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HUMAN RESOURCE DEVELOPMENT IN VIETNAM'S BANKING SECTOR IN THE DIGITAL ECONOMY

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Abstract: *The digital economy presents numerous challenges for the human resources of the banking sector, as the application of technology is necessary to provide services to customers and execute digital transformation in implementing human resource development policies. Additionally, factors such as the economic downturn, the Covid-19 pandemic, and global supply chain disruptions have created new situations that impact human resource development policies and their implementation in the sector in the coming years. Hence, the banking sector needs to change its human resource structure, operational methods, and the way it implements human resource development policies to adapt to the digital economy.*

• Keywords: *digital economy, human resource development, banking.*

Tóm tắt: *Nền kinh tế số đặt ra nhiều thách thức đối với nguồn nhân lực ngành ngân hàng, bởi việc ứng dụng công nghệ là cần thiết để cung cấp dịch vụ cho khách hàng và thực hiện chuyển đổi số trong thực hiện các chính sách phát triển nguồn nhân lực. Ngoài ra, các yếu tố như suy thoái kinh tế, đại dịch Covid-19 và sự gián đoạn chuỗi cung ứng toàn cầu đã tạo ra những tình huống mới tác động đến các chính sách phát triển nguồn nhân lực và việc thực hiện chúng trong ngành vào những năm tới. Do đó, ngành ngân hàng cần thay đổi cơ cấu nguồn nhân lực, phương thức hoạt động và cách thức thực hiện các chính sách phát triển nguồn nhân lực để thích ứng với nền kinh tế số.*

• Từ khóa: *kinh tế số, phát triển nguồn nhân lực, ngân hàng.*

1. Introduction

The digital economy is opening up technological applications that allow banks to simplify processes, procedures, and documentation, thereby reducing the time required to deliver services to customers and perform various tasks within the banking sector. This change has created increasing competition in the banking service market at present and in the near future. It requires bank personnel to master technology to perform their work and avoid being laid off. With the widespread use of artificial intelligence, machines can easily observe and learn from humans, thereby quickly acquiring all necessary skills. Therefore, in the future, the trend is to reduce human resources (HR) in the banking sector and focus on recruiting personnel with basic knowledge of banking operations, processes, regulations, risk management, etc., and the ability to effectively apply technology to their work.

According to statistics from the State Bank of Vietnam (SBV), as of 2020, the workforce in SBV was 6,871 people, and in credit institutions was 339,723 people, including state-owned commercial banks with 110,947 people, joint-stock commercial banks with 161,211 people, People's Credit Funds with 14,500 people, and financial companies with 41,937 people. However, the quality of bank personnel is both weak and insufficient. Hence, new changes require the banking system to implement effective HR development policies in order to attract and retain talented individuals, while increasing competitiveness against financial technology (fintech) companies. The banking environment has long been considered rigid and restrictive, lacking the space for creativity and activities for high-quality personnel in technology compared to fintech companies. Despite having a vast amount of customer information and data, banks sometimes appear less appealing to candidates, as breakthroughs and innovations in technology are often seen merely as support for financial operations, while talented individuals

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prefer environments with more career development opportunities.

2. Theoretical foundations

2.1. Related concepts

Human resources play a crucial role in the development of a nation in general and the economy in particular. According to Le Thanh Ha (2009), "HR refers to resources within each individual, including both physical and mental abilities, which are externally manifested through one's work capabilities. It encompasses health (height, weight, strength, and endurance), qualifications (knowledge, skills, and experience), psychology, consciousness, effort, creativity, and passion." Le Thanh Ha (2009) further explains that an organization's HR are resources of all employees within that organization, combining each individual's unique resources and complementing the differences in resources to form the organization's resources. The collective strength of the workforce is applied to achieve the organization's shared goals, thereby achieving each individual's goals. In line with Le Thanh Ha's perspective, this study considers "HR as the totality of an individual's resources, including intellectual, physical, and emotional ones. They are the workforce with specific skills required by the market. An organization's HR encompasses resources of all employees and managers working in the organization, both in terms of quantity and quality of labor. They utilize their capabilities to achieve their personal goals as well as organizational ones." Applying this perspective to the banking sector, bank personnel refers to the labor force with professional competence, encompassing their knowledge and capabilities to perform financial and banking activities in the market, contributing to socio-economic development.

Thus, HR in the banking sector represents the overall potential of human labor in a country, which has been prepared to a certain extent and can be mobilized in the national socio-economic development. This potential includes various aspects of individuals' physical, mental, and personal capabilities within a country, in line with a specific labor structure demanded by the economy. Essentially, it is the potential of individuals in terms of quantity, quality, and structure. This perspective provides a comprehensive understanding of HR in the banking sector, considering them not only from a quantitative perspective (labor resources) but also from a quality perspective (development potential). According to this approach, HR in the sector encompasses individuals' skills and capabilities related to their personal progress and national development.

HR in the banking sector includes all potential of individuals within an organization or society (including managers of banks) who utilize their knowledge, abilities, behavior, and ethical values to establish, maintain, and develop their banks. HR in the sector is the most important factor in productive forces. With their decisive role in the dynamics and development of the productive forces, HR determines the development and progress of society as a whole (at the macro level) and the success or failure of an organization (at the micro level).

2.2. Characteristics of HR in the banking sector

The banking sector has its own specific characteristics that affect the workforce within this sector compared to other sectors. Banks possess characteristics of a service industry, such as intangibility, quality instability, non-storability, and inseparability from their source, which highlights the role and importance of HR. Therefore, effectively utilizing HR can make differences, increase profits, and enhance the competitiveness of banks. However, in order to have effective HR development policies in the banking sector, it is necessary to understand specific characteristics of HR in this field, including:

Firstly, the recruitment of HR is more demanding compared to other sectors. HR in the sector not only meet professional requirements (trained and graduated from reputable institutions), possess soft skills (such as communication skills, problem-solving abilities, foreign languages, and computer literacy), but also have an appropriate appearance for the job position (for example, front-line staff not only require professional knowledge and soft skills but also need to have an appealing appearance, suitable height, and good health).

Secondly, bank personnel need to have a strong grasp of credit-related laws and be able to handle work pressure. In addition to time pressure, HR also face significant pressure from quotas set for

them. Within banks, there are various departments with different requirements for HR, such as wholesale banking, retail banking, business and capital management, risk management, finance and accounting, partnership, operations, legal department, and credit approval. Each department has its high workload and work pressure, often requiring overtime work, especially towards the end of quarters and years. Bank personnel regularly work with high intensity and significant pressure, including sales targets, pressure from customers, and a large volume of work.

Thirdly, there is an asymmetric gender distribution in the bank workforce, especially among tellers in branches and transaction offices, where the majority are female. Compared to male employees, female ones may face health issues and are more prone to sick leaves, family issues, maternity leave, which can lead to HR fluctuations within the sector.

Fourthly, bank personnel have a relatively young average age, making them more prone to job changes.

Fifthly, the quantity and quality of management-level personnel are limited; their ability to apply scientific and technological advancements is ineffective.

2.3. Developing bank personnel in the digital economy

Human resources are an important factor in the economy. The International Labor Organization states that HR development encompasses a broader scope, not only occupying occupations or general training issues but also developing capabilities and effectively utilizing those capabilities in employment, as well as meeting professional requirements and satisfying one's personal life. Therefore, HR development involves a combination of activities ranging from planning, recruitment, training, utilization, creating conditions, and providing a stimulating work environment for employees. From the perspective of the International Labor Organization, when studying human resources in the banking sector, developing human resource development can be understood as a progressive process in all aspects of the banking staff during a certain period, including an increase in the scale, quantity, and quality of bank personnel. It represents progress in

awareness, education, skills that meet the standards and criteria set for bank employees.

Since human resources in the banking sector are considered the core factor of socio-economic development, developing human resources in the sector is a process of increasing the knowledge, skills, and capabilities of individuals in society. From an economic perspective, this process can be described as the accumulation of human capital in the banking sector and the efficient investment of that capital in economic development. From a political viewpoint, developing bank personnel aims to prepare them to participate effectively in political activities as citizens in a democratic society. From a sociological approach, developing human resources in banks contributes to helping individuals live a more fulfilling and prosperous life, transforming individuals into human resources in the banking sector. HR development in the sector is seen as a critical process enabling individuals or organizations to reach their full potential over time. In the context of international economic integration, countries worldwide are concerned about developing HR in the banking sector to create a workforce with high quality, high-level qualifications, the ability to grasp new scientific and technological advancements and apply them effectively to production and life.

The digital economy is an economic activity that utilizes digital technology and data as its main input, uses the digital environment as its primary operating space, and applies information and communication technologies (ICTs) to enhance labor productivity, innovate business models, and optimize the economic structure (Decision No. 411/QD-TTg dated March 31, 2022). Trung Thanh (2021) asserts: "The digital economy is the entire network of socio-economic activities built and conducted on a digital foundation. The digital economy encompasses all economic sectors (including industry, agriculture, services, manufacturing, distribution, logistics, transportation, finance, banking) in which digital technology is applied". The digital economy plays a role in promoting e-commerce growth, encouraging internet usage among users, and developing digital economic systems of goods and services. The digital economy will reshape the structure and quality of human resources in the banking sector in the coming years.

3. Research methodology

The research methods used in this study include qualitative research, which consists of two stages:

(1) Preliminary research with a small sample size: The qualitative research is conducted through techniques such as group discussions and in-depth interviews, involving experts in human resource development and Central Bank officials, to explore and confirm the content of human resource development in the banking sector in Viet Nam. Based on the findings, the questionnaire is adjusted to ensure the reliability of the collected data.

(2) Formal research is conducted to evaluate the content of human resource development in the banking sector in Viet Nam.

Secondary data: Collected from books, newspapers, journals, publicly available documents, the internet, relevant government agencies, and reports from the Central Bank and state-owned banks.

Primary data: Obtained through a survey sampling. The research utilizes a non-probability sampling technique (convenience sampling). The appropriate sample size is determined using the formula proposed by Cochran (1977):

Sample size formula:

$$n = \frac{Z_{\alpha/2}^2 * p * q}{\varepsilon^2}$$

To achieve the highest representativeness in sample size, assume p = q = 0.5.

$Z2\alpha/2$= 1,96; ε = 10%; with a confidence level of 1 - α = 95%, we can calculate the sample size as follows:

$$n = \frac{1,96^2 * 0,5 * 0,5}{0,1^2} = 96$$

Based on the minimum sample size of 96, the author has chosen a stratified random sampling with a sample size of 300 managers from the Central Bank and commercial banks in Viet Nam.

The survey results are processed using Excel software and calculated using statistical formulas.

4. Results

4.1. *The reality of the banking sector in Vietnam in the context of the digital economy*

According to the Decree of 13th National Representatives, Decree No. 52-NQ-TW dated on 27th September 2019 by Politburo, Digitalized Transformation Program by the Decision No. 749/QĐ-TTg on 3rd June 2020 by the Prime Minister, digitalization, digital economy, and society development are identified as strategic focuses of Vietnam in the next period. They set high targets that by 2025, the digital economy will take 20% of GDP, minimal achievement by every industry digitally reaches 10%, annual work efficiency at least 7%, and broadband infrastructure coverage for 80% of households and 100% of communes. It is also expected that 4G/5G mobile networks and smartphones will be popularized, and 50% of the population rate with account for e-payment. To adapt to the digital economy and sustainably develop the banking system in the context of industrial revolution 4.0, developing human resources is a core issue to meet banks' demand in the digital era. During the phase of 2017-2023, due to the storm of digitalization, economic recession, and impacts of the Covid-19 pandemic, banks shape strategies for training, coaching, and updating basic e-business for their staff. Especially, banks highly regard equipping their personnel with soft skills and managerial skills to operate digital bank systems. The banks also increase the interconnection with universities' training, planning, strategizing, and developing high-quality human resources for transforming banks digitally. They orientate digital banks with the digital application, technology, and creative models 4.0 with objectives in doing business, managing and executing banks with their product and service chains on digital platforms to increase turnover, reduce costs, enhance the operation effectiveness, optimize the customer experiencing and upgrade the customer cohesion. It is forecast that during 2020 - 2025, the need for executive human resources will be increased by 20% annually.

In the past decade, Vietnam's banking sector has extraordinarily developed in scale, products and services, and operation quality. In response to the economy's service needs, domestic credit organizations have extended the scale, enlarged the network, established nearly 7,000 branches and transaction locations throughout Vietnam, and soared personnel numbers accordingly. The total current staff of the banking industry is 175,247 people. The number includes 6,322 people

working at the state banks and 168,925 at the credit organization system. Among this, 83,709 staff belong to state commercial banks, 66,903 staff work at joint-stock commercial banks, 12,952 staff belong to credit fund units, 1,760 staff work at joint-venture banks, and 3,601 staff work for financial companies. During ten years, the scale of banks' human resources has risen rapidly, from 67,558 bankers in the year 2000 to 175,247 bankers in the year 2010, about the 2.59-time fold, with 10.03% average human resources increased speed, whereas averaged economic growth of this period 2000-2010 is at 7,2%. The evaluation results by the units in the banking industry, including state banks and credit organizations, show that the number of human resources in banking is enough the meet the working demand in terms of workforce.

Workforce structure by age: The banking workforce is relatively young. Now, labor below 30 takes 60.11%, 30 - 50 years old takes 35.05%, and from 50 years old takes 4.84%. The human resources of credit organizations with age below 30 take 61.37%, from 30-50 takes 34.37%, and a small proportion at 4.26% for those above 50. Similarly, the age frame of state banks' personnel accounted for 26.54%, 53.27%, and 20.18%. Current human resources are healthy and qualified to access new knowledge and technology. With the current age structure of human resources, the banking industry does not face a significant shortage due to the retirement of elderly staff, at least from the next 5 to 7 years, and favorable conditions in planning and developing human resources.

Figure 1. Age pyramid of bank staff at Head Office and branches
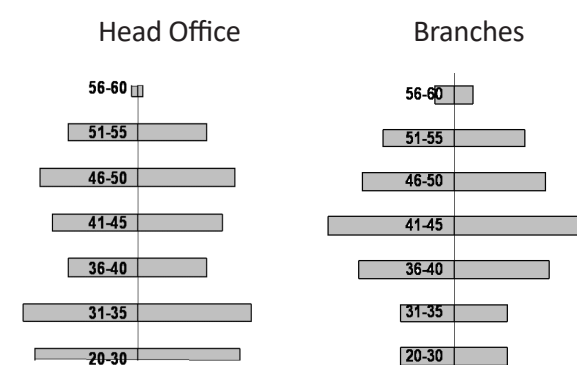
Source: State Bank of Vietnam

Compared to previous years, the staff at the Head Office tends to be younger and younger. The average workforce age at the Head Office is now 38.5, 10 years ago, it was 42. Branch staff are a bit older, with an average age of 41, and tend to get older more due to not recruiting new. The average age of officials working in management and administration is 49.05 years old, and 43 years old at department level. The dynamism of their youth and suitable qualification are the prerequisites for their success and opportunities for their further development.

4.2. Developing the human resources of the banking sector in Vietnam

According to the World Bank (WB), Vietnam's human resources are only scored at 3.79/100, ranking 11/12 in Asia, with South Korea scoring 6.91, India scoring 5.76, Malaysia scoring 5.59, and Thailand scoring 4.94 (Minh Ngọc, 2019). Despite being considered high-quality human resources, reports and studies indicate that many shortcomings exist at all levels, from decision-makers and staff of consultants to the decision-making force. The imbalance is also a significant problem in developing high-quality human resources, as reflected in the structure of training, the distribution of occupations, and regional distribution. Currently, the number of high-quality human resources with university degrees or higher is about 30 times higher than those with intermediate vocational qualifications, 13.4 times higher than those with intermediate degrees, 16.9 times higher than those with college degrees, and 3.6 times higher than those with technical college degrees. The imbalance in the development of high-quality human resources is also evident by industry, profession, and region. Mainly, the concentration of high-quality human resources is in the Red River Delta (1639.3 thousand), North Central and Central Coast (1,075.5 thousand), and the Southeast (1,373.0 thousand). In contrast, these resources are still scarce in the Northern Midlands and Mountains (625.5 thousand), Mekong River Delta (621.2 thousand) and Central Highlands (235.8 thousand).

Thus, human resource development in the banking industry in Vietnam in the context of the digital economy is deployed at an average level in activities, with most of the indicators in the survey being assessed at the average scale. The average score ranges from 2.99 to 4.73, with the average

score of 3 points accounting for a large proportion. This shows that the adaptability to the new context of human resource development in the banking industry is not really optimal and may not fully meet the requirements of the digital economy.

Table 1. Human resource development activities in the banking industry in Vietnam

No.	Content	Average	Standard deviation	Totally disagree and disagree (%)	Totally agree and agree (%)
1	The Bank stipulates the functions, tasks, and powers of individuals and departments involved in the implementation of human resource development	3.98	0.780	0	59.20
2	Discover the appropriate form and content of training to improve the work performance of human resources	4.73	0.644	0	90.83
3	Make a master plan for the implementation of training at the training schools for bank officers	4.31	0.697	13.3	87.14
4	Support and guide human resource development	3.56	0.919	14.7	56.0
5	Conduct training through instruction, tutoring in the bank	4.00	0.753	0	72.0
6	Design appropriate training activities to meet the needs of human resources	3.85	0.651	0	70.7
7	Send officials and employees to study at training organizations outside the bank	3.43	0.498	0	42.7
8	Coordinate with external training organizations to design training content, programs and organize training courses	2.99	0.533	14.7	13.3
9	Monitor and review the progress of human resources during training implementation	3.60	0.900	13.3	58.7
10	Regularly communicate with the human resources team and instructors to improve the effectiveness of on-the-job training	3.12	0.636	14.7	26.7
11	Evaluating the effectiveness of training conducted at the bank	3.19	0.762	19.3	58.0
12	Improve decisions and mechanisms to ensure the effectiveness and efficiency of human resource development	3.13	0.644	14.7	28.0

Source: Author's survey results

5. Conclusions

For fast and sustainable economic development, the economic infrastructure system plays an important role, in which the banking system acts as a blood vessel to help circulate and convert nutrients to supply the economy. Therefore, the banking industry has developed very quickly in the past period. However, human resources in the banking industry still have limitations that cannot meet the needs of the economy and the banking system. The human resource structure has changed, but it still needs to be faster and more cohesive among departments, not meeting the requirements of Industry 4.0, especially in areas such as artificial intelligence (AI) and cloud computing where there is a shortage of skilled personnel. Additionally, the management, training, and use of human resources are currently outside the market mechanism; the state still directly intervenes in the training of human resources.

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EXPERIENCES IN DEVELOPMENT INVESTMENT OF IRRIGATION INFRASTRUCTURE IN SOME LOCALITIES AND LESSONS FOR BAC NINH PROVINCE

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Abstract: *Irrigation infrastructure plays a vital role in the economic development of Bac Ninh province. After more than 20 years of re-establishment, Bac Ninh province has always paid attention to building a synchronous and modern irrigation system to best meet the needs of irrigation, production, and flood prevention. However, in the process of investment and development of irrigation infrastructure, there are still some limitations such as: over many years of exploitation and use, many works and work items have been seriously degraded; the system of main irrigation and drainage canals and system of other minor canals are encroached upon by urban development; due to the influence of climate change, it is necessary to exploit multi-purpose irrigation works to meet flood prevention work... The following article focuses on studying the experience of development investment of irrigation infrastructure in Nam Dinh and Nghe An; thereby drawing lessons for Bac Ninh province to improve investment efficiency and strengthen irrigation management in the coming time.*

Tóm tắt: *Kết cấu hạ tầng thủy lợi đóng vai trò quan trọng trong sự phát triển kinh tế của tỉnh Bắc Ninh. Sau hơn 20 năm tái lập, tỉnh Bắc Ninh luôn quan tâm xây dựng hệ thống thủy lợi đồng bộ, hiện đại nhằm đáp ứng tốt nhất nhu cầu tưới tiêu, phục vụ sản xuất và phòng chống lụt bão. Tuy nhiên, trong quá trình đầu tư phát triển kết cấu hạ tầng thủy lợi của tỉnh còn một số hạn chế như: qua nhiều năm khai thác và sử dụng, nhiều công trình và hạng mục công trình đang xuống cấp nghiêm trọng; hệ thống kênh trục tưới, tiêu chính và hệ thống các kênh trục nhỏ khác bị lấn chiếm do phát triển đô thị; do ảnh hưởng của biến đổi khí hậu nên cần khai thác đa mục tiêu các công trình thủy lợi để đáp ứng công tác phòng lũ… Bài viết dưới đây tập trung nghiên cứu kinh nghiệm đầu tư phát triển kết cấu hạ tầng thủy lợi ở Nam Định và Nghệ An; từ đó rút ra bài học kinh nghiệm cho tỉnh Bắc Ninh để nâng cao hiệu quả đầu tư và tăng cường quản lý thủy lợi trong thời gian tới.*

• Từ khóa: *kinh nghiệm, đầu tư phát triển, kết cấu hạ tầng thủy lợi.*

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1. Theoretical basis for development investment of irrigation infrastructure

1.1. Irrigation and irrigation infrastructure

Irrigation is the use of water to irrigate dry areas to support plant growth or to provide irrigation water for crops at times of insufficient rainfall. In addition, irrigation also has the effect of protecting plants, avoiding frost, controlling weeds growing in rice fields, and preventing soil consolidation. Irrigation is often studied in conjunction with a drainage system, which can be natural or man-made to drain the surface or groundwater of a particular area.

According to the Vietnamese Dictionary, Da Nang Publishing House (1998), irrigation is taking advantage of water and combating its harmful effects.

According to the Law on Irrigation (2017), irrigation is a combination of solutions to store, regulate, transfer, distribute, supply, irrigate, and drain water for agricultural production,

aquaculture, and salt production; combine water supply, and drainage for daily life and other economic activities; contribute to natural disaster prevention and control, environmental protection, adaptation to climate change and assurance of water source security.

According to the Ordinance on Exploitation and Protection of Irrigation Works - Standing Committee of the National Assembly (2001), irrigation work is infrastructure work in order to exploit the benefits of water and prevent harmful effects of water from causing damage. environmental protection and ecological balance, including: reservoirs, dams, culverts, pumping stations, wells, pipelines, canals, structures on canals, and embankments of all kinds.

Thus, in general, irrigation is a measure of harmonizing water requirements with the amount of water coming from nature in the area; It is also a combination of measures to exploit, use and protect water resources, and at the same time limit the damage caused by water.

According to Decree 129, in 2017, irrigation infrastructure includes: dams, water reservoirs, culverts, pumping stations, water conduction and transfer systems, embankments, irrigation embankments and auxiliary works in service of management, and irrigation exploitation.

1.2. Development investment of irrigation infrastructure

Development investment is the use of current capital, in order to create physical and intellectual assets, increase production capacity, provide new services and maintain existing assets, and create more jobs for development purposes.

Development investment in irrigation infrastructure means the use of capital and other resources to build irrigation works, creating assets that are necessary works and equipment for irrigation activities, in order to meet water resources to develop the national economy.

