study named this factor “Satisfaction” (SHL).

* Factor value convention:

Use the average method to estimate the values of the representative variables.

$$TDPV = \frac{TDPV1 + TDPV2 + TDPV3 + TDPV4 + TDPV5}{5}$$

$$CSVC = \frac{CSVC1 + CSVC2 + CSVC3 + CSVC4 + CSVC5}{5}$$

$$STC = \frac{STC1 + STC2 + STC3 + STC4}{4}$$

$$QTTT = \frac{QTTT1 + QTTT2 + QTTT3 + QTTT4}{4}$$

$$NLPV = \frac{NLPV1 + NLPV2 + NLPV3 + NLPV4}{4}$$

$$LPDV = \frac{LPDV1 + LPDV2 + LPDV3}{3}$$

$$SHL = \frac{SHL1 + SHL2 + SHL3}{3}$$

4.2.2. Factors affecting people's satisfaction with public services in Huong Phong commune

The results of linear regression show the following:

Table 3. Factors affecting people's satisfaction

Regression model								
Factor		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	Collinearity Statistics	
		B	Std. Error				Tolerance	VIF
1	Constant	-1,045	0,269		-3,892	0,000		
	STC	0,228	0,046	0,263	4,956	0,000	0,792	1,263
	NLPV	0,244	0,061	0,254	3,987	0,000	0,547	1,828
	TDPV	0,166	0,039	0,215	4,248	0,000	0,872	1,147
	CSVC	0,173	0,049	0,199	3,561	0,001	0,716	1,397
	QTTT	0,213	0,051	0,237	4,164	0,000	0,685	1,459
	LPDV	0,135	0,043	0,151	3,135	0,002	0,962	1,040

Source: Survey data processing results

After checking the regression assumptions are satisfactory, the study concludes that the regression model through the regression equation of the Standardized coefficient Beta is:

$$SHL = 0,263 \times STC + 0,254 \times NLPV + 0,215 \times TDPV + 0,199 \times CSVC + 0,237 \times QTTT + 0,151 \times LPDV + e_i$$

Accordingly, the order of impact from strongest to weakest of the independent variables to the dependent variable SHL is: STC (0,263), NLPV (0,254), QTTT (0,237), TDPV (0,215), CSVC (0,199), LPDV (0,151). Thus, all the factors given in the hypothetical model have a positive influence on people's satisfaction with public services at Huong Phong Commune People's Committee.

5. Conclusions and recommendations

This study has measured and analyzed the factors affecting people's satisfaction with public services at Huong Phong Commune People's Committee. People's satisfaction is measured through factors such as satisfaction with service quality, service delivery and processing time. Factors that affect people's satisfaction include trust with civil servants, staff's service capacity, staff's service attitude, facilities, processes and procedures and service fees.

From there, the study recommends that the above factors should be enhanced to improve people's satisfaction. Specifically, the administrative procedures are clearly and transparently listed by the listing agency, which is an important factor in creating the trust of the people. Reception staff need to be proficient and follow the correct process of handling the job. Reception staff also need to be friendly and enthusiastic to guide people's questions. Facilities need to be improved in the direction of creating conditions for people to submit and receive documents.

Appendix

APPENDIX 1. RESEARCH SAMPLE DESCRIPTION STATISTICS

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	80	53.3	53.3	53.3
	Female	70	46.7	46.7	100.0
	Total	150	100.0	100.0	

Age group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 30 years old	80	53.3	53.3	53.3
	From 30 years old to under 45 years old	40	26.7	26.7	80.0
	45 years old and up	30	20.0	20.0	100.0
	Total	150	100.0	100.0	

Profession					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	45	30.0	30.0	30.0
	Farmers	12	8.0	8.0	38.0
	Workers	25	16.7	16.7	54.7
	Business, Sales	33	22.0	22.0	76.7
	Civil servants, Officials	14	9.3	9.3	86.0
	Others	21	14.0	14.0	100.0
	Total	150	100.0	100.0	

Type of public administration service ever used					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Social Protection	16	10.7	10.7	10.7
	Justice, Civil Status	63	42.0	42.0	52.7
	Policy of meritorious people	7	4.7	4.7	57.3
	Cadastral, Land, Environment	17	11.3	11.3	68.7
	Construction, Agriculture	7	4.7	4.7	73.3

Others	40	26.7	26.7	100.0
Social Protection	150	100.0	100.0	

APPENDIX 2. EFA. DISCOVERY FACTOR ANALYSIS

Exploratory factor analysis EFA for the independent variable:

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.813
Bartlett's Test of Sphericity	Approx. Chi-Square
	df
	Sig.
	1920.924
	300
	.000

Total Variance Explained										
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings			
	Total	% of Variance	Cumulative %							
1	6.786	27.145	27.145	6.786	27.145	27.145	3.597	14.390	14.390	
2	3.101	12.403	39.548	3.101	12.403	39.548	3.505	14.019	28.409	
3	2.238	8.954	48.501	2.238	8.954	48.501	2.740	10.958	39.367	
4	1.942	7.768	56.269	1.942	7.768	56.269	2.569	10.277	49.644	
5	1.804	7.217	63.486	1.804	7.217	63.486	2.513	10.052	59.696	
6	1.146	4.585	68.071	1.146	4.585	68.071	2.094	8.375	68.071	
7	0.837	3.348	71.419							
8	0.812	3.249	74.668							
9	0.748	2.991	77.659							
10	0.659	2.635	80.293							
11	0.625	2.499	82.793							
12	0.499	1.998	84.790							
13	0.468	1.870	86.661							
14	0.403	1.613	88.274							
15	0.397	1.587	89.861							
16	0.362	1.448	91.309							
17	0.348	1.394	92.702							
18	0.314	1.255	93.958							

19	0.300	1.202	95.159						
20	0.258	1.034	96.193						
21	0.227	0.907	97.100						
22	0.207	0.829	97.929						
23	0.192	0.770	98.699						
24	0.174	0.697	99.396						
25	0.151	0.604	100.000						
Extraction Method: Principal Component Analysis.									

Rotated Component Matrix^a						
	Component					
	1	2	3	4	5	6
TDPV3	.860					
TDPV1	.859					
TDPV2	.806					
TDPV5	.792					
TDPV4	.767					
CSVC2		.818				
CSVC4		.799				
CSVC3		.798				
CSVC1		.769				
CSVC5		.747				
STC4			.848			
STC3			.820			
STC1			.800			
STC2			.675			
QTTT2				.777		
QTTT3				.744		
QTTT1				.700		
QTTT4				.696		
NLPV1					.762	
NLPV4					.721	
NLPV3					.695	
NLPV2					.604	
LPDV3						.855

LPDV1						.802
LPDV2						.764
Extraction Method: Principal Component Analysis.						
Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 6 iterations.						

Exploratory factor analysis EFA for the dependent variable:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.690
Bartlett's Test of Sphericity	Approx. Chi-Square	158.714
	df	3
	Sig.	.000

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.185	72.832	72.832	2.185	72.832	72.832
2	.510	16.985	89.817			
3	.305	10.183	100.000			
Extraction Method: Principal Component Analysis.						

Component Matrix^a	
	Component
	1
SHL1	.889
SHL2	.865
SHL3	.803
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

APPENDIX 3. ANALYSIS OF LINEAR REVOLUTIONS

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.826 ^a	.682	.668	.37202	2.116
a. Predictors: (Constant), LPDV, TDPV, QTTT, STC, CSVC, NLPV					
b. Dependent Variable: SHL					

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.413	6	7.069	51.075	.000 ^b
	Residual	19.791	143	.138		
	Total	62.204	149			
a. Dependent Variable: SHL						
b. Predictors: (Constant), LPDV, TDPV, QTTT, STC, CSVC, NLPV						

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.045	.269		-3.892	.000		
	STC	.228	.046	.263	4.956	.000	.792	1.263
	NLPV	.244	.061	.254	3.987	.000	.547	1.828
	TDPV	.166	.039	.215	4.248	.000	.872	1.147
	CSVC	.173	.049	.199	3.561	.001	.716	1.397
	QTTT	.213	.051	.237	4.164	.000	.685	1.459
	LPDV	.135	.043	.151	3.135	.002	.962	1.040
a. Dependent Variable: SHL								

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ANALYSIS OF THE DEMAND OF THE GENERAL Y YEARS IN HUE CITY FOR STAYCATION TOURISM SERVICES: A ACCESSORY FROM THE AIO MODEL

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ABSTRACT

The aim of this study is to analyze the needs of Gen Y in Hue city for on-site tourism services (Staycation) from the approach of the AIO model. Data analysis was done through a survey of 250 valid answer sheets using a number of mainly used techniques: descriptive statistics and cluster analysis. Research results have described the needs of the Gen Y generation in Hue city for on-site tourism services through 10 factors: vacations, outdoor entertainment, social events, extreme sports activities, experience, social issues, financial ability, cultural exploration, concern for the environment, attachment to the homeland. Besides, the research results also show the formation of 03 local tourism market segments: a group interested in all, a group interested in social events in the homeland, and a group of people with important tourism experience attention to the environment. Managerial implications for on-site tourism services as well as stakeholders are also examined and proposed at the same time.

Keywords: AIO, Staycation, on-site tourism, gen Y, demand, Hue city

1. Introduction

The outbreak and continued Covid-19 pandemic over the past two years has caused huge negative impacts on the global economy and huge impacts on the tourism industry not only at the international level but also in the country. Vietnam, a country is increasingly asserting its position on the world tourism map. Since the end of the 2019 winter break that began in Wuhan, China until now, the Covid-19 pandemic has caused a series of disruptions to tourists' travel and vacation plans. People's movement is also strictly controlled because the Governments of all countries have issued regulations on travel restrictions and social distancing in order to limit the spread of the disease during normal times. considered the peak of the tourism industry. Activities in the hotel, motel, restaurant and transportation sectors have mostly been postponed due to the nationwide shutdown order. In addition, the aviation industry was also severely affected when a series of domestic and international flights to and from Vietnam were cancelled. Not only international tourists, but also domestic tourists also dropped sharply due to the complicated development of the epidemic and Vietnam implemented social distancing. According to the General Statistics Office, international arrivals to Vietnam in March 2020 decreased sharply, reaching nearly 450,000 arrivals, down 68.1% over the same period in 2019 and down 63.8% compared to February ¹. This fact shows that the losses caused by the Covid 19 pandemic are enormous. To gradually adapt to this situation, on-site tourism (Staycation) has begun to be recognized as a life-saving solution for many localities, business units in the field of tourism in countries around the world as well. like Vietnam.

Also in the same situation, tourism business units in Thua Thien Hue have also managed and implemented appropriate on-site tourism business activities to ensure revenue and maintain revenue. existence for its business unit. Because in the context of epidemic outbreaks in many places, making it difficult for tourists to participate in tourism, on-site tourism with the feature of "fast - compact - economical" may be one of the solutions. good for both tourism service providers and tourists. Aware of this,

¹ Looking back at the impact of the Covid-19 epidemic on Vietnam's tourism and development trends in 2021, Events Magazine, 2021. <http://consosukien.vn/nhin-lai-tac-dong-cua-translation-covid-19-doi-voi-du-lich-viet-nam-va-xu-huong-phat-trien-nam-2021.htm>

many Hue tourism business units have flexibly set up a number of tourism programs/products to serve tourists, such as the Advertising Communication and Tourism Service Joint Stock Company. The Eagle Calendar only accepts visitors from within the province; the Vinpearl resort and entertainment service brand is present in many provinces and cities in the Central region, including Thua Thien-Hue, offering a methodical and synchronous recovery strategy in all aspects. such as promotion policies, new product launches, service upgrades, and safety standards, contributing to a wave of positive responses to the program "Vietnamese people travel to Vietnam" of the Ministry of Culture, Sports and Tourism; Kawara My An Onsen Resort offers high-class health care according to the traditional Japanese Onsen method on the precious local source of My An hot mineral. However, in the initial stage of exploiting this type of tourism, meeting the needs of tourists also has certain limitations because of the diversity of groups of tourists by age, gender as well as other aspects. the visitor's other personal edge. With their love of travel, self-discovery, and considering travel as a part of happiness and success in life ², Gen Y is generally seen as a golden generation that the tourism industry needs. current top concern. With Gen Y's passion for tourism, UNWTO has forecasted that by 2022 the number of this generation's tourists will increase by about 300 million trips and will increase further in the future. According to statistics, the average person with the Y gene spends about 35 days a year traveling. Therefore, understanding and meeting the needs of this target group is essential for tourism service providers to expand their markets and maximize their revenue. Stemming from that reason, this study was conducted with the desire to explore the needs of Gen Y tourists in Hue city for on-site tourism services to have a basis to better meet the tourism demand in the segment. this track.

2. Theory overview

2.1. Staycation

The origin of Staycation dates back to the US in 2008, when their economy went through a recession it affected local people, businesses, gas prices, and the ability to travel and spend on goods. luxury (Fox, 2009). From there, the term Staycation was born and is also known as "Staying". Today, in the context of the ongoing epidemic, on-site tourism is being deployed in many countries as a lifeline solution for the tourism industry in the immediate future to ensure safety and save for tourists during the epidemic season.

Staycation is a combination of "stay" and "vacation". In some countries, a staycation is also known as holistay, which stands for "stay" and "holiday". You can briefly understand it as "on-site tourism". Or travel without having to go far to relax, rest and regain energy. A staycation can be a vacation trip at a hotel, homestay, sipping in cafes, cycling around where you live...or even traveling in your own home. Vackova (2009) provides a similar definition stating that accommodation is a place where tourists stay at home instead of traveling to another destination and use that time to explore the local environment; such as staying in a city hotel or exploring the countryside near their home. In general, a staycation can be understood as a stay in the home country without moving to a place other than the tourist's place of residence (instead of traveling to another place). further).

Staycation activities are usually: Going to a festival; local fairs; Cycling; Going to coffee with friends; Join the beach or swimming pool; Reading a book; Playing sport; Takingake a local tour; Walking activities; Camping in which campers want to get away from civilization and enjoy nature. Camping can include the use of a tent, a simple structure, or no shelter at all.

Thus, it can be understood that on-site tourism (staycation) is the participation in tourism activities provided by tourism service businesses at the place of residence (without moving out of the place of residence). of local people for the purpose of safety and savings.

2.2. Gen Y tourists

Tourists are people who travel out of their usual habitat to another place for less than 12 consecutive months with the main purpose of the trip being to visit, rest, entertain or visit other places. purposes other than carrying out activities to generate income and earn a living in the destination. This tourist concept

²Millennials and new travel trends, Liberation Saigon Online Newspaper, 2018, <https://www.sggp.org.vn/the-he-millennials-va-xu-huong-du-lich-moi-523045.html>

applies to both international tourists and domestic tourists and applies to both day-trippers and day-trippers with overnight stays. However, in the context of epidemics and unsafety, the term on-site tourism has been emerged and applied quite widely, with the understanding of on-site tourism, the concept of tourist is also changed in perspective to match the tourism context. Accordingly, on-site tourists are locals who participate in tourism activities provided by tourism operators at their places of residence with the purpose of meeting their own travel needs for the purpose of tourism. safety (social distancing) and savings.

In fact and through the above studies, up to now, there has not been a single source of data that has fixed or completely consistent results on the age of generation Y (Millennials). But in general, Gen Y is the generation born from the early 1980s to the mid-1990s - early 2000s. After referring to the above studies and to be consistent and convenient with current research. At present, the authors choose the average age of the Gen Y generation from 21 to 41 years old (from 1980 to 2000). Personality traits in Gen Y Millennials: often optimistic and open-minded about life's points of view, very good at using the Internet, able to communicate and integrate well into society they tend to focus on results instead of the process and are innovative thinkers. According to UNWTO (World Tourism Organization), Millennials are the golden generation that the tourism industry needs to pay attention to today. With Gen Y's passion for tourism, UNWTO has forecasted that by 2022, the number of tourists of this generation will increase by about 300 million trips and will increase further in the future ³.

2.3. Tourism demand

According to Nguyen Van Dinh and Tran Thi Minh Hoa (2009), tourism demand is the desire of people to go to a place different from their usual place of residence to get new emotions and experiences. new knowledge, to develop social relationships, to restore health, to create mental comfort. Tourist needs are different from tourists' needs. Tourism demand is not a basic need, therefore, tourism demand can only be satisfied under certain conditions, especially economic, technical and social conditions. Tourism is the specific desires of tourists on a particular trip, it includes essential needs, specific needs, and additional needs.

2.4. Model AIO

The AIO model, also known as the lifestyle-based needs analysis model, is a widely used Activity, Interest, and Opinion model developed by Plummer (1974) to segment the market.

In addition, Lifestyle is described as 'the way people conduct their lives, including activities, interests and opinions' (Peter & Olson, 1990). The activity, interest, and opinion (AIO) approach is most commonly used for lifestyle segmentation. Activities are explained as actions such as work, hobbies, etc.; Interest is the degree of interest in certain objects, events ,or topics and opinions such as descriptive beliefs about self, social problems, etc. (Cheong, 2010).