2. Experience in development investment of irrigation infrastructure in some localities

2.1. Experience in development investment of irrigation infrastructure in Nam Dinh province

According to statistics of the Department of Agriculture and Rural Development of Nam Dinh province, currently, the irrigation works system of the province is managed and exploited by the one-member limited liability company exploiting irrigation works, including: 315 sluices through the main dyke, dyke and backup dyke; 540 electric irrigation pumping stations, 887 pumps with a total capacity of 2,145,205 m³/h; 1,238 dams (regulating sluice); 209 siphons, conduit; 76 aqueducts; 2,600 grade II sewers; 265 grade I channels with a total length of 1,196,645km; 2,923 level II canals with a total length of 3,910,357km. The system of irrigation works managed and exploited by localities has 9 sluices through the dyke and the backup dike; 199 electric irrigation pumping stations, 250 pumps with a total capacity of 239,620 m³/h; 444 dams (regulating sluice); 1,306 channel sluices on grade III canals; 70 aqueducts on grade III canals; 9 grade I canals with a total length of 16.52km; 40 grade II canals with a total length of 48,385km; 40,692 grade III sluices and block culverts; 33,963 grade III canals with a total length of 9,884km. Over the past years, thanks to the investment attention of the Central Government and the efforts of localities, the irrigation works system of the province has been gradually consolidated, upgraded, and timely served the agricultural production of the province.

To meet the requirements of production innovation, improve the efficiency and economic value of agriculture, and effectively respond to climate change every year, the province has actively mobilized investment resources to build and deploy many projects to upgrade irrigation systems. Irrigation works invested in upgrading have contributed to improving the capacity of flood and storm prevention, serving production and people's life. From the beginning of 2014 up to now, the whole province has renewed 3 sluices and repaired 11 sluices under the dike (grade I); building 54 new sluices, repairing 103 regulating sluices and grade II sluices; new construction and repair of 2,313 sluices and

dams of grade III; solidify 99 channels at all levels with a total length of 54,899m; dredging 45 sluice gates, 56 suction tanks, 18 grade I canals, 308 grade II canals, 10,380 grade III canals, 5,454 canals and coastal areas... The total volume of excavation and embankment 3,903,071m³; build 13,287m³ of bricks and stones; casting 8,767m³ of concrete; repair and purchase more 84 pumps of all kinds, 48 opening and closing machines and other equipment... with a total cost of 180 billion 254 million dong. One member limited liability company exploits My Thanh Irrigation works with the task of operating the irrigation system for irrigation and drainage for agricultural production, improving the ecological environment, ensuring safety and hygiene, preventing waterlogging, floods and storms and people live in My Loc district and communes with agricultural land of Nam Dinh. My Thanh irrigation system supplies water for 8,229 hectares of rice, 1,423 hectares of crops and industrial plants, and 905 hectares of aquaculture. To serve agricultural production in 2014, right from the beginning of the year, the company has repaired, renovated and upgraded the irrigation system with a total cost of 6.3 billion VND. In which, repairing and renewing 7 casting works; solidifying 927m of irrigation canal from My Thang commune to Loc Hoa commune; dredging 15 canals, sluice gates; repairing and maintaining 9 pumping stations and 10 pumps; handling 11 projects unexpectedly; building, repairing and upgrading Le Xa pumping station house, Nhat pumping station house, Cau Vu pumping station house in My Tan, My Thanh and My Ha communes. In addition, the company has contracted for each production group and cluster to clear obstacles and clear the flow. Therefore, the key canals to ensure waterlogging in the rainy season and create irrigation water sources such as the T3, T5, and Tien Huong canals are always kept open. In Nghia Hung district, communes, towns and cooperatives have focused on dredging grade III canals, embanking the area, building new and repairing grade III sluices, and

placing ball culverts. The system of irrigation works managed and exploited by Nghia Hung one-member limited liability company with irrigation works is invested and repaired with funds for compensation for irrigation fees and other funding sources invested by the State. The whole district has dredged 230,900m³ canals of grade I, II; 157,874m³ canals of grade III and regional banks with a total cost of over 22.69 billion VND. Repairing 6 culverts under the dike; building 9 new grade II sluices; repairing 24 sluices, level II dams; building 6 new pumping stations; paving 3,413m canal, building 12 semi-permanent bridges; new construction and repair of 261 grade III sluices; installing 2,295 ball culverts. In order to be proactive in flood and storm prevention, the district irrigation works one-member limited liability company has inspected all the works from the focal point to the infield to assess the quality, detect damage, propose remedial measures and focus on prioritizing repair of key works. At the same time, develop a plan to protect key culverts such as: Coc Thanh, Chi Phu, Phu Giao, Quan Khu, Thanh Huong; organize scraping, repainting the entire system of works; carry out maintenance and inspection of machinery, engines and parts of the pumping station to meet the requirements of irrigation and drainage for production and flood prevention.

In the coming time, the province directs the agricultural sector to continue researching, reviewing, supplementing and improving the irrigation and drainage capacity of irrigation works, ensuring to meet production and people's requirements. Recalculate irrigation and drainage coefficients to suit practical needs. Solidify, renovate, repair, repair machinery and equipment and dredge and clear the canal system managed by one-member limited liability companies exploiting irrigation works My Thanh, Vu Ban, Y Yen management, improve the efficiency of works, solve the problem of irrigation for the northern region of Nam Dinh. For irrigation systems in Nghia Hung, Nam Ninh, Xuan Thuy, and Hai Hau, the canal

systems have been dredged and solidified to reduce water loss. Renovate, repair, upgrade and build a number of key works and in-field works to ensure that the design irrigation coefficient is achieved. Adding a number of pumping stations for irrigation and drainage for local upland areas. In the districts of Nghia Hung, Hai Hau, and Giao Thuy, in the dry season due to low river water levels, saltwater often encroaches into the mainland, making it difficult to obtain water for irrigation for production, so it is necessary to increase the water intake capacity of the public the focal process, reducing the time needed to collect, taking advantage of high and good quality water to get water for production, ensuring the right season according to the intensive farming process. Currently, the use of short-term crop varieties, with higher cultivation techniques, requires shorter time for water supply and drainage, so it is necessary to have reasonable and scientific irrigation planning. Faced with the situation that the river water level is increasingly depleted, all levels, branches and localities continue to focus on building, repairing and upgrading irrigation works to improve the irrigation and drainage capacity of the system and increase the capacity of the irrigation system, creating a balanced alluvium source, preventing landslides, supplying fresh water to the southern region of the province.

2.2. Experience in investment and development of irrigation infrastructure in Nghe An province

Nghe An is the largest province in Vietnam by area. It borders Thanh Hoa province to the north, Ha Tinh province to the south, Laos to the west and the East Sea to the east. The topography of the province has many hills, valleys, and a dense system of rivers. With such a geographical position, Nghe An is a province with many conditions for investment and the development of irrigation.

Promoting the preferential strengths of nature and effectively mobilizing resources, Nghe An has adopted appropriate irrigation development investment policies and achieved encouraging

results, and at the same time created a premise for the province's socio-economic development is stable and sustainable. In each different period, the province advocates investment in irrigation development from different angles. In the period 2001 - 2005, the province has invested in upgrading and repairing damaged works caused by natural disasters. Training and guiding the staff in irrigation companies to enhance the supply of irrigation water as well as domestic water supply for people to avoid wasteful losses as well as damage to the works caused by lack of understanding of management staff. Since then, it has improved the quality of irrigation works in the province, helping the province to promote the development of agriculture as well as other industries such as industry and fisheries.

In addition, the province also focuses on investing in key projects serving multiple purposes. Nghe An is a province that suffers from many natural disasters and floods every year, so the province and the State pay special attention to investing in irrigation works in the province. In the 2005-2009 period, the province was interested in investing in hydroelectric projects by the State. Drawings serve multiple purposes. This is the largest hydroelectric project in the North Central region with a capacity of 320MW, the main task is to generate electricity, connect to the national power grid, and at the same time provide a part of electricity for Laos, creating favorable conditions for economic development for the people in the country. At the same time, it also provides water for domestic use, production, salt push against floods for the downstream of Ca river. Thanks to a reservoir with a basin area of $8700km^2$, with a capacity of 1700 million m^3, it has been able to regulate the climate, improve the ecological environment and develop tourism in the region.

In recent times, due to the influence of floods, the number of irrigation works has been greatly degraded. Regarding the reservoir system, Nghe An has over 1000 reservoirs, but many of them are seriously degraded, there are many unsafe dams, earth dams do not meet

the standard cross-sections, the quality of dam construction is poor... Meanwhile, the need to repair and upgrade the irrigation system to meet flood control requires a lot of money. Over the years, attracting a lot of capital from the JICA project, loans from the World Bank..., Nghe An is gradually completing the flood control irrigation system. From 2018 to now, from the capital of the World Bank, Nghe An has implemented the construction and upgrading of 33 dams, of which the WB's capital has been more than 490 billion VND, the corresponding provincial budget has been 27 billion VND. Reservoir construction has been completed, storing water and effectively combating floods. In addition, Nghe An province also implements Japanese ODA loan projects such as the project to restore and upgrade the North Nghe An irrigation system to build irrigation canals and flood drainage. The project is deployed in the direction of making use of it, maximizing the project's efficiency. The solidified canal system has prevented water loss, especially reducing the burden of water supply demand for crops in the beneficiary area.

3. Lessons on investment and development of irrigation infrastructure in Bac Ninh province

From the experience of irrigation development investment of the provinces, some lessons have been drawn for Bac Ninh province as follows:

Firstly, formulate and implement proper and reasonable irrigation development investment policies for each development stage. The province needs to focus on upgrading and repairing degraded irrigation works. At the same time, it is necessary to train the staff of irrigation management in irrigation companies. There are regular training classes on the management and operation of pumping stations to avoid wasting water resources as well as avoid significant damage caused by floods.

Second, focus on investing in key projects serving multiple purposes. This investment will help develop the region's economy, besides agricultural development, it will develop other sectors and fields such as power generation, fisheries, industry and tourism. Therefore, the province should focus on focusing investment capital on multi-purpose projects.

Third, actively attract domestic and foreign capital sources to invest in the development of irrigation infrastructure. Investment in irrigation development requires a lot of capital, so the province can mobilize domestic capital sources as well as attract foreign capital sources to invest in large-scale irrigation projects, helping to achieve the target.

The above experiences in irrigation development investment are valuable practical bases for research and application in Bac Ninh province in order to invest in irrigation development effectively. However, one thing to note, each different locality will have its own natural, socio-economic characteristics, advantages and difficulties in investment and development of irrigation, so it is necessary to apply a flexibly and creatively these experiences. At the same time, it is necessary to stick to specific goals and tasks in the field of irrigation of the province. Therefore, the province's investment in irrigation development is really effective.

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THE DYNAMICS OF BOARD OF DIRECTORS AND CAPITAL STRUCTURE CHOICES - EMPIRICAL EVIDENCE FROM THE VIETNAMESE MARKET

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Abstract: *The purpose of the study is to evaluate the impact of the activity of the Board of Directors on the choice of capital structure of enterprises listed on the Vietnamese stock market in the period 2008 to 2020. The study uses panel data regression method, and evaluates the endogeneity in the estimate, the research results suggest that the dynamics of the board of directors helps the enterprise prioritize the use of funding from equity. Similarly, enterprises with a higher level in board independence, financial performance and liquidity often choose equity financing over debt.*

• Keywords: *activity, capital structure, firm, endogeneity.*

Tóm tắt: *Mục đích của nghiên cứu nhằm đánh giá tác động của hoạt động của HĐQT đến lựa chọn cấu trúc vốn của doanh nghiệp niêm yết trên thị trường chứng khoán Việt Nam trong giai đoạn 2008 đến 2020. Nghiên cứu sử dụng phương pháp hồi quy dữ liệu bảng và đánh giá tính nội sinh trong ước lượng, kết quả nghiên cứu cho rằng tính năng động của HĐQT giúp doanh nghiệp ưu tiên sử dụng nguồn tài trợ tới từ vốn chủ sở hữu. Tương tự, doanh nghiệp có tính độc lập của HĐQT, hiệu quả tài chính và thanh khoản cao hơn thường lựa chọn phương án tài trợ bằng vốn chủ sở hữu hơn so với nợ vay.*

• Từ khóa: *năng động, cấu trúc vốn, doanh nghiệp, nội sinh.*

1. Introduction

The Board of Directors (BOD) is the heart of the enterprise and has an important role in strategy, implementation and control of the entire operation of the enterprise. The Board of Directors that represents shareholders can directly participate shareholders or nominate suitable candidates to participate. The Board of Directors is usually a collection of a group of people, which may include independent members, female members, or foreigners. The BOD's positivity is reflected in the BOD regularly holding meetings to discuss development and make important corporate governance decisions. A highly active board is often associated with the board's activities, and they regularly maintain the Board of Directors meetings and therefore governance decisions are often issued in a timely manner with the performance of the business.

In a joint-stock enterprise, the Board of Directors is elected through the general meeting of shareholders, which is the meeting in which the shareholders holding shares in the enterprise can participate and propose suitable members of the Board of Directors. According to the Vietnamese corporate law, the board of directors is usually composed of 3 to 11 members, and large enterprises often have more board members than small enterprises. Every year, enterprises always maintain the organization of the annual general meeting, or they can also hold an extraordinary meeting to consult in advance on important issues in the enterprise and at the same time they can elect and

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nominate members of the Board of Directors. It can be said that the Board of Directors is the place where shareholders place their trust in order to perform the leadership function on behalf of shareholders to achieve the goals of business development and maximize corporate value as well as shareholder benefits.

Previous studies have all suggested that there are a number of characteristics of the board of directors that affect the choice of capital structure of the enterprise. Ezeani et al. (2022) argued that board characteristics have different effects on capital structure in Japanese, French and German firms. Amin et al. (2022) affirmed that the large-scale as well as highly independent Board of Directors has a positive impact on corporate leverage. Furthermore, gender has a positive effect on a firm's leverage. Or A.A. Zaid et al. (2020) argued that gender diversity has a significant contribution in reducing the impact of board structure on corporate financial decisions. A recent study in Ghana, Doku et al. (2022) also confirmed that the Board of Directors with a larger size and more diversity often prioritizes the choice of capital structure in favor of debt, in contrast, the choice of equity.

However, research on the dynamics of the Board of Directors to the choice of capital structure has not been studied by scholars, especially in the case of real estate and construction enterprises in Vietnam, which is the reason for the formation of this study. In fact, the construction and real estate sectors have contributed much to the employment and economic growth of the country. The development of the construction and real estate industries has created technical infrastructure and met the accommodation needs of the majority of families in Vietnam, thereby promoting urbanization and quality of life.

In addition to the introduction that was introduced, the rest of this study includes: Part 2 deals with previous studies, Part 3 deals with data collection and research methodology. Sections 4 and 5 are the results, and conclusions of the study.

2. Literature review

The dynamism of the Board of Directors is reflected in the close process of the Board of Directors in the process of running the business. Specifically, when enterprises encounter problems that need to be consulted by the Board of Directors, the Board of Directors can respond in the fastest way. The dynamics of the Board of Directors can help smooth corporate governance and thus reduce transaction costs as well as improve corporate performance. In the volatile business environment nowadays, the Board of Directors always requires in-depth supervision of the activities of the enterprise so that appropriate corporate governance can be established to help the business develop. In fact, the Board of Directors has more dynamism, it can help businesses reduce transaction costs and directly improve corporate financial performance.

There have been a number of studies on corporate governance, typically the activities of the Board of Directors to the choice of capital structure. Ezeani et al. (2022) evaluated the impact of board characteristics on the adjustment speed and choice of capital structure of firms, the study suggests that board characteristics have different effects on capital structure in firms of Japan, France and Germany. The study also confirms that the capital structure of a company often reflects the governance environment, that is, the governance environment has an impact on the choice of capital structure from owners or debt and it depends on the conditions of each country.

Research by Amin et al. (2022) uses 2062 observations of 226 non-financial companies at the Stock Exchange of Pakistan and suggests that the BOD with a larger and a highly independent board size has a positive impact on firm leverage, therefore, the company will use a debt-oriented capital structure. However, there is a negative effect of CEO tenure on capital structure, reflecting that CEO tenure has an influence on owner-oriented capital structure choices. Amin et al. (2022) also confirmed that gender diversity is associated with better corporate

governance quality and has a positive impact on firm leverage, thereby supporting the view of implementing a mandatory policy appoint female members of the Board of Directors in accordance with the Pakistani company law and implement corporate governance mechanisms in listed companies to gain trust from lenders.

Another study in a Middle Eastern country, which has experienced rapid economic growth in recent times, Bazhair (2023) using GMM regression for 100 non-financial companies in Saudi Arabia showed that companies have flexible adjustment to achieve target leverage at 30.46% annually. The study also confirmed that board size and CEO tenure have a negative impact on leverage, moreover, companies in Saudi Arabia with a significant number of independent directors often pursue a corporate governance structure in favoring debt. It can be explained that independence in governance can help businesses make investments in projects that have the ability to achieve higher efficiency, so using higher leverage can enhance businesses realize get the goal. Bazhair (2023) also confirmed that the role of gender diversity in the board of directors has little influence in setting corporate debt targets.

Research by A.A. Zaid et al. (2020) uses ordinary least squares, fixed-effects and random-effects analysis, and considers the likely endogeneity from the estimate since there may be a correlation between residuals and independent variables. The study suggests that board size and independence have a positive effect in terms of high gender diversification, while the effect of CEO tenure on firm leverage shifts from positive to negative. The authors also emphasized the influence of gender diversity in reducing the impact of board structure on corporate financial decisions. Therefore, an increase in gender diversity helps companies make more harmonized management decisions and thus can improve business operations and choose the optimal capital structure.

A recent study in Pakistan, Javaid et al. (2021) used a sample size of 1800 observations at non-financial companies listed on the Stock Exchange of Pakistan between 2004 and 2016 and confirmed that the size, composition of the board, duality of the board, and ownership have a direct influence on the financial decisions of the company. However, as CEO, ownership also has a significant indirect influence on the decision to choose the capital structure in the company. The research results serve as evidence of the mediating role of the cost of capital in the relationship between corporate governance and capital structure, furthermore, the study also confirms the impact of firm size, financial assets, profits, and business risks to capital structure selection decisions.

3. Data and methodology

3.1. Data

We use data from 52 real estate and construction companies listed on the Vietnamese stock market. As a result, Vietnam's stock market currently has 2 stock exchanges located in Ho Chi Minh City and Hanoi. In fact, the Ho Chi Minh Stock Exchange has a higher size, type and quality of goods than this on the Hanoi Stock Exchange. The data used in this study is collected from the annual audited financial statements, some data is collected from the annual report and prospectus. The study collected data for the period 2008 to 2020.

3.2. Methodology

In this study, we use regression analysis according to FGLS to give the best results and eliminate defects in the estimated model. In addition, the study also estimated according to GMM to consider endogenous phenomena that may occur in the estimation model. The study also uses dynamic ordinary least square (DOLS) method to assess the robustness of the results.

The proposed research method is as follows:

$$LEV_{it} = \beta'_0 + \beta_0 BOARD0_{it} + \beta_1 BOARD1_{it} + \beta_2 BOARD2_{it} + \beta_4 SIZE_{it} + \beta_5 ROA_{it} + \beta_6 LIQ_{it} + \mu_{it}$$

Where:

LEV_{it}: is a measure of leverage, calculated as total debt to total assets;

$BOARD0_{it}$, $BOARD1_{it}$, $BOARD2_{it}$,

respectively, are the size of the board of directors, measured by the number of members of the board of directors; the independence of the board of directors, to measure the percentage of independent board members; the activity of the board of directors, measuring the number of meetings of the board of directors in a month;

$SIZE_{it}$, LIQ_{it}, respectively, are the size of a business, expressed in logarithms of total assets; the liquidity, measured by short-term assets over short-term liabilities;

ROA_{it} is the financial performance of the enterprise, is the return on total assets of enterprise i, year t;

β'_0 is the intercept.

β_0, β_1, β_2, β_3, β_4, β_5, β_6 all are estimated coefficients

μ is the error term.

4. Results

4.1. Descriptive statistics

Table 1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
LEV	676	.6631365	.1667568	.1155198	1
BOARD0	676	5.134615	.7666667	3	9
BOARD1	676	.1930051	.2001714	0	.8
BOARD2	676	.5255178	.3527904	.25	2
SIZE	676	11.8408	.5249941	9.112912	13.50088
ROA	676	.0299531	.0620188	-.280502	.839056
LIQ	676	1.052266	1.345331	.01	10.95165

Source: Authors' analysis

Table 1 is the statistical results describing the variables in this study. For capital structure, 66.31% of capital comes from debt, the rest comes from equity. Regarding the size of the Board of Directors, the average size is 5.13 members, of which the smallest and largest scale are 3 and 9 members, respectively. Regarding the independence of the Board of Directors, 19.3% of the members of the Board of Directors are independent, that is, they do not own shares in joint stock companies. Regarding the dynamics of the Board of Directors, the average number of meetings of the Board of Directors per month is 0.52 meetings. As for financial performance, this indicator averaged 2.99% for ROA, and reached the minimum and maximum levels of -28.05% and 83.90% respectively, indicating a relatively large volatility in financial performance. In terms of liquidity, this indicator is only 1.05 times and is a low level, in which many companies do not reach liquidity.

4.2. Correlation matrix and VIF analysis

Table 2 shows that the independent variables have low correlation, so multicollinearity is unlikely to occur. Moreover, Table 3 also indicates that the mean VIF is 1.08 and less than 10, so it can be confirmed that there is no multicollinearity phenomenon. Therefore, the quality of the regression will be best in this case.

Table 2. Correlation matrix

	LEV	BOARD0	BOARD1	BOARD2	SIZE	ROA	LIQ
LEV	1.0000						
BOARD0	-0.0761	1.0000					
BOARD1	-0.1988	0.1649	1.0000				
BOARD2	-0.2680	-0.0022	0.1104	1.0000			
SIZE	-0.0007	0.2357	0.0100	0.1462	1.0000		
ROA	-0.4273	0.0716	0.1006	0.1807	0.0308	1.0000	
LIQ	-0.2984	0.1916	0.1588	0.0183	0.0395	0.1177	1.0000

Source: Authors' analysis

Table 3. The analysis of VIF

Variable	VIF	1/VIF
BOARD0	1.13	0.888099
SIZE	1.09	0.920692
BOARD2	1.07	0.934763
LIQ	1.07	0.937855
BOARD1	1.06	0.938980
ROA	1.05	0.948292
Mean VIF	**1.08**	

Source: Authors' analysis

4.3. Regression results

Table 4. Regression results

Variable	OLS	FEM	REM	GLS	IV-GMM	DOLS
BOARD0	0.0001 (0.995)	0.0144** (0.066)	0.0106* (0.160)	0.0001 (0.995)	0.0001 (0.995)	-0.0060 (0.688)
BOARD1	-0.0867*** (0.002)	0.0360 (0.200)	0.0114 (0.674)	-0.0867*** (0.002)	-0.0867*** (0.002)	-0.1117 (0.042)
BOARD2	-0.0922*** (0.000)	-0.0106 (0.477)	-0.0219 (0.135)	-0.0922*** (0.000)	-0.0922*** (0.000)	-0.1251 (0.000)
SIZE	0.0156 (0.146)	0.0490*** (0.000)	0.0413*** (0.001)	0.0156 (0.144)	0.0156 (0.144)	0.0086 (0.756)
ROA	-0.9546*** (0.000)	-0.5218*** (0.000)	-0.5733*** (0.000)	-0.9546*** (0.000)	-0.9546*** (0.000)	-0.9738 (0.000)
LIQ	-0.0295*** (0.000)	-0.0245*** (0.000)	-0.0257*** (0.000)	-0.0295*** (0.000)	-0.0295*** (0.000)	-0.0254 (0.003)
_cons	0.6029*** (0.000) 0.0480 (0.774)		0.1726 (0.265)	0.6029*** (0.000)	0.6029*** (0.000)	
Adj R-squared	0.2896	0.1679	0.2193			0.5785
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
F test	F(51, 618) = 18.09 Prob > F = 0.000					
Hausman test	Chi2(6) = 41.00 Prob > chi2 = 0.0000					
Breusch and Pagan Lagrangian multiplier test for random effects	chi2(52) = 12886.06 Prob > chi2 = 0.0000					
Wooldridge test for autocorrelation	F(1, 51) = 28.922 Prob > F = 0.0000					

Source: Authors' analysis

According to the F test, it shows that OLS regression gives less good results than FEM regression. According to Hausman test, FEM regression gives better results than REM, so it can be concluded that FEM regression gives the best results. According to the test of autocorrelation based on Wooldridge test and heteroskedasticity based on Breusch and Pagan Lagrangian multiplier test, the results of FEM regression both have these defects, so FGLS regression should be conducted.

5. Discussions

The results of Table 4 show that:

The research results show that the estimated coefficient of the size of the board of directors is not statistically significant, similar to the size of the enterprise, so it can be seen that the size of the board of directors and the size of the enterprise have no impact on the choice of capital structure.

The results show that the estimated coefficient of BOARD1 has a negative sign and is statistically significant. That is, increasing the independence of the Board of Directors affects the choice of capital structure in the direction of equity selection, or increasing independent members on the Board of Directors has the ability to increase the critical voice in corporate governance. Management decisions in enterprises are less influenced by other factors, so enterprises respond in the direction of increasing the choice of equity to finance projects. Moreover, real estate and construction businesses have large working capital, when these businesses use equity, they are able to reduce risks and improve operational efficiency. In contrast, firms with low independence often choose a risk-averse capital structure through the use of debt

The research results show that the estimated coefficient of BOARD2 has negative sign and is statistically significant. That is, when the dynamism of the Board of Directors increases, enterprises will prioritize using equity in capital structure rather than debt. It can be explained that if the Board of Directors operates regularly, management decisions are issued in a timely manner and the monitoring mechanism of the business activities is also stricter, and thus the enterprise tends to become more active. According to the pecking order theory, businesses should seek their own capital, then use borrowed capital to minimize operational risks. In the volatile business environment, increasing risks and reducing business performance, businesses should use safe financing options to help them achieve the goals set by shareholders.

The study also shows that the estimated coefficient of ROA has a negative sign and

is statistically significant. That is, firms with high financial performance often increase the choice of equity in capital structure. Indeed, businesses with high financial efficiency should have retained profits and that is the foundation for businesses to use these resources for reinvestment. On the contrary, enterprises with low business efficiency have low retained earnings, so they do not have the advantage of using this capital for reinvestment. The study also shows that the estimated coefficient of LIQ has a negative sign and is statistically significant. High-liquidity businesses often choose equity to finance investment projects, while low-liquidity businesses often use debt to make investments in the business.

6. Conclusion

The Board of Directors has an important role in orienting the development, implementing the plan and monitoring the operation of the enterprise. The Board of Directors may have the participation of many people, diverse in gender, independent members or foreign members. The dynamic Board of Directors is reflected in the management decisions that are issued in a timely manner and regularly follow the development of the business. This paper has â study on the dynamics of the Board of Directors on the choice of capital structure in enterprises. The study uses data from 52 real estate and construction companies listed on Vietnam's stock market collected from annual audited financial statements, some data collected from regular reports. And, the annual report and prospectus for the period from 2008 to 2020. Using regression analysis according to FGLS, GMM aims to consider endogenous phenomena and estimates dynamic ordinary least square -DOLS to assess the robustness of the research results. According to the research results, the increased dynamism of the board of directors will orient the enterprise to use equity in capital structure rather than borrowed capital. The participation of independent members in the Board of Directors helps enterprises to choose a capital structure in favor of equity. Moreover, high financial efficiency enterprises often increase equity in capital structure, and

low financial efficiency enterprises often choose debt financing option. Enterprises with high liquidity often choose equity to finance investment projects, and businesses with low liquidity often choose debt financing.

Through the research, there are a number of policy proposals for Vietnam. Firstly, the Vietnamese government develops the capital market to help businesses access capital at an appropriate cost, which can improve business operations and the output of the economy. Secondly, the Board of Directors continues to improve towards increasing the participation of independent members, improving gender diversity and increasing the dynamism of the Board of Directors so that it can help the Board of Directors operate more effectively, improve business activities. Third, businesses improve liquidity and financial efficiency, which is an important foundation for businesses in the construction and real estate industries to have long-term development.

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FACTORS AFFECTING THE INTENTION TO ADOPT CLOUD-BASED ACCOUNTING IN VIETNAMESE SMALL AND MEDIUM ENTERPRISES

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Abstract: *The Covid-19 pandemic, with social distancing policies being widely applied around the world, has exposed the fatal weakness of traditional accounting software (software that is installed on computers located at businesses and connected via Local Area Network) in the transmission of accounting information. Therefore, accounting software operating on the cloud computing platform emerged as an indispensable need of businesses at that time. Accounting software development companies in Vietnam such as MISA, FAST, SOFTDREAMS have very well met this demand when launching accounting software that works entirely on the cloud platform, exclusively for SMEs. However, contrary to the expectations of developers, the adoption of this type of software is still very conservative. Therefore, this study examines which factors influence the intention to adopt cloud-based accounting software in Vietnamese SMEs.*

• Keywords: *cloud-based accounting, Vietnamese SMEs, TOE framework.*

Tóm tắt: *Đại dịch Covid-19 cùng với chính sách giãn cách xã hội được áp dụng rộng rãi trên toàn cầu đã làm bộc lộ yếu điểm nghiêm trọng của phần mềm kế toán truyền thống (phần mềm được cài đặt trên máy chủ tại doanh nghiệp và kết nối thông qua mạng cục bộ - LAN) trong việc truyền tải thông tin kế toán. Do vậy, phần mềm kế toán hoạt động trên nền tảng điện toán đám mây đã trở thành nhu cầu không thể thiếu của các doanh nghiệp vào thời điểm đó. Các công ty phát triển phần mềm kế toán tại Việt Nam như MISA, FAST, SOFTDREAMS đã đáp ứng rất tốt nhu cầu này khi tung ra các phần mềm kế toán hoạt động hoàn toàn trên nền tảng đám mây, đặc biệt dành cho các doanh nghiệp vừa và nhỏ. Tuy nhiên, trái với kỳ vọng của các nhà phát triển, việc áp dụng loại phần mềm này vẫn rất dè dặt tại Việt Nam. Vì vậy, nghiên cứu này xem xét những nhân tố nào ảnh hưởng đến ý định sử dụng phần mềm kế toán trên nền tảng điện toán đám mây trong các doanh nghiệp vừa và nhỏ tại Việt Nam.*

• Từ khóa: *kế toán đám mây, SME Việt Nam, mô hình TOE.*

1. Introduction

The accounting information system (AIS) serves as an intermediary to collect, process, and provide accounting information to inform users, so they can make reasonable economic decisions. In today's business environment, where competition is increasingly fierce, AIS plays an ever more important role in providing relevant information for decisions in a timely manner. However, as companies grow in size and geographic spread, traditional AIS (whose data is stored on organization premises) gradually reveal their weaknesses in information transmission (Asatiani et al., 2019). Furthermore, from 2019 to the present, the Covid-19 pandemic has forced many parts of the world to implement blockade measures, which has worsened the information transmission speed of traditional AIS. While large enterprises have various solutions for AIS to minimize this issue, small and medium enterprises (SMEs) have limited choices to enhance their AIS in terms of information transmission (Al-Okaily et al., 2022; Khayer et al., 2020).

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The advancement of information technology (IT) during the 4.0 technological revolution has had a significant influence on the accounting activities of businesses. Cloud computing, a breakthrough of the 4.0 technology revolution, has a close relationship with the AIS and affects the change of accounting information (Simkin et al., 2014). Cloud computing platforms enable employees and stakeholders to access programs via computers and mobile devices at any time, regardless of their physical location. With new technological achievements, accounting data will no longer be historical data but rather real-time financial data (Khanom, 2017). Accounting information can be more timely, and accountants can detect erroneous and fraudulent information faster to help limit risks and, at the same time, analyze financial trends and make recommendations for managers in real-time. The economic performance of an enterprise is determined by objective and timely information, which must be provided by the accounting system. Therefore, cloud computing is expected to have a significant effect on the timeliness with which financial reports may be released (Ahn & Ahn, 2020).

In 2013, the FAST accounting software company launched FAST accounting online software, operating on a cloud computing platform. This was a significant step forward and an effective support tool for SMEs in Vietnam. SMEs can inherit the outstanding advantages of cloud computing at a reasonable cost and, most importantly, improve the accounting system's efficiency and speed of information provision. However, with only approximately 7,000 customers using it after eight years since its launch (Fast Software Company, 2022), it is clear that FAST accounting online software has not effectively reached its customers. This raises a significant question for FAST in particular and other companies that have just developed cloud-based accounting software, such as MISA (with AMIS accounting) and Softdreams (with Easybook), about what factors customers take into account when choosing a cloud accounting software.

2. Literature review and hypothesis development

This study applies the TOE framework (Tornatzky & Fleischer, 1990) to justify the factors affecting Vietnamese SMEs' intention to adopt cloud-based accounting software. There are a total of nine factors that are categorized into three groups: technological, organizational, and environmental factors.

2.1. Technological factors

Relative advantage is a measure of how much a particular technology is perceived as being more beneficial to companies. According to the DOI theory, this is one of the five characteristics of innovative products (Rogers, 1995). Logically, when considering the adoption of innovations, firms must take into account the benefits that can be gained from these new technologies (To & Ngai, 2006). Cloud-based accounting has several advantages over traditional technologies, such as cost reduction, scalability, flexibility, mobility, and resource sharing. For example, cloud-based accounting provided on a pay-as-you-go basis frees organizations from server investment, year-round IT infrastructure administration and maintenance, thus significantly cutting the overall expenses of running an in-house server system (Feuerlicht, 2010). Resource sharing is another advantage of companies powered by cloud-based accounting, allowing their employees to access data in the cloud from any location (Bhardwaj et al., 2010). As a result, the following theory is suggested:

H1: Relative advantage has a positive impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

The Model of Innovation Resistance stated that perceived risks were a principal factor of innovation resistance (Ram, 1989). Considering cloud computing, cloud storage is increasingly popular, which makes the data stored in the cloud more and more targeted by cybercriminals, and accounting data stored on the cloud is not excluded from this trend. One of the most common types of cyber attacks is phishing. According to Ramzan (2010), phishing "typically stems from a malicious email that victims receive effectively convincing

them to visit a fraudulent website at which they are tricked into divulging sensitive information (e.g., passwords, financial account information, and social security numbers). This information can then be later used to the victim's detriment." Cloud accounting software users, much like users of web-based software, are vulnerable to attacks by this method. Another risk is that, just like cloud ERP software, when accounting data is stored in the data centers of third-party cloud providers, the clients naturally have concerns due to having less control over who accesses their confidential data (Peng & Gala, 2014). Not to mention that the ability to work remotely while traveling presents a potential security risk that sensitive information could be leaked if the Wi-Fi connection is not properly secured (Khanom, 2017). With the aforementioned concerns, the following hypothesis is developed:

H2: Security concern has a negative impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

Compatibility is considered a key driver of adoption decisions in DOI theory (Rogers, 1995). Numerous previous research indicated that the level of compatibility has a positive relationship with the adoption of new technologies. For example, Kim & Lee (2008) claimed that the technical compatibility of previous information systems with Electronic Data Interchange (EDI) systems had a positive influence on the extent of EDI implementation. When referring specifically to cloud-based accounting, compatibility can be understood as the consistency between cloud-based accounting software and the size of the business, current workflow, practices, and regulations, along with data and usage experience from old accounting software. If cloud-based accounting software has high compatibility, the adopters could save time, money and effort because they would not need to spend much time learning the new software and commit much money to new IT infrastructure. Therefore, this study hypothesizes that compatibility positively affects the adoption of cloud-based accounting software as follows:

H3: Compatibility has a positive impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

2.2. Organizational factors

Similar to other management areas, the theory of IT application has also recognized the role of senior management support in the initiation, implementation, and adoption of many new ITs. This factor was listed in the organizational element category of the TOE model (Tornatzky & Fleischer, 1990). Al-Zoubi (2017) explained that Top management support was the perceptions and actions of top managers about the use of technological innovation in creating value for the company. Support from the top management team ensures long-term vision, reinforces values, commits resources, optimally manages resources, builds a favorable organizational environment, and has a higher appreciation of an individual's self-efficacy, helps overcome barriers and resistance to change (Lin & Jang, 2009; Ramdani et al., 2009; Wang et al., 2010). From these studies, top management support positively influenced new technology adoption. Therefore, the following hypothesis is proposed:

H4: Top management support has a positive impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

According to Pew Tan et al. (2007), organizational capacity refers to the readiness of a company to utilize new technologies, as perceived by its managers. This perception is based on factors like awareness, resources, commitment, and governance. Generally, in the context of their research, organizational capacity is described with two aspects, namely financial readiness (financial resources to deploy new technologies and ongoing costs during use) and technology readiness (infrastructure and human resources for using and managing new technologies) (Musawa & Wahab, 2012; Oliveira & Martins, 2010). Companies with efficient infrastructure, highly specialized staff, and financial backing increase the usefulness of technology. Regarding specifically to IT infrastructure, it proved to be a factor influencing the adoption of new technologies (Kuan & Chau, 2001; Oliveira & Martins, 2010; To & Ngai, 2006; Zhu et al., 2006). IT infrastructure provides the foundation upon which cloud computing

applications can be built. These views lead to the following hypothesis being proposed:

H5: IT infrastructure readiness has a positive impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

Along with IT infrastructure, HR readiness also plays an important role in the adoption of new technologies (Kuan & Chau, 2001; Oliveira & Martins, 2010; To & Ngai, 2006; Zhu et al., 2006). Cloud-based accounting services can only become part of value chain operations if companies have technical-ready employees. That cannot be done without IT department employees who provide knowledge and skills to deploy IT applications related to cloud-based accounting (Wang et al., 2010). In the case of cloud-based accounting, HR-ready companies are often more prepared for cloud-based accounting adoption. These perspectives lead to the following hypothesis:

H6: HR readiness has a positive impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

2.3. Environmental factors

Competitive pressure is the amount of pressure that a company experiences from its competitors within the industry (Oliveira & Martins, 2010; To & Ngai, 2006). The experience of intense competition is an essential determinant of IT adoption (Kuan & Chau, 2001; Zhu et al., 2006). Companies in the high-tech economy are under pressure to keep up with the industry's quick pace of development, which means they are keeping a careful eye on their rivals' adoption of cutting-edge technologies. By switching to cloud-based accounting, businesses gain deeper insight into their industry, enhanced operational efficiency, and more precise data collecting (Misra & Mondal, 2011). Therefore, the following hypothesis is proposed:

H7: Competitive pressure has a positive impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

Support from cloud service providers is essential to the success of cloud computing technology adoption (Khayer et al., 2020). This type of environmental factor is usually examined in papers applying the TOE model (Alshamaila et al., 2013). To persuade clients to embrace cloud services, the most well-known cloud service providers (Google, Microsoft, Amazon, etc.) invest heavily in marketing and support. On the client side, they are increasingly seeking technology partners as opposed to technology suppliers since they need more ongoing and long-term assistance (Maqueira-Marín et al., 2017). This trend is inevitable, since the support of software providers in general and cloud service providers in particular will assist prospective consumers in reducing their fears over the risks associated with adopting new technology. Regarding cloud-based accounting, in particular, providers of this sort of software view client transformation support as a first-and-foremost activity. Customers have reacted positively to the introduction of data conversion tools, the promotion for the first year of use, the dispatching of experts for direct support, and the periodic offering of free online training courses. The convenience of contacting support personnel 24 hours a day, seven days a week through means such as live chat, a toll-free number, social media forums, etc. is also a significant consideration when choosing software (Lutfi, 2022). With the aforementioned arguments, the following hypothesis is proposed:

H8: Vendor computing support has a positive impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

The market for cloud-based accounting software, particularly software for SMEs, is still in its infancy, and there is ample space for development. Consequently, the quality and functions of cloud-based accounting software can vary significantly, much like ERP software in its early stages of growth (Peng & Gala, 2014). This inevitably increases the likelihood that the customers could select unsuitable software, and then have a need to move to a different program. Changing accounting software, however, is not as simple as changing software for other typical applications. Accounting software is a tool for gathering, storing, processing, reporting, and distributing crucial company data. It serves administrative purposes, enhancing operational efficiency, and regulatory

compliance in accounting, tax, and other areas which need financial reports. In the majority of firms, accounting is an integral part of the internal control system. Therefore, a change in accounting software will result in alterations to business operations, control procedures, and even corporate culture, which can lead to resistance of innovation according to MIR theory (Ram & Sheth, 1989). Specifically concerning cloud-based accounting software, the cloud component presents its own switching provider challenges. According to Dutta et al. (2013), those issues, which are called vendor lock-in, are very common in cloud computing environment. From the aforementioned issues, the following hypothesis is proposed:

H9: Vendor lock-in has a negative impact on the intention to adopt cloud-based accounting services of Vietnamese SMEs.

3. Research methodology

This study utilized the hypothetico-deductive methodology in conjunction with the quantitative approach. The study began by reviewing theories, principles, assumptions, and basic concepts related to cloud-based accounting from prior research to generate hypotheses regarding the influence of several factors on the intention to adopt cloud-based accounting in Vietnamese SMEs. Then, data collection and quantitative analysis were used to test the hypotheses.

3.1. Research design

This research focuses on chief accountants, general accountants, and directors who work or manage Vietnamese SMEs in commercial, manufacturing, and service industries. This target audience directly utilizes cloud-based accounting software for booking or consumes data created by such software for administrative purposes. Convenience sampling method, a non-probability sampling technique, was used for this study. The questionnaire was distributed through Form-Google docs.

The sample size selected for the study must be consistent with the quantitative techniques of Cronbach's Alpha (Cronbach, 1951) and EFA (Nunnally & Bernstein, 1994), which evaluate the measurement scales, and multiple linear regression analysis for testing hypotheses,

all of these analyses were performed in IBM SPSS Statistics 23 software. Hair et al. (2006) recommend a minimum sample size of 50, preferably 100, and an observation/item ratio of 5:1 for EFA. According to Tabachnick & Fidell (1991), the sample size should be at least five times the number of observable variables for regression analysis to produce good results. In this study, there are 48 observable variables. Thus, the minimum number of observations required for the study is n = 5 x 48 = 240 samples. The author used an official research sample of n = 402, which is greater than the minimum required sample size of 240.

3.2. Measurement scales

This research study uses 48 items to measure 9 independent variables and 1 dependent variable. The measurement scale is based on a 5-point Likert scale (1 = strongly agree; 5 = strongly disagree).

Table 1: Measurement scales

	SCALE	SOURCE
Relative advantage	*Compared with traditional accounting software, I think cloud-based accounting software will...*	Ahn & Ahn (2020)
	Significantly improved my company's operating results.	
	Much more convenient to use.	
	Provide accounting information more quickly.	
	Significantly reduce the cost of the business.	
	More flexibility when expanding business.	
Security concern	*When thinking about using cloud-based accounting software, I am concerned that...*	Ahn & Ahn (2020)
	The company's accounting data is not strictly confidential.	
	Others may gain unauthorized access to the company's accounting data.	
	Supplier unauthorized access to company accounting data.	
	We do not know where the data is stored.	
	Data security regulations are not strict enough.	
	Data cannot be recovered if a system error occurs.	
Compatibility	*I believe cloud-based accounting software will...*	Grover (1993) and Moore & Benbasat (1991)
	Suitable for the current size of my company's operations.	
	Fits my company's workflow.	
	Get the approval and support of the staff of the accounting department.	
	Accounting data can be inherited from our traditional software.	
	Match the experience of using traditional accounting software	

	SCALE	SOURCE
Top management support	*When it comes to new technologies, the top managers at my company...*	Eldalabeeh et al. (2021)
	Very interested in the benefits that new technologies bring.	
	Always encourage employees to apply new technology in their work.	
	Provide the bulk of the budget for new technology adoption.	
	Supporting the selection of software providers for business administration.	
IT infrastructure readiness	*My company's current IT system...*	Yeh et al. (2014)
	Allows convenient connection between units within the company.	
	Allows convenient connection between my company and external partners.	
	Excellent response to the current operating scale of the company.	
	Rarely interrupts during upgrades or maintenance.	
	Internet connection is fast and stable.	
HR readiness	*The current employees of my company...*	Ahn & Ahn (2020)
	Get a tutorial on cloud-based accounting software.	
	Knowledge of cloud-based accounting software functions.	
	They are regularly trained to use new technologies.	
	Backed by in-house experts when using new software.	
	Have the capacity to approach and effectively use new technologies.	
Competitive pressure	*Businesses in my industry...*	(Lê Nguyên Hậu et al., 2013)
	There is always tremendous competitive pressure.	
	There is always competition for new technology adoption.	
	My company's products/services are easily copied.	
	Using cloud-based accounting software helps the company gain a competitive advantage.	
Vendor computing support	*As far as I know, cloud-based accounting software providers usually...*	Kinuthia (2014)
	Technical support is excellent in helping the company use the software effectively.	
	Ready to send experts to support any time the company needs.	
	There are attractive promotions when using their software.	
	Offers free training courses.	
Vendor lock-in	*If using cloud-based accounting software, my company...*	Ahn & Ahn (2020)
	It is possible to try a lot of software from many different vendors.	
	Expensive if you want to return to traditional accounting software.	
	Difficult to switch suppliers due to legal restrictions.	
	The operating procedure given by the supplier shall be accepted.	
	Must accept the product development roadmap provided by the supplier.	

	SCALE	SOURCE
Intention to adopt cloud-based accounting	*My company...*	Ahn & Ahn (2020)
	Plan to use cloud-based accounting software as soon as possible.	
	Appreciate the idea of using cloud-based accounting software.	
	Have a positive perspective on using cloud-based accounting software.	
	Having a thorough discussion about the application of cloud-based accounting software.	
	Preparing for cloud-based accounting software adoption.	

Source: The authors

4. Results and discussions

4.1. Regression results

Below are statistics of the regression coefficients of the factors in the research model:

Table 2: Multivariable linear regression analysis results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.221	.186		6.573	.000		
ADVAN	.112	.031	.126	3.589	.000	.763	1.310
SECUR	-.218	.030	-.249	-7.228	.000	.792	1.263
COMP	.119	.032	.124	3.766	.000	.868	1.152
TMSUP	.018	.026	.024	.688	.492	.746	1.340
ITINF	.184	.035	.205	5.269	.000	.619	1.616
HRREA	.248	.037	.260	6.640	.000	.610	1.638
COMPET	.138	.022	.212	6.403	.000	.855	1.170
VENSUP	.013	.034	.014	.372	.710	.676	1.480
VENLOC	.045	.031	.051	1.470	.142	.784	1.275
a. Dependent Variable: ADOPIN							

Source: The authors

The results of Table 2 show that Relative Advantage, Compatibility, IT infrastructure readiness, HR readiness, and Competitive pressure have positive relationships with the Intention to adopt cloud-based accounting, which supports the research hypotheses, and have statistical significance (Sig = 0.000 < 0.05). Security Concern has a negative relationship with the dependent variable and has statistical significance (Sig = 0.000 < 0.05). Top management support and Vendor support have positive relationships with the dependent variable as the research hypotheses suggested but are not statistically significant (Sig > 0.10). The vendor

lock-in variable has no negative relationship and has no statistical significance (Sig > 0.10), which does not support the suggested hypothesis.

4.2. Discussions

Regression analysis results showed six factors affecting the intention to adopt cloud-based accounting software in SMEs in Vietnam. The following sections are detailed discussions of each of those factors.