In Research by Alexandra James et al (2016), the AIOs model stands for the phrase A - Activities, I - Interests, and O - Opinions:

- + Actions: Actions that focus on the daily habits and preferences of a certain customer.
- + Interests: Customers' preferences relate to the concepts and ideas that drive their passions.
- + Opinions: Everyone has opinions, including customers.

Consumer AIO insights can be used to create unique packages that providers (in the case of accommodations, accommodation providers) can use to target consumers used (Suresh & Ravichandran, 2010). As accommodation becomes a more popular choice for tourists, it is clear that more information is needed about travelers' needs in order to better target and serve them in the future.

3. Research Methods

3.1. Data collection

- For secondary data: Data from the Department of Tourism, agencies, and tourism units providing on-site tourism services in Hue City to reflect the general situation of tourism service providers in Hue city. study local accommodation.

- For primary data

³Tuong Bach (2022). Travel experience as a favorite gift, VnEconomy, February 19, 2022, from <https://vneconomy.vn/trai-nghiem-du-lich-thanh-qua-tang-duoc-yeu-thich.htm>

Qualitative: The study has performed a review of previous studies related to on-site tourism services to better understand the knowledge related to this type of tourism service.

Research to approach on-site tourism service providers in Hue city through their websites to grasp the implementation of on-site tourism services in recent times.

Research on approaching the Y generation: The study conducted group interviews including some students and office workers through group interviews. The interview focused on on-site tourism, their activities, reasons for their experience, and motivations for participating, as well as sharing their experiences about their most recent vacation to better understand their experiences. and their needs for on-site travel services in the context of the Covid epidemic.

Quantitative: Research on the Gen Y approach in Hue city on on-site tourism services through survey implementation.

Access to survey form

The authors approach and investigate 307 samples, by sending 219 samples online through social networks such as Zalo and Facebook. Besides, the direct survey was also selected by the author group and collected 88 samples, the places to approach the sample are workplaces and coffee shops. Out of a total of 307 survey samples collected, 250 valid samples were included in the analysis. The samples are not valid due to: not completing the answers in the questionnaire, not having the homogeneity of the answers, and not being in the target audience for the research...

The scale

The scale used in this study was adopted from the study of Plummer (1974) TF Srihadi et al (2016), Sougata Banerjee (2015), Chen et al (2009), William D. Wells (1971), Alexandra James et al (2017), Chang (2006). Specifically, the scale for the concept of vacation was received from TF Srihadi & Associates (2016) and Sougata Banerjee (2015), outdoor recreation approached by Chen et al (2009), cialsocialnts continued. approach from Chang (2006), extreme sports approach from TF Srihadi & Associates (2016), experience from Alexandra James et al (2016) and Chang (2006), ability with access to finance from William D. Wells (1971), cultural exploration of social issues Alexandra James et al. (2016) with TF Srihadi & Associates (2016) and Chang (2006), scales of concern for the environment, associated The home country received previous studies and made additional adjustments to suit the context and target audience. For each measure of these concepts, a 5-point Likert scale is used and convention with 1 = strongly disagree and 5 = strongly agree, where 3 = neutral to gather opinions. assessment opinion.

3.2. Data processing

The study used SPSS 23.0 software to process all collected primary data. Some of the main statistical techniques used in data analysis include descriptive statistics, reliability assessment of the scale, exploratory factor analysis, and cluster analysis.

4. Research results and discussion

4.1. Survey sample information

The survey results show that the survey sample consists of 250 people, in which the female proportion is quite high (69.2% corresponding to 173 survey participants). In terms of occupation, the survey sample showed a diversity of occupations in which the proportion of employed people accounted for the majority (90.4%). In terms of age, the survey sample of Gen Y with the proportion of age group 21-25 accounts for a high proportion (44.8%) and married without children or unmarried is 42.4%. In addition, looking at the average monthly income of the respondents, 40% of the survey respondents have an income of 7 million VND or more.

Table 1: Survey sample characteristics (n=250)

Characteristic		Frequency (Person)	Ratio(%)
Job	Student.	42	16.8
	Working in a business.	69	27.6
	Working in government agencies.	98	39.2
	Housewife.	14	5.6
	Unemployment.	10	4
	Free labor.	17	6.8
Sex	male	77	30.8
	Female	173	69.2
Age	From 21 to 25 years old	112	44.8
	From 26 to 32 years old	89	35.6
	From 33 to 41 years old	49	19.6
Marital status	Get married and have children under 5 years old	69	27.6
		75	30
	Get married and have children over 5 years old	106	42.4
	Married without children or unmarried		
Income	< 3.5 million	34	13.6
	From 3.5 million to 7 million VND	116	46.4
	From 7 million to 10 million VND	46	18.4
	From 10 million to 15 million VND	36	14.4
	Over 15 million won	18	7.2

(Source: SPSS data processing and analysis)

4.2. On-site tourism experience activities that Gen Y has participated in

Survey results show that people often go with their family/relatives (44.8%) most of them organize themselves in groups (77.8%) and come in whenever they want (32.4%) in about 1 day (46.8%) and often participate in activities to discover new tourist destinations and take pictures to check in with friends (33.6%)

Table 2: Summary of on-site tourism experience activities that Gen Y has participated in

Criteria		Frequency (person)	Ratio (%)
Activities spent on vacation	Just stay in the local area and go through the daily activities (coffee, movie, shopping, meeting friends, ...)	93	37.2
	Participate in festivals and events held in your locality	44	17.6
	Check in and experience local tourist attractions		45.2
		113	

Activities spent on vacation in hometown	Participate in carnival games	22	8.8
	Experience Kayaking / Sup named Perfume River	36	14.4
	Experience ecotourism in Tam Giang	32	12.8
	Discover new tourist destinations and take pictures to check in with friends	84	33.6
	Experience buffet breakfast or afternoon tea services at hotels	25	10
	Join running/cycling activities with groups	14	5.6
	Go camping (parks, hills, suburbs, ...)	37	14.8
How to spend a vacation	Self-organizing in groups	193	77.2
	Make your own plans	22	8.8
	Join tours provided by travel agencies and travel companies	35	14
The right time to experience the holiday	Holidays in Spring	16	6.4
	On summer vacation	20	8
	In the cool weather of Autumn	11	4.4
	In the last months of the year	18	7.2
	On weekends	63	25.2
	On special occasions of family and loved ones	24	9.6
	When there are promotions	26	10.4
Average time spent on vacation	1 day	117	46.8
	1-3 days	98	39.2
	3-7 days	23	9.2
	Over 7 days	12	4.8
The first to come and experience the holiday	Family/relatives.	112	44.8
	Colleagues/friends	96	38.4
	Alone	17	6.8
	Groups/Clubs	15	6
	Other	10	4

(Source: SPSS data processing and analysis)

4.3. Gen Y needs on-site tourism services through cluster analysis

Based on the results of testing the reliability of the scale by Cronbach's Alpha coefficient with all 41 observed variables of 10 factors used in the research model, it shows that the scales achieve quite high values above 0.7. However, two variables KN5 and KPVH6 were excluded because the total correlation coefficient was < 0.3. So, there are all 39 observed variables that meet the requirements of reliability of 10 factors used for EFA exploratory factor analysis.

Bartlett test results for factors

Parameter	Value	Condition
KMO	0.852	≥ 0.5
Sig. of Bartlett's Test	0.000	≤ 0.05
Eigenvalues	1.230	> 1
Total variance extracted	64.867	$\geq 50\%$

(Source: SPSS data processing and analysis)

The first result when analyzing the factor rotation matrix table, the author removed the variables GTNT4, KPVH5, KNG4 because these variables were uploaded in both factors, so we removed the variables and ran the exploratory factor analysis again. The second EFA. After the second factor analysis showed that KMO = 0.852, factor analysis is appropriate, the meaning of Bartlett's test (Sig. of Bartlett) = 0.00 < 0.05 proves the observed variables are correlated with each other in the population. Eigenvalues = 1,230 > 1 represents the variation explained by the factors, then the factor drawn has the best information summary significance. Total variance extracted (Rotation Sum of Squared Loadings (cumulative %)) = 64.867% > 50%, which proves that 64.867% variation of the data is explained by 10 factors.

Exploratory factor analysis

Table 4: Summary of EFA analysis results of factors

Concept	Ingredient	Number of variables observe	Confidence trust	Variance extract (%)	Beaten price
Model AIO	Vacation	4	0.785	64.867%	Qualified
	Outdoor entertainment	3	0.805		
	Social events	3	0.775		
	Extreme sports activities	3	0.785		
	Experience	4	0.799		
	Social issues	4	0.784		
	Possibility with finance	3	0.722		
	Cultural discovery	4	0.822		
	Care for the environment	4	0.783		
	Stick with the homeland	4	0.776		

(Source: SPSS data processing and analysis)

Corrected model: Based on the results of Cronbach's Alpha correlation coefficient analysis and EFA exploratory factor analysis, the author removed the variables KN5, KPVH6, GTNT4, KPVH5, KNG4 when unsatisfactory. Therefore, there are a total of 36 variables affecting vacation demand and the research model does not need to be adjusted

Table 5: Summary statistics of cluster analysis

	Cluster 1	Cluster 2	Cluster 3	F. value	Sig
Vacation	3.78	4.17	3.22	53,035	0.000
Outdoor entertainment	3.54	4,,18	3.13	63.836	0.000

Social events	3.75	4.36	3.08	101,627	0.000
Extreme sports activities	3.54	4.16	3.19	44,171	0.000
Experience	3.74	3.35	4.09	27,444	0.000
Social issues	3.57	3.94	3.00	45,643	0.000
Possibility with finance	3.74	4.18	3.07	58,737	0.000
Cultural discovery	3.76	4.13	3.25	43,031	0.000
Care for the environment	3.93	3.39	4.33	48,652	0.000
Stick with the homeland	3.88	4.53	3.52	67,975	0.000

(Source: SPSS data processing and analysis)

The results of Table 5 show that the level of statistical significance (sig) in all tests is less than 0.05, so the hypothesis of similarity between clusters is not accepted. This proves that there are significant differences between clusters and this study can use the results of cluster analysis as a reference source of information for identifying market segments and generational needs. Gen Y of Hue city about on-site tourism services. More specifically, analysis of the descriptive panel data revealed:

Cluster 1 has 117 respondents and accounts for 46.8% of the sample. This cluster is the largest segment and all the factors are of nearly equal importance without too big of a difference. Hence this cluster can be named “All Interest Group”.

Cluster 2 has 73 respondents and accounts for 29.2%; The mean of the holiday factor is 4.17; outdoor recreation 4.18; social events 4.36; extreme sports activities 4.16; 3.35 experience; social issues 3.94; ability with finance 4.18; culture discovery 4.13; care about the environment 3.39; try to stick with the homeland 4.53 and in which there are 2 factors "social events" and "sticking to the homeland" are the most important. Therefore, this cluster can be named the “Group interested in social events in the homeland”. They are people who tend to like to participate in festival activities, and social activities (charity, relief, ..) and who want to establish a career in their homeland, want to develop their homeland, etc.

Cluster 3 has 60 respondents and accounts for 24%; The average value of the holiday factor is 3.22; outdoor recreation 3.13; social events 3.08; extreme sports activities 3.19; 4.09 experience; social issues 3.00; possibility with finance 3.07; cultural discovery 3.25; care about the environment 4.33; attachment to the homeland 3.52 and in which there is 2 factors "care for the environment" and "experience" is the most important. Therefore, this cluster can be named the “Group of people with tourism experience who care about the environment”. They are independent people in terms of time, self-control when traveling, they learn where they come from and care about their living environment...

5. Management implications for on-site tourism service providers (Staycation)

5.1. For cluster 1: All-interest group

Some administrative implications related to holiday activities

Besides the typical activities already available at the suppliers, here are some suggestions to stimulate tourism demand of tourists:

With the advantage of being close to the sea, suppliers can combine a number of activities such as experiencing near-shore fishing with fishermen; develop seawater parks to attract visitors; Currently, canoeing activities are few or even none, so they should be supplemented and developed; overnight camping in the coastal area, skydiving at sea needs to be exploited; The coastal sands that are still open are great opportunities to invest in sand games.

Combine and develop tourism types: such as forming discovery tours and resort tourism, forming experience tours from the city to the countryside; Overnight camping for new tourist destinations such as Hon Van, Khe Ngang, ...

With the advantage of mountainous terrain, it is possible to organize group climbing sessions to attract customers who want to conquer challenges and exercise to register to participate.

Hue has many temples to raise orphans, disabled children and helpless elderly people, etc. With a philanthropic heart, we can organize charity activities. Everyone can contribute money, contribute, contribute things that are still usable but we don't need it, ... to help and take care of the children and the elderly.

Regularly organize local specialty fairs to exchange food and culture near tourist attractions.

Some administrative implications related to holiday preferences

At the property, it is recommended to build and develop mini gardens for guests to experience farming; virtual live check-in points, new play areas for children; novel contexts; ...

Let customers design their own tour when there are places and times available for them to draw their itinerary to make the trip more planned.

Not only coffee shops but other business models are combined with homestay models to make use of space.

Hue has pine hills like miniature Da Lat that can turn it into Da Lat in Hue for local guests to experience such as simulating famous places in Da Lat, and developing Dalat-style cafes. , ...

Improve the quality of local check-in locations.

Organize photo and video contests in an online format about the daily activities of customers themselves with attachments about the organization's implementation of a way to promote the image.

Classes on soft skills at home such as cooking, embroidery, painting, piano lessons, etc. can help customers avoid commuting and can do the things they like at home.

Some governance implications related to vacation Opinions

Ensuring health and safety is essential for each customer, so suppliers need to ensure that they are fully equipped with basic equipment and skills.

Environmental hygiene during the holiday is also something that guests care about because it affects their mood.

With the current situation, financial constraints are inevitable when offering travel services, so it is necessary to consider the spending ability of customers, which can include vouchers, discounts, and gifts, ...

Sports activities are not only held on weekends and holidays but also need to be organized on weekdays on a smaller scale.

New unspoiled places near the city need to be exploited and expanded to bring closer to everyone such as organizing overnight and day camping, and establishing associations to conquer new places, ...

5.2. For cluster 2: Groups interested in social events in their hometown

The group of people surveyed in this cluster 2 is those who are most interested in social events (belonging to the active component) and attachment to their homeland (under the opinion component), so besides developing In developing drug elements of preference, more attention should be paid to the other two components, activity and opinion.

Some administrative implications related to holiday activities

Hue is developing walking routes next to the Perfume River such as the one on the south bank of the Perfume River behind the Hue Academy of Music and the walking route extending from Truong Tien Bridge to Thien Mu Pagoda and the opposite side respectively.

Travel companies should form day tours for customers to experience, such as organizing a 5km walking or jogging contest along the Perfume River, a culinary contest on a yacht, and a rowing contest on the river. Perfume River, the competition includes games such as shuttlecock, badminton, or games to help bring back childhood such as eating mandarin umbrellas, babies learning to walk, shooting marbles, blindfolded, etc.

Travel companies, when combined with local officials to explore local tourism, should offer charity programs to support the locality when tourists come to experience it. The tour company should include at the end of the tour program a charity fundraising activity to support the locality where you want so that tourists can both travel knowledgeable about the local, and can contribute to help the local that I want.

Accommodation providers may also offer items such as behind-the-scenes tours of local performance festivals and meet-and-greets with actors, or discounts on stays during cultural holidays chemical. Create a night tour for nighttime activities.

Service providers can link up with new or popular local clubs and offer them discounted prices.

Some governance implications related to vacation Opinions

Hue has pine hills like miniature Da Lat that can turn it into Da Lat in Hue for local guests to experience such as simulating famous places in Da Lat, and developing Dalat-style cafes. , ...

Improve the quality of local photography locations such as upgrading roads, having drink stalls, resting places, ...

Opening classes on soft skills at home such as cooking, embroidery, painting, piano lessons, etc. can help customers avoid commuting and can do the things they like at home.

In addition to informing about the activities of the business unit, the unit should also update information about events happening in the homeland.

Offer discounted or free tickets to local museums, and to local performing arts.

Offers shuttle or bus service to local attractions.

5.3. For cluster 3: Group of people with tourism experience who care about the environment

The group of people surveyed in this cluster 3 is those who are most interested in environmental factors (opinion component) and experience factor (in interest component), so besides developing drug factors Active ingredients need to focus more on the other two components, preferences and opinions.

Some administrative implications related to holiday preferences

Service providers are always innovating experiences to fit this cluster. Not only the experience of activities but more importantly, the experience of the environment.

Ensuring health and safety is essential for each customer, so suppliers need to ensure that they are fully equipped with basic equipment and skills.

Environmental hygiene during the holiday is also something that guests care about because it affects their mood.

Some governance implications related to vacation Opinions

With the current situation, financial constraints are inevitable when offering travel services, so it is necessary to consider the spending ability of customers, which can include vouchers, discounts, gifts...