HR readiness

Among the antecedents, HR readiness has the most substantial influence on the intention to adopt cloud-based accounting by SMEs in Vietnam, with a coefficient of $\beta = 0.260$ (hypothesis H6). In other words, when businesses have a team of qualified personnel skilled in using cloud-based accounting software, their intention to adopt such software is higher. This result is consistent with previous research (Kuan & Chau, 2001; Oliveira & Martins, 2010; To & Ngai, 2006; Zhu et al., 2006).

While previous studies did not mention the importance of HR readiness compared to other factors, the results of this study show that HR readiness is the most important factor driving the intention to adopt cloud-based accounting software at SMEs in Vietnam.

Competitive pressure

Competitive pressure is the second most decisive factor influencing the intention of SMEs in Vietnam to adopt cloud-based accounting software, with a coefficient of $\beta = 0.212$ (hypothesis H7). In an open economy, SMEs not only face competition from domestic enterprises but also from foreign enterprises that may be strong in technology. This drives businesses in Vietnam to accelerate the application of advanced technologies in their production and business activities, including the adoption of cloud-based accounting software. This result is consistent with previous research by Oliveira & Martins (2010) and To & Ngai (2006).

IT infrastructure readiness

The readiness of the information technology (IT) infrastructure has the third strongest influence on the intention of SMEs in Vietnam to adopt cloud-based accounting software, with a coefficient β of 0.205 (hypothesis H5). This suggests that businesses are more likely to adopt this software when they have the appropriate IT infrastructure for cloud-based accounting applications. This finding is consistent with previous research by Kuan and Chau (2001), Oliveira and Martins (2010), To and Ngai (2006), and Wang et al. (2010).

Relative advantage

Relative advantage has a relatively strong influence on the intention of SMEs in Vietnam to adopt cloud-based accounting software. The coefficient β is 0.126, supporting hypothesis H1. This finding suggests that when businesses recognize the benefits of cloud-based accounting, such as lower investment costs and maintenance expenses, increased scalability, flexibility, mobility, and resource sharing, they are more likely to adopt cloud-based accounting. This research result is consistent with previous experimental studies conducted by Benlian & Hess (2011), Bhardwaj et al. (2010), and Marston et al. (2011).

Compatibility

The study found that the compatibility factor has a significant impact on SMEs' intention to adopt cloud-based accounting software in Vietnam, with a coefficient of $\beta = 0.124$ (hypothesis H3). When the installation and use of cloud-based accounting software are highly compatible with an enterprise's information technology system, there is a greater likelihood that the enterprise will intend to adopt cloud-based accounting software. This finding is consistent with previous research (Benlian & Hess, 2011; Bhardwaj et al., 2010).

Security concern

The intention to adopt cloud-based accounting software by SMEs in Vietnam is negatively influenced by security concerns with a coefficient of $\beta = -0.249$ (hypothesis H2). Information security is a major concern when using cloud-based accounting. Service providers should ensure that the protection system is constantly updated and that all new features are rigorously tested.

The research results are similar to previous studies conducted by Bhardwaj et al. (2010) and Feuerlicht (2010). The results for security concern have important implications. Most previous studies only focused on the factors that positively affect the intention to adopt cloud-based accounting, without considering factors that have the opposite effect. This study shows that security concerns are a major factor reducing the intention to use cloud-based accounting in SMEs in Vietnam.

Top management support, Vendor computing support and Vendor lock-in

Three factors, including top management support, vendor computing department, and vendor lock-in, were hypothesized to have an influence on the intention to adopt cloud-based accounting (corresponding to hypotheses H4, H8, and H9). However, regression analysis revealed that these factors had no significant effect on the dependent variable of the study model (sig > 0.05). It is possible that these factors are not relevant in the context of Vietnamese SMEs. For example, managers at SMEs in Vietnam may underestimate the growth of accounting qualifications and the improvement of accounting work, resulting in divergent opinions among survey respondents (Dang Thi Thuy Ha, 2017). Future research using new models or larger sample sizes may provide further insight into this topic.

5. Conclusions

The results of this study help accounting software providers determine which aspects influence the intention to adopt cloud-based accounting, allowing for a more rational approach to product promotion. Additionally, managers of SMEs and accountants who wish to implement cloud-based accounting may realize which criteria are often prioritized when using this technology. The research results once again confirm the global research findings regarding the positive relationship between HR readiness, IT infrastructure readiness, competitive pressure, relative advantage, and compatibility with the intention to use new technology, as well as the negative relationship between security concerns and the intention to use new technology, which

was confirmed in the Vietnamese environment, especially cloud-based accounting technology.

Contrary to the commonly held belief that technological factors have the most impact on the desire to embrace new technology, the study reveals that an organizational element, which is the readiness of employees, is the most influential on the intention to adopt cloud-based accounting. When marketing or implementing a new technological product, this discovery enables software developers and managers to focus more on the human factor. Besides the various factors that encourage the use of cloud accounting, software developers must take care to address customer concerns regarding data safety. This has been proven by the quantitative analysis results showing the strongest negative impact on the intention to use cloud-based accounting.

Multiple international studies indicate that vendor computing support, vendor lock-in, and top management support have an effect on the intention to adopt new technology in general and cloud-based accounting in particular. However, the study's findings did not indicate a correlation between these criteria and the intention to adopt cloud-based accounting.

In terms of academic research, this work has summarized cloud-based accounting principles and related theories. Additionally, researchers in the domains of accounting, business administration, and technology can utilize the tested measurement scales for their own study.

Usually, every study has some limitations, thereby providing new perspectives for future research. Therefore, having limitations in this study is unavoidable. First, the time study data show that the causal relationships identified may vary across sectors, industries, sizes, types of business, or respondents. Therefore, longitudinal studies may be required to strengthen the direction of the causal relationship. Second, the study focused on the Ho Chi Minh City and Bien Hoa areas, so other researchers can conduct it in other regions to create a meaningful result that is more integrated and comprehensive. Finally, other factors will likely influence the final decision to adopt cloud-based accounting and may not have been included

in the TOE model to help understand enterprises' adoption behavior, thereby setting another big issue in the future to consider and learn more about; that is, the decision to adopt cloud-based accounting in the enterprises.

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THE IMPACT OF LIQUIDITY RISK ON OPERATIONAL EFFICIENCY OF VIETNAMESE COMMERCIAL BANKS

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Abstract: *This paper will focus on clarifying the impact of liquidity risk on the performance of commercial banks in Vietnam. The data is collected from annual reports that have been published and audited by 20 Vietnamese commercial banks, reliable sources of data and information on World Bank, IMF and the General Statistics Office of Vietnam for the period from 2007 to 2021 with 300 observations. Simultaneously, we apply quantitative research methods with Pool OLS, FEM, REM regression. Regression results show that all variables representing liquidity risk included in the model impact the performance of 20 commercial banks in Vietnam. Based on the results, this paper will propose several suggestions to reduce liquidity risks and improve operational efficiency in commercial banks.*

• Keywords: *liquidity risk; operational efficiency; commercial banks; OLS, FEM, REM.*

Tóm tắt: Bài viết này sẽ tập trung làm rõ tác động của rủi ro thanh khoản đến hiệu quả hoạt động của các ngân hàng thương mại tại Việt Nam. Dữ liệu được thu thập từ các báo cáo thường niên đã được công bố và kiểm toán của 20 ngân hàng thương mại Việt Nam, các nguồn dữ liệu và thông tin tin cậy từ World Bank, IMF và Tổng cục Thống kê Việt Nam cho giai đoạn 2007-2021 với 300 mẫu quan sát. Đồng thời, các tác giả áp dụng phương pháp nghiên cứu định lượng với hồi quy Pool OLS, FEM, REM. Kết quả hồi quy cho thấy tất cả các biến đại diện cho rủi ro thanh khoản đưa vào mô hình đều tác động đến hiệu quả hoạt động của 20 ngân hàng thương mại tại Việt Nam. Trên cơ sở kết quả nghiên cứu, một số giải pháp được đề xuất nhằm hạn chế rủi ro thanh khoản và nâng cao hiệu quả hoạt động tại các ngân hàng thương mại.

• *Từ khóa: rủi ro thanh khoản; hiệu quả hoạt động; ngân hàng thương mại; OLS, FEM, REM.*

1. Introduction

The financial crisis at the end of 2007 engulfed the entire US economy through the mass collapse of the banking system due to the error in the economic theories of the free market of government officials in the United States of America. More specifically, the operations and profits of US commercial banks were severely affected because of bad debts and liquidity risks. Liquidity risk appeared, the worst also happened to the financial sector of this power, a series of banks had to merge together and the worst was forced to declare bankruptcy because of inability to liquidity as well as recovery of bad debts. After devastating the US economy, this crisis is also known as the "domino" effect, it swept and caused the entire world economy to collapse, falling into a severe recession cycle. It can be said that the financial crisis of 2007 was the most serious crisis in the past two decades. Therefore, bank governance must focus on risk management, especially liquidity risk.

Recognizing the remnants of the crisis, Vietnamese commercial banks put their top attention on liquidity and its impact on the performance of commercial banks. The lack of liquidity still exists and is a problem that many banks face. Many banks lost a large number of customers because of a lack of liquidity, which

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significantly affected the quality of business operations and the bank's reputation. Besides, when the amount of liquidity in the bank is too much, in other words, there is excess liquidity and difficulties in activities such as credit and investment also become a concern of the risk manager in the commercial banks. So how to improve the liquidity of commercial banks while still achieving operational efficiency?

2. Research methodolody

2.1. Research data

The data collection of research variables is extremely important for the results of the research to have high accuracy and reliability.

For liquidity risk measurement variables and performance measurement variables of Vietnamese commercial banks: We use internal data presented in the financial statements and annual reports of 20 fully updated and audited commercial banks for a period of 15 years (from 2007 to 2021).

For macro variables that affect the performance of Vietnamese commercial banks: We collect data from the information archives of the General Statistics Office of Vietnam, World Bank, the homepage of the State Bank of Vietnam, and IMF data from 2007 to 2021.

2.2. Research methods

In this study, we use the balanced panel data estimation techniques and Stata 15.0 software application to process the collected data file. In addition, we also use scientific methods such as estimating the OLS regression model, estimating the regression model with fixed effects (FEM), and regression model with random effects (REM). Moreover, in the process of making the above estimates, we discovered that this research model contains many defects through the tests of White's test and Wooldridge's test. Finally, the FGLS method is the most optimal method used to overcome the above problems.

2.3. Research models

From the background of previous studies, inheriting the research model of Ahmed Arif &

Ahmed Nauman Anees (2012); Samuel Siaw (2013); Nguyen Thu Hieu (2015); Ho Thanh Thuy (2017); Phan Vu Hoang Nga (2020); Tram Thi Xuan Huong et al (2021), we continue to build and develop an empirical research model of the following general form:

$$ROA_{it} = \alpha_0 + \alpha_1 LTGAP_{it} + \alpha_2 SIZE_{it} + \alpha_3 ETA_{it}$$
$$+ \alpha_4 LIQ_{it} + \alpha_5 CAR_{it} + \alpha_6 NPL_{it} + \alpha_7 LDR_{it}$$
$$+ \alpha_8 GGDP_{it} + \alpha_9 INF_{it} + \varepsilon_{it} \quad \text{(Model 1)}$$

$$ROE_{it} = \beta_0 + \beta_1 LTGAP_{it} + \beta_2 SIZE_{it} + \beta_3 ETA_{it}$$
$$+ \beta_4 LIQ_{it} + \beta_5 CAR_{it} + \beta_6 NPL_{it} + \beta_7 LDR_{it}$$
$$+ \beta_8 GGDP_{it} + \beta_9 INF_{it} + \varepsilon_{it} \quad \text{(Model 2)}$$

$$NIM_{it} = \gamma_0 + \gamma_1 LTGAP_{it} + \gamma_2 SIZE_{it} + \gamma_3 ETA_{it}$$
$$+ \gamma_4 LIQ_{it} + \gamma_5 CAR_{it} + \gamma_6 NPL_{it} + \gamma_7 LDR_{it}$$
$$+ \gamma_8 GGDP_{it} + \gamma_9 INF_{it} + \varepsilon_{it} \quad \text{(Model 3)}$$

In which:

ROA_{it}: Return On Total Assets

ROE_{it}: Return On Equity

NIM_{it}: Net Interest Margin

$LTGAP_{it}$: Liquidity Transformation Gap (Liquidity risk)

$SIZE_{it}$: Bank Size

ETA_{it}: Equity Ratio

LIQ_{it}: Ratio Of Liquid Assets To Total Assets

CAR_{it}: Capital Adequacy Ratio

NPL_{it}: Non-Performing Loan

LDR_{it}: Loan To Total Deposit Ratio

$GGDP_{it}$: Economic Growth Rate

INF_{it}: Inflation Rate

α, β, γ: Coefficient of freedom for each model 1, 2, 3

i: Observer bank i (i = 1, 2, ..., 20)

t: The t th year of observations (t = 1, 2, ..., 15)

3. Results and discussion

Variable Liquidity Transformation Gap (LTGAP): Research results with a significance level of 1% in REM model show that Liquidity Conversion Gap (LTGAP) has a negative impact on efficiency measurement variables activities

of 20 Vietnamese commercial banks. This result supports the results of the previous work of Chung - Hua Shen et al (2009); Ahmed Arif & Ahmed Nauman Anees (2012); Muhammad Kashi Razzaque Khan & Nadeem A. Syed (2013); Zaphaniah Akunga Maaka (2013). This negative relationship is explained by the average bank lending is smaller than the average amount of deposits, whose main income comes from lending. And so, the bank's income is less and lower than the interest expenses paid. In other cases, banks use excess capital mobilization to invest in other types of assets with higher profitability, earning more profits and enough to cover expenses payable, but will still have to trade off with higher risk. When liquidity risk arises, commercial banks need to convert illiquid assets into cash with high costs, mobilization costs also increase, or commercial banks are forced to approach the money market to raise capital at higher costs. Since then, business activities have faced many difficulties, stagnation, and profits have decreased significantly.

Variable Bank Size (SIZE): In the author's research, there exists a positive relationship between bank size (SIZE) and variables measuring the performance of 20 Vietnamese commercial banks (ROA, ROE, NIM) with statistical significance at 10%, 1% and 5%, respectively. To explain the positive effect between the above pairs of variables, we argue that size is an advantage of banks, the competitiveness of large-scale banks will be appreciated more, by the main advantage is being able to provide products and services to customers at a cheaper, more attractive price than small-sized banks. Since then, large-scale banks have improved their profit sources. This result is said to be similar to previous studies of Chung - Hua Shen et al (2009); Nguyen Cong Tam & Nguyen Minh Ha (2012); Mohammad Hossein Khadem Dezfouli et al (2014); Ho Thanh Thuy (2017).

Variable Equity Ratio (ETA): With a significance level of 1%, Equity Ratio (ETA) has a positive impact on Return on Total Assets

(ROA) and Net Interest Income Ratio (NIM). However, there is no statistical significance showing the impact of ETA on ROE of commercial banks in Vietnam. The implication of this result explains that when the capital in the bank increases, the level of leverage will decrease, at the same time, the bank's business performance tends to increase, and the profit earned is improved. The author's research results are similar to the previous research of Samuel Siaw (2013); Naser Ail Yadollahzadeh Tabari (2013); Phan Vu Hoang Nga (2020).

Variable Liquidity Assets to Total Assets (LIQ): The research results show the negative relationship between the ratio of liquid assets to total assets (LIQ) and the performance of Vietnamese commercial banks. At the 1% significance level, LIQ has the opposite effect on NIM and there is no statistical significance showing the impact of LIQ on ROA and ROE. The reason that this opposite relationship exists is that banks have too few liquid assets in reserve compared to total assets and when their customers suddenly withdraw money, the source of liquidity is short, not enough to meet the other withdrawal demand, affecting the bank's profit. This result is said to be consistent with the study of Fredrick Mwaura Mwangi (2014); Ali Sulieman Alshatti (2015) and Nguyen Thu Hieu (2015).

Variable Capital Adequacy Ratio (CAR): Regression results show that Capital Adequacy Ratio (CAR) has no impact on Return on Total Assets (ROA). However, at the 1% level of statistical significance, the relationship between CAR and ROE has a negative sign, and the relationship between CAR and NIM has a positive sign. Most of the capital adequacy ratio in the period 2007 - 2010 of 20 Vietnamese commercial banks in the author's sample is relatively low (below the safety level of 9%). It can be said that CAR is considered as the survival coefficient of the bank, acts as a buffer to protect commercial banks against the instability of the economy and is a factor to reduce the risk of

liquidity risk in the banking system. However, by the period 2011 - 2021, the capital adequacy ratio has been greatly improved by Vietnamese commercial banks, which has helped increase the bank's operational efficiency. The author's research results are said to be consistent with the study of Ameni Ghinimi et al (2017); Tran Thi Ngoc Diep (2019) and Vo Tan Loc (2021).

Variable Non-Performing Loan (NPL): Regression results show that Non-Performing Loan (NPL) has a negative impact on bank performance. Specifically, the negative expectation sign represents the negative relationship between NPL and ROA, between NPL and ROE at the 1% statistical significance level. Besides, the research results also did not find the impact of the NPL ratio (NPL) on the Bank's Net Interest Margin (NIM). To better explain the above negative effect, we believe that there is a relationship between credit risk and liquidity risk and that credit risk is the cause of liquidity risk. The fact in Vietnam, in the period 2008 - 2011, and 2012 - 2016, the situation of bad debt in the banking system increased, bank credit grew rapidly, and most commercial banks did not pay attention to credit quality but massively lend money, ignoring the bad changes in the macroeconomy. Domestic macro is showing signs of instability with high inflation, production and business activities of non-financial enterprises are facing many difficulties and challenges; The world macro is becoming a mess with the remnants of the financial crisis at the end of 2007. All these disadvantages have turned into weaknesses that seriously reduce the quality of assets, profits, and business performance of commercial banks in Vietnam. Even worse, in the period 2012 - 2015, there were many commercial banks that had to be merged and consolidated; even forced to declare bankruptcy, greatly affecting the whole banking system. The author's research results also provide more empirical evidence to support the research results of Ahmed Arif & Ahmed Nauman Anees (2012); Nguyen Cong Tam & Nguyen Minh Ha (2012); Ho Thanh Thuy (2017); Phan Vu Hoang Nga (2020).

Variable Loan To Total Deposit Ratio (LDR): There is a positive relationship between the loan-to-deposit ratio (LDR) and the performance of Vietnamese commercial banks. Specifically, the impact between LDR and ROA, ROE is shown at 1% significance level and the impact between LDR and NIM is found at 5% significance level. The reason, this positive relationship exists because credit activities are considered as the main activities that bring the majority of profits for all commercial banks. Consequently, the ratio of loans to total deposits is high (at an acceptable level) is also a factor capable of improving operational efficiency for banks. However, credit is also an asset with poor liquidity and high risk, it will also become a double-edged sword pushing down the bank's business performance. The author's research results show that the direction of impact of LDR variable on ROA, ROE, and NIM of commercial banks is not similar to previous studies of Ali Sulieman Alshatti (2015) and Nguyen Thu Hieu (2015).

Variable Economic Growth Rate (GGDP): Contrary to the author's expectation about the macro factor - annual economic growth rate (GGDP), with a significance level of 5%, the impact of GGDP on ROE has a negative sign, and no statistical significance was found about the direction of the impact of GGDP on ROA and NIM of 20 commercial banks in the sample. This result is not consistent with Chung - Hua Shen et al (2009); Naser Ail Yadollahzadeh Tabari et al (2013) and Phan Vu Hoang My (2020).

Variable Inflation Rate (INF): The impact of the variable inflation rate (INF) on operational efficiency of Vietnamese commercial banks is contrary to the author's expectations as well as to previous research by Phan Vu Hoang Nga (2020). With a statistical significance level of 1%, INF has the same reaction with ROE and NIM of 20 commercial banks in the sample;

there was no statistical significance for the relationship between INF and ROA. This result is said to be consistent with the study of Nguyen Cong Tam & Nguyen Minh Ha (2012).

Table 1: Descriptive statistics

No.	Vars	Obs	Mean	Std. Dev.	Min	Max
1	ROA	300	0.9483	0.7083	0.0014	4.7289
2	ROE	300	10.7105	7.3774	0.0283	36.2758
3	NIM	300	2.8774	1.1927	0.5016	8.1700
4	LTGAP	300	39.7079	24.1948	-19.8268	90.3704
5	SIZE	300	32.3389	1.3075	28.3422	35.1051
6	ETA	300	9.2159	5.8399	0.0738	49.8674
7	LIQ	300	0.1998	0.1055	0.0450	0.6104
8	CAR	300	13.8653	7.7042	0.0000	77.9000
9	NPL	300	2.1662	1.4359	0.0000	11.4017
10	LDR	300	1.4986	0.3775	1.0343	3.7015
11	GDP	300	5.8043	1.3445	2.5889	7.2000
12	INF	300	6.9363	6.1087	0.6312	23.1155

Source: Author's calculated

Table 2: Regression results

Vars	Pool OLS			FEM			REM		
	ROA	ROE	NIM	ROA	ROE	NIM	ROA	ROE	NIM
LTGAP	-.00710***	-.0738***	-.00979***	-.0079***	-.0842***	-.00792***	-.0078***	-.0835***	-.008***
SIZE	.102***	2.348***	.0852	.0975	1.853***	.192**	.0958*	1,989***	.172**
ETA	.0333***	.0843	.0453***	.0304***	.0144	.0281**	.0309***	.0273	.0294***
LIQ	-.692	.0395	-4.746***	-.903	-4,931	-4,589***	-.868	-3,946	-4.617***
CAR	.00987*	-.126**	.0268***	.00395	-.173***	.0223**	.00475	-.166***	.0223***
NPL	-.106***	-1.125***	-.00212	-.0856***	-.884***	.0343	-.0882***	-.913***	.0323
LDR	.289**	2.361**	.245	.405***	3.254***	.468**	.387***	3,079***	.454**
GDP	-.0664**	-.505*	-.0489	-.0669***	.596**	-.0395	-.0672***	-.573**	-.0417
INF	.00929	.193***	.0261**	.00790	.168**	.0330***	.00785	.174***	.0318***
_cons	-2.261	-60.82***	.409	-2.135	-43.31**	-3.432	-2,069	-47.97***	-2.747
R - square	0.2609	0.3547	0.2220	0.2544	0.3468	0.1909	0.2564	0.3494	0.1977
Test - value	F = 11.38	F = 17.71	F = 9.19	F = 11.58	F = 10.63	F = 10.33	Wald = 109.56	Wald = 110.50	Wald = 96.74

*Note: *, **, *** correspond to the significance levels of 10%, 5%, 1%*

Source: Analysis results using Stata 15.0 software

4. Suggestions to reduce liquidity risks and improve operational efficiency in commercial banks

- Through the calculation of the liquidity conversion gap, the bank can control the possible liquidity risk. Specifically, the amount of annual deposits by term is the basis for determining supply sources' liquidity stable and low-cost, detecting the increase and decrease in the average amount of deposits to assess the level of capital mobilization of the bank; after then, find out the cause and propose solutions to the abnormal changes (sudden decrease) of the deposit amount. In addition, through this liquidity conversion gap, banks can also determine their credit growth from average loan demand by term. Finally, determine whether the bank's liquidity is in excess or deficiency through the difference between loans and customer deposits.

- Bank size is also a necessary factor to improve business performance at Vietnamese commercial banks. With a large enough scale, the bank knows how to exploit and take advantage of economic advantages that can enhance the image, brand, quality of products and services provided to customers; since then, the bank's profit has also improved more clearly. To take advantage of scale, bank managers are forced to improve their management skills and capacity by controlling unusually rising costs.