New unspoiled places near the city need to be exploited and expanded to bring closer to everyone such as organizing overnight and day camping, establishing associations to conquer new places...

Sports activities are not only held on weekends and holidays but also need to be organized on weekdays on a smaller scale.

Learn, and offer new programs based on customer feedback to avoid boredom.

6. Conclusion

Staycation is not a new type of tourism, but in the current context, it is really one of the remarkable solutions for the tourism industry. Through the lifestyle model (AIO), the research has analyzed the needs of the Gen Y generation in Hue city. Through the process of synthesizing and analyzing the research, the results show that there are 250 suitable survey samples, the research model is influenced by 10 factors including vacations, outdoor recreation, social events, activities in extreme sports, social issues, experience, cultural exploration, financial ability, concern for the environment, attachment to homeland with 36 relevant observed variables and divided into 3 clusters There are different groups of people interested in all, groups interested in social events in their homeland and groups of people with travel experience who care about the

environment. From there, it is possible to give some governance implications for on-site tourism service providers.

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THE CUSTOMERS' PRIVACY PERCEPTION OF THE RETAIL INDUSTRY IN THE DIGITAL TRANSFORMATION PERIOD IN HO CHI MINH CITY

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ABSTRACT

In the current 4.0 context, digital transformation is a particularly necessary thing for retail businesses in particular or most businesses in general. That's why a sense of privacy is so important to retailers. And this paper focuses on the factors affecting the privacy perception of customers in the digital transformation period in Ho Chi Minh City. Therefore, the research team embarked on this topic to understand, analyze and make assessments about the impact of different factors on customers' perception of privacy in digital transformation for the retail industry.

Keywords: privacy perception, retail industry, digital transformation, Ho Chi Minh city.

1. Introduction

In current's information technology-driven environment, privacy threats are higher and individuals have relatively less control over their data (Whitley, 2009). According to Rejikumar et al. (2021), individuals' privacy concerns and consumer privacy beliefs significantly influence their online purchasing behavior. Tifferet and Sigal (2019) and Thelwall (2012) conclude that the findings show that women have higher levels of privacy concerns and behaviors than men. However, the percentage of women shopping online is higher than that of men (Q&Me Statistical Report, 2020).

All the time, for more than 20 years, privacy has always been one of the issues that countries such as the US, Belgium, Canada, Israel, and the UK... have been inspected. According to Hoofnagle et al (2010), adolescents aged 18-24 years have less privacy awareness than adults and privacy knowledge is maximum for adults aged 40-55. On the other hand, cultural differences act as the main driver of diversity in customer behavior (Hong et al., 1987; Moon et al., 2008; Pergelova & Angulo-Ruiz, 2017). For a developing country with many different cultures like Vietnam, privacy is also of considerable concern, but there are relatively few research papers on this area.

Because of the changes and challenges facing the retail industry in the digital age for good management of customers' privacy perception, the study attempts to build a highly referenced, progressive model and empirical test of the relationships between them. In addition, considering the impact of culture between countries as well as the influence of specific demographic factors such as gender. As a result, providing suitable solutions to help retailers develop the best.

2. Theoretical framework

2.1. Literature review

Janse et al (2007) argue that the privacy perception or the way customers perceive the system has affected their privacy. One of the important aspects for customers is to accept intelligent systems around. According to Sabah Al-Fedaghi (2012), customer privacy is also one of the most complex issues to solve.

So far, digital transformation has progressed in such a short time that it is difficult to achieve, even in the retail sector. Changing customer expectations about the shopping experience have long been an issue for

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brick-and-mortar retailers (Childs et al., 2020; Kleemann & Glas, 2020). Furthermore, it goes even harder for offline sellers to look for their way back to their old strengths if they cannot make something suitable (Roy & Moorthi, 2017). Online shopping can increase next-generation customer satisfaction; however, it requests distribution centers, new logistics infrastructure, and enhanced reliable communication (Akram et al. events, 2021).

In the retail industry, aspects related to retailers, technology, and customer personality characteristics would affect privacy perception (Pizzi & Scarpi, 2020). In addition, the study also mentioned that privacy perception in the retail industry goes beyond the attitude towards technology and affects customers' perceived value of the retailer, which in turn will affect influence retailer loyalty intentions and positive word-of-mouth. In addition, two separate research sources have produced different results on whether customers will respond to a retailer's actions whether offline (Walz & Celuch, 2010) or online (Bleier & Eisenbeiss, 2015) all based on how trustworthy they are to the retailer. Meaning, that customers will be more inclined to reveal personal data to retailers depending on the perceived level of trust (Taddei & Conena, 2013).

The advantages seem largely dependent on consumers' technology acceptance although new technologies are being invested strongly (Mwesiumo et al., 2021). Accordingly, the Technology Acceptance Model (TAM) has been adopted widely to guess the construct (Davis, 1989). In privacy problems, consumers' perspectives have been seldom accepted when consumers' privacy concerns might be increased through the introduction of retailers' technology (Kakatkar & Spann, 2019; Van de Sanden et al., 2019) and restricted acceptance (Laukkanen, 2016; Mani & Chouk, 2017). In other, Justice Theory (Deutsch, 1985) proposes that the advantages of technologies could be counterproductive whether the advantages obtained are overbalanced by the number of information given (Aguirre et al., 2016).

Consequently, this study focuses on the most core factors based on a combination of previous studies. Besides, the proposed model is built based on the basic foundation of the TAM model and Justice Theory.

Hypothesis development

2.1.1. Retailer vs. Consumer Benefit

Retailer vs. Consumer Benefit concentrates on consumers' perceived value of sharing information with the retailer (Inman & Nikolova, 2017). Most prior studies have concentrated on the practical advantages of disclosing personal information (Sun et al., 2015). In the domain of personal information disclosure, these perceptions of distributive fairness are original as the collation between the data given and the advantages got (Pizzi & Scarpi, 2020). In this case, perceived justice or fairness has been frequently framed as the level to which consumers identify equitable and balanced when they exchange with the retailer (Maxham & Netemeyer, 2003). If the stock of distributive fairness is high, consumers may give up some privacy and even adopt mild privacy invasions (Pizzi & Scarpi, 2020). Consequently, technologies that bring more advantages to the retailer could make consumers feel distributive fairness is lower, then, they would find more concerned when they had to disclose personal information (Gabriele et al., 2020).

H1. Consumers will be more confident to disclose personal information when they perceive they will be received more advantages than the retailer through using technology.

2.1.2. Technology Hedonism

Through the study by Babin et al. (1994), prior studies have indicated that pleasure, fun, and enjoyment are essential in promoting consumers' recognition of technologies. Besides, prior studies have indicated that consumers' reactions might be different to more utilitarian in-store technologies if they purchased hedonically (White et al., 2012). So, both hedonism and fairness can influence consumers' beliefs to disclose personal information through technology. Prior literature has documented that hedonism can be a stronger driver of positive behavioral outcomes than utilitarianism (Scarpi, 2012), mainly by facilitating consumers' escapism from everyday concerns (Mathwick et al., 2001). Consequently, the higher hedonism that technology offers develops consumers' concerns lower about providing information. For instance, even technologies that do not give impartial and practical benefits can still bring consumers interestingly valuable

advantages (Gabriele et al., 2020). So, using technology with high hedonism makes consumers' concerns lower.

H2. *Consumers will be more confident to disclose personal information when they use a technology that provides higher hedonism.*

2.1.3. Consumers' Personality Traits

Prior literature has proposed how consumers' use of technologies (Marbach et al., 2019; Sun et al., 2015) and how they provide personal information through the internet (Bansal et al., 2016) might be affected by personality traits. Previous studies have focused on gender- (Tifferet, 2019) and age- (Priporas et al., 2017) related differences. Narrow personality traits have been added to the larger framework of the TAM model. But, the psychological studies make concerns about using narrow personality traits become serious (Judge & Bono, 2001). Consequently, earlier studies introduced the Big Five to the theoretical framework of privacy perceptions (Korzaan and Boswell, 2008). The consumer personality traits and posits that could affect the privacy concerns are also considered in the study of Pizzi and Scarpi (2020).

H3. *Consumers will be more confident to disclose personal information when they are more open.*

2.1.4. The Retailer's Trustworthiness

The retailer's trustworthiness, which has been emphasized in prior studies, is consumers' belief in the integrity and reliability of retailers (De Wulf & Odekerken-Schroeder, 2003). Horne and Horne (2002) chronicled how potentially negative outcomes after disclosing information affect the level of consumers' belief; Chaudhuri and Holbrook (2001) announced if consumers believed a seller, they would trust that they will not be harmed. Pizzi and Scarpi (2020) imply providing data to a reliable retailer makes consumers perceive safer since they feel that their personal information will be managed with integrity. The study anticipated that the positive impact of fairness and hedonism on privacy perceptions and technology acceptance would be consolidated by consumers' level of trustworthiness in a retailer. Thence, the effect of hedonism and fairness on privacy perceptions and technology acceptance will be positively strengthened by the level of consumers' belief in a retailer. Such as the stronger privacy and technology acceptance affected, the more reliable the retailer's technology is provided (Pizzi & Scarpi, 2020).

H4a. *The interaction between fairness and privacy will be moderated positively by the retailer's trustworthiness.*

H4b. *The interaction between the technology's hedonism and privacy will be moderated positively by the retailer's trustworthiness.*

2.1.5. Privacy Concerns

Goldfarb and Tucker (2012) detect denials to provide information have increased and younger people are more likely to do than elder people. Decisions to provide personal data had been influenced notably by privacy concerns (Morosan, 2018). The connection of focal variables' prior exposure is the major factor to build privacy invasion and decisions to provide personal data (Mwesiumo et al., 2021). Besides, perceptual and behavioral consequences built from consumers' assessments are a set explained through the theoretical framework of Pizzi & Scarpi (2020).

Besides, prior studies that privacy concerns were viewed as a third-order construct (Mwesiumo et al., 2021). Smith et al. (2011) supposed that in any case, a multi-dimensional scale should use to measure privacy concerns. Like Hong and Thong (2013), it modeled privacy concerns by three dimensions: interaction management, information management, and awareness.

The interaction management is considered how an individual manages his or her information (Hong & Thong, 2013). According to Hong and Thong (2013), interaction management is one of two parts of interpersonal interaction that is the center of privacy concerns on the internet.

The information management is considered how an individual manages personal information (Hong & Thong, 2013). According to Culnan and Williams (2009), a lacking of data and out-of-control personal data

make consumers vulnerable in purchase exchanges. So, how one is notified or manages how the data is used defines conditions of privacy violations (Culnan & Regan, 1995; Foxman & Kilcoyne, 1993).

The efforts to protect consumers' data after being collected are a concern of online consumers (Buchanan et al., 2007; Culnan & Williams, 2009; Pavlou et al., 2007), and protecting data integrity is very important (Stewart & Segars, 2002). Malhotra et al. (2004) identified the level of awareness that stems from a person concerned about privacy practices on websites.

H5. When consumers' privacy concerns are higher, their privacy perception is more affected.

2.1.6. Privacy Invasion Experience

The connection between privacy invasion and willingness to disclose information shows that the privacy invasion experience makes privacy concerns enlarge (Mwesiumo et al., 2021). In a specific case, this statement is argued that the threats had been able to advance through knowledge about privacy invasion, then, factors that could affect privacy can be recognized (Masur, 2019). For example, recently, privacy concerns affect the decision to provide information positively (Ioannou et al., 2020). According, privacy concerns influence the decision to disclose information negatively. Now, customers tend to hold their information against loss (Mwesiumo et al., 2021).

H6a. When consumers' privacy experience is more, it has negative effects on the privacy concerns.

H6b. When consumers' privacy experience is more, they are less confident about disclosing personal information when using the technology.

Figure 1. shows hypothesized relationships in this study.

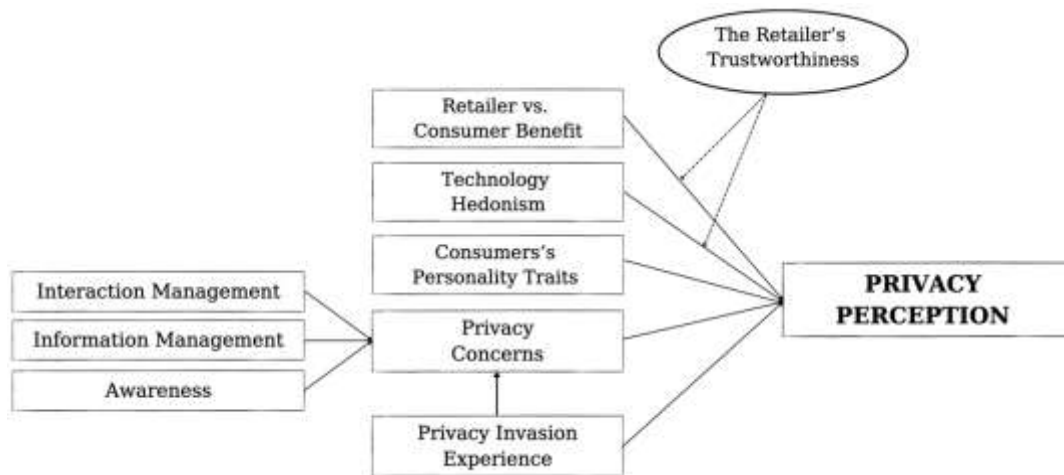


Figure 1. Theoretical model

Source: Authors

3. Research method

3.1. Measurement Development

Observed variables in the questionnaire use the Likert scale (07 levels). This scale can bring positive results with many options, and many levels so that respondents can easily record according to their feelings and evaluations. There are 8 scales including customer interest, technological hedonism, customer personality, retailer reliability, privacy concerns, privacy-intrusive experiences, and perceived privacy (Appendix B).

3.2. Data analysis

Firstly, the authors perform Cronbach's Alpha test to check whether observed variables in the same scale are measuring for the same concept. Following confirmatory factor analysis CFA, an observed variable can only load on one factor, the cross-load coefficient will be fixed at zero. Based on the results of testing the model through confirmatory factor analysis (CFA). The research model is adjusted to have appropriate data to conduct testing of the research model (linear structural model) using AMOS 20.0 software. Next, to check

if a model exists for a variable, the first step is to transform and calculate the normalization of all variables, especially the two moderators and predictors.

4. Results and discussion

4.1. Results

4.1.1. The descriptive statistics of sample demographics

The population that this study targeted was the residentials living in Ho Chi Minh city who shopped with digital technology. Through the statistical process, a total of valid 452 valid questionnaires. Appendix A showed that most of the participants were female residentials which corresponds to 66.81%. Regarding education level, most of the participants were college degrees which were 52.66%.

4.1.2. Scale assessment

a) Scale assessment

As shown in Table 1, the Cronbach's alpha for all construct scales ranged from 0.804 to 0.928, exceeding Nunnally's proposed threshold of 0.7. (1978). This showed that all of the measurement scales in this study's constructs had excellent reliability, which refers to the consistency of items within each construct.

b) Convergent and discriminant validity testing

Table 1 reveals that all standardized factor loading values of measured items were greater than 0.5, and the Average Variance Extracted (AVE) of all scales of all constructs was greater than 0.5. As a result, this study's measuring scales have convergent validity (Hair et al., 2010).

Table 1. Items' Standardized Factor Loading and measures' AVE

Items	Standardized Factor Loading	Average Variance Extracted (AVE)	Cronbach's alpha
Retailer vs. Consumer Benefit		0.703	0.876
RC1	0.830		
RC2	0.847		
RC3	0.838		
Technology Hedonism		0.604	0.848
TH1	0.581		
TH2	0.821		
TH3	0.895		
Consumers's Personality Traits		0.662	0.806
PT1	0.804		
PT3	0.879		
PT4	0.753		
The Retailer's Trustworthiness		0.680	0.804
RT1	0.788		
RT2	0.970		
RT3	0.692		
Privacy Concerns		0.735	
Interaction Management			0.893
IM4	0.736		
IM5	0.831		
IM6	0.867		
IM7	0.848		
IM8	0.790		

IM9	0.799		
Information Management			0.880
IFM1	0.586		
IFM2	0.615		
IFM3	0.594		
IFM4	0.828		
IFM5	0.841		
IFM6	0.811		
Awareness			0.891
AW1	0.839		
AW2	0.868		
AW3	0.845		
Privacy Invasion Experience		0.715	0.872
PE1	0.792		
PE2	0.937		
PE3	0.799		
Privacy Perception		0.643	0.928
PP1	0.704		
PP2	0.785		
PP3	0.871		
PP4	0.896		
PP5	0.853		
PP6	0.711		
PP7	0.769		

Source: Authors

The squared correlation coefficients between constructs and constructions' AVE are shown in black boldface in Table 2. It is obvious that the AVE of measures was lower than the value of squared correlation coefficients between constructs. As a result, it is possible to conclude that the measurement scales for all constructs in this study attained discriminant validity (Hair et al., 2010).

Table 2. Squared correlation between constructs and the scales' AVE

	PC	TH	PT	RT	PE	RC	PP
PC	0.858						
TH	-0.004	0.777					
PT	0.124	0.049	0.814				
RT	0.175	-0.030	0.319	0.825			
PE	0.704	0.046	0.065	0.125	0.845		
RC	0.059	-0.009	0.272	0.227	0.041	0.838	
PP	-0.078	-0.045	0.285	0.190	-0.030	0.779	0.802

Source: Authors

c) The evaluation of model fit

The next stage was to test the model fit to see how well the model fit the data acquired after the measurement model's reliability and validity had been validated (Barret, 2006).

In order to achieve a model fit, the value of Chi-square/degree of freedom (Cmin/df) has been suggested less than 5 is acceptable, and less than 3 is good (Hu & Bentler, 1999). The GFI value should be equal to or over 0.9, however in this case GFI is below 0.90, but the GFI is known to depend on the sample size (Mulaik et al., 1989). (Mulaik et al, 1989). So over 0.80 is acceptable value for GFI (Baumgartner and& Homburg, 1995; Doll, Xia, and Torkzadeh et al., 1994). RMSEA value should be between 0.05 and 0.08 (Fabrigar et al., 1999). (Fabrigar, Leandre R., et al, 1999). CFI values greater than 0.90 may suggest that the model is reasonably well fitted (Kline, 2005). TLI was suggested to be over 0.90 for an acceptable model fit (Hu & Bentler, 1999). For PNFI, there is no widely accepted cutoff value for a satisfactory model, relatively

high values represent a relatively better fit (Hair, 2019). It should be over 0.50. This sample exhibits a good fit to the 6-factor model based on these indices.

Table 3. The fit indices of the measurement model

Fit indices	Path
Chi-square/ degree of freedom (χ^2 / df) (<3)	2.772
Root mean square error of approximation (RMSEA) (≤ 0.08)	0.063
Parsimony Normed fit index (PNFI) (≥ 0.5)	0.782
Comparative fit index (CFI) (≥ 0.9)	0.913
Goodness-of-Fit Index (GFI) ≥ 0.8	0.834
Tucker Lewis Index (TLI) ≥ 0.9	0.903

Source: Authors

4.1.3. The result of testing hypotheses

a) The result of testing the moderate relationship of retailer's trustworthiness

According to the analysis, the retailer's moderating role – in terms of its ex-ante trustworthiness – had no significant effect on the Consumer Benefit–Privacy Perception (P-value = 0.2) and Technology Hedonism- Privacy Perception relationships (P-value=0.552). As a result, no observed support was found for H4a and H4b. The lack of statistical significance is consequential because it implies that the retailer's reputation is not relevant to customers when their privacy is at risk. Instead, the exchange between giving customers clear advantages and disclosing information through technology makes positive privacy perceptions for all retailers.

Table 4. Path analysis of retailer's trustworthiness

	Path	Standardized coefficient (β)	P-value	Testing result	Testing result
H4a	Retailer trustworthiness moderates Retailer vs. Consumer Benefit \rightarrow Privacy Perception	-.035	.200	Non-significant	Support
H4b	Retailer trustworthiness moderates \rightarrow Technology Hedonism \rightarrow Privacy Perception	.028	.552	Non-significant	Support

Note: P-value=*** means that P-value. <0.001

Source: Authors

b) The result of the testing relationship between other factors and privacy perception

Consumers' confidence in a technology's privacy issues increased when they considered the technology to be more useful to them than to the seller ($\beta=0.766$, P-value=***), giving support to H1. Hedonism, in contrast to H2, was found to not affect people's confidence in releasing information through technology ($\beta=-0.047$, P-value=0.201).

Privacy perceptions were affected positively and significantly by openness ($\beta=0.126$, P-value=***), meaning that one will provide personal data more comfortably if they are able to adapt to a new idea, which supported hypothesis H3. Privacy concerns had a significant and negative effect on privacy perceptions ($\beta=-0.183$, P-value=0.002). This indicates that hypothesis H5 is supported.

Privacy invasion experience influenced significantly and positively privacy concerns ($\beta=0.709$, P-value=***). The evidence-informed that there was no significant relationship between privacy invasion experience and privacy perceptions ($\beta=0.067$, P-value=0.232). This indicates that hypotheses H6a and H6b were supported. This observation implies that customers of online shops only become less confident in

providing personal data for further services if a previous privacy infringement has raised their privacy concerns.

Table 5. Path analysis of the relationship between other factors and privacy perception

	Path	Standardized coefficient (β)	P-value	Testing result	Testing result
H1	Retailer vs. Consumer Benefit → Privacy Perception	.766	***	Significant	Support
H2	Technology Hedonism → Privacy Perception	-.047	.201	Non-significant	Support
H3	Consumers' Personality Traits → Privacy Perception	.126	***	Significant	Support
H5	Privacy Concerns → Privacy Perception	-.183	.002	Significant	Support
H6a	Privacy Invasion Experience → Privacy Concerns	-.709	***	Significant	Support
H6b	Privacy Invasion Experience → Privacy Perception	.067	.232	Non-significant	Support

Note: P-value=*** means that P-value. <0.001

Source: Authors

4.2. Discussion

4.2.1. Result Discussion

Research results are obtained from an online survey with 452 people who have experienced buying through e-commerce platforms. The concepts that need to be measured are retailer vs. consumer benefit, technological hedonism, consumers' personality traits, retailer's trustworthiness, privacy concerns, privacy invasion experience, and privacy perception. Research results show that most of the factors have statistical significance (P-value < 5%). In which the most impactful factor is Privacy Intrusive Experience (PE), followed by The Retailer's Trustworthiness (RT), Privacy Concerns (PC), and finally Retailer vs. Consumer Benefit (RC).

4.2.2. Managerial Implication

The factor that has the strongest impact on the customer's perception of privacy is the Invasion of Privacy Experience. customers decrease. Therefore, businesses need to set up personal information security for customers through individual login accounts. In addition, it is necessary to put in place regulations to ensure that the customer's information collection process is confidential in terms of providing personal information after the customer's privacy-infringing experiences. had before. Retailer Reliability has a positive impact on customers' perception of privacy. The more trust a customer has in the retailer they intend to purchase from, the higher the customer's perception of privacy. Therefore, The information of the enterprise must have a clear title on the website to be public when selling, and information when registering with the Ministry of Industry and Trade attached with the registration certificate of the E-commerce trading floor the Ministry of Industry and Trade must be registered with the Ministry of Industry and Trade clearly displayed on the company's website. At the same time, always update and amend regulations on the data management systems to protect customers' personal information, and ensure compliance of company employees with the customer data system. Avoid employees disclosing customer information to the outside. Customers' privacy concern also harms customers' privacy perception which means that the more privacy-concerned a customer is, the lower the perception of privacy will be thus Appropriate security in transactions with customers is essential and at the same time, it is necessary to make statistics of unusual transactions in the system when affecting the use of customers. Contrary to the Privacy Concern factor, the Customer Interest factor has a positive impact on the perception of privacy meaning that the greater the benefit the customer receives, the better the decision to provide information. big. What retailers need to do is show

customers the positive feedback of previous customers and handle customer problems when providing information in the fastest and safest way.

The results drawn in this study should be relevant to regulators and stimulate future research. The state needs to improve regulations on protecting the privacy of each individual and deter those who have committed acts that threaten the privacy of other individuals. Enterprises must take measures to collect and use customers' personal information strictly and reasonably to improve the security of customer information. Besides, businesses should not only invest in products but also invest in service quality so that customers have the best shopping experience. Moreover, letting customers know how their privacy is being used should be extended to give customers complete peace of mind when providing information to businesses. Regulators may find it useful when customers have to see benefits from technology in exchange for information they are disclosing, so it is necessary to quantify the extent to which customers perceive benefits from technology. Finally, businesses need to understand the laws and regulations of the state related to privacy to ensure the security of both sellers and buyers.

The project still has some limitations in the implementation process due to various difficulties. First, the topic is only done with people living in Ho Chi Minh City. Second, this study was evaluated based on only 5 factors. Third, the sampling takes place only online, making it difficult to reach those who do not use the Internet. Fourth, the proposed assessments are based solely on the individual nature and results of the research team's findings.

For the next research direction, the team will expand the survey scope to people living in cities that have access to digital technology even more and add many other factors to bring more assessment angles. . In addition, the team will conduct both online and field surveys using the probabilistic sampling method to make the results more general.

5. Conclusion

Following previous studies on customer perception of privacy in the digital transformation period for the retail industry, the team's study set out to measure the factors already in the research papers. Previous research examines factors that influence consumers' perceptions of privacy. From there, find out the relationship between these factors and the customer's perception of privacy during the digital transformation period in Ho Chi Minh City.

The research team clarified the concepts of customer perception of privacy and the retail industry when adopting digital transformation in this research paper. Cronbach's Alpha test help do the quantitative research method, the factors are measured by SEM linear structure model. Research results show that the level of impact of variables on Perception, in order from strong to weak, are the variables Experience Invasion of Privacy, Retailer Reliability, and Rights Concern. Privacy, Customer benefit. In which, the variable Experience intrusive privacy has the opposite effect on Perception, the higher the privacy-infringing experience, the lower the perception of privacy.

6. Appendix

Appendix A. The descriptive statistics of sample demographics

	Frequency	Percent (%)	Cumulative (%)
Gender			
Male	150	33.19	33.19
Female	302	66.81	100
Education level			
12/12	52	11.5	11.5
College degree	238	52.66	64.16
Graduated degree	121	26.77	90.93
Another	41	9.07	1000

Appendix B. Construct measures

Items	AVE	Cronbach alpha
Retailer vs. Consumer Benefit (1 = The retailer; 4 = Both; 7 = The consumer)	0.703	0.876
Given the investments required to implement this new technology (e.g., time and money), the final result would be more valuable to		
The effect of implementing this new technology would be better for		
Given the inconvenience that this technology may cause, the outcome would be more equitable for		
Technology Hedonism	0.604	0.848
This technology would make shopping more enjoyable		
This technology would be interesting in itself, regardless of the things I finally purchase		
With this technology, I would visit a store not because I needed stuff, but simply because it would be entertaining		
Consumers' Personality Traits	0.662	0.806
I have a vivid imagination		
I'm not concerned with other people's problems		
I have trouble comprehending abstract concepts		
I do not have a good imagination		
The Retailer's Trustworthiness	0.680	0.804
I appreciate and respect this retailer		
I have faith in this retailer		
This store provides high - quality goods and services		
This store has a clear plan for the future		
This store is up to date on the latest technology		
Privacy Concerns	0.735	
Interaction Management		0.893
It would irritate me if I was asked for personal information		
I would think carefully before disclosing personal information		
I am afraid that far too much personal information is being gathered		
I am afraid that personal information I provide for a certain purpose may be used for other purposes		
I would be concerned that personal information I provide could be shared without my permission		
I would be concerned that personal information I provide could be sold without my permission		
I would be concerned if I didn't have control over the personal information had to submit		
I would be concerned if I didn't have control over how my personal information was collected, used, and shared		
I would be concerned if my personal information could be changed or lost without my awareness		
Information Management		0.880
I would be concerned that personal information about me is inaccurate		
I would be concerned if methods for correcting inaccuracies in my personal information were insufficient		
I am concerned that not enough time and effort is spent verifying the authenticity of my personal information		
I would be concerned that unauthorized access to my personal information is not adequately protected		
I would be concerned if not enough time and effort is put into preventing unauthorized access to my personal information		
I would be concerned if not enough precautions are made to ensure that unauthorized individuals do not have access to my personal information		

Awareness		0.891
I would be concerned if no clear privacy policy is provided while supplying personal information		
I would be concerned if I didn't know how my personal information will be used		
I would be concerned if no clear explanation is provided about how my personal data is collected, processed, and used		
Privacy Invasion Experience	0.715	0.872
I feel my personal information (e.g., name, social security number, address, phone number, or payment information) has been monitored, searched, recorded, or stored without my permission at least once		
I have had negative experiences with the privacy of my personal information when using internet services		
I have been a victim of online privacy issue at least once before		
Privacy Perception	0.643	0.928
I believe that the benefits I would obtain from using this technology will outweigh the danger of my information leak		
The benefit I obtain from using this technology outweighs the information I provide		
I believe the retailer has enough security procedures to secure my personal information		
I believe my privacy would be secured at this retail store		
I would feel secure in my shopping experiences with this retail store		
I would feel confident sharing my information with this retailer		
I would feel secure sharing my information with this retailer		

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THE IMPACT OF SOCIAL MEDIA USAGE ON MENTAL HEALTH DURING THE COVID-19 PANDEMIC

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ABSTRACT

The outbreak of COVID-19 has significantly impacted people's daily lives and has contributed to the growth of social media use. In this challenging time, social media has become increasingly popular as users seek informational, emotional, and peer support on social networking sites. However, excessive social media use can have adverse impacts on users' mental health, leading to depression and other psychological issues. This study aims to identify the drivers behind social media usage and investigate the relationship between social media usage and users' mental health in the COVID-19 pandemic. Drawing on quantitative methods, the results show that social media use has a positive effect on depression, with gender factors moderating the relationship between social media use and depression. The research provides practical implications that help Internet users and service providers become aware of mental health problems and encourage use social media more effectively to minimize negative impacts.

Keywords: COVID-19, mental health, social media usage, depression.

1. Introduction

The outbreak of COVID-19 has caused a global health crisis (WHO, 2020), with the rising death rate posing a threat to the whole world in general and Vietnam in particular. Starting in April 2021, Vietnam experienced its largest outbreak, with more than 1.2 million cases recorded in November (Tough, 2021). Lockdown restrictions have been applied to reduce COVID-19 infection rates, which involves social distancing, cancelling large gatherings, closing schools and offices, turning to study and work online, and traveling restrictions (United Nations, 2020). All of the above measures were recommended by the World Health Organization (WHO) and were used by most countries and regions of the world, seriously affect people's lives in all aspects.

According to Statista (2021), Vietnam is one of the countries with the highest proportion (78.1%) of social media users in the world, indicating that the use of social media is popular with all generations, not just young people in this country. The outbreak of the coronavirus reduced the quality of life and affected daily routines, which caused many people to be confused and afraid (Lachlan et al., 2016). During this time, social media has played an increasingly important role as the main source of information and solace. Using social media to keep oneself updated with health information has become popular and is considered part of the support received from society (Ouyang et al., 2016). Similarly, social media can give users an opportunity to stay connected with their community, both socially and emotionally.

However, the Internet has also allowed misinformation about the epidemic to spread, which causes anxiety and public confusion (Garfin et al., 2020). Moreover, fatigue when using social media is a consequence that users suffer mental harm after experiencing an overload of information by joining and contacting different channels (Bright et al., 2015; Lee et al., 2016; Ravindran et al., 2014; Zhang et al., 2016). Although using social media during the outbreak still brought some informational and mental support

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from those around them, spending much time on it could have negative effects on users' psychological wellbeing (Zhong et al., 2021).

Given the increased significance of social media in the digital age, many studies have attempted to shed light on its relationship with users' thoughts, emotions, perceptions, and behaviors. These research focus mainly on analyzing the impact of social media usage on health behavior change (Gao et al., 2020; Zhong et al., 2021). According to Liu et al. (2021), the study investigated the impact of perceived information overload about COVID-19 leading to social media discontinuance intention through fatigue, fear of disease, and fear of missing out. Besides, Lin et al. (2020) analyzed the mediating influence in the link between social media usage and psychological symptoms such as stress or insomnia. However, the number of research in the background that had major health concerns such as COVID-19 are restricted, and the results of finding consequences of social media's effect on mental health were quite inconclusive (Brailovskaia & Margraf, 2021; Gao et al., 2020; Liu et al., 2021; Soroya et al., 2021; Zhong et al., 2021). This study hopes to contribute to further understanding of the mental health effects of social networks during difficult periods. Thereby, it also makes appropriate recommendations to deal with the crisis and better preparations in the post COVID-19 period. Overall, this study aims to analyze the influence of social media users' mental health on the COVID-19 outbreak. To be more specific, this study analyzes the impact of social media use on users' mental health through aspects of informational, emotional, and peer support during the pandemic. Moreover, we also analyze the differences between users' gender as well as COVID-19 status on the relationship between social media use and depression.

This research aims to deal with the following questions:

RQ1. How did informational, emotional, and peer support people received from the social media and COVID-19 burden impact social media usage during the COVID-19 pandemic?

RQ2. How did the Covid-19 burden and social media usage in the COVID-19 outbreak impact users' depression?

RQ3. How did gender, COVID-19 infection status and social loneliness impact the relationship between social media use and the degree of depression?

In terms of practical contributions, this study has helped to identify indirect and direct factors affecting the mental health of social media users, more specifically, depressive symptoms. This research provides information about the nature of depression to help people become more concerned about their mental health and acknowledge the importance of mental health in life. The research team also suggests effective strategies to help social media users maintain their mental health at the highest possible level to improve their quality of life, especially in the COVID-19 pandemic.