- Equity ratio has a positive impact on the performance of commercial banks. Therefore, with the opportunity coming from the open international integration, Vietnamese commercial banks can find and increase their capital by cooperating with financial partners who are knowledgeable about the banking industry, have stable financial foundations, and have good management ability. Access to many different sources of mobilized capital will partly help commercial banks' business activities become more efficient.

- The ratio of liquid assets to total assets has a positive and negative impact on the performance

of Vietnamese commercial banks; however, the opposite effect is more often found. The amount of liquid assets is too low, causing the liquidity ratio to be low, and the bank's failure to meet customers' sudden withdrawal needs in a timely manner can also significantly reduce profits. On the other hand, when the ratio of liquid assets to total assets is too high, it also shows that the bank's profitability is too low and the trade-off for an opportunity cost is too high. Therefore, Vietnamese commercial banks are forced to control and maintain a reasonable proportion of liquid assets in order to promptly meet and ensure payment needs as well as stabilize the bank's operational efficiency.

- Vietnamese commercial banks need to focus on ensuring liquidity, and maintaining the capital adequacy ratio (CAR) at the minimum level set by the State Bank of 9%. Vietnamese commercial banks can consider and improve the capital adequacy ratio by reducing high-risk assets, increasing equity capital, increasing tier 2 capital by issuing bonds, increasing capital through the stock market, raising capital through increasing retained earnings…

- Controlling bad debt is a top priority in any bank. In order to do this task well, commercial banks need to closely monitor and evaluate each credit provided to customers, and classify debts correctly to have effective debt recovery measures, to avoid becoming uncollectible accounts. Simultaneously, commercial banks need to strengthen risk management to minimize possible losses; review and re-evaluate collateral in order to recover the case of foreclosure of customer assets (debt recovery)

- Control the ratio of loans to total deposits at a reasonable level, not granting credit in an easy way, causing credit growth to overheating, forming debt reversal loans, bad debt loans, and backyard loans; prevent new loans by mobilizing without resolving old debts.

- Strengthen the ability to forecast annual macro conditions to have contingency plans to limit risks as well as possible losses.

- The human factor is the most important factor, so commercial banks need to train a team of enthusiastic, honest, capable, and highly qualified staff.

- In addition, the SBV needs to improve efficiency and strictly control the inspection and supervision of commercial banks' activities to take timely measures to handle violations and prevent the "domino effect" of the banking system.

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SUPERVISORY GUIDANCE AND TOURISTS' BEHAVIORS: AN EXPLORATORY STUDY FROM SOCIALLY SUSTAINABLE TOURISM PERSPECTIVE

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Abstract: *This study aims to explore the impact of supervisory guidance by tour guides and local host over the deviant tourist behaviors from a socially sustainable tourism perspective. A qualitative study was conducted in Khau Pha, a remote destination in Vietnam, with 19 informants including tour guides, tourists, and local community. The findings suggest that supervisory guidance play an important role in promoting socially sustainable tourism behaviors and reducing deviant tourist behaviors. The implications and future research directions are also discussed in this paper.*

• Keywords: *socially sustainable tourism, deviant tourist behavior, supervisory guidance, qualitative research.*

Tóm tắt: *Nghiên cứu này khám phá ảnh hưởng của hướng dẫn giám sát từ hướng dẫn viên và cộng đồng địa phương đối với hành vi du lịch lệch chuẩn. Dựa trên góc nhìn du lịch bền vững về xã hội, một nghiên cứu định tính được thực hiện tại Khau Phạ, qua phỏng vấn 19 hướng dẫn viên, du khách và người dân địa phương. Kết quả nghiên cứu cho thấy hướng dẫn giám sát đóng vai trò quan trọng trong việc khuếch trương các hành vi hướng tới sự bền vững du lịch về xã hội và làm giảm các hành vi lệch chuẩn trong du lịch. Bài viết cũng thảo luận các hàm ý và hướng nghiên cứu trong tương lai.*

• Từ khóa: *du lịch bền vững về xã hội, hành vi du lịch lệch chuẩn, hướng dẫn giám sát, nghiên cứu định tính.*

1. Introduction

In the tourism field, the topics related to sustainable tourism have become one of the critical research areas (Liu, 2003). Previous studies often refer to sustainable tourism with three dimensions including economy, environment, and society (Boström, 2012). Most studies, however, have been focusing on the environmental and economic dimensions, leaving social sustainability the least discussed dimension in sustainable tourism research (Shirazi and Keivani, 2017). Therefore, there is a need to spend more effort to examine social dimension of sustainable tourism (Qiu Zhang et al., 2017).

Roxas et al. (2020) have proposed a framework pertaining to the roles of stakeholders in governing tourism destination. Among the stakeholders, tourists have been considered to play an important role in facilitating efforts to achieve sustainable development. Past research also suggests that most of the negative impacts of tourism come from improper tourists' behaviors (Hall and Lew, 2009). Similarly, Li and Chen (2017) suggest that deviant tourist behavior damages tourism development, and managing deviant tourist behavior significantly contributes to destinations' sustainable development. However, there has been modest research effort examining tourists' roles in contributing to sustainability (Roxas et al., 2020), especially to socially sustainable tourism (Caruana et al., 2014). It is, therefore, important to fill the gap

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by studying deviant tourist behavior as well as its antecedents with the purpose of controlling or managing them towards social sustainability.

Previous studies have long provided empirical evidence to support the significant role of supervisory guidance in predicting the behaviors of employees and students (e.g., Colvin et al., 1997; Zheng et al., 2015). In the tourism context, tour guides and host community (i.e., local people) often play the roles similar to supervisors' (Wang et al., 2018; Weiler and Black, 2015) when they provide behavioral guidance to tourists. Thus, this study aims to address the main research question: What is the role of supervisory guidance on domestic tourists' deviant behaviors from a multi-stakeholder perspective.

2. Theoretical background

2.1. Social sustainability in tourism and deviant tourist behaviors

Sustainable tourism, originated from the more mainstream sustainable development, is defined as the process that "takes full account of its current and future economic, social, and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities" (UNEP and UNWTO, 2005, p. 11). Within the scope of tourism, social sustainability, or social sustainable tourism, leans toward promoting the local communities' quality of life (Pinto Da Silva et al., 2019) or cultural preservation (Qiu Zhang et al., 2017).

Tourism provides a fertile ground for deviant behaviors to bloom as it creates separate domain in which the social norms are suspended (Uriely et al., 2011) and tourists can just ignore the local rule (Turner & Ash, 1975). These practices, often called deviant tourist behaviors, are destructive to tourism resources, tourists' experience, and related businesses (Li & Chen, 2017). The term "deviant tourist behaviors" is recently adopted to include a wide range of misbehaviors. Vandalism is a type of deviant behavior particularly well studied in tourism research. It includes both physical impact on the site, such as leaving traces (Thirumaran, 2013) or picking parts as souvenirs (Weaver, 2006), and abstract violation like disrespecting local traditions (Bhati and Pearce,

2016). The number of manifested forms of deviant tourist behaviors can be overwhelming. While these misbehaviors are usually minor offend, there can be serious consequences, such as physical harassment or violence (Aslan and Kozak, 2012).

Deviant tourist behaviors are motivated behaviors and are the sum of multiple antecedents (Bhati and Pearce, 2016). Li and Chen (2017) explain the motivation to engage in deviant tourist behaviors as the consequence of a perception of money as power. On the other hand, Uriely et al. (2011) suggest that deviant behaviors can be a way for tourists to satisfy their unconscious needs. Also, deviant behaviors are sometimes considered as the essence of tourism as part of its hedonistic experiences (Bhati and Pearce, 2016), and therefore are totally justified and even encouraged. Unlike the disapproving view often taken on deviant behaviors, this hedonistic view of deviant tourist behaviors implies a certain degree of acceptance of these practices as long as they are meant for leisure. In this study, deviant tourist behaviors are limited within the usual observations related to tourism, such as committing vandalism, making noise, disrespecting local rules, and taking improper photos (Li and Chen, 2017; Uriely et al., 2011).

2.2. Supervisory guidance in tourism context

The conceptualization of supervisory behavior is loosely defined in extant literature. In its early definition, supervisory behavior refers to the act of "assigning work and directing task performance" from a superior position, usually the manager (Griffin, 1981, p. 176). These instructions aim to induce positive outcomes from the target subject. Gilbreath and Benson (2004) found that supervisors' support can increase their employees' psychological wellbeing. Guiding the employees can also improve productivity but only positive instructions would lead to the desired outcomes (Zheng et al., 2015). Thanks to its simple concept, supervisory behavior is a versatile concept that can be utilized in various contexts outside of management. For example, Colvin et al. (1997) showed that supervising students can correct their misbehaviors.

As not every instruction is the same, supervisory behaviors exist in various forms. Abusive supervisory behaviors (Tepper, 2007) are also instructions from a superiors but are very destructive and harmful (Tepper et al., 2017). Well-delivered supervisory behaviors with good intention are sometimes referred to as "supervisory coaching" (Ellinger et al., 2003) or "supervisory guidance" (Dineen et al., 2006). Ellinger et al. (2003)'s conceptualization is centered around the coaching, which is "a form of facilitating learning to encourage growth and development" (p.438). On the other hand, Dineen et al. (2006) focus on promoting the desired outcomes and limiting the undesired behaviors.

In the context of tourism, findings regarding supervisory guidance in tourism are rare because we lack a clear manager-employee hierarchy in the relationship between tourists and tourism service providers. However, tour guides and the host community are suggested to play the role of mentor to shape tourists' behaviors throughout the journey (Wang et al., 2018; Weiler and Black, 2015). The current study adopts the essence of Dineen et al. (2006)'s conceptualization and supervisory guidance refers to the extent to which tour guides and local people instruct tourists regarding the enactment of positive behaviors and avoidance of negative behaviors.

3. Research methodology

3.1. Sampling and data collection

To serve the purpose of this study, we employed a qualitative research approach. Specifically, 19 interviews were conducted with tourism stakeholders in Khau Pha valley (Yen Bai province), one of the favorite destinations in the Northwest mountains of Vietnam. This site has attracted many domestic tourists.

The informants were selected based on three main groups of stakeholders, including tour guides, tourists, and the local community. Convenience and snowball sampling techniques were employed. We first interviewed tour guides taking tourists to Khau Pha and then asked them to recommend other tour guides with similar experiences. Tourists were selected at the tourist sites based on their willingness to participate in the interview. Local people were selected among those who provide tourism services or those who are affected by tourists' behaviors. A total of 19 informants were interviewed and their IDs were coded as shown in Table 1.

Table 1. Informants' profile

Group	Informant type	Number of informants	Informant number
G1	Tour guide	6	1, 2, 3, 4, 5, 6
G2	Local people (host community)	7	7, 8, 9, 10, 11, 12, 13
G3	Tourist	6	14, 15, 16, 17, 18, 19

The interviews started with a briefing about the research purpose and the ideas of social sustainability. The informants were asked to share their views of tourists' behaviors that may impact social sustainability and the factors that have impacts on tourists' behaviors. The interviews focused on exploring the major aspects of supervisory guidance from tour guides and local people pertaining to knowledge, education briefing, reminder, and rules enforcement. The factors that have impacts on the effectiveness of supervision guidance were also explored. Open-ended questions were use throughout the interview to encourage informants to express themselves freely. The interviews lasted between 30 and 45 minutes, and all informants were asked for permission to record the conversations.

3.2. Data analysis

The interviews were transcribed and then translated into English using the back-translation technique. Next, the corpus was thematically analyzed. To ensure internal validity, the data were performed by two of the researchers using an inductive strategy. These two researchers first coded three interviews together. Each researcher then coded the remaining corpus separately, strictly respecting the double coding procedure (Miles *et al.*, 2020). The discrepancies in coding were settled after a discussion with the third researcher, who reviewed the codes obtained from the other two researchers. The third researcher's experience in the qualitative study came in handy in resolving this issue. Finally, the results of the thematic analysis were reported as per the research question.

4. Research results

Two main themes emerged from the interviews, those are presented in the following.

4.1. The roles of supervisory guidance

The findings regarding the impact of supervisory guidance on tourist behaviors were classified into three groups. The first group indicated the preventive effect of supervisory guidance over deviant behaviors. The second group affirmed the role of supervisory guidance in promoting behaviors that have a positive impact on social sustainability. The last group indicated the lack of supervisory guidance is the main cause of tourists' deviant behaviors.

With the group referring to the preventive effect of supervisory guidance, the results strongly suggested the significant roles of both tour guides, host community and even local authorities.

"Regulations and code of conduct by local authorities and host community [avoid conducting deviant behaviors] will work when well informed to tourists. Travel agencies, tour guides, hotels, restaurants and drivers can also go with the local people in telling tourists about that." (Informant 7)

"Local authorities make regulations… tour operator and tour guides should give advice to tourists before going to the destination." (Informant 11)

While seeing that guidance on the code of conduct from the host community can contribute to the prevention of deviant behaviors, the role of the tour guide is still emphasized. In addition, the power of tour guide in delivering supervisory guidance will be improved if the tour guide has deep knowledge and experience.

"Many tourists now have a high sense of social responsibility and experience in learning about destinations... The tour guide is still the person who has the most positive impact on tourists' behaviors when they are on the tour; Reminder from tour guide or from local people can also work in preventing improper behaviors…" (Informant 2)

"I trust that if tour guides have a convincing discourse, better explain how we should behave, and better show their concern about the local culture and other social issues at the beginning of the trip, improper behaviours from tourists might be avoided." (Informant 15)

Experience with strong supervision method was also highlighted with the emphasis on penalties for both tourists and homestay owners if the tourists' deviant behaviors are conducted.

"Each homestay has a notice board showing the rules, and there are also verbal reminders to tourists by homestay owners. Tour guide is also supposed to tell the village's regulations to tourists before groups arrive in the village. There are rules that the tourist must obey the village's code of conduct, otherwise both the homestay owner and the tourists will be fined." (Informant 9)

Our interview findings also strongly suggested that the educational briefing or instructions encourage tourists to behave properly.

"As I have seen, tourists who are well informed of the dos and don'ts before coming either by the tour guide or doing their own research before travel often conduct appropriate behaviors like showing respect to community, responsible shopping, responsible social exchange…" (Informant 1)

"Tourist going with Khau Pha Friends company are well informed and thus they treated us [host community] with respect and help us a lot. It is different from other groups of tourists. They make noise, drinks…" (Informant 8)

Regarding the absence of supervisory guidance, many our informants suggested that lack of instruction or education can lead to tourists' improper behaviors. They referred to the "*lack of education*" as mentioned by informants 10 and 14 or "*lack of awareness*" as mentioned by informants 16,18,19.

"They did the wrong things because nobody tells them that these are wrong." (Informant 4)

"I have seen tourists who are not in my group try to do the good things but end up doing the wrong things like giving money to local people

as charity. Obviously, they did not receive instruction on what to do." (Informant 6)

While the findings strongly suggested that supervisory guidance in different forms works well in preventing deviant behaviors and encourage the proper ones, there are some different views. Some informants claimed that setting up a code of conduct or the nudge 'theory-based' interventions does not work in promoting appropriate tourist behaviours.

"*Signboards of rules and regulations and recommendations from tour guides or tour operators do not work. ... Tourists just keep exhibiting wrong behaviours even though I do remind them to behave properly all the time.*" (Informant 3)

"*When they arrive, we nicely tell them not to sing karaoke late at night but they still do until other neighbour get mad and shout at them.*" (Informant 12)

4.2. Factors Influencing the Power of Supervisory Guidance

Besides investigating the influence of supervisory guidance on tourist behaviors, the interview findings also suggested some factors influencing supervisory guidance's power. These factors also help explaining the "failure" of supervisory guidance as suggested by informants 3 and 12. Some informants suggested the low bargaining power of the host community. Lower socioeconomic status leads to lower self-esteem (Sultana & Kabir, 2018). This along with the promotion and marketing campaigns over-emphasising the importance of customers (e.g., tourists), makes service providers stay in lower status. Most tour guides "*are obsessed with the idea that 'the customer is the King' and ... always trying to please tourists regardless of their behaviours....*" (Informant 13)

Some interviewee also mentioned that some tourists ignored instructions, guideline from tour guides or from local hosts because they think that as the one who pay money they are superior.

"*Tourists think that they have the right to do what they want because they believe that they have a superior status ...*" (Informant 5)

5. Discussion

5.1 Discussion on the Findings

This paper explores the impact of supervisory guidance on deviant tourists' behaviors among Vietnamese tourists from socially sustainable tourism perspective. In this study, we explore this impact under the view of Dineen *et al*. (2006)'s approach focusing on the instruction to promote positive behaviors and to encourage the avoidance of negative behaviors. The findings suggest that supervisory guidance by tour guides and local people can help prevent deviant tourist behaviors and promote positive behaviors.

The findings also suggest that socially deviant behaviors by tourists are due to the absence of the advice and reminders provided by tour guides and local people regarding which behaviors should be done and which ones should be avoided during the trip. Especially, our findings explore that knowledge, skill and experience of tour guide can enhance the impact of supervision guidance.

While the findings show the power of supervisory guidance by tour guide and host community on tourists' behavior, there are still some different views on that. It may be due to the low bargaining power and the inferiority complex of some tour guides or the local hosts because of their lack of knowledge, skills, and experience. It may also be due to the feeling of superiority held by some tourists.

Overall, the findings contribute to a better understanding of supervisory guidance, an important factor driving tourist behaviors. Specifically, from a theoretical perspective, this study enriches the existing knowledge pertaining to socially sustainable tourism and factors influencing deviant tourist behaviors. This study is among the few pioneering studies to explore the impact of supervisory guidance (from tour guides and host community) in the tourism context.

5.2 Implications and Future Research Directions

The findings of this study provide several managerial implications to tourism businesses. First, tour operators should provide effective training for their tour guides to build the

guides' knowledge and skills in giving effective supervisory guidance to tourists. In addition, instructions and enforcement of proper behaviors (dos and don'ts) should be stressed as an obligatory part of the tour guides' responsibility. Furthermore, tourism businesses may want to work closely with the host community in joint effort of promoting socially sustainable tourism.

This study also provides some implications for policy makers in developing effective communication campaigns to encourage tourists to engage in proper behaviors and avoid deviant behaviors by raising their aware of the negative consequences associated with deviant behaviors. The government at national and local level should also work with host communities in developing and enforcing the code of conduct towards tourism sustainability in general and social sustainable tourism, particularly.

Based on the findings and limitations of this study, several directions for future research can be recommended. First, this study is qualitative research by nature, conducted in a remote destination in North-western, Vietnam. Future research can conduct a large-scale survey to test the impact of supervisory guidance on deviant tourist behaviors. Empirical evidence regarding the impact of tour guides and host community separately should be desirable. Next, future studies may want to examine other antecedents of deviant tourist behaviors in addition to supervisory guidance. Perhaps, a theoretical model should be developed and proposed relationships can be empirically tested to gain better understanding of the factors driving tourist behaviors towards social sustainability.

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FACTORS INFLUENCING ACCOUNTING INFORMATION SYSTEMS IN SMALL AND MEDIUM ENTERPRISES: THE CASE IN HANOI

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Abstract: *The study aims to identify the factors influencing the accounting information system in small and medium-sized enterprises in Hanoi, Vietnam. The questionnaire was distributed to 350 small and medium-sized enterprises in Hanoi, and a total of 245 valid responses were collected. They included directors, chief accountants, and accounting staff. By multivariate regression analysis from SPSS 22 software, the results indicate that there are five factors affecting the effectiveness of the accounting information system in small and medium-sized enterprises in Hanoi. The level of influence of these factors is ranked as follows: (1) Managerial knowledge, (2) External expert support, (3) Organizational characteristics, (4) User participation in the system, and (5) Managerial support. The research results are the basis for proposing solutions to improve the Accounting Information Systems in Vietnam for making decisions.*

• Keywords: *accounting information systems, small and medium-sized enterprises, Hanoi.*

Tóm tắt: *Nghiên cứu nhằm xác định các nhân tố ảnh hưởng đến hệ thống thông tin kế toán tại các doanh nghiệp vừa và nhỏ tại Hà Nội, Việt Nam. Bảng câu hỏi được phát cho 350 doanh nghiệp nhỏ và vừa tại Hà Nội và thu thập được tổng cộng 245 câu trả lời hợp lệ. Họ bao gồm giám đốc, kế toán trưởng và nhân viên kế toán. Bằng phân tích hồi quy đa biến từ phần mềm SPSS 22, kết quả cho thấy có 5 nhân tố ảnh hưởng đến hiệu quả của hệ thống thông tin kế toán tại các doanh nghiệp nhỏ và vừa trên địa bàn Hà Nội. Mức độ ảnh hưởng của các yếu tố này được xếp hạng như sau: (1) Kiến thức quản lý, (2) Hỗ trợ chuyên gia bên ngoài, (3) Đặc điểm tổ chức, (4) Sự tham gia của người dùng vào hệ thống và (5) Hỗ trợ quản lý. Kết quả nghiên cứu là cơ sở để đề xuất các giải pháp hoàn thiện Hệ thống thông tin kế toán phục vụ ra quyết định tại Việt Nam.*

• Từ khóa: *hệ thống thông tin kế toán, doanh nghiệp vừa và nhỏ, Hà Nội.*

Introduction

The development of information technology has completely changed the accounting landscape, most clearly shown in the method of processing and providing accounting data, which has made great strides compared to the manual accounting process before. However, the accounting information system in Vietnamese enterprises in general, especially in small and medium-sized enterprises, still has many limitations. Therefore, it is necessary to build an effective accounting information system to provide accurate, complete, and timely information to managers. By doing this, managers can make the right decisions, contributing to improving business efficiency and creating competitive advantages for businesses.

Small and medium enterprises play an important role in the economy of Hanoi, the capital of Vietnam, accounting for about 97% of the total number of enterprises operating in the municipality (Vietnam Government, 2009). But in fact, the accounting information system of small and medium-sized enterprises in Hanoi still has many limitations such as weak accounting qualifications, outdated computer systems, and software, placing importance on financial accounting only. Therefore, the accounting information system of enterprises has not fully played its role of providing useful information for managers in the decision-making process

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(Binh V. T. et al, 2022). There is not a single industry or field escaping this pressure (Otley, 2016). To cope with the fiercely competitive environment, enterprises will increasingly use accounting information to support planning, control, and decision-making. However, in reality, the application of managerial accounting in Vietnamese small and medium-sized enterprises is still limited, only financial accounting be brought into focus, while managerial accounting has received little attention (Tran Ngoc Hung, 2016). Therefore, the question is whether, in the advent of fierce competitive pressure, Vietnamese small and medium enterprises will increase the use of management accounting information.

In this study, we want to evaluate the factors affecting the accounting information system of SMEs in Hanoi, Vietnam. The remainder of this paper is arranged as follows: Part 2. Theoretical foundations to develop theoretical models and hypotheses. Part 3 presents research methods, sampling procedures, data collection, and measurement of observed variables. Part 4 is the results of data analysis using the proposed model. Part 5 ends by summarizing the findings and conclusion.

Research models and hypotheses

Organizational characteristics

Size, organizational structure, and business strategy are three issues of organizational characteristics that many researchers on accounting information systems are particularly interested in. Regarding the size of the organization, large-sized companies often have financial and human resources, so they find it easier to accept and use accounting information systems more effectively (Wisna, 2015). Research by Binh V.T.T et al (2022) shows that organizational structure has a positive influence on the accounting information system because at this time the system must work effectively to support managers in making the right and timely decisions. In recent research, Binh V.T.T. et al (2022) also pointed out that organizational culture has a strong effect to enhance the quality of accounting information systems of Vietnamese firms. Therefore, the first proposed research hypothesis is:

Hypothesis H1: Organizational characteristics have a positive relationship with the effectiveness of the accounting information system.