2. Theoretical framework

2.1. Social distancing and depression

To prevent the severe spread of COVID-19 disease, many governments have applied many social distancing policies such as staying at home for a long time or even normal activity disruption. As a result, many people rely on social media to find and share information (de Calheiros Velozo & Stauder, 2018; Y. Li et al., 2018). However, overexposure to social media causes them to face fatigue when using social media (Owsinski, 2017), provoking symptoms of depression and anxiety. Depression is one of the most common mental problems that has been reported as a consequence of the COVID-19 pandemic.

Depression is a phenomenon in which pleasant emotions are diminished or disappear (Dhir et al., 2018). It has characteristic signs or symptoms such as: feeling pessimistic or hopeless; persistent sad, tense, and empty mood; feeling guilty, worthless, or useless; thinking about death or suicide (National Institute of Mental Health, 2018). Meanwhile, anxiety was defined as a pervasive psychological state of fear or apprehension that could be influenced by potentially difficult situations or threats (Freeman et al., 2002; Stein & Sareen, 2015). According to Hou et al. (2020), the prevalence of depression (14.14%) was higher than the prevalence of anxiety symptoms. Research by Gao et al. (2020), when performing a cross-sectional

study of 4872 adults in China, also found a link between social media usage and mental health problems. The results for the prevalence of depression were 48.3%, much higher than that of anxiety with only 22.6%. Besides, depressive symptoms also impair social, occupational, and educational outcomes; the presence of symptoms could lead to feelings of worthlessness and suicidality, which are more serious than other psychological problems (Verrocchio et al., 2019). Thereby, the research team decided to focus further analysis on depressive symptoms.

2.2. Social media usage

During the COVID-19 pandemic, social media was the most used tool to communicate and find health information (de Calheiros Velozo & Stauder, 2018). Stemming from the fact that the outbreak of the epidemic had seriously affected people's spiritual and material life, making them panic and fear (Lachlan et al., 2016), they consider social media as a support tool from society for each person, specifically medical support (Ouyang et al., 2016). However, social media is also a way to spread misleading information about the epidemic, which causes anxiety and confusion in society (Garfin et al., 2020). However, positive online experiences can contribute to the development of a close emotional bond to social media and a strong need to stay permanently online (Brailovskaia et al., 2020). This phenomenon has been termed as addictive social media and is defined by six typical characteristics including salience (permanent thinking about social media usage), tolerance (more and more time has to be spent on social media to experience positive emotions), mood modification (mood improvement by social media usage), relapse (reverting to higher amounts of social media usage after unsuccessful attempts to reduce the online activity), withdrawal symptoms (feeling uncomfortable and nervous without social media usage), and conflicts (interpersonal problems caused by social media) (Andreassen et al., 2017). People with high levels of addictive social media usage usually lose control over their online behavior and experience intensive discomfort when they must temporarily leave the social media networks (Bányai et al., 2017).

2.3. Informational Support

Informational support is a form of providing information about life and social situations shared between individuals. In the situation of social distancing due to the COVID-19 epidemic, information was provided and notified to users through social media. The information shared includes everyday health and disease information (Mertens et al., 2020), which helps individuals make helpful decisions about their health. According to Reblin & Uchino (2008), people tend to seek health information on social media due to the benefits shared by social media users, which help individuals make helpful decisions about their health problems. As a result, it increases the certainty of knowledge and protects and supports mental health and their families (McConnell et al., 2015; Selkie et al., 2020; Villagonzalo et al., 2019).

2.4. Emotional Support

Everyone's emotions were often diverse, sometimes they were of happiness, but sometimes they also experienced unpleasant emotions, especially when faced with the outbreak of the COVID-19 pandemic, which changed their daily lifestyle (Diener et al., 1995). In the context of a pandemic, emotional support was the form in which social media users care and sympathize with the general health information they have and are currently doing. Exposure and experience (Zhong et al., 2021). According to Langford et al. (1997), emotional support includes providing care, empathy, love, and mutual trust. Specifically, during the COVID19 pandemic, thanks to social networks, people could interact, share and support each other mentally and emotionally (through these supports on digital platforms). The more effective these measures of emotional support were, the lower the response to stress and depressive factors would be (Mehnert et al., 2010). As a result, people were more exposed to social media because they felt love, care, and sharing from individuals on social media who had the same experience.

2.5. Peer Support

During the COVID-19 pandemic, peer support is considered support from individuals with similar health conditions. The social distance that had made individuals face limited ability to communicate face-to-

face. However, thanks to the development of social media, people in general and people with similar health conditions, in particular, could interact and communicate with each other more easily. In addition, according to Mead et al. (2004), peer support assumed that people with similar experiences could have better relationships and were, therefore, able to make more accurate assessments and empathy.

2.6. Burden by COVID-19

Burden by COVID-19 can be multifaceted. First of all, COVID-19 has placed a burden on personal life control (Galea et al., 2020; Taylor et al., 2020). As a lack of vaccines, the government has issued regulations on social distancing to reduce contact and the risk of disease spread, which has caused many people to change their daily habits. Therefore, normal activities are significantly reduced (Sohrabi et al., 2020). Regarding the information burden, today, thanks to the development of technology and the requirements of social distancing, it helps people to communicate with other users around the world. However, the transmission of inaccurate information on social networks can affect user psychology and be seen as a burden of COVID-19 (Reihani et al., 2021; Vazquez, 2020; Yamey & Gonsalves, 2020; Zheng et al., 2020).

The persistence of burden by COVID-19 on mental health-related problems including depression (Hyland et al., 2020; Shevlin et al., 2020; Torales et al., 2020). More specifically, when the burden of COVID-19 becomes more and more severe, the psychology of social media users could be significantly affected by depression (Kanter et al., 2020). Indeed, research by (Brailovskaia & Margraf, 2020) has linked the COVID-19 pandemic burden with depression.

3. Research method

3.1. Sampling

Aiming to investigate how people have accessed health information, got emotional support and peer support on social media, and how social media usage has affected depression, we employed an extensive literature review of academic sources relevant to the topic and developed the first questionnaire based on prior scales. A survey pretest is then conducted among a group of 10 respondents in order to assess their understanding of and responses to the overall questionnaire when introduced for the first time, with the aim of improving the questionnaire clarity and design. After the questionnaire is finalized, we collected data by online survey. According to Stanley (1957), the population should be at least 200; Cattell (1978) required the desired minimum sample size of 250. In addition, based on Hair et al. (1998), the expected minimum sample size for EFA analysis is 5 times the total number of observed variables. There are about 40 observed variables estimated for 7 factors in this study, so the minimum requirement is $40 \times 5 = 200$. This survey received 523 forms from social media users in the Ho Chi Minh city area to ensure quality data. However, a total of 165 participants were eliminated from the analyses for invalid data due to cross-answer violations.

3.2. Measures

This research investigated the effect of social media usage on depression. Except for the scale for measuring depression adapted from DASS-21 (Lovibond & Lovibond, 1995) using 4-point Likert-type scales (1 = did not apply to me at all to 4 = applied to me very much, or most of the time), the items in all other scales were assessed on a 5-point Likert-type scale (1 = strongly disagree to 5 = strongly agree). The informational, emotional, and peer support scales were adopted from Zhong et al. (2021). Social media usage was developed with six items by the study of Andreassen et al. (2016). Burden by COVID-19, following Brailovskaia & Margraf, (2020), was assessed with six items. Based on Van Tilburg et al. (2021), loneliness was measured with the three items. Before surveying officially in large numbers, this study conducted a trial test step by inviting ten people using social networks to test the measures and check the errors to ensure the respondents correctly and consistently understood the question.

4. Results and discussion

4.1. Results

According to the survey results, the highest number of people experienced extreme depression during the COVID-19 period. The collected sample size of 358 respondents is divided into 5 levels of depression according to the DASS 21 scale, including: Normal (0), mild depression (0), moderate depression (121), severe depression (68), extremely severe depression (169). The data illustrates that people received a great deal of informational support (M = 3.76, SD = 0.89) and peer support (M = 3.54, SD = 0.938) but less emotional support (M = 3.50, SD = 0.971) when they exchanged covid-19 and health information on social networks. Cronbach's Alphas are analyzed to ensure the reliability of the scales. Through the research results, all variables ensure the reliability index above 0.6.

Table 1. Descriptive statistics and Cronbach's Alpha of the scales

Variable	Medium	Standard deviation	Cronbach's Alpha
Information support (IS)	3.76	0.89	0.818
Peer support (PS)	3.54	0.938	0.865
Emotional support (ES)	3.50	0.971	0.849
Social media usage (SMU)	3.24	1.013	0.868
Burden by COVID-19 (BBC)	3.12	0.99	0.865
Social loneliness (SL)	3.52	0.857	0.774
Depression (TC)	2.00	0.925	0.916

After conducting EFA, the results show that all variables have a loading coefficient above 0.5 and the model is suitable because the total variance extracted is equal to 65,169% > 50%, KMO = 0.892 > 0.5 and Sig of the Barlett test = 0.0000 < 0.05. The CFA analysis was used to evaluate the model's fit, the overall reliability as well as the convergent and discriminant values of the variables. The overall fit indices of the measurement model (Chi-square/df=1.525; CFI=0.953; TLI=0.948; RMSEA=0.038) indicates a good model fit (Fornell & Larcker, 1981; E. Hair et al., 2006; Mackenzie et al., 2011). As shown in table 3, all of the factors satisfied the conditions for reliability and validity (Hair et al., 2006).

Table 2. Convergent and discriminant validity

Time	CR	AVE	MSV	MaxR-(H)	IS	TC	PS	GN	SMU	ES	SL
IS	0,820	0,533	0,343	0,823	0,730						
DES	0,914	0,604	0,200	0,918	0,088	0,777					
PS	0,867	0,521	0,343	0,871	0,586	0,203	0,722				
BBC	0,858	0,504	0,145	0,870	0,173	0,381	0,216	0,710			
SMU	0,857	0,502	0,246	0,867	0,318	0,447	0,397	0,336	0,708		
ES	0,850	0,587	0,261	0,857	0,505	0,131	0,511	0,221	0,496	0,766	
SL	0,780	0,542	0,182	0,783	0,363	-0,042	0,427	0,114	0,339	0,423	0,736

Structural Equation Modelling (SEM) was employed to examine the relationships of constructs. The results support five of the six direct hypothesized relationships. According to the SEM results, Information Support (IS) has no impact on Social Media Usage (SMU). This can be explained by the fact that more and more false information is available on social media sites, especially fake news related to the COVID-19

epidemic such as the number of infected people, the number of deaths from COVID-19 has resulted in users feeling confused and distrustful of the information they receive on social media.

Peer support (PS), Emotional Support (ES), and Burden by COVID-19 (GN) have an impact on Social Media Usage (SMU). Peer support (PS) is assessed by the group as having the strongest relationship with Social media usage (SMU) with a standardized regression coefficient of 0.356. This is further explained because most of the survey subjects of the research group focus on young people. Besides, it shows that young people often use social media for the purpose of communicating with friends and people around them more than to find health information during the COVID-19 period.

Social media usage (SMU) has a strong effect on Depression (DES) with a standardized regression coefficient of 0.357. This shows that when users consume a large number of shares or give too much importance to content on social networks, they will lose control and form depression. In other words, the abundance of emotional support or peer support makes it difficult for users to stop even realizing the mental health effects they're experiencing.

Table 3. Results of testing hypotheses

Hypothesis	Statement	Standardized weights	P Value	Result
H1	Information support has a positive relationship with Social media usage	-0.003	0.955	Rejected
H2	Emotional support has a positive relationship with Social media usage	0.172	0.023	Accepted
H3	Peer support has a positive relationship with Social media usage	0.356	***	Accepted
H4	Social media usage has a positive relationship with Depression	0.357	***	Accepted
H5	Burden by COVID-19 has a positive relationship with Social media usage	0.218	***	Accepted
H6	Burden by COVID-19 has a positive relationship with Depression	0.254	***	Accepted

Regarding the hypothesized moderating effects, the results show that Social Loneliness (SL) has no impact on the relationship between Social Media Usage (SMU) and Depression (TC) with p-value $0.94 > 0.05$. A similar result was also found for COVID-19 infection status. This may be because people who are positive for COVID-19 or not all have the same level of experience in the context of the epidemic and access to social media is similar, so there is no difference in the above factors. On the other hand, the multigroup analysis shows that there is a new significant difference between different genders when it comes to the relationship between social media usage and depression (p-value=0.02), with the relationship stronger for male respondents (standardized regression weight 0.502) than their female counterparts (0.285).

4.2. Discussion

The research confirms that the tendency to use social media during the COVID-19 pandemic was affected by the following factors: Information support, Peer support, Emotional support, Burden by COVID-19 and such excessive use of social media is related to Depression. This research results confirm findings by Zhong et al. (2021) on the factors behind social media usage. However, this study also found that is depression caused by the increase of social media usage. This shows that when users consume many shares or give too much importance to content on social networks, they are likely to lose control and be prone to depression. In other words, the abundance of emotional support or peer support makes it difficult for users to stop even after they have realized the mental health problems they are experiencing.

The factor of peer support is found to have the strongest relationship with social media usage, while Zhong et al. (2021) have not really emphasized this factor and asserted that the Information support is the most influential factor. To explain this difference, it may be because most of the survey subjects of the research group focus on young people while the study of Zhong et al. (2021) focused on people in Wuhan who were middle-aged 30 or older. This shows that young people are more likely to use social media for the purpose of communicating with friends and people around them more than to search for health information during the COVID-19 period. In addition, our study showed that the effect of the frequency of social media use on depression levels was significantly different between men and women. The results showed that for males the frequency of use is more likely to lead to higher levels of depression than for females. However, the results of the study showed that there was no statistical difference between people who have had covid-19 and those who have not. The reason may be that they all have the same level of experience in the current situation and the level of social media use is equal. As for the social loneliness variable, the study results showed that there was no effect on the relationship between the frequency of social media use and depression. The reason may be that social media users in the surveyed area are receiving more emotional support and peer support, so they rarely feel alone. Therefore, social loneliness does not affect this relationship.

5. Conclusion

The factors affecting social media users' psychology in using social networks have been identified through this research. This research has been carried out to give suggestions to support the psychology of social media users during the COVID-19 pandemic.

Regarding information support factor, because of the multidimensional impact of information, in order to protect users, governmental agencies as well as social media providers need to regularly check and remove unreliable and unverified information from their sites on time. In addition, social media users should be responsibly aware of their posts and comments and share helpful experiences in COVID-19 prevention to help others and protect themselves. Social media platform providers can provide additional personalized features to help users reduce the rate of exposure to harmful and fraudulent information.

Regarding emotional support factor, health organizations or governments should raise people's awareness of the importance of mental health by changing health policies and launching programs. In addition, those providing social media platforms should diversify emoticons so that users can share and receive sympathy from friends and relatives. Peer support has a significant relationship with the frequency of using social media. To reduce feelings of isolation and insecurity and to help individuals overcome complex problems during the pandemic, especially in the context of social distancing, social media providers such as Facebook, Instagram should innovate features to help users easily connect on social networks, optimize the receipt rate from posts by their friends and relatives.

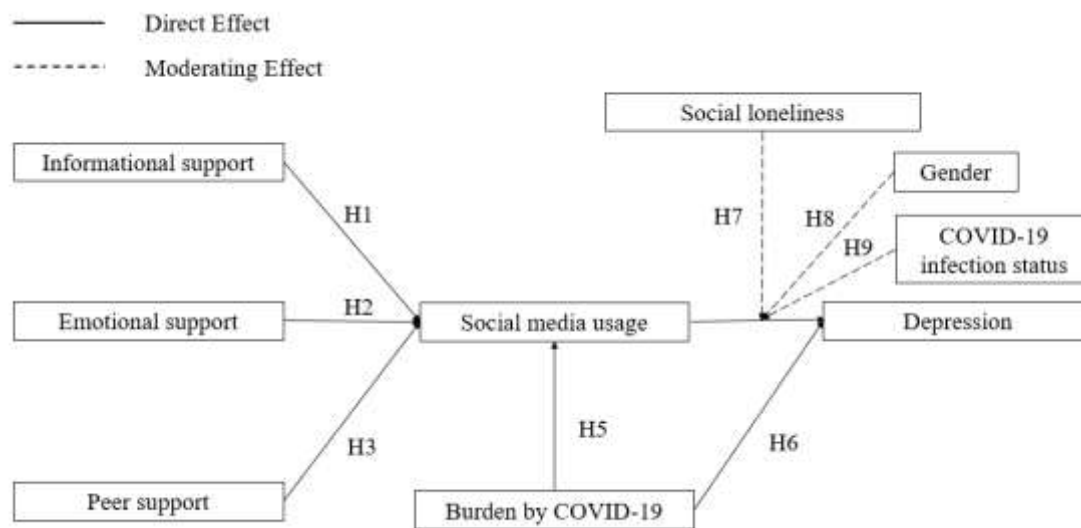
The study found that the frequency of social media usage is one of the most decisive factors affecting depression. Research encourages social media users to spend time practicing activities such as physical exercise, meditation, setting good rules, and giving themselves breaks to help avoid constant contact with social media. Schools or on-site clubs may offer online campaigns to help their students reduce their interaction with social media, such as volunteering or exercising. Sharing programs in the context of social distancing will also reduce depression. In addition, the government and social network providers can convey messages that people should not use social networks for more than a certain amount of time in a day to ensure physical health and safety, both spiritually. Social media platform providers can create functions to help detect bad psychological symptoms by using artificial intelligence or machine learning to study social media surfing behavior.

Besides the above factors, the burden of the COVID-19 factor has a severe effect on people's lives. The government needs to promote community-based projects such as psychological support and financial support for individuals and businesses adversely affected by the Covid-19 pandemic. At the same time, the

government needs to strengthen punishments for individuals and organizations that spread fraudulent information about the COVID-19 epidemic.

6. Appendix

Research Model



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FACTORS IMPACTING ON THE ONLINE PURCHASING BEHAVIOR OF FRESH FOOD OF PEOPLE IN HO CHI MINH CITY DURING THE COVID-19 PANDEMIC

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ABSTRACT

This study aims to determine and analyze the impact of factors on the online purchasing behavior of fresh food of people in Ho Chi Minh City during the Covid-19 pandemic. The technology acceptance model TAM and risk perception theory TPR have been applied and integrated with two new factors. Quantitative data were collected from the responses through an online questionnaire sent to people in HCMC. 441 qualified responses were analyzed using descriptive statistics, Cronbach's Alpha test, exploratory factor analysis EFA, confirmatory factor analysis CFA, linear structural model SEM, Bootstrap estimation, T-test and Anova. The results show that the factors perceived usefulness, perceived ease of use, perceived online transaction risk, perceived product/service risk, reference group opinion, and perceived cost have an influence on behavioral intention, and behavioral intention has a positive influence on online fresh food purchasing behavior. From the research results, the authors provide some managerial implications for fresh food businesses in Ho Chi Minh City in developing strategies to attract consumers.

Keywords: Covid-19, fresh food, vegetable, online, purchase behavior.

1. Introduction

The world in general and Vietnam in particular have been experiencing the fierce sweep of the Covid-19 pandemic, negative impacts on both the economy and unprecedented human losses. Ho Chi Minh City recorded a total of nearly 530,000 infections and the highest death rate of more than 19,000 in the country (Ministry of Health, 2022). In addition, Ho Chi Minh City experienced 4 periods of social distancing from May 31, 2021 to after October 1, 2021 and affected the GDP growth rate of the entire economy of our country. Most businesses have to temporarily suspend their business or even go bankrupt due to insufficient resources to sustain the epidemic, leading to loss-making business (VCCI, 2021). However, for businesses trading fresh food on online or e-commerce sites, the highest growth ever. The revenue from fresh food of the whole country reached 45.8% in the food market, equivalent to USD 466.56 billion, increased by \$28.29 billion compared to 2020 and \$ 102.33 billion compared to 2019 (Statista, 2021). Meanwhile, revenue from online sales increased by 75% from 2019 to 2021, the highest rate ever. The above shows that the Covid-19 epidemic has created a big change in the new consumption trends of consumers. Customers change from buying food at traditional markets, supermarkets, and convenience stores to buying online. The online food marketplace responds to consumers' desire to shop safely away from Covid19 risks (Lee, Kwak, & Cha, 2020). In Ho Chi Minh City, at the time of implementing social distancing according to Directive 15/CT-TTg and Directive 16/CT-TTg, the purchase amount of people in HCMC on the online market is constantly growing and highly concentrated mainly on essential items such as fresh food (Vietnam News Agency, 2021). In fact, there have been many foreign studies related to the behavior and intention of consumers to purchase fresh food on online platforms that bring great value to businesses such as the study of Esi Asyani Listyowati and colleagues (2020) and the study of Xue Wang et al (2020). However, the factors given in the model are not affected in the context of the Covid-19 epidemic and have not deeply exploited the risk problem faced by customers in this context. In Vietnam, there are very few research topics on purchase

behavior in the field of online fresh food business in Vietnam in the Covid context in general and HCMC during the Covid epidemic, in particular, has almost no research. Realizing the urgency of this issue to have an impact on consumer behavior and economic development in the context of Covid-19, the group chose to research on the topic "Factors affecting online purchase behavior of fresh food in Ho Chi Minh City during the COVID-19 pandemic". The study aims to analyze specifically which factors affect and how much influence those factors have on people's behavior of buying fresh food online on a scientific basis. The research object is the factors affecting the online buying behavior of fresh food of people in Ho Chi Minh City during the period from September 2021 to February 2022. The study explores the influencing factors. to the decision to buy fresh food online of people in Ho Chi Minh City in the context of the Covid-19 period and clearly analyze the impact of these factors on buying behavior. From there, giving governance implications to help businesses have an appropriate strategy in the COVID-19 situation to maintain and develop, bring value to businesses and meet consumer needs.

2. Theoretical framework

2.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was invented by Davis (1986) and is widely used to explain and predict the adoption of different technologies or information systems. The TAM model is recognized and widely used by researchers in all different fields such as tourism, finance, banking, e-commerce, E-learning learning system, etc. to explain and predict behavior vi by users of technology (Davis et al., 1989; McCoy et al., 2007; Teo, 2009; Giesbers et al. 2013). Davis et al. (1989) conducted in-depth tests on the TAM model using PEOU and PU as the two independent variables and using the system as the dependent variable. There is ample evidence that PU and PEOU both play an equally important role in explaining technology adoption and use behavior (Alarcón-Del-Amo et al., 2012; Choi & Chung, 2012; Rauniar). et al., 2014; Sledgianowski & Kulviwat, 2009). The TAM model has been calibrated by Davis, Bagozzi, Warshaw (1989) to remove the attitude factor from the model. The TAM model has 5 variables as follows: (1) Perceived usefulness, (2) Perceived ease of use, (3) Extrinsic variables, (4) Attitude towards use, (5) Intentions use.

2.1.1. Perceived usefulness:

According to Davis (1986), perceived usefulness means "the degree to which a person believes that using a new system will increase their productivity". The perceived usefulness factor has a significant impact on attitude (Agarwal & Prasad, 1999; Venkatesh & Davis, 2000; Davis, 1989). Davis (1989) suggested that perceived usefulness is an independent factor, defined as the degree to which a person believes that using a particular system will improve their job performance. With online shopping, perceived usefulness is mentioned as the degree to which a person believes that engaging in online transactions will improve their performance (Park & Kim, 2003). Yunita, N. R., Sumarsono, H., & Farida, U. (2019) demonstrate that perceived usefulness has a positive and significant influence on online shopping decisions.

2.1.2. Perceived ease of use:

It is one of the factors that have an impact on consumer attitudes. Perceived ease of use indicates that adopting a new technology requires little effort on the part of the user (Davis, 1986). Online shoppers think that online shopping is easy to use if it provides enough product information, supports product/service comparability, the application is easy to learn and use, has websites ease of use and flexible interaction (Choudhury & Dey, 2014; Wang, Lin, & Luarn, 2006). Tylor and Stutton (2010) suggest that perceived ease of use has a direct and indirect impact on purchase intention.

2.2. Theory of Perceive Risk (TPR)

Theory of perceived risk was formulated by Raymond Bauer in 1960. According to him, risk perception is a measure of consumer behavior that is likely to cause unintended consequences and risks. This means that consumers are always faced with uncertainty and uncertainty when choosing a product, which leads to risks. The TPR model includes 3 elements (Figure 4): (1) perceived product/service risk, (2)

perceived risk of online transactions, and (3) actual purchase behavior and impact. of two factors (1), (2) to (3) are positive. According to Bauer (1960), perceived risk in online consumption is divided into 2 factors: (1) perceived risk related to product/service and (2) perceived risk related to transaction online translation.

2.2.1. Perceived Product/Service Risk (PRP)

According to Bauer (1960), a measure of trust as well as about perceived risk of products/services that people used, this factor is believed to be the main factor influencing the conversion between buying online and buying in person. Jacoby and Kaplan (1972) divided perceived risk related to products/services into 5 categories: physical (physical), psychological (psychological), social (social), financial (financial), performance (performance). According to Bhatnagar & Ghose (2004), when it comes to risk factors, the author shows that product risk and financial risk negatively affect online shopping decisions. Ahn et al. (2001) stated that the lower the risk factor related to products/services, the more their purchasing decisions will increase.

2.2.2. Perceived online transactions risk

Several previous studies on online shopping and transactions have shown that consumer confidence will increase if, during the shopping process, the communication channels Online translations fully publish the source and responsibilities of the supplier, minimize the amount of personal data collected and always be clear about the legal terms or any information given to the user. Such studies as: Swaminathan V. et al (1999) suggest that customers are interested in supplier evaluations before making a purchase, so supplier characteristics and information are essential and required in online transactions. In 1996, Bhimani showed that the risk in accepting e-commerce channels can lead to legal consequences such as: loss of passwords, modification of personal data or late payments, ... According to Bauer, R.A. (1960) mentioned that perceived risks in online transactions are those related to confidentiality, security-certification, non-repudiation and overall risk perception of online transactions. When customers face issues of transaction security and privacy, they worry about the possibility that their personal data will be misused and affect their decision to buy products (Zhou et al., 2008). The lower the risk in online transactions is lower than the customer's acceptable value, the less it affects their behavior and vice versa, the higher the risk, the more customers tend to delay and worry. when making purchasing decisions (Greatorex & Mitchell, 1993).

2.3. Reference group opinion

Reference group opinion: is a factor defined as a person or group of people that has a significant influence on an individual's behavior (Dhurup et al., 2013). Many studies show a significant impact of the reference group opinion on the shopping behavior of customers. Research by Ha Nam Khanh Giao and Be Thanh Tra (2018), research by Nguyen Thi Bich Lien and Nguyen Thi Xuan Trang (2021), research by Nguyen Truong Son et al (2020), have concluded that opinion Reference groups influence consumers' online shopping intention and have a high degree of importance. After conducting an empirical research review, the authors decided to include the reference group opinion from the research paper of Nguyen Truong Son et al (2020) into the proposed research model of the group. Research by Lan et al. (2011) suggests that consumers tend to accept informational influences when they have to evaluate a complex product and when they consider the purchase or use of high risk. Iman Khalid A. Qader (2011) finds a clear impact of communication on purchase intention. Research by Robin Robert (2007) confirms that the reference group affects consumers' intention to buy safe food.

2.4. Perceived cost

A factor that is determined by costs such as money, time, ... to spend to buy products and is also a predictor that has a great impact on customer behavior and attitudes (Verhallen & Pieters, 1984). Yan et al. (2020) shows that perceived cost plays an important role in the online shopping process to purchase fresh agricultural products. Wu et al. (2014) proposed an estimate of perceived costs including spending time and money that negatively affect consumers' intention to shop online. In addition, researchers Ahumada et al.

(2012) and Yan et al. (2020); Anwar et al. (2020) supported this argument and argued that perceived cost negatively affects the purchasing process of consumers.

2.5. Fresh food

The Food Safety Law (2010) defines “Fresh food as unprocessed food including meat, eggs, fish, seafood, fresh vegetables, tubers, fruits and other unprocessed foods”. (Article 2, Clause 21).

2.6. Online shopping behavior

Based on the definition of Li & Zang (2002), online shopping behavior (also known as online or Internet purchase) is the act of purchasing goods and services over the Internet. According to Monsuwe et al. (2004), online shopping is the behavior that consumers shop through online stores, the Internet or e-commerce sites.

2.7. Behavioral intention and buying behavior:

According to Blackwell et al. (2001), intention is a factor used to evaluate the ability to perform a behavior in the future. Venkatesh et al. (2003) stated that behavioral intention is a widely used factor in studies of individual acceptance to make decisions about that behavior. Azjen's (1991) theory of intended behavior has also suggested that an individual's behavior is determined by behavioral intention, intention is a motivating factor, it motivates an individual to be willing to perform the behavior. that vi. Research on factors affecting customers' intention and decision to buy vegetables and fruits online by Esi Asyani Listyowati et al (2020) has shown that the intention to buy vegetables and fruits online is increasing. The increase of consumers will lead to an increase in consumers' purchasing decisions, which means that purchase intention has a positive relationship with the decision to make that purchase behavior.

Based on the the previous studies, the hypothesis was then developed;

H1: Perceived usefulness has a positive influence on the intention to buy fresh food online for people in Ho Chi Minh City during the Covid-19 period.

H2: Perceived ease of use has a positive influence on the intention to buy fresh food online for people in Ho Chi Minh City during the Covid-19 period.

H3: Perceived online transactions risk negatively affect the behavioral intention to buy fresh food online of people in Ho Chi Minh City during the Covid-19 period.

H4: Perceived products/services risk negatively affects the intention to buy fresh food online of people in Ho Chi Minh City during the Covid-19 period

H5: Reference group opinion has a positive influence on behavioral intention to buy fresh food online during the Covid-19 period.

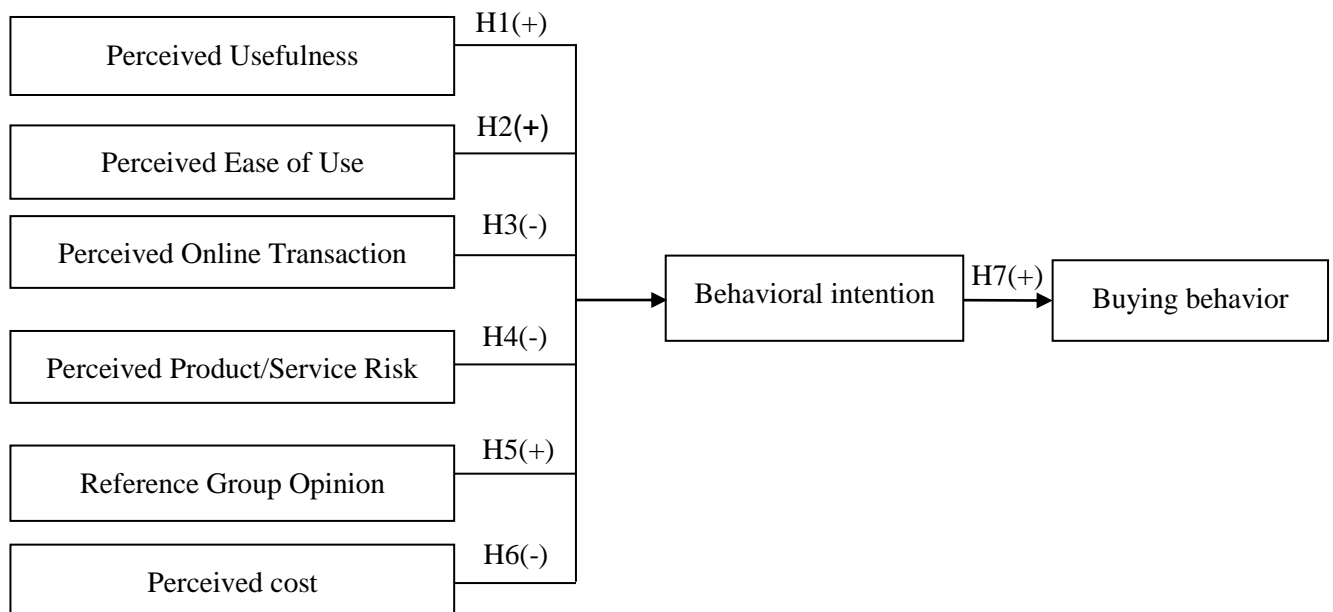
H6: Perceived cost negatively affects the behavioral intention to buy fresh food online of people in Ho Chi Minh City during the Covid-19 period.

H7: Behavioral intention has a positive influence on online buying behavior of fresh food during Covid-19.

3. Research method

The research team built the questionnaires and sent them to people in Ho Chi Minh City. There were totally 50 valid responses. After collecting data, the research team assessed the reliability of the scale using Cronbach's Alpha coefficient, thereby adjusting the scale and completing the official survey. After adjusting the questionnaires, the official quantitative survey method was conducted by distributing the questionnaires to all people living in Ho Chi Minh City during the Covid-19 epidemic by both online and offline channels. Research questions with a 5-point Likert type scale were used throughout the study. After one month of data collection, the research team received 441 valid results. After that, the data was synthesized and analyzed on SPSS 20 and SPSS AMOS. The group used data analysis methods through descriptive statistics, tested the reliability coefficient of the scale (Cronbach's Alpha) and analyzed the data by exploring Exploratory Factor Analysis (EFA). Confirmatory Factor Analysis (CFA) is used for latent regression analysis and structural

equation modeling (SEM). The analysis results was use to conclude factors that really affect on “Buying behavior” and the level of impact of those factors.