Managerial knowledge

Several studies in the world have been carried out and proved that the owner/manager is an important factor affecting the accounting information system in the enterprise. Ismail et al (2007) also argue that the knowledge of managers/owners has an influence on accounting information systems in small and medium-sized manufacturing enterprises in Malaysia. Thong (1999) shows that one of the important factors affecting the application of accounting information systems is the managers' knowledge of information systems. In Vietnam, a study by Hieu and Anh (2020) concludes that managerial knowledge affects the effectiveness of accounting information systems in small and medium-sized enterprises in Ho Chi Minh City. Therefore, the second proposed research hypothesis is:

Hypothesis H2: Knowledge of managers/ owners has a positive relationship with the effectiveness of the accounting information system.

Managerial involvement

The involvement of managers/owners also plays an important role in the successful implementation of information systems in SMEs. Therefore, the third proposed hypothesis is:

Hypothesis H3: The involvement of managers/ owners has a positive relationship with the effectiveness of the accounting information system.

Managerial support

In a study on factors affecting the successful application of management information systems in organizations, Al-Mamary et al. (2014) indicated that senior managers' support affects the perceived usefulness and satisfaction of management information system users. The support of managers is their willingness to provide the necessary resources (financial, human, and time) for the successful implementation of the project. Therefore, the fourth proposed research hypothesis is:

Hypothesis H4: The support of managers/ owners has a positive effect on the effectiveness of the accounting information system.

User participation in the system

The participation of system users is also an important factor for the successful implementation of an accounting information system. According to Al-Eqab and Ismail (2011), user participation is the intervention of users in the processes from planning and development to implementation of accounting information systems. These people are the direct users of the accounting information system, so they are the most knowledgeable about the requirements of an accounting information system for the job (Hieu & Anh, 2020). Therefore, the fifth proposed research hypothesis is:

Hypothesis H5: The participation of system users has a positive relationship with the effectiveness of the accounting information system.

External expert support

The success of an information system implementation depends not only on the expertise of the accountants and owners inside the business but also on external IT support (Deni, 2015). External units that affect the application of accounting information systems in small and medium-sized enterprises include:

Suppliers and consultants: Many researchers have emphasized the importance of suppliers and consultants for computerization projects in small and medium enterprises (Breen et al., 2004).

Accountants Association and IT Training Institutions: Also play an important role in encouraging SMEs to computerize their book-keeping processes (Breen, 2004; Hamid, & Arash, 2018; Lien D. T. Q., 2021).

Government: Government support also plays an important role in promoting IT adoption among SMEs, especially in developing economies (Jarvenpaa & Ives, 1991).

Accounting firms: Accounting firms are also a source of advice for small and medium-sized enterprises in implementing and applying accounting information (Jarvenpaa & Ives, 1991; Hieu & Anh, 2020).

Therefore, technical support, training, and a harmonious working relationship with consultants can reduce the risk of failure in small and medium enterprises.

Hypothesis H6: The support of external experts has a positive effect on the effectiveness of the accounting information system.

Thus, based on understanding the theoretical overview of the accounting information system, the background theories along with the analysis of relevant research at home and abroad, the authors have identified 6 factors that are affecting the efficiency of the accounting information system of small and medium enterprises in Hanoi province. Figure 1 presents the research model.

Research methods

Samples and methods of data collection

Quantitative research was carried out to evaluate the scale and analyze factors to discover and test the influence of factors on the accounting information system in small and medium enterprises in Hanoi. After having completed the survey from the qualitative research step, the author distributes the survey to the directors, chief accountants, and accounting staff who are knowledgeable about the accounting information system. The study sample size depends on the analytical method, this study uses exploratory factor analysis (EFA) and multivariate linear regression analysis methods. First of all, in exploratory factor analysis, the sample size is determined based on the minimum size and the number of observed variables included in the analysis. According to Hair et al. To achieve the above sample size, 350 questionnaires were distributed. To collect research data, the author directly distributed survey questionnaires to respondents at enterprises and collected them immediately after the questionnaires were answered. In addition, the author also emailed the survey questionnaire to the survey subjects that the author knew. As a result, 283 survey votes were obtained (reaching the rate of 80.86%), of which 245 were valid. Invalid questionnaires were discarded such as blank votes, incomplete answer sheets, or votes that only selected one level for all statements, etc.

Table 1. Descriptive statistics of the study sample

Characteristic	Frequency	Percentage (%)
1. Operating time		
Less than 5 years	112	45.72
From 5 to 10 years	93	37.96
Over 10 years	40	16.32
2. Areas of operation		
Trade and services	171	69.8
Industry and construction	57	23.27
Agriculture, forestry, and fisheries	14	5.71
Other areas	3	1.22
3. Size		
Micro	67	27.35
Small	113	46.12
Medium	65	26.53
4. Level of IT application in accounting work		
Use manual accounting	32	13.06
Use Excel, Access (automatically render reports)	41	16.73
Use accounting software	167	68.16
Using ERP system	5	0.01
5. Surveyed person's position		
Accountant	185	75.51
General Accountant	47	19.18
Head/Deputy Head of Accounting Department	9	3.67
Director/Deputy Director	4	1.64

Source: Compiled by the author

Measurement of observed variables

In addition, the organizational structure, as well as the business strategies of the enterprise, will affect and set requirements for an accounting information system compatible with it. Therefore, we design a scale of organizational characteristics through three observed variables: (1) Size; (2) Organizational structure; and (3) Business Strategy

Through group discussion with experts, the experts commented on additional observed variables (4) Qualifications of accountants. Experts believe that the qualifications of accountants in different businesses are not the same and have an important influence on the successful implementation of an accounting information system. The scale of independent variables is measured by 24 observed variables, specifically, organizational characteristics (4 observed variables), managerial knowledge (5 observed variables), managerial involvement (4 observed variables), managerial support (3 observed variables), the system user participation (4 observed variables) and external expert support (4 observed variables). In addition, to measure the dependent variable of the effectiveness of the accounting information system, the study uses a scale of 6 observed variables.

Research results

Result of factor analysis

The initial analysis results for the scale of factors affecting the accounting information system in small and medium-sized enterprises have Cronbach's Alpha coefficient of 0.770 (> 0.6). The total correlation coefficient of the remaining observed variables is greater than 0.3.

Table 2. Reliability results of the scales

Observed variables	Average value if item deleted	Variance if item deleted	Total variable correlation	Cronbach's Alpha if the item deleted
DDTC1	10.27	3.993	.542	.735
DDTC2	10.30	4.089	.639	.680
DDTC3	10.20	4.207	.582	.710
DDTC4	10.11	4.464	.533	.735
KTQL1	12.95	8.465	.624	.833
KTQL2	13.13	7.732	.761	.796
KTQL3	12.93	8.094	.684	.817
KTQL4	13.18	8.550	.600	.839
KTQL5	13.06	8.152	.657	.825
TGQL1	10.27	3.778	.715	.737
TGQL2	10.23	4.474	.566	.806
TGQL3	10.20	4.196	.595	.793
TGQL4	10.26	3.503	.702	.745
HTQL1	6.83	2.102	.565	.690
HTQL2	6.87	2.240	.612	.638
HTQL3	6.96	2.203	.570	.683
NDHT1	9.99	4.553	.655	.708
NDHT2	10.03	4.696	.583	.744
NDHT3	10.20	4.704	.619	.726
NDHT4	9.96	4.806	.535	.769
CGBN1	10.79	3.733	.421	.700
CGBN2	10.79	3.463	.460	.680
CGBN3	11.04	3.113	.578	.607
CGBN4	11.10	3.154	.560	.619

Source: Data analysis results

In summary, the results of testing the scale value through Cronbach's Alpha coefficient show that 25 observed variables of 6 independent variables and 6 observed variables of dependent variable meet the requirements, so they should be kept for further EFA analysis.

Test for direct and indirect impacts of variables

The results of data analysis show that the adjusted R2 coefficient is 48.7% (Table 3), which means that the independent variables in the model (Organizational characteristics, Managerial knowledge, managerial support, system user participation, external expert support) explained 48.7% of the variation of the dependent variable (Effectiveness of the accounting information system), the rest is explained by factors not considered in the model.

Table 3. Multivariate regression analysis

Model	R coefficient	R² coefficient	Adjusted R² coefficient	Standard deviation	Durbin-Watson
1	.707ᵃ	.500	.487	.49502	1.784
a. Independent variables: DDTC, KTQL, HTQL, NDHT, CGBN					
b. Dependent variables: HTTT					

Source: Data analysis results

Next, we perform the F-test on the fitting of the overall linear regression model. This test tells us whether the dependent variable is linearly correlated with all the independent variables.

Hypothesis H_0 is: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$

If hypothesis H_0 is rejected, we can conclude that the independent variables in the model can explain the change of the dependent variable, which means that the model is suitable for the data set of variables.

The results of testing the reliability of the scale by Cronbach's Alpha coefficient, all scales are kept unchanged for inclusion in the next step of the analysis. The scale ensures reliability with Cronbach's Alpha coefficient greater than 0.6 and a total variable correlation coefficient greater than 0.3.

As the results of exploratory factor analysis (EFA), fortunately, out of 24 observed variables

of the independent component proposed 6 independent variables and 6 observed variables of the independent factors also regressed 1 dependent factor as proposed by the original model.

The results of testing the linear regression model have 5 factors that have a positive relationship with the effectiveness of the accounting information system in descending order from large to small as follows: managerial knowledge, external experts' support, organizational characteristics, system user participation, and managerial support. Particularly, the managerial involvement factor is not statistically significant because of sig. > 0.05, however, when testing the correlation, it is found that this factor correlates with the effectiveness of the accounting information system. The results of testing the multivariate linear regression model have 5 factors that have a positive influence on the effectiveness of the information system. The results of the accounting information system with the order from large to small are summarized in Table 5.1 below. Particularly, the managerial involvement factor is not statistically significant because of sig. > 0.05, however, when we check the correlation, we find that this factor correlates with the effectiveness of the accounting information system.

Table 4. Impact of factors Analysis

No.	Factors	Impact of factors
1	Managerial knowledge	$\beta = 0.242$
2	External expert support	$\beta = 0.181$
3	Organizational characteristics	$\beta = 0.175$
4	System user participation	$\beta = 0.161$
5	Managerial support	$\beta = 0.132$

Source: Compiled by the author

The results of this study are the basis for the authors to propose recommendations to improve the efficiency of the accounting information system to improve the quality of accounting information provided to stakeholders.

Discussion and conclusion

Based on theoretical understanding and published studies related to the topic, we have identified 6 factors affecting the effectiveness of accounting information systems in small

and medium-sized enterprises: organizational characteristics, managerial knowledge, managerial involvement, managerial support, system user participation, and external expert support.

The research was carried out in two phases: (1) Qualitative research was carried out by interviewing experts. The purpose of this step is to complete the survey form to prepare for the quantitative research step; (2) Quantitative research was conducted by sending questionnaires to 350 directors/deputy directors, chief accountants, general accountants, and accountants. From the obtained 245 valid votes, we conducted the following analysis steps: descriptive statistics, scale reliability assessment, exploratory factor analysis, and multivariate regression analysis.

The results of the data analysis show that there are 5 factors affecting the effectiveness of the accounting information system of small and medium enterprises in Hanoi. Which, the influence of the factors is arranged in order from large to small as follows: (1) Managerial knowledge; (2) External expert support; (3) Organizational characteristics; (4) System user participation; and (5) Managerial support. Particularly, the factor of managerial involvement is not statistically significant because of sig. > 0.05, however, when we check the correlation, we find that this factor correlates with the effectiveness of the accounting information system. The results are similar to some previous research in Vietnam, such as Hieu and Anh (2020), and Binh V. T T et al (2022).

Based on the research results, the author also proposed some recommendations to small and medium enterprises in Hanoi, external experts, and educational institutions. Although the study has achieved certain results, there are inevitably limitations that need to be overcome in future studies such as sample size, sampling method, and data processing method.

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CURRENT SITUATION AND SOLUTIONS TO PROMOTE THE APPLICATION OF TECHNOLOGY 4.0 IN STATE ACCOUNTING IN VIETNAM

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Abstract: *The content of the paper assesses the actual situation of implementing accounting work and preparing State financial statements in the context of applying Technology 4.0; Learning from international experience in implementing accounting work. Additionally, solutions to enhance the application of 4.0 technology at the first stage of processing and recording data; Solutions to increase the application of 4.0 technology at the stage of data reconciliation and reporting; Solutions to increase the application of 4.0 technology at the stage of recording accounting books and presenting State financial statements.*

• Keywords: *state financial statements; 4.0 technology; solutions to increase the application of 4.0 technology.*

Tóm tắt: *Nội dung bài viết đánh giá thực trạng triển khai công tác kế toán và lập BCTC Nhà nước trong bối cảnh ứng dụng công nghệ 4.0; Học tập kinh nghiệm quốc tế trong thực hiện công tác kế toán. Bên cạnh đó, các giải pháp tăng cường ứng dụng công nghệ 4.0 ở khâu xử lý, ghi nhận dữ liệu đầu tiên; Giải pháp tăng cường ứng dụng công nghệ 4.0 ở khâu đối chiếu dữ liệu, báo cáo; Giải pháp tăng cường ứng dụng công nghệ 4.0 vào khâu ghi sổ kế toán và trình bày BCTC Nhà nước.*

• Từ khóa: *báo cáo tài chính nhà nước; công nghệ 4.0; giải pháp tăng cường ứng dụng công nghệ 4.0.*

First, the current situation of applying technology 4.0 in the collection and recording of initial data: The information technology application system at state accounting units initially applies artificial intelligence technology to identify and classify input information. Documents at state accounting units are electronic documents combined with digital signatures. However, the collection and recording of initial data at some state accounting units have not been automated. Most documents at state accounting units are electronic documents combined with

digital signatures. Digital signatures are mainly used in online public services at the State Treasury, online tax declaration and payment, electronic customs declaration, etc. Thanks to the application of digital signatures in processes, legality, and safety are ensured, each service is specified in detail for participating units, and the forgery of signature and a unit's seal is prevented because the Chief Accountant and the Head of the unit affix their digital signatures, payment information is kept confidential, time and costs are saved, and responsibilities of cadres and civil servants in the performance of their duties are enhanced.

Second, the current situation of applying technology 4.0 in data processing and reconciliation: An account combination - Chart of Accounts (COA) is created to classify and systematize arising economic operations, helping reflect and extract multidimensional information and control and manage the State budget fund. The Chart of Accounts is a key component of the public financial management framework. The Chart of Accounts must be designed according to certain principles in order to systematically, consistently, and comprehensively classify, record, and provide information. TABMIS's

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Chart of Accounts, consisting of 12 code segments, created in 2007, is used to classify and systematize arising economic and financial operations according to economic content and regularly, continuously, and systematically reflect and control State Budget revenues and expenditures and professional activities of the State Treasury. Depending on each account and corresponding operations, the account combination can be combined with different code segments, in particular, fund codes, account codes, and State Treasury codes are mandatory ones for any account combination. The combination of code segments in the account combination helps accountants reflect and extract multidimensional information and meet different information provision requirements. In particular, in TABMIS, the combination of code segments in the account combination is carried out on the system using the law of cross-combination between code segments. The law of cross-combination does not allow the creation of meaningless account combinations, helping accountants avoid errors in the accounting process.

Third, the current situation of applying technology 4.0 in information provision: The information technology application system at state accounting units automatically promptly dumps reports according to user information needs on the basis of artificial intelligence technology and cloud computing. From databases stored in the "cloud", the information technology application system automatically closes accounting books and generates accounting reports at the end of the accounting period. The automatic closing of accounting books at the end of the accounting period helps prevent any outside interference in accounting data and completed operations, ensuring that accounting information provided to users is always true and correct. The scheduling system automatically updates books and reports according to every time mark. The system only allows the closing of the accounting period after ensuring that all arising accounting documents are fully and accurately accounted for in the accounting period.

Current status of applying information technology in the preparation of state accounting reports: The State Budget finalization report is synthesized mainly by manual method; data has not been synchronized with TABMIS. Units using the State Budget make finalization reports on Excel tables and then sign and send them to superior management agencies for synthesis and sending to the Ministry of Finance (State Budget Department, State Treasury) for synthesis and inclusion in Annual State Budget finalization reports, being submitted to competent authorities for consideration and approval. The State Budget Department (Ministry of Finance) aggregates data using the QLNS 8.0 Application. However, because data is not synchronized and there is a lack of unexpected data, the annual budget finalization is mainly carried out manually.

Fourth, the current situation of applying technology 4.0 in data integration and interconnection: Regarding the level of data integration and interconnection at state accounting units, the data integration and interconnection of core systems (TABMIS, TMS, and KTTT) with support systems at state accounting units is assessed to be relatively good and stable. However, the level of interconnection of some applications is not high. TABMIS, TMS, and KTTT are centralized systems that connect and share data with support application systems. Regarding the level of data integration and interconnection with external units, the information technology application system has data integration and interconnection with application systems of external units.

Fifth, the current situation of applying technology 4.0 in security and decentralization: The decentralization mechanism of the information technology application system at state accounting units is implemented with 3 layers. The decentralization of use rights to users according to the scope of work, functions, and tasks of the system does not affect the general data of both the industry and state accounting units. Currently, TABMIS, TMS, KTTT and some other accounting software are centrally integrated systems, and there is a very high probability that one officer can interfere

with the database of the entire system. In the event of data loss or damage, it will take a lot of time and effort to carry out troubleshooting. Besides, due to a large number of users, building a reasonable decentralization mechanism is extremely necessary to avoid resource conflicts during use. The decentralization mechanism of the information technology application system at state accounting units is implemented with 3 layers. Regarding information security mechanisms, accounting data stored in the "cloud" will automatically back up to prevent risks during use such as damage or loss of storage devices.

Solutions

First, regulations on state finance and accounting: In the field of state finance and accounting, there is a relatively complete legal framework, such as the Law on Accounting 2015, the Law on State Budget 2015, the Law on Customs 2014, and most recently the Law on Tax Administration 2019 (effective from 01/07/2020). On that basis, the Government and the Ministry of Finance have issued Decrees and guiding documents and amended a number of state accounting regimes to conform with the Law on Accounting, the Law on State Budget, and specialized laws. In the current context of Industry 4.0, the creation and improvement of a legal framework on finance and accounting are extremely important to enhance the application of information technology in the field of state accounting.

Second, regulations on the application of information technology: In addition to the system of legal documents on finance and accounting, in order to create a legal corridor on the application of information technology in the field of state accounting, the Government and the Ministry of Information and Communications need to urgently promulgate regulations on the management, connection, and sharing of digital data nationwide, and the Ministry of Finance needs to consider, prepare and promulgate specific regulations in the field of finance and accounting in general and the state sector in particular. In addition, the Government and the

Ministry of Information and Communications need to promulgate regulations on the electronic identification of individuals and organizations as a basis for implementing online public services.

Third, improvement of the accounting process: The accounting process is the process of identifying, recording, synthesizing, and reporting economic information to decision-makers. Currently, the accounting process in Vietnam usually includes steps to collect, process, check, analyze, and provide economic and financial information in the form of value, in-kind and labor time to managers. Therefore, state accounting units need to change their perception, assess the impacts of innovation and re-establish accounting processes from the collection and recording of initial information (electronic documents) and information processing and dump to the analysis, evaluation, and storage of information. The improvement of the accounting process contributes to enhancing the usefulness of accounting information through the application of information technology in analyzing and evaluating accounting information while creating favorable conditions for accountants to mine and use accounting data sources quickly and effectively.

Fourth, digitization from sources and sharing of digital data: Information originating from any organization or individual is digitized right from that organization or individual and shared with users to minimize the requirement for state accounting units having transactions with the State Treasury to provide hard copies or scans. For example, medium-term public investment plans, annual investment capital plans, e-contracts, etc. are digitized on the information technology system of the Ministry of Planning and Investment and shared for the purpose of expenditure control of the State Treasury, and electronic invoices for the supply of goods to the public sector are digitized by enterprises, are connected to the tax authority's electronic invoice database, and needs to be shared for the purpose of expenditure control of the State Treasury.

Fifth, building an electronic storage system to manage the number of electronic records that are expected to increase significantly: To save digitization costs and manual storage costs while creating convenience for staff to process and check records, in addition to limiting the reception of paper records and encouraging units using the State Budget to provide electronic records instead of paper records, it is necessary to build an electronic storage system.

Sixth, the use of electronic documents must meet the requirements of the Law on Accounting 2015: Electronic documents must meet the requirements of the Law on Accounting 2015 concerning confidentiality and preservation of data and information during use and storage and must be managed and checked to prevent mining, hacking, copying, stealing or using electronic documents in contravention of regulations. Electronic documents are managed as accounting documents in the original form in which they were created, sent, or received but there must be sufficient equipment suitable for use.

Seventh, applying technology 4.0 in document identification: Up to now, application systems have initially applied artificial intelligence technology in identifying and classifying documents. However, in the current context of Industry 4.0, there are more and more advanced new technologies, such as machine learning, deep learning, etc. State accounting units can apply image recognition and machine learning technology so that data can be entered faster. For example, for invoices and documents, use a smartphone to take pictures or use a scanner, and the system will automatically analyze the information and convert into invoices and documents and put it into the accounting software without having to enter data manually.

Eighth, updating the Chart of Accounts (COA) and developing sections to meet information requirements: First of all, it is necessary to evaluate and update the Chart of Accounts so that it can fully meet current and future needs for financial reporting and information throughout the public financial management system in Vietnam. It is then necessary to adjust and develop sections to meet information requirements.

Ninth, the interconnection of Chart of Accounts (COA) and code values between systems: Organizations with information that needs to be interconnected with each other need to promulgate regulations on the use of uniform code values to ensure interconnection. For example, the accounting system of the state accounting sector needs a uniform accounting code to be eligible to synthesize and analyze information in the state accounting sector; investment project codes should be consistent between the formulation and implementation of medium-term plans of the Ministry of Planning and Investment and expenditure control of the State Treasury; codes of economic sectors managing investment projects in the Planning and Investment sector (according to Decision No. 10/2007/QD-TTg dated 23/01/2007 of the Prime Minister promulgating the system of economic sectors of Vietnam) with the economic codes of the financial sector (according to the table of contents of the budget) need consistency, etc.

Tenth, the development of TABMIS into a single integrated general ledger that stores all financial information for the general government sector: TABMIS is developed into a central transaction processing system with a single database. TABMIS is expanded through an online public service portal that will be used by all 150,000 units using the State Budget to process transactions and reports at all levels, both the preparation of financial statements and the State Budget finalization report. For this purpose, TABMIS must operate as a single ledger with subsidiary ledgers for each state accounting unit. It is necessary to expand the scope of General Ledger (GL) on TABMIS to cover the entire public sector including non-State Budget financial funds, ODA, and revenues of units using the State Budget. The development of TABMIS into a single integrated general ledger covering all units using the State Budget will facilitate the preparation of consolidated reports for the entire general government sector,

both periodic and annual reports. On such a basis, it is possible to prepare finalization reports directly from TABMIS instead of using current TABMIS data to check and collate. A single ledger is complemented by an integrated single treasury account.

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MANAGEMENT ACCOUNTING IN SMALL AND MEDIUM-SIZED ENTERPRISES IN CAN THO CITY: CURRENT SITUATION AND SOLUTIONS

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Abstract: *Management accounting is considered one of the effective management tools in the context of a competitive market economy due to the flexibility, usefulness, and timeliness of accounting information to serve internal management requirements in business organizations. However, the application of management accounting in management activities is still a new issue for small and medium enterprises in Can Tho. It has not been implemented synchronously and scientifically. The study is based on data collected from 120 observations and processed using the SPSS 26 tool. By employing descriptive statistics, the author analyzed the current situation of applying management accounting in small and medium-sized enterprises in Can Tho City. The aim is to propose solutions to assist these businesses in effectively applying management accounting in their operations.*

• Keywords: *management accounting, small and medium enterprises in Can Tho.*

Tóm tắt: Kế toán quản trị được coi là một trong những công cụ quản lý hữu hiệu trong điều kiện cạnh tranh của nền kinh tế thị trường bởi tính linh hoạt, hữu ích và kịp thời của thông tin kế toán phục vụ yêu cầu quản lý nội bộ trong tổ chức doanh nghiệp. Tuy nhiên, việc áp dụng kế toán quản trị trong hoạt động quản lý vẫn còn là một vấn đề mới đối với các doanh nghiệp vừa và nhỏ tại Cần Thơ, chưa được triển khai đồng bộ và khoa học. Nghiên cứu dựa trên dữ liệu được thu thập từ 120 quan sát và được xử lý bằng công cụ SPSS 26. Bằng phương pháp thống kê mô tả, tác giả đã phân tích thực trạng việc áp dụng kế toán quản trị tại các doanh nghiệp nhỏ và vừa trên địa bàn thành phố Cần Thơ. Mục đích là đề xuất các giải pháp hỗ trợ các doanh nghiệp này áp dụng kế toán quản trị vào hoạt động của mình một cách hiệu quả.

• *Từ khóa: kế toán quản trị, doanh nghiệp vừa và nhỏ tại Cần Thơ.*

1. Introduction

Many small and medium-sized businesses struggle to survive in today's globalized business environment. Besides rapidly changing market conditions, various reasons contribute to the demise of SMEs, including a lack of working capital, poor management skills, and inadequate use of essential business and management activities. The use of management methods can provide important information to ensure the effectiveness and efficiency of these businesses. Hopper, Koga & Goto's (1999) study of Japanese small and medium enterprises suggested that the failure to adopt management accounting practices, such as cost management systems, could be a leading cause of the current high failure rate of small and medium enterprises. Ahmad (2012) also argues that one of the main reasons behind the failure of small and medium enterprises is poor management practices.

Management accounting is an accounting system that provides information to business managers for planning and controlling their activities (Robert S. Kaplan and Anthony A. Atkinson, 1998). In fact, management accounting information is equally important as financial accounting information, but financial accounting information is more commonly found in existing documents. Financial accounting information is available to both internal and external users, such as investors, creditors, competitors, government, and suppliers, while

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management accounting information primarily serves managers inside the business. Therefore, the role of management accounting information provider is critical in order to have accurate and timely information to support managers' decisions. Management information is considered an effective tool for corporate governance in management and decision-making. It serves as the initial source of information for the inspection and decision-making process, helping business managers make timely and accurate decisions (Pham Van Duoc, 2006).

Can Tho City, located in the center of Vietnam, bears the characteristics of the Southwest region and is the most modern and developed city in the Mekong Delta. Can Tho is an economic and cultural center, serving as a vital hub for regional and international transportation in the downstream Mekong region. Its role is extremely significant, not only in terms of socio-economic and cultural life but also as a key area holding a strategic position in the defense and security of the Mekong Delta.

Through a preliminary survey of business managers, it can be observed that the percentage of enterprises in Can Tho City using management accounting is still very low. The accounting systems of enterprises, in general, as well as small and medium-sized enterprises in Can Tho City, do not realize and grasp the importance of applying accounting management in their operations. Therefore, research, analysis of the current situation, and proposing solutions to help SMEs in Can Tho City apply management accounting in their units are essential.

2. The role of management accounting in SMEs

The Law on Accounting No. 88/2015/QH13 in Vietnam emphasizes the role of management accountants in providing accurate, timely, and required information to management when managers want to make decisions and indicating the order of identification of management accounting information in organizations. KTQT performs the same process as financial accounting, starting from finding, receiving, and transmitting information to internal managers of the enterprise.

The specific role of SMEs in Can Tho City is shown in the following aspects:

- Small and medium-sized enterprises often have relatively simple requirements for labor quality, and as a result, small and medium-sized enterprises have attracted a large number of suitable workers to accommodate the needs of the business. There are popular occupations such as household sewing, farming, animal husbandry, veterinary medicine, fisheries, motorcycle repair, construction, and informatics.

- Contributing to the effective use of local resources, with its small retail, flexible business locations, low charter capital, small and medium enterprises in Can Tho city easily attract capital sources small idle in the population classes.

- Promoting the development of the market, due to its small and flexible scale, small and medium-sized enterprises are more likely to change products, redirect production and innovate technology. Thus, the impact of small and medium-sized enterprises on the development of the market is extremely large.

- Contributing to promoting economic growth and restructuring, SMEs have many opportunities to exploit the strengths of the population (such as handicrafts, traditional craft villages, etc...). Especially in rural areas, the presence of small and medium enterprises contributes to increasing the living standards of these population classes, contributing to the transformation of economic structure from agriculture to industry and services.

- Promoting competition in the market economy, small and medium enterprises account for a large and important proportion in the economy, small and medium enterprises have the ability to quickly improvise and change circumstances. With the advantage of compactness and flexibility, small and medium enterprises adapt very quickly to the economic market.

3. The actual situation of applying management accounting in smes in Can Tho city

Organization of management accounting system in SMEs in Can Tho city

The level of application of management accounting was investigated by asking respondents to answer the question of the management accounting system at the enterprise "Already" or "Not yet", the survey results were obtained. This is shown in the following summary table:

Table 1: The level of application of management accounting system in small and medium enterprises in Can Tho

Indicator	Quantity	Ratio %
Management accounting system at the enterprise	120	100.0
Already	56	46.7
Not yet	64	53.3

Source: Actual survey data, 2023

The data table shows that out of 120 subjects surveyed about the organization of a management accounting system in small and medium-sized enterprises in Can Tho city, 64 people said that there is no management accounting system in their business (accounting for 53.3%), the remaining 56 people said that their enterprise already has a management accounting system, accounting for 46.7%. This can be explained by several factors. Firstly, the size of the enterprise is small, so the capacity of capital or labor of the enterprise is limited, so it will be affected by the human and material resources of the enterprise. Enterprises in small and medium enterprises sometimes cannot meet their information collection and processing needs. Secondly, the enterprise apparatus is usually compact, the production facilities as well as manufacturing are simple, so the need for management and mutual control is relatively low, often the business owner can easily observe all operations of the business without needing information from management accounting. Thirdly, awareness of the role of management accounting information and the cost to build a management accounting system is also a main barrier preventing business owners from accessing the management accounting system.

The need to organize management accounting in small and medium enterprises in Can Tho city

Table 2: Describe the need to organize management accounting work at small and medium enterprises in Can Tho city

Indicator	Quantity	Ratio %
The need to organize management accounting work	120	100.0
Very necessary	70	58.3
May be necessary	35	29.2
Not necessary	15	12.5

Source: Actual survey data, 2023

According to the survey results on the need to organize management accounting work, there are 70 subjects surveyed who think that the organization of management accounting is very necessary, accounting for 58.3%. There are 35

survey respondents who stated that it may be necessary to organize management accounting (29.2%) while still 12.5% of respondents said that this is not really the necessary case.

The level of processing accounting information by computer

The application of computerization in accounting is an extremely effective support tool for processing, classifying, analyzing and providing accounting information in a timely, complete and accurate manner.

Table 3: Describe the degree of computerized accounting information processing in small and medium enterprises in Can Tho city

Indicator	Quantity	Ratio %
Level of information processing by computer	120	100.0
All by computer	80	66.7
Combination of computer and craft	40	33.3

Source: Actual survey data, 2023

Of the 85 surveyed subjects, 80 said that in their business, accounting information is processed entirely on computers (66.7%), while 40 said that in their business, accounting information is processed through a combination of computer and manual accounting (33.3%). In general, the information processing by computers of Can Tho City's small and medium firms is highly valued; it can be seen that information technology is widely implemented in all disciplines. Accounting is no exception to this rule.

Some reasons for not organizing management accounting in Can Tho City enterprises surveyed

As previously stated, 77.64% of surveyed businesses do not practice management accounting. In addition to underestimating the role of management accounting in the context of the study, respondents cited a variety of reasons for not implementing management accounting.

Statistics describing the frequency of some reasons why businesses have not built a management accounting apparatus.

Table 4: Reasons for not performing management accounting

Indicator	Quantity	Ratio %
No knowledge of management accounting	4	6.3
Not necessary to apply management accounting	19	29,7
Time consuming and expensive to implement insufficient human resources to implement	20	31.3
Not enough human resources to implement	21	32.8

Source: Processing data from the survey, 2023

For businesses that do not have a management accounting organization, many reasons and difficulties lead to failure to perform. Among the reasons presented for the choice of the respondents, 31.3% said that organizing management accounting would be costly and time-consuming for enterprises. This can be explained by the fact that the survey subjects are small and medium-sized businesses, and the respondents say that organizing management accounting will cost a lot of money, so business owners rarely use management accounting. This opinion is that respondents think that the current system is not necessary to apply management accounting, accounting for 29.7%, and the reason is not enough human resources to implement for 32.8% The remaining reason accounts for 6.3% of the respondents saying that they do not know management accounting.

Just like in businesses that do management accounting, in the businesses that don't do management accounting, respondents give a lot of difficult opinions about personnel such as lack of employees, insufficient expertise, and concurrently, not separate organization. Some comments from the respondents were raised such as "Haven't found human resources and unified arrangement from management level"; "Management accounting is still applied at the company, but has not been concretized and applied effectively because the company is still small and lacks personnel"; "Need more human resources for the accounting department otherwise the accounting department has to do more work, which leads to many negatives"; "Currently, the official management accounting apparatus has not been created, currently it is only similar in nature to the part-time department heads".

Stemming from the necessity of management accounting for businesses, respondents said that since the company has only recently been, it does not yet have or need a management accountant. In some enterprises, the general company set up at the branch did not implement or only a small part. Business owners also do not require management accounting according to the opinion of some respondents such as "The business does not clearly distinguish the roles between management accounting and financial accounting. Business owners do not demand accountants to prepare management reports", "Because it is a small business, business owners are not interested in management accounting work; building more management accounting will cost more."

Furthermore, some businesses require management accounting but encounter obstacles in doing so. In addition to the above-mentioned difficulties in personnel, there are also difficulties in organizing management accounting. One of the respondent's opinions about organizational difficulties is as follows: "The enterprise has moved from a household to a one-member limited liability company, so it should work without discipline", "The medium enterprise did not perform well before, so currently, the employees are irresponsible, do not declare clearly, and it is difficult to apply management accounting.

According to respondents who are chief accountants who have worked for more than 3 years at a company, they said: "Whether it is the method, the goal of management accounting is to increase revenue and reduce costs. It is necessary to monitor revenue and expenses to propose to superiors to have appropriate adjustment plans." Thus, if accountants do not do well in this issue, it will be the difficulty that makes business owners feel that hiring management accountants is not necessary, even with the opinion of business owners that it is "capital loss".

4. Some solutions to apply management accounting in small and medium enterprises in Can Tho city

Regarding the business

Enterprises need to raise awareness of managers and help administrators see the importance of management accounting in the accounting system.

Business administrators need to have a profound awareness of the importance of management accounting within the accounting system. Managers must understand the nature of management accounting in the enterprise's accounting system and its function in collecting, processing, and providing information for management decisions. This understanding serves as the premise for management accounting to become an effective and valuable management tool.

Training and developing human resources specializing in management accounting in enterprises.

Enterprise managers should prioritize the training and development of management accounting personnel, as they are essential components of the team responsible for performing management accounting work. Since the role of management accounting is to provide information and advice to managers, management accountants must possess knowledge in accounting, management accounting, and various other economic sciences. Therefore, the management and training of human resources with a strong grasp of these matters, capable of efficiently executing management accounting operations, should be a significant concern for enterprises.

Application of information technology, accounting computerization in accounting work.

Information plays an important role in decision-making. Timely and reliable information helps managers make the right decisions. Therefore, businesses need to apply available scientific achievements to analyze and process information quickly, efficiently, and with high quality.

Accounting software and computer systems are regarded as effective tools for accessing and processing information effectively, assisting in the creation of data in accordance with the requirements of administrators and various information users. As a result, establishing an information system for management accounting is an essential and necessary task for SMEs in Can Tho City.

Regarding training place

- There is a need to improve the program and teaching methods of accounting majors in universities. In particular, specialized training in management accounting as a real industry has many practical applications.

- Building a training model that combines theory with the practice of management accounting between universities and businesses so that students can learn practical, and understand better.

- Training facilities for accounting and management accounting should feature a sizable, well-stocked library with a wide range of books on management accounting that cover a wide range of topics and contents.

As an accountant in general and a management accountant in particular, besides having good expertise, professional ethics is also very important.

Because today's management accountants not only transmit information to managers, but also advise managers on important business decisions. This information is so significant because it directly affects the decisions of managers. Therefore, if a management accountant lacks professional ethics, acts negligently, provides inaccurate information or for personal gain, falsifies information, or discloses confidential information to other parties. ... will affect the interests of the business. Therefore, it is necessary to regularly educate accountants on professional ethics.

Regarding government

The Vietnamese Accounting Law and the circular guiding management accounting currently mention management accounting, but they are vague and general, making it difficult for businesses to understand how to develop management accounting.

As a solution, the State should issue more guiding circulars and specific instructions for each type of enterprise to assist them in developing management accounting. Additionally, the State should refrain from excessively intervening in management accounting practices, thus protecting the rights of businesses to decide whether management accounting should be included in their enterprise accounting system and how to develop it. This way, businesses can construct management accounting on a strong legal foundation.

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CSR ATTRIBUTIONS AND ORGANIZATIONAL COMMITMENT: MEDIATION BY PERSON-ORGANIZATION FIT

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Abstract: *This paper focuses on the relationship between CSR attributions and employee organizational commitment. Despite existing evidence supporting the impact of CSR attributions, there has been limited research investigating their effects on employee outcomes, specifically organizational commitment. To address this gap, our study explores how the effects of two types of CSR attributions, namely substantive and symbolic attribution, on organizational commitment are mediated by the perception of person-organization fit. Data from the banking industry in Vietnam supports our hypothesis regarding the positive effect of substantive attribution but found no significant relationship between symbolic attribution and commitment. Our findings provide implications for both future research and practitioners.*

• Keywords: *CSR, CSR attribution, organizational commitment, person-organization fit.*

Tóm tắt: *Bài báo này tập trung vào mối quan hệ giữa động cơ của CSR và cam kết với tổ chức của nhân viên. Mặc dù đã có các bằng chứng thực nghiệm cho thấy động cơ của CSR tác động tới các nhân viên của tổ chức, song vẫn có rất ít nghiên cứu tập trung vào chủ đề này. Để giải quyết khoảng trống nghiên cứu này, chúng tôi phân tích tác động của hai loại động cơ CSR, cụ thể là động cơ thực chất và động cơ biểu tượng, tới cam kết với tổ chức thông qua biến trung gian là sự phù hợp giữa cá nhân với tổ chức. Dữ liệu từ ngành ngân hàng tại Việt Nam đã ủng hộ giả thuyết về tác động tích cực của động cơ thực chất nhưng không tìm thấy mối quan hệ giữa động cơ biểu tượng và cam kết với tổ chức. Những kết quả nghiên cứu của chúng tôi cung cấp hàm ý cho các nghiên cứu tiếp theo và cho những tổ chức thực hành CSR.*

• Từ khóa: *CSR, động cơ của CSR, cam kết với tổ chức, sự phù hợp của cá nhân với tổ chức.*

1. Introduction

Companies have become increasingly involved in corporate social responsibility (CSR) activities, which may affect their employee's retention (Brammer, Millington, & Rayton, 2007; Farooq, Farooq, & Cheffi, 2019; Nejati, Brown, Shafaei,

& Seet, 2021). In fact, with the prevalence of CSR, employees now place greater importance on companies' efforts to address social and environmental issues. For example, Deloitte 's (2022) survey revealed that nearly four out of ten respondents in Central Europe expressed their willingness to consider switching jobs to work for a more sustainable company. Thus, understanding how CSR efforts affect employee commitment becomes crucial in this context.

As a result, the relationship between CSR and commitment has been extensively studied in CSR literature (Akhouri & Chaudhary, 2019). While most of those studies emphasized the impact of the extent of CSR implementation on commitment (Farooq et al., 2019; Glavas & Kelley, 2014), there is evidence suggests that employees not only care about the extent of CSR but also the motives behind its implementation (Chatzopoulou, Manolopoulos & Agapitou, 2022). Recent research has shown that employees' attitudes and behaviors are significantly influenced by the motivations they attach to CSR activities (i.e., CSR attribution) (Donia, Ronen, Tetrault Sirsly, & Bonaccio, 2019; Vlachos, Theotokis, & Panagopoulos, 2010). Yet, investigations of the impact of employee's motive attribution to CSR practices on commitment are limited despite its

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relevance in understanding the effect of CSR on employees.

In this paper, thus, we address the research gap in the relationship between CSR attributions and employee outcomes by investigating into the effect of CSR attributions on organizational commitment. The rest of the paper would be organized as follows. We first review the literature on employee CSR attributions and organizational commitment. Next, we develop theoretical framework and propose hypotheses. Research method is then described, followed by the main findings from the hypotheses testing. The paper ends with a discussion of results, theoretical contribution, and practical implications.

2. Literature review

CSR and organizational commitment

Due to their essential implications for employee performance and other positive outcomes, organizational commitment has received significant research focus in micro-CSR (Chaudhary & Akhouri, 2018). However, mixed findings on the relationship between CSR and organizational commitment are reported. While several studies have shown a positive association between organizations' participation in CSR programs and employee commitment (Brammer et al., 2007; Farooq et al., 2019; Glavas & Kelley, 2014), Chun and associates (2011) did not find a significant relationship between the two variables. We anticipate that these inconclusive results can be resolved by taking account the impact of CSR attributions employee commitment, which has not been thoroughly explored in previous research.

CSR attribution approach

Attribution theory posits that individuals have a natural inclination to try to attribute a cause to the happenings around them (Heider, 1958; Kelley, 1973) as a result of their innate need to understand their surroundings and the world (Jones & Davis, 1965). These interpretations then play an essential role in determining their subsequent attitudes and behaviors. As employees within an organization, they try to make sense of their external environment by making causal ascription to organization's events they confront, including CSR activities (Donia & Tetrault Sirsly, 2016). Drawing from their company experiences, they are more able to evaluate the motivations behind CSR practices. The attributed motives then significantly affect their subsequent attitudes toward the CSR initiatives and the organization (Vlachos, Panagopoulos, Bachrach, & Morgeson, 2017).

Recent studies found that different types of CSR attributions have varying effects on employee attitudes and behaviors. They conceptualized types of motives employees attribute to CSR practices: substantive vs symbolic (Donia, Tetrault Sirsly, & Ronen, 2017), internal vs external (Vlachos, Panagopoulos, & Rapp, 2013), and intrinsic vs extrinsic (Boğan & Sarıışık, 2020). The various types of CSR attribution fall into two categories: those that focus on meeting social needs (i.e., substantive attribution) and those that seek self-serving gains (i.e., symbolic attribution; Donia et al., 2017). Empirical results show that only substantive CSR yields a positive impact on employee variables such as job satisfaction (Vlachos et al., 2013), creativity (Ahmad, Donia, & Shahzad, 2019), and extra-role behavior (Afridi et al., 2023) while symbolic CSR does not.

In comparison with measuring CSR by the level of implementation, this attributional approach gave us an additional aspect of how employees perceive their organization's CSR activities. In fact, the perception of CSR also extends to the motivations behind these practices. Empirical evidence shows that employees care about the motivations of CSR programs, and such motivations affect their subsequent attitudes and behaviors. Meta-analysis indicated that attributional constructs are as important as other widely studied constructs, such as organizational justice, in contributing to organizational outcomes (Harvey, Madison, Martinko, Crook, & Crook, 2014). Plus, CSR attribution covers the case that some companies just engage in superficial CSR to remain legitimacy (Pope & Wæraas, 2016). In such a situation, employees with deeper insights into the firm's CSR behavior might ascribe social initiatives as symbolic ones. Therefore, we argue that incorporating CSR attribution might contribute to a better understanding of how CSR initiatives affect employee commitment.

3. Hypothesis development

CSR attribution and organizational commitment

According to social identity theory, individuals are aware of their membership in social groups,

including organizations, and this awareness is an integral part of how they define themselves. The extent of their identification with a group may vary based on how appealing the group is in shaping their self-concept. Individuals desire to enhance their self-concept, therefore they are naturally attached to social groups that provide them with a positive view of themselves. Research suggests that individuals tend to identify with organizations that exhibit positive values, including those conveyed through CSR initiatives (Rupp & Mallory, 2015).

CSR attributions provide information for employees to evaluate the attributes of their organizations. Substantive attribution reflects the ethical values of the organization, indicating its genuine concern about social well-being. This type of attribution highlights a selfless identity, which is viewed as a positive attribute. Thus, membership in a company that demonstrates substantive attribution might enhance employee self-identity, thereby strengthening the emotional bond between them and the company. Empirical studies have shown that employees are more loyal to organizations that show ethical values such as caring and fairness (Shafer, Poon, & Tjosvold, 2013). Therefore, substantive attribution might encourage employees to be more committed to the organization.

Conversely, symbolic attribution conveys the perception that the organization primarily focuses on self-benefits. This portrayal captures a self-serving attribute, which can be viewed negatively. In organizations where employees are aware of the negative attribute and their self-concept are at risk of being undermined, employees might feel less connection and belongingness, making it easier for them to consider leaving the organization. Hence:

Hypothesis 1a: Employees' substantive CSR causal attribution is positively associated with organizational commitment.

Hypothesis 1b: Employees' symbolic CSR causal attribution is negatively associated with organizational commitment.

The mediating role of person-organization fit

We propose that the effects of CSR attributions on commitment, as discussed above, are mediated by the perception of person-organization (PO) fit. PO fit captures the idea of compatibility between people and the organizations they work for (Cable & DeRue, 2002). Individuals are naturally attracted to and inclined to stay in organizations whose values align with their own and where they feel their needs will be fulfilled. PO fit perception also plays a crucial role in evaluating organizational events. Events reflecting values congruent with those of employees might trigger the perception of PO fit, thereby being viewed positively by employees. In contrast, attributes reflecting values that mismatch with those of employees might result in perceived incongruence, leading to negative evaluation.

We argue that PO fit play a crucial role in the employee's evaluation of CSR attribution. As employees perceive CSR attributions, employees evaluate whether these attributions align with their own values (Donia et al., 2019). The congruence or incongruence of values determines whether they view the attribution positively or negatively. When the values indicated by substantive attribution align with employee values, it results in a positive view of substantive attribution. This positive alignment enhances employee commitment to the organization. In addition, through self-categorization, individuals are also more likely to stay in social groups that share similar attributes and values (Hogg & Terry, 2000). In contrast, symbolic attribution may lead to a mismatch with employees' values, resulting in a negative evaluation and diminished commitment to the organization. The perceived incongruence with their values weakens the psychological connection and commitment to the organization. Hence:

Hypothesis 2a: PO fit mediates the positive relationship between employees' substantive CSR attribution and organizational commitment.