Proposed model of factors affecting the online buying behavior of fresh food of people in Ho Chi Minh City during the Covid-19 epidemic period (Source: Synthesis group)

4. Results and discussion

4.1. Results

4.1.1. Pilot study:

Before distributing the official questionnaire, a preliminary survey was conducted and distributed via online channels such as gmail, facebook to 50 people living in Ho Chi Minh city districts. The survey results for all 8 variables have a good level of greater than 0.7 (Nunnally & Burnstein, 1994). No modifications were made to the questionnaires and all items remained as they were being constructed.

4.1.2. Description of research sample:

A total of 441 valid survey samples; in which female accounts for 69.4%, male 30.6% (Appendix A). The age group from 18-30 accounts for more than half of 57.4% (Appendix A). The survey was collected from people in Ho Chi Minh City spread over 24 districts with the main income from 3 million to 5 million with 25.9% (Appendix A). After conducting the T-test for the sex variable and ANOVA for the age, residence, and income variables, there was no difference of those variables that affecting the behavior of buying fresh food online.

Table 1. Summary of Descriptive Finding

Variables	N	Minimum	Maximum	Mean	Standard Deviation
Perceived Usefulness	441	1	5	3.59	0.783
Perceived Ease Of Use	441	2	5	3.65	0.714
Perceived Online Transaction Risk	441	1.5	5	3.57	0.757
Perceived Product/Service Risk	441	1.5	5	3.60	0.750
Reference Group Opinion	441	1	5	3.15	0.799
Perceived Cost	441	1.8	5	3.64	0.756
Behavioral Intention	441	1	5	3.32	0.776
Purchase Behavior	441	1.75	4.75	3.45	0.617

Source: Analysis results on Spss

From Table 1, the mean scores range from 3.00 to 4.00 indicating that all variables score moderately (Lopes, 2012). The lowest mean score of 3.15 belongs to the reference group opinion variable and the highest is the perceived ease of use variable with an average score of 3.65. The findings suggest an acceptable variation in the data set as the standard deviation ranges between 0.617 and 0.799. Therefore, respondents have different views on the variables being studied.

4.1.3. Reliability Analysis:

Table 2: Summary of Reliability Test.

Variables	No. of item	Cronbach's Alpha
Perceived Usefulness	4	0.835
Perceived Ease Of Use	3	0.766
Perceived Online Transaction Risk	4	0.824
Perceived Product/Service Risk	4	0.803
Reference Group Opinion	3	0.822
Perceived Cost	5	0.876
Behavioral Intention	4	0.888
Purchase Behavior	4	0.805

Source: Analysis results on Spss

From Table 2, the Cronbach Alpha value is between 0.766 and 0.888, no factors were excluded because the values meet the requirement above 0.6 (Hoang Trong & Chu Nguyen Mong Ngoc, 2005). In which, the variable with the highest reliability is behavioral intention with 0.888 and the lowest is perceived ease of use with 0.766.

4.1.4. Empirical Testing of Hypothesized Model

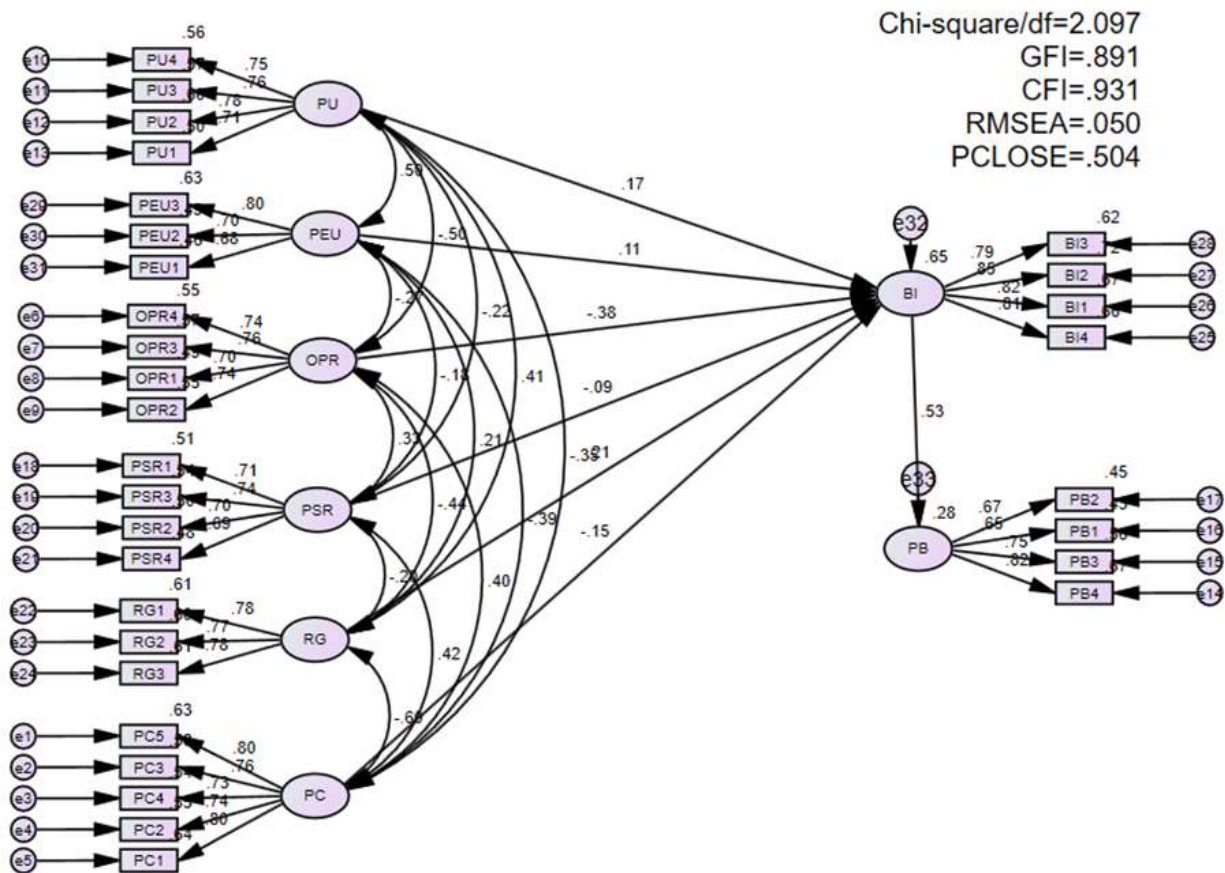


Figure 1. Hypothesized Model

Source: Analysis results on Amos

Based on Figure 1, the total of 31 items remains the same. Then, the model shows that all the fitness index requirements have been achieved as follows: According to Hu & Bentler (1999) CMIN/df= 2.097 <3;

CFI= 0.931 > 0.9; RMSEA = 0.05 < 0.06; PCLOSE= 0.504 > 0.05; GFI= 0.891 > 0.8 (Baumgartner and Homburg, 1995; Doll, Xia and Torkzadeh, 1994).

4.1.5. Hypothesis Testing Result of Direct Relationship of Variables

Table 3. Relationship between Exogenous and Endogenous Variable

Hypotheses	Exogenous and Endogenous	Std. Estimate	Critical Ratio	Hypothesis
H1	PU → BI	0.171	3.801	Supported
H2	PEU → BI	0.110	2.142	Supported
H3	OPR → BI	-0.376	-6.838	Supported
H4	PSR → BI	-0.093	-2.019	Supported
H5	RG → BI	0.215	3.680	Supported
H6	PC → BI	-0.154	-2.587	Supported
H7	BI → PB	0.528	9.641	Supported

Source: Analysis results on Spss

According to Ghazali (2005), the path coefficient is significant at the 0.05 level when the critical coefficient is greater than 1.96. According to Table 3, variables meet this requirement. Value-p < 0.05 can conclude the variables perceived usefulness, perceived ease of use, reference group opinion positive impact on behavioral intention and perceived online transaction risk, perceived product/service risk, perceived cost negative impact on the intention of online fresh food purchase and behavioral intention directly influence people's online fresh food buying behavior in Ho Chi Minh city. In which, the variable perceived online transaction risk has the greatest impact on intention and the smallest impact is perceived product/service risk. The conclusion is to support the 7 hypotheses that the authors have made previously.

4.2. Discussion

4.2.1. Interpretations of the results:

By using Cronbach's Alpha test, exploratory factor analysis EFA, confirmatory factor analysis CFA, linear structural model SEM, Bootstrap estimation, T-test and Anova, the results show that the factors perceived usefulness, perceived ease of use, perceived online transaction risk, perceived product/service risk, reference group opinion, and perceived cost have an influence on behavioral intention, and behavioral intention has a positive influence on online fresh food purchasing behavior.

Perceived Online Transaction Risk has the strongest impact and has a negative impact on behavioral intention. Following that are The Reference Group Opinion, The Perceived Usefulness, Perceived Cost, Perceived Ease Of Use, Perceived Product/Service Risk, all of these factors have a positive influence on behavioral intention. The behavioral Intention factor strongly influences the buying behavior factor (SEM weight = -0.528).

4.2.2. Implications of the research:

Practically, this study explores the factors affecting the decision to buy fresh food online of Ho Chi Minh City people in the context of the Covid-19 period and clearly analyzes the impact of these factors to purchase behavior. From there, giving governance implications to help businesses have an appropriate strategy in the COVID-19 situation to maintain and develop, bring value to businesses and meet consumer needs.

Theoretically, this study synthesis of theories on consumer behavior, purchasing decisions, online purchases, and models related to the theory of consumer behavior. Provide a model with 4 original factors of the theoretical model TAM and TPR in the proposed model. In addition to those 4 factors, the authors review a number of studies and introduce a new 2-factor into the research model.

4.2.3. Limitations:

The survey sample is not large enough. The survey of 441 samples is not large enough to determine the overall population living in Ho Chi Minh City. Moreover, the research team only mentions 6 variables - 4 variables are inherited from TAM and TPR models and 2 variables are from empirical studies - affect the

behavioral intention then affect buying behavior, so other variables can be ignored. Therefore, the explanatory level of the variables in the model is not high. Finally, the survey questionnaire is sent and received feedback through social media Facebook and email, so the collected data may be affected by the respondents' subjective opinions and attitudes.

4.2.4. Recommendations:

For the next research, the group will continue to do more in-depth research on the factors affecting the behavior of buying fresh food online, especially in the post-Covid-19 period. Preparing good resources to collect information from a larger sample; diverse the next sample with people of different ages, genders and incomes. In addition, a new research model will also be considered to further explore the factors affecting the behavior of buying fresh food online from previous works (such as website quality, perceived behavioral control, ...) in order to improve the accuracy of the research model.

5. Conclusion

The research results show that perceived usefulness, perceived ease of use, reference group opinion positive impact on behavioral intention and perceived online transaction risk, product/service perceived risk, perceived cost negative impact directly on behavioral intention and behavioral intention impact on variable purchase behavior. The level of impact in descending order: Perceived online transaction risk, reference group opinion, perceived usefulness, perceived cost, perceived ease of use, perceived product/service risk. Based on the research results, the authors provide some managerial implications for fresh food businesses according to the impact level of the factors.

First, about "Perceived Online Transaction Risk", businesses should invest, set up security terms that should be posted on the company's websites in a clear and understandable way to create trust for customers, and at the same time improve the reputation of online sales services of enterprises.

Second, about "Reference group opinion". Businesses should make good use of communication channels with a large number of audiences. At the same time, take advantage of the influence of reputable celebrities to represent the media campaigns to promote the company's products. In addition, there should be discounts and customer services.

Third, about "Perceived ease of use". Enterprises need to refresh their website, diverse in products, categories. The information and images of the products need to be constantly updated, simple interface, quick and convenient operation. Therefore, it can help consumers easily access and use the website more flexibly and interactively.

Fourth, about "Perceived cost". Enterprises need to find the solutions to decrease the product costs from the stages of purchasing input materials, logistics costs, and choosing suitable distributors to lower product costs. help increase the competitiveness in the market.

Fifth, about "Perceived usefulness", businesses need to improve website design to help shoppers easily compare foods and make quick choices, save time and suit their needs and demand.

Finally, about "Perceived Product/Service Risk", enterprises should apply information technology in agriculture such as supply chain management systems integrated with product traceability and GIS. In addition, businesses should invest in product preservation such as using antibacterial biodegradable membranes to protect raw food. In addition, it is necessary to ensure that the carrier delivers the goods with the right quality and on time to improve the service reputation of the business.

6. Appendix

Appendix A- Description of research sample

		Frequency	Percentage
Sex	Female	306	69,4%
	Male	135	30,6%
Age	Under 18	62	14,1%
	18- 30	253	57,4%
	30-50	104	23,6%
	Above 50	22	4,9%
Residence	Thu Duc District	23	5,2%
	District 7	47	10,7%
	District 10	35	7,9%
	District 9	28	6,3%
	District 8	26	6%
	District 11	24	5,4%
	District 1	46	10,4%
	District 2	15	3,4%
	District 3	18	4,1%
	District 4	14	3,2%
	District 5	14	3,2%
	District 6	21	4,8%
	District 12	16	3,4%
	Binh Tan District	14	3,2%
	Binh Thanh District	21	4,8%
	Cu Chi District	18	4,1%
	Hoc Mon District	14	3,2%
	Remaining districts	47	10,7%
	Income	Under 3 million	68
3 - 5 million		114	25,9%
5 - 10 million		89	20,1%
10 - 20 million		104	23,6%

	Above 20 million	66	15%
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Appendix B- Scale of variables in the research model

Variables	Observation question	Reference
Perceived Usefulness		
PU1	Shopping for fresh food online help me to save time	Kirui Andrew Kibet (2016)
PU2	I easily compare different suppliers when shopping fresh food online	Nguyen Truong Son et al (2020)
PU3	Using websites to buy fresh food makes shopping easier for me.	Davis (1987)
PU4	Overall, I find the grocery shopping website useful for my life	
Perceived ease of use		
PEU1	I learned how to shop for fresh food online easily.	Fortes & Rita (2016), Marios Koufaris (2002)
PEU2	Buying fresh food online for me is a clear and straightforward process.	
PEU3	I easily mastered buying fresh food online.	
Perceived Online Transaction Risk		
OPR1	I am concerned that websites collect too much of my personal information.	Bui Thanh Khoa (2018), Raymond Bauer (1960)
OPR2	I am concerned that websites site arbitrarily use my personal information for other purposes.	
OPR3	I am concerned that my personal information is not securely managed on websites.	
OPR4	I am concerned about the fees incurred when transacting online.	
Perceived Product/Service Risk		
PSR1	I am concerned that the quality of the fresh food is not as advertised.	Bui Thanh Khoa (2018), Bui Thanh Trang (2013)
PSR2	I am concerned that the fresh food is not what I expected.	
PSR3	I am concerned I will not receive fresh food after payment.	
PSR4	I find it very difficult to evaluate the quality of fresh food accurately when buying online.	
Reference Group Opinion		
RG1	Friends influence me in buying fresh food online.	Lutfi et al (2020), Nguyen Truong Son et al (2020)
RG2	Family influences me in buying fresh food online.	
RG3	Media information (reviews, comments...) influences me in buying fresh food online.	
Perceived Cost		
PC1	I am concerned that buying fresh food online costs more than in person	Xue Wang et al (2020)
PC2	I am concerned that buying fresh food online takes a long time to ship	
PC3	I am concerned about spending too much time searching for information when buying fresh food	
PC4	I am concerned about the cost of internet service when	Konrawan Rattanaburi et al (2020)

	buying fresh food online	
PC5	I am concerned about the cost of intermediary transactions when buying fresh food online	(Wu and Wang, 2005)
Behavioral Intention		
BI1	I plan to buy fresh food online in the future.	Oanh Thi Nguyen (2020), Nguyen Thu Ha and Hoang Dam Luong Thuy (2020), Jure et al (2021), Ajzen (1991)
BI2	I love buying fresh food online when the need arises.	
BI3	I will recommend to friends and family to buy fresh food online.	
BI4	I think buying fresh food online should be advisable.	
Purchase Behavior		
PB1	I will recommend to friends and relatives to buy fresh food online.	Nguyen Thu Ha and Hoang Dam Luong Thuy (2020), Nguyen Ngoc Dat & Nguyen Thanh Hien (2016), Schiffma & Kanuk (1997)
PB2	I prefer buying fresh food online over buying in person during Covid-19.	
PB3	I will continue to buy fresh food online regularly during Covid-19.	
PB4	I plan to buy more fresh food online after Covid-19.	Proposal group

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15,500 students
31 Undergraduate Majors
12 Student Transfer programs
02 Undergraduate Collaboration Programs

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University of Economics (DUE), located in Danang city, is a member of the University of Danang – one of the three regional universities in Vietnam.

With over 47 years of experience in educating and training, the DUE has played an important role in providing a labour force specializing in business, management and economics, partly contributing to Vietnam’s economic development. We offer a wide range of under-graduate and post-graduate programs, including 04 doctoral programs, 06 master programs, and 31 under-graduate programs. High qualified teaching and research staff, including professors, senior and experienced lecturers together with learner-centered curriculums are the reflection of our aim to ceaselessly raise teaching standard. The University currently has about 15,000 students for both full-time and part-time courses.