Hypothesis 2b: PO fit mediates the negative relationship between employees' symbolic CSR attribution and organizational commitment.

4. Research method

Research context

We conducted the research in the context of the banking industry in Vietnam for the following two reasons. First, banking is a high-contact service industry where employees play an important role in the performance of the business (Yee, Yeung, & Cheng, 2011). Therefore, improving employee organizational commitment is especially important. Second, banks in Vietnam have been recently more widely engaging in social responsibility practices and communicating

them to the public audience. From 2015, the State Bank of Vietnam institutionalize many CSR practices in the industry. Such pressure in this context force banks to communicate more widely about their implementation of social responsibility, making banking employees more likely to be aware of CSR practices conducted within the industry (Nguyen, 2023). The above reasons show that setting the research context in the banking industry in Vietnam is appropriate for the research objectives.

Data collection

We collected data by delivering the surveys in postgraduate classes which major in Banking and Finance at two large universities in Vietnam. Students who were working for banks in Vietnam were asked to fill in the paper survey and invite their co-workers to join the online questionnaire anonymously and voluntarily. We collected the surveys from October through December 2020 and March 2021.

Sample

In the questionnaire, we presented examples of common CSR practices in the banking industry in Vietnam and included a question to ensure respondents were already aware of CSR practices their banks have been doing. We received a total of 417 answers. After removing 106 invalid responses, the final number of usable surveys is 311.

The participants' mean age was 30.46. Among the respondents, 63.3 per cent were female, and 61.4 per cent had received higher education. On average, the respondents had a tenure of approximately 7.01 years in their current organization, and 23.8% held a management title.

Measurement

CSR attribution

In the present study, CSR refers to "actions that appear to further some social good, beyond the interests of the firm and that which is required by law" (McWilliams & Siegel, 2001). We assessed participants' attributions of CSR practices using CSR attribution measurement from Donia et al.'s (2017) work.

Organizational commitment

We focus on the affective commitment since it reflects a voluntary willing to stay in the organization. We adapted the scale from Allen and Meyer (1990) to measure affective commitment,.

PO fit

PO fit was measured by the three-item scale from Cable and DeRue (2002).

Control variables

Following previous studies on affective commitment (Brammer et al., 2007), we controlled for gender, marital status, education, organization tenure, managerial position, income, and job satisfaction. Job satisfaction measurement scale was derived from Churchill et al. (1974).

5. Research results

Before testing the hypotheses, we conducted the exploratory factor analysis (EFA) to elimnate items with low factor loadings. Cronbach's alpha for all measurement scales were acceptable, exceeding the .60 threshold suggested by Hair et al. (2010).

In order to test the hypotheses H1a and H1b, we ran a regression model (Model 1), controlling for gender, managerial position, marital status, education, income, tenure, and job satisfaction (Table 1). The variance inflation factor (VIF) for each variable was less than two, indicating that multicollinearity is not an issue in our model (Hair et al., 2010). The analysis revealed that substantive attribution is positively associated with organizational commitment ($\beta = 0.194$, $p < 0.001$) in support of hypothesis H1a. However, the relationship between symbolic attribution and commitment is not statistically significant ($\beta = -0.005$, $p = 0.928$); therefore hypothesis H1b is not supported.

Table 1. Regression results (Model 1-2)

Independent variable	Dependent variable: Organizational commitment (Model 1)	Dependent variable: PO fit (Model 2)
Gender	0.013	-0.005
Marital status	-0.092	-0.035
Education	0.036	0.081
Position	-0.042	-0.108*
Income	0.039	-0.029
Tenure	0.163*	0.164**
Job satisfaction	0.394***	0.445***
Substantive attribution	0.194***	0.237***
Symbolic attribution	-0.005	0.038
R^2	0.265	0.375
Adjusted R^2	0.243	0.356

*Significant at confidence levels of: *95%, **99%, and ***99.9%.*

To examine the hypotheses H2a and H2b, we conducted another regression model (Model 2) where PO fit is the dependent variable to check if PO fit acts as a mediator between CSR attribution and organizational commitment (Table 1). The results showed a significant positive relationship between substantive attribution and PO fit (β = 0.237, p < 0.001), suggesting a potential mediation effect. However, the relationship between symbolic attribution and PO fit is not statistically significant (β = 0.038, p = 0.429), indicating that PO fit does not mediate the relationship between symbolic attribution and organizational commitment. Thus, hypothesis H2b is not supported.

We tested the mediating role of PO fit in the relationship between substantive attribution and organizational commitment using the Sobel analysis. In order to run the Sobel test, we ran three models with relevant control variables. The first model (Model 3) is to test the effect of substantive attribution on PO fit. In the second one (Model 4), we examined the combined effect of substantive attribution and PO fit on organizational commitment. Finally, we tested the direct effect of substantive attribution on organizational commitment (Model 5). The unstandardized coefficient and standard error are presented in Table 2.

Table 2. Regression results (Model 3-5)

Variables	B	Std. error	t	Sig.
Model 3:				
Substantive attribution --> PO fit	0.262	0.054	4.898	0.000
Model 4				
Substantive attribution --> Organizational commitment	0.151	0.062	2.423	0.016
PO fit --> Organizational commitment	0.250	0.064	3.886	0.000
Model 5				
Substantive attribution --> Organizational commitment	0.217	0.061	3.529	0.000

Since the unstandardized coefficients (B) of substantive attribution in Model 4 (0.151) is smaller than that in Model 5 (0.217), it is possible to perform a Sobel analysis to test the mediating effect. The results from the Sobel analysis (Table 3) indicates that PO fit serves as a mediator of the substantive attribution-organizational commitment relationship, as demonstrated by p < 0.01. As a result, hypothesis H2a is supported.

Table 3. Sobel analysis

Input		Test statistics	Std. error	*p*-value
a = 0.262	Sobel test	3.04267713	0.0215271	0.00234484
b = 0.250	Aroian test	3.00420865	0.02180275	0.00266273
Sa = 0.054	Goodman test	3.08266225	0.02124787	0.00205158
Sb = 0.064				

a = raw (unstandardized) regression coefficient for the association between substantive attribution and PO fit.
Sa = Standard error of a.
b = raw coefficient for the association between the PO fit and organizational commitment (when substantive attribution is also a predictor of organizational commitment).
Sb = standard error of b.

6. Discussion and conclusion

This paper analyzes how substantive and symbolic CSR attribution affect organizational commitment through the mediating role of PO fit. Our findings reveal that substantive attribution improves organizational commitment via the mediator of PO fit. This result is consistent with previous studies indicating that PO fit acts as a mediator in strengthening commitment (Donia et al., 2019). Furthermore, our findings align with other studies that have found only substantive attribution to positively impact employee attitudes (Afsar, Al-Ghazali, Rehman, & Umrani, 2020).

Although we proposed that symbolic attribution might mitigate commitment, with PO fit perception acting as a mediator, our results does not support this hypothesis. Symbolic attribution does not show a significant relationship with either organizational commitment or PO fit. One possible explanation for this could be that in the banking industry, employees might perceive CSR initiatives as a financial investment and expect to benefit from them. As a result, symbolic attribution is more likely to be acceptable in this context. The null relationship between symbolic attribution and commitment indicates a need for further investigation into the mechanism of attributional effect on employee variables. Future research might take into account the role of other mediators or contextual factors.

Our study contributes to the micro-CSR literature by addressing the limited study on the impact of CSR attributions (Zhang, Wang, & Jia, 2022). The findings from this study hold significant theoretical implications for understanding the complex relationship between CSR and employee outcomes, particularly organizational commitment. Our research highlight the importance of CSR attribution in understanding how CSR affect

employees outcomes. Moreover, our study underscores the value of considering PO fit as a crucial mediating factor linking CSR attributions to organizational commitment.

From the practical perspective, our research has implication for firms seeking to enhance their employees' commitment. By focusing on meaningful and substantive CSR actions, organizations can potentially foster a stronger sense of loyalty and perception of fit among their workforce. In addition, firms should be attentive to other factors that can help promote the positive attribution regarding CSR initiatives, such as the communication process.

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FACTORS IMPACTING CUSTOMER SATISFACTION IN FOOD TESTING SERVICES: A CASE STUDY IN QUALITY ASSURANCE AND TESTING CENTER 1

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Abstract: *Purpose: This research is to investigate the factors that impact customer satisfaction in the competitive food testing industry to help companies improve their services and attract and retain customers.*

Theoretical Framework: This study examines factors influencing customer satisfaction in food testing services, including price, corporate image, service quality, employee behavior, and service innovation. The framework incorporates previous research models to understand customer expectations and perceptions.

Design/Methodology/Approach: The research employed a quantitative methodology, and a self-structured questionnaire was developed and administered to a convenience sample of 150 customers who use the food testing service of Quality Assurance and Testing Center 1 (Quatest1). The gathered primary data was screened, processed, and analyzed using SPSS.

Findings: The results indicated that while reasonable price factors, corporate image, service quality, employee behaviors, and service innovation significantly influence customer satisfaction, in which service quality and affordable price have the most significant impact.

Research, Practical & Social implications: To improve customer satisfaction and reputation, Quatest1 should prioritize service quality, maintain reasonable prices, innovate testing experience, promote ethical and professional behavior, and monitor service performance.

Originality/Value: The current paper study on factors that impact customer satisfaction in food testing services. The study's findings reveal that service quality and affordable prices are the most significant factors affecting customer satisfaction. The study's research model and self-structured questionnaire can be helpful for future research in this field. The results can aid conformity assessment companies in improving their services, attracting and retaining customers, and maintaining competitiveness in the market.

• Keywords: *customer satisfaction, food testing service; quality assurance.*

1. Introduction

Food safety is a major concern for the public, with high levels of anxiety being expressed following high-profile food safety incidents. The importance of food testing has therefore become paramount, with demands from both authorities and consumers for assurance that food is free of physical, chemical, and biological hazards. The significance of food testing is highlighted by the report on the global burden of food-borne diseases released by the WHO, which suggests that the level of food-borne illnesses is comparable to the "big three" diseases - HIV/AIDS, tuberculosis, and malaria (Havellar et al., 2010). The

critical role of food testing in ensuring the safety of food cannot be overstated, as it helps to build trust among consumers.

While many authors have studied various factors that affect customer satisfaction, such as service quality, employee behavior, expertise, brand image, and billing accuracy (Rana & Medha, 2013; Gustafsson et al., 2005; Dhurup et al., 2006), there is a lack of research in Vietnam, particularly in relation to food testing services. Although some companies have conducted surveys to gauge customer opinions on service quality, these surveys typically focus on all the services provided by the companies, rather

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than specifically on food testing. Therefore, this study aims to identify the factors that influence customer satisfaction in the food testing service of Quatest1, and to evaluate the relationship between these factors and customer satisfaction. The study will also provide recommendations for improving customer satisfaction.

2. Literature review

The definition of customer satisfaction remains a topic of lively debate among marketing scholars despite extensive research in the field (Chauhan & Limbad, 2013; Fornell, 1992; Biesok & Wyród-Wróbel, 2011; Baruk, 2002). While some scholars argue that it is a measure of how well a firm's products and services meet or exceed customer expectations, others claim that it encompasses the overall purchasing experience, including pre-and post-sales interactions. However, it is widely accepted that maintaining customer satisfaction is crucial for a company's success, as customers play a vital role in determining a firm's market position and delivering its products or services (Fornell, 1992; Deng et al., 2009; Al-Msallam, 2015). Additionally, a significant increase in customer satisfaction has been linked to higher returns on investment, productivity growth, market value-added, and stock market performance (Anderson et al., 1994, 1997, 2004; Fornell et al., 2006).

The concept of services has undergone a significant shift over time, with varying definitions offered by scholars (Solomon et al., 1985; Lovelock, 1991; Zeithaml & Bitner, 2003; Kotler & Armstrong, 2001; Quinn & Gagnon, 1986). However, services are generally understood as activities, deeds, processes, and interactions that provide benefits or satisfaction and are offered for sale in connection with the sale of goods (American Marketing Association, 1960).

In the conformity assessment industry, testing services are crucial in ensuring product quality and compliance with standards and regulations (Kim, 2013). Testing is also a practical tool for manufacturers and service providers to meet customer demands without incurring costs from quality failures in the market. It provides a measure for regulatory bodies to enforce safety and environmental laws and support state inspection when necessary. The importance of testing services has given rise to numerous food testing providers, highlighting the need to capitalize on opportunities arising from market changes.

Customer satisfaction is a well-researched area, with studies showing the impact of service quality on customer satisfaction in various sectors, including mobile banking (Khadim & Islam, 2022), online transactions in home brokers (Jorge et al., 2014), and retail banking (Ahmad Jamal & Kamal Naser, 2003). For instance, Jorge et al. (2014) found that perceived security and trust strongly influenced customer satisfaction with online home broker services. Jamal and Naser (2003) found a strong correlation between service quality and customer satisfaction in the retail banking sector but did not convincingly demonstrate the link between tangible aspects of service environments and customer satisfaction. Rana's (2013) study on the satisfaction level of customers of fast-food retailers in Dhaka City indicated that menu variety, social status, cleanliness, and price significantly impacted customer satisfaction, with menu variety being the most crucial factor.

After analyzing the studies mentioned above, it is evident that several factors contribute significantly to customer satisfaction in the service industry. These factors include Reasonable Price, Corporate Image, Service Quality, Employee behaviors, and Service innovations. Accordingly, a model was developed to assess the factors influencing customer satisfaction in Quatest1's food testing services. The model identified five key determinants that significantly impact customer satisfaction.

Figure 1: Conceptual model of the study
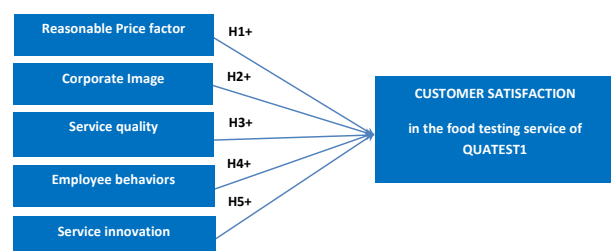
Source: Prepared by the authors

Kotler and Armstrong (2012) defined price as "the sum of all the values that customers exchange for the benefits of having or using the product or service." This definition acknowledges that the price of a product or service can vary depending on the sacrifices made or benefits received. Bei and Chiao (2001) also noted this variation in their research cited by Razak (2016). The role of price in determining customer satisfaction has been a topic of interest among scholars, with

several studies (Ehsani and Ehsani, 2015; Malik et al., 2012; Hanzaee and Yard, 2010) finding a positive relationship between price and customer satisfaction. Hermann et al. (2007) also supported this claim, showing a direct relationship between price perception and customer satisfaction. However, Bei and Chiao (2001) argued against this correlation, while Wairimu (2011) suggested that a perceived price-performance inconsistency could negatively impact customer satisfaction. Scholars have identified various factors that could influence price, such as fair price, customer expectations, price sensitivity, price suitability, clarity in price calculation, competitor price, and discounted price (Kotler and Keller, 2012; Kusdiyah, 2012; Nguyen et al., 2018; Wairimu, 2011).

Hypothesis 1: There is a positive relationship between the reasonable price factor and customer satisfaction in the food testing service of Quatest1.

According to Balmer and Greyser (2006), the concept of corporate image emerged in the 1950s and 1960s and has since been a popular topic among academic scholars in the business world. Corporate image is commonly defined as "the impression, beliefs, feelings, and knowledge about a corporation in the minds of people" (Boyle, 1997; Furman, 2010; Worcester, 1997, cited in Nguyen et al., 2018).

Several scholars have highlighted the strong link between corporate image and customer satisfaction. Bolton and Drew (1991) argued that customer satisfaction is formed based on accumulated purchase experiences and corporate image plays a significant positive role in this process. This observation has been supported by other scholars, including Hu and Huang (2011), Lai et al. (2009), Nguyen and Leblanc (2001), and Kandamplully and Hu (2007). Andreassen and Lindestad (1998) further emphasized that corporate image can also impact customers' perception of quality, value, and satisfaction.

While Walters (1978) suggested that the corporate image can be classified into three aspects - corporate image, functional image, and merchandise image, Keller (2000) proposed four significant corporate image elements - merchandise image, customer-oriented image, corporate citizen image, and corporate reputation. Nguyen and Leblanc (2001) argued that based on customers' understanding of the corporation, other elements such as corporate

name, history, management philosophy, and product diversification could also be considered.

Hypothesis 2: There is a positive relationship between corporate image and customer satisfaction in the food testing service of Quatest1.

According to Bitner and Hubbert (1994), service quality is generally understood as "the customer's impression of the relative superiority/inferiority of a service provider and its services" (cited in Prakash and Mohanty, 2012), although there may be divergent opinions among scholars. Many previous studies have established a positive relationship between service quality and customer satisfaction, with some suggesting that service quality is the dominant determinant of customer satisfaction (Lin et al., 2005; Davis and Mentzer, 2006; Zeithaml and Bitner, 1996; de Ruyter et al., 1997). Furthermore, improving service quality can have indirect impacts on customer loyalty, positive word of mouth, employee turnover reduction, lower operating costs, higher market share, and profitability (Hossain, 2012; Al Khattab & Aldehayyat, 2011; Karunaratne & Jayawardena, 2010; Kandampully & Suhartanto, 2000; Sureshchandar et al., 2002; Kang & James, 2004; Ladhari, 2009).

While various frameworks and scales have been introduced to assess service quality, the SERVQUAL (Parasuraman et al., 1988) and SERVQUAL scale (Cronin & Taylor, 1992) are widely accepted among academic researchers. The SERVQUAL scale consists of five constructs for quantitative measures: reliability, responsiveness, assurance, empathy, and tangibles. However, the accuracy of the SERVQUAL model in yielding precise results has been questioned by Cronin and Taylor (1992), which led to the introduction of the SERVPERF scale, which focuses solely on evaluating customer motivation and behavior based on performance alone.

Hypothesis 3: There is a positive relationship between service quality and customer satisfaction in the food testing service of Quatest1.

Hanna et al. (2004, p.1167) defined employee behaviors as "various sequences of actions carried out by employees within the organization". Positive employee behaviors contribute to a positive image of the company in the eyes of customers, while destructive behaviors can cause harm to the business (Bowen and Shoemaker, 1998). Employee behaviors

have been extensively studied as a mediator of customer satisfaction, with a focus on the positive impact of friendly and polite employees on customer satisfaction (Lemmink and Mattsson, 1998; Brown, 1996). Kong and Jogaratnam (2007) argued that customer satisfaction can be predicted by employee personalization and politeness, and Jones and Dent (1994) found that a smiling face can significantly improve customer satisfaction. Examples of friendly employee behaviors include "friendliness, familiarity, caring, politeness, responsiveness, trustworthiness, helpfulness, and understanding" (Spark, 1994). Mattsson and Lemmink (1998) also found that the degree of personal warmth displayed by service employees towards customers has a positive relationship with service quality perceptions and customer satisfaction. Providing extra support to customers (Bitner et al., 1990) and displaying confidence, friendliness, empathy, and attentiveness (Specht, Fichel & Meyer, 2007) are some specific actions that can leave a good impression on customers.

Van Dolen, DeRuyter, and Lemmink (2004) classified employee behaviors into two types: employee-specific and interaction-induced. This classification depends on whether cooperation with customers is involved or not. Vo (2012) suggested that other indicators of employee behaviors were delivering services, friendly attitude, and willingness to help.

Hypothesis 4: There is a positive relationship between employee behaviors and customer satisfaction in the food testing service of Quatest1.

Betz (1987) defined innovation as the introduction of new products, methods, and technological innovations. On the other hand, Menor et al. (2002) suggested that innovation encompasses a company's contribution to additional services or changes in service ideas to meet customers' demands for new offerings. Scholars have widely acknowledged the importance of understanding the relationship between innovation and customer satisfaction for organizational success (Athanassopoulos et al., 2001; Mahmoud, 2017; Ganesan, 2016). According to Tang (1999), innovation plays a vital role in enhancing a company's competitive position by sustaining customers, which is supported by research findings indicating innovation's positive impact on customer satisfaction (Anderson et al.,

1994; Agarwal et al., 2003; Hu and Huang, 2011). However, Caner and Banu (2015) have argued against the notion that innovation affects customer satisfaction. Innovation can be measured using items adapted from the Oslo Manual (OECD, 2005), such as product, process, organization, and marketing innovation. Several researchers have implemented these items on a larger scale for data collection and analysis, while other approaches include market innovation, input innovation, and strategic innovation (Kurniawan et al., 2019).

Hypothesis 5: There is a positive relationship between service innovation and customer satisfaction in the food testing service of Quatest1.

3. Material and methodology

In the proposed research model, the author developed a scale based on previous studies by scholars such as Nguyen et al. (2018), Wairimu (2011), Vo (2015), and Simon & Yaya (2012). The author then conducted qualitative research through open interviews with 5 customers and 5 experts to explore the factors influencing customer satisfaction with the food testing service. The interview questions were designed based on the theoretical framework summarized in the literature review, and the author recorded and noted the responses. The author used the interview results to supplement the scale and ensure its suitability in the context of Vietnam.

To ensure the quality of the study, the author determined the necessary sample size of 135 observations based on 27 observed variables of the scale (Hair et al., 1998). However, to improve the quality of the research, the author chose a larger sample of 170 surveys, and 150 valid responses were received and used for analysis.

The final questionnaire consisted of two parts. The first part focused on personal information of the respondents, such as age, gender, occupation, and type of company. The second part investigated the factors influencing customer satisfaction with Quatest1's food testing service using a 5-point Likert rating scale. Descriptive statistics were used to analyze the collected data, followed by reliability and validity testing, exploratory factor analysis (EFA), Kaiser-Meyer-Olkin (KMO) measure, and multiple regression model to determine the relationship between independent and dependent variables and determine the degree of influence using R^2 and β values.

4. Results and discussion

Descriptive statistics

As time was restricted and the customer base was limited, the authors dispatched 170 surveys to Quatest1's food testing service users. Out of these, 150 surveys were successfully returned and deemed valid, providing accurate answers that could be utilized for analysis.

Table 1: Demographic information of the Target Respondents

Demographic		No	%	Demographic		No	%
Gender	male	80	53.3	Occupation	State officer	15	10
	female	70	46.7		Staff	83	55.3
Age	Under 30	13	8.7		Manager	19	12.7
	30 to 40	77	51.3		Deputy Director/	12	8.0
	40 to 50	48	32.0		Director	21	14.0
	over 50	12	8.0		Others		
				Company type	State agency	18	12.0
					Manufacturing enterprise	76	50.7
					Importer/ exporter	46	30.7
					Individual	10	6.7

Source: SPSS, prepared by the author

Table 2. Descriptive statistics of Service quality scale

Code	Valid	N	Minimum	Maximum	Mean	Std. Deviation
SQ1	The company provides access to information on services offered including testing items, methods and criteria.	150	1	5	3.37	.618
SQ2	The company performs the services as promised.	150	1	5	3.33	.609
SQ3	The terms and the clauses of the service contract or testing request form are clear and easy to understand.	150	1	5	3.27	.587
SQ4	The company always provides documentation correctly.	150	1	5	3.36	.594
SQ5	The company provides customer service quickly and gives attention to each customer's needs.	150	1	4	3.19	.692

Source: SPSS, prepared by the author

According to Table 2, the food testing service of Quatest1 is highly appreciated by the customers, average under mark 4. Specifically, the access to information on services offered in Quatest1 has the highest mark (3.37). The performance of service as promised takes the second position (3.33). The company's quick customer service has the lowest effect (3.19).

Table 3. Descriptive statistics of Corporate Image scale

	Valid	N	Minimum	Maximum	Mean	Std. Deviation
CI1	The company frequently appears in media channels (website, e