The DUE has cooperated with a number of companies to not only provide our students with opportunities for internship courses,

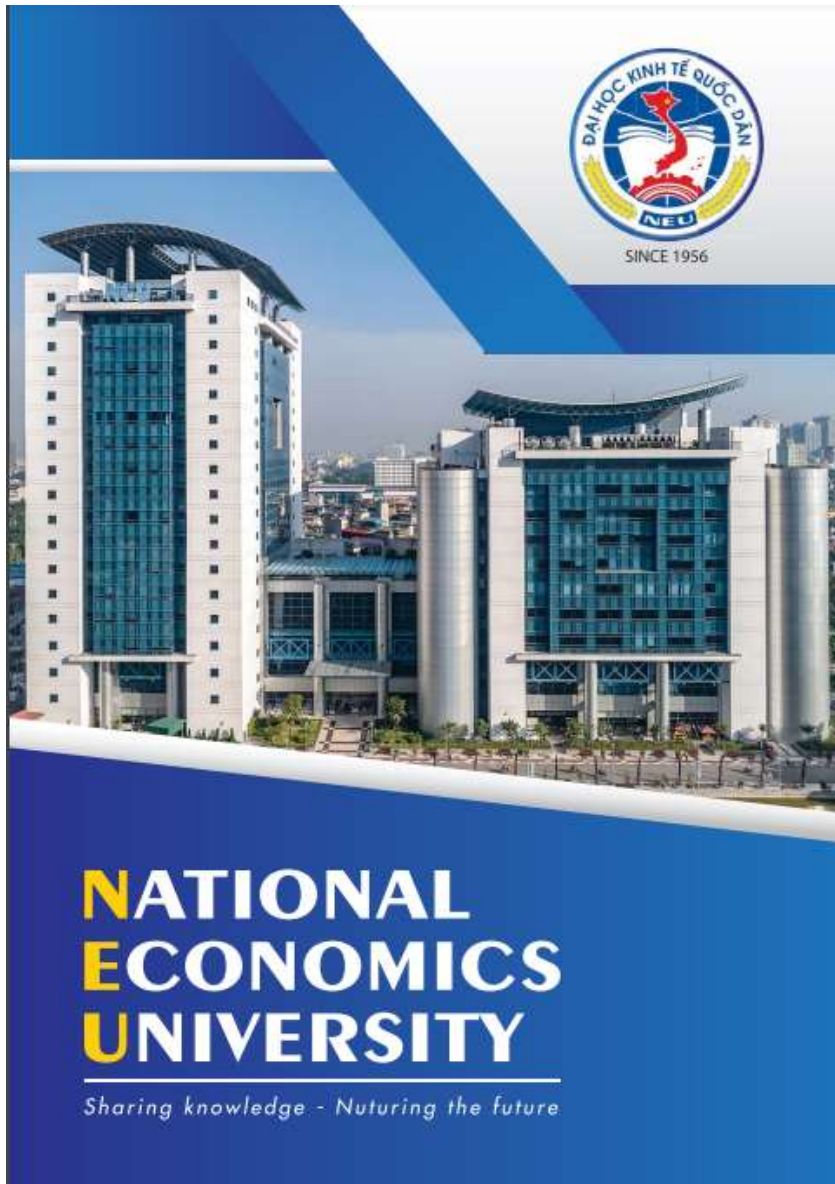
but also equip them with necessary skills and capabilities to work within the context of global integration.

Forty-seven years of vigorous growth witnesses our university achieving a variety of historical milestones. The DUE has become not only a nationally prestigious multidisciplinary higher educational institution, but also a leading research center for business management consultancy and business & economic knowledge transfer in Vietnam.

Annually, the DUE has about 8 to 10 key research projects carried out at state, ministerial, provincial levels, and dozens of university-level projects. Additionally, the DUE collaborates with its international partner network to organize academic conferences, seminars, workshops on business, management and economic matters. These assist the University in improving teaching materials and training quality. Research activities also bring more accessibility to business environment, practices and legal aspects.

NATIONAL ECONOMICS UNIVERSITY

Founded in 1956, National Economics University is one of Vietnam's leading universities in Economics, Management and Business Administration. Throughout the establishment and development, we always keep our proud position as:



Top Quality Economics and Business Institution in Vietnam

We place a high priority on the quality of teaching and the employment preparation for students in an increasingly competitive environment. With over 1,200 faculty members and staff, including more than 150 professors, associate professors, and over 200 PhDs, NEU currently offers training and education to over 35,000 students annually at Bachelor, Master and PhD levels.

A Prestigious Center For Economic Research

We are chairing a network of more than 40 universities in Vietnam in economics and business administration. Our university has become an important hub for academic exchange domestically and internationally.

A Consulting Center in Economics, Business and Management

NEU is a prestigious research and consultation center with its extended academic publications and consulting works to the government and non-governmental organizations on policy making and to the business community on strategic development.

THUONGMAI UNIVERSITY

Trường Đại học Thương mại



Quy mô Đào tạo

Trình độ Đại học
~4000
Sinh viên Chính quy/ năm

Trình độ Sau Đại học
~700
Học viên cao học/ năm

~70
Nghiên cứu sinh/ năm

Hợp tác Quốc tế

Trường Đại học Thương mại đã thiết lập quan hệ hợp tác với nhiều trường Đại học và tổ chức trên thế giới tại Châu Âu, Châu Mỹ, Châu Á, Châu Úc. Cùng với đó là rất nhiều các chương trình trao đổi dành cho sinh viên và giảng viên.

Quy mô liên kết Đào tạo Quốc tế

Trình độ cử nhân
~1000
Sinh viên liên kết đào tạo quốc tế/ năm

Trình độ Thạc sĩ
~30
Học viên cao học liên kết đào tạo quốc tế/ năm

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Thuongmai University (abbreviated as TMU) is a public university under the national education system of the Socialist Republic of Vietnam.

Thuongmai University is a public autonomous multi-major training university with strengths and prestige in undergraduate and post-graduate training; knowledge, science-technology research and transfer in contemporary economic and trade fields which meet the demand of industrialization, modernization and international integration. Since its establishment, TMU has provided society with tens of thousands of bachelors, masters, and doctors and has trained many business management officers for commerce and other industries.

ACADEMY OF FINANCE



The graphic features a yellow and teal color scheme. At the top left is the AOF logo. The main title 'HỌC VIỆN TÀI CHÍNH' is in large, bold, teal letters. Below it, a circular graphic displays '97,52%' in white on a yellow background, with 'SV TỐT NGHIỆP CÓ VIỆC LÀM' in teal below. The mission statement is in small teal text. At the bottom, the website 'www.hvtc.edu.vn' and the address 'Số 58, Phố Lê Văn Hiến, Phường Đức Thắng, Quận Bắc Từ Liêm, Thành phố Hà Nội.' are provided. The background includes an aerial view of the AOF campus and a circular inset showing a building.

**HỌC VIỆN
TÀI CHÍNH**

97,52%
SV TỐT NGHIỆP
CÓ VIỆC LÀM

*Sứ mệnh: Cung cấp các sản phẩm đào tạo và nghiên cứu khoa học
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The Academy of Finance (AOF), formerly known as the Central Banking School of Finance and Accounting, was established in 1963 and renamed the Hanoi University of Finance and Accounting in 1976. In 2001, the name “Academy of Finance” was officially used under Decision No. 120/2001/QĐ-TTg based on the merging of three institutions: Hanoi University of Finance and Accounting, Institute of Financial Research and Centre of Financial Cadre Training. In 2003, the Institute of Market and Price Research and School of National Treasury Training were also integrated into AOF. The mission of the Academy of Finance is to provide finance and accounting expertise in scientific research and training activities to society. The mission has been defined by our 59-year history with outstanding achievements and contributions branded by our lecturers, researchers and students.

BANKING ACADEMY OF VIETNAM



The graphic features the Banking Academy of Vietnam logo in the top left, which includes a graduation cap and the text 'HỌC VIỆN NGÂN HÀNG' and 'BANKING ACADEMY'. To the right of the logo, contact information is provided: 'Hvnh.edu.vn/tuyensinh', 'Facebook.com/hocviennganhang1961', and the phone number '1900 561 595'. The background shows a stylized cityscape with buildings and palm trees. In the foreground, a smiling woman in a black graduation cap and gown is shown. Four orange arrow-shaped callouts point to the right, containing the following text: 'A multi-disciplinary University', '14 Faculties and Subjects', '600 Lecturers', and '4000 Undergraduate 400 Postgraduate Annually'.

Banking Academy of Vietnam is a multidisciplinary public university governed by the State Bank of Vietnam and the Ministry of Education and Training. It is headquartered in Hanoi with two campuses in Bac Ninh and Phu Yen provinces. Established in 1961, BAV is an applied interdisciplinary university. It meets international standards to become a leading university in Vietnam's finance and banking sectors. Currently, BAV offers 9 programs with around 600 academic faculties of high quality and attracts 17,000 students studying at different levels. BAV commits to internationalizing its curriculum to provide standardized training to meet the requirements of society in high-quality human resources. In recent years, the BAV has made impressive improvements in scientific research activities and extended research cooperation with international partners. The number of scientific research has been increasing through the years, illustrated through the number of scientific articles, domestic and international workshops and conferences. The university creates the most favorable conditions for its faculty, undergraduate and graduate students to actively and creatively participate in research activities.

UNIVERSITY OF ECONOMICS AND BUSINESS – VNU HANOI



Founded in 1974, University of Economics and Business is a member of Vietnam National University, Hanoi (abbreviated as UEB-VNU). During our development, UEB-VNU has constantly improved the quality of training, research and other services towards becoming a research-oriented university and training high-quality human resources in the fields of economics, management and business administration. UEB-VNU is known as a long traditional history university with visions and determination to develop towards world-class quality. Over more than 47 years of development, UEB-VNU is proud to be a key and leading unit among members and schools of VNU Hanoi. We played an important role in bringing VNU Hanoi to the top 1,000 universities worldwide in three consecutive years, according to QS World University Rankings. In 2022, UEB-VNU is the first and only university in Vietnam to appear in the top 451-500 QS Rankings by subject in Business and Management Studies. In the same year, we received the Certificate of Merit from the Prime Minister for extraordinary achievements in the fields of business administration, management studies and development of science, technology and international cooperation. With all our achievements in training and research, UEB-VNU has increasingly affirmed our reputation in the country and become a pioneer in international integration.

FOREIGN TRADE UNIVERSITY

Established in 1960, Foreign Trade University (FTU) is among the first universities in Vietnam to offer intensive economics and international integration training. Over 60 years of development, FTU is recognized as one of the most prestigious universities in Vietnam and has gained enormous achievements in providing talented graduates to the Vietnamese economy and gradually reaching the region and the world.

FOREIGN TRADE UNIVERSITY

Core Values

- Innovation and Excellence
- Accountability and Resilience
- Diversity and Inclusion

A LEADING INNOVATIVE UNIVERSITY

- 14 Academic Faculties
- 4 Research programs
25 Research groups
- 20.000 Students
- 800 Faculty + Staff members

With 3 campuses in Hanoi, Quang Ninh and Ho Chi Minh City, FTU is currently training over 20,000 students. Following its philosophy of “Enhancing liberation, practicality; nurturing integrity, accountability and creativity of learners”, the university has developed and diversified its programs in many forms and levels. In pursuit of academic and research excellence and changes for a prosperous nation and a better world, researchers at the FTU actively carry out innovative multidisciplinary research with a strong foundation in economics and business. The four main research directions of FTU include reform of socio-economic institutions for sustainable development, green economy and social responsibility, innovation and knowledge transfer to businesses, and restructuring and reform of corporate governance. In collaboration with international and local networks, organizations, universities, and businesses, FTU

researchers also strive to turn ideas into impact. FTU’s research is translated into policy recommendations, management models and tools transferred to enterprises, and solutions for community development.

UNIVERSITY OF ECONOMICS – HUE UNIVERSITY



University of Economics is a member of Hue University. Founded in 1969, University of Economics has a mission to train high-quality/ professional human resources and conduct prestigious research and consulting work to solve socio-economic development issues in the Central Region of Vietnam and the whole country. University of Economics offers a wide range of majors and specializations in economics, business administration, finance, banking and management information system. Currently, University of Economics, Hue University, offers training and education to over 6,5000 students annually at bachelor, master, and PhD levels. University of Economics, Hue University cooperates with over 40 international partners worldwide.

UNIVERSITY OF ECONOMICS HO CHI MINH CITY



As one of the leading key national universities in Vietnam, the University of Economics Ho Chi Minh City (UEH) is home to more than 30,000 students across all levels and disciplines, the largest culmination of the student body across the country. UEH continues to stay in first place in the ranking list of the best business schools in Vietnam (Webometrics, 2021) and in the Top 551+ Best Universities in Asia (QS World University Ranking, Asia 2022); Top 298 Best Universities in Asia in Research Performance, Innovation and Societal Impact (SCImago Institutions Rankings, 2022). By 2030, UEH will become a multidisciplinary university with reputable academic influence within Asia and sustainable development.

UNIVERSITY OF ECONOMICS & LAW – VNU HCMC



VIET NAM NATIONAL UNIVERSITY HO CHI MINH CITY
UNIVERSITY OF ECONOMICS AND LAW

Unity
Thống nhất
Excellence
Vượt trội
Leadership
Tầm phông



University of Economics and Law (UEL) - a member of Vietnam National University in Ho Chi Minh City (VNU-HCM) - was founded by virtue of Prime Minister's Decision No. 337/QĐ/TTg dated March 24th, 2010, formerly known as Faculty of Economics under direct authority of VNU-HCM by virtue of VNU-HCM President's Decision No. 441/QĐ/DH/QG/TCCB.

UEL is a higher education institution as well as scientific research and technology transfer center with high quality in the fields of economics, law and management in response to the demands of socio-economic development in the process of industrialization, modernization and global integration in Vietnam.

MISSION

Promoting the development of society through high-quality research, training and other services in the fields of economics, law and management.

VISION

- Functioning as research oriented university.
- Becoming an institution of international standard, in the ranking of prestigious universities in Asia.
- Training learners who are capable of working in a global environment.
- Being the center of scientific research and a policy consulting pioneer Viet Nam in the field of economics, law and management.

● VNU-HCM ranks in the **top 801-1000**, in the **Top 68%** of the world's best universities by the **QS World Rankings 2021**

● Rankings by sciences subject field of THE 2021 evaluated VNU-HCM with a rank of **Top 601+** in the field of **Business and Economics**.

● **09** were evaluated to meet **AUN – QA standards: International Economic Relations, Finance – Banking, Economics, Accounting, Civil Law, Business Administration, Public Economics and Management, Management Informatics**

900

Postgraduate students

6.500

Undergraduate students

30.384

Alumni

97%

Students satisfy with the quality of teaching and support service at UEL

95%

Students are willing to introduce UEL to their relatives and friends

97%

Graduates are employed within one year after graduation

95%

Graduates work in the field of their majors





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JOINT STOCK COMMERCIAL BANK FOR INVESTMENT AND DEVELOPMENT OF VIETNAM

BIDV has been recognized and awarded by many international and major financial institutions for its outstanding business performance. The bank is listed in the Top 500 world's most valuable banking brands (by Brand Finance), named "Best Retail Bank in Vietnam" for the fourth consecutive year (by The Asian Banker) and received a series of IT awards.



JOINT STOCK COMMERCIAL BANK FOR FOREIGN TRADE OF VIETNAM

Vietcombank's development orientation is to become the No. 1 bank in Vietnam and one of the 100 largest banks in Asia, and one of the 300 largest financial and banking groups in the world. By 2030, Vietcombank strives to become one of the 1000 largest listed companies in the world that contribute to the development of Vietnam.



VIETNAM JOINT STOCK COMMERCIAL BANK FOR INDUSTRY AND TRADE

A leading multi-functional, modern and efficient bank in Vietnam, being among the Top 20 strongest banks in the Asia-Pacific region by 2030; and by 2045, being the strongest and most prestigious bank in Vietnam, a leading bank in the Asia-Pacific region and a highly reputable bank in the world. Its mission is to become a pioneer bank in the country's development on the basis of bringing optimal value to customers, shareholders and employees.

Tạp chí KHOA HỌC KINH TẾ

// Giới thiệu

- Tạp chí Khoa học Kinh tế là diễn đàn khoa học và giáo dục của Trường Đại học Kinh tế - Đại học Đà Nẵng
- Tạp chí khoa học chuyên ngành được tính 0.5 điểm công trình theo Hội đồng Giáo sư Nhà nước
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- Thời gian phản biện trung bình: 06 tuần/ bản thảo

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Các công trình nghiên cứu lý thuyết và thực chứng liên quan đến khoa học kinh tế, kinh doanh và quản lý có hàm lượng khoa học cao thể hiện qua ý nghĩa lý luận và thực tiễn của nghiên cứu, chưa công bố ở bất kỳ tạp chí nào.

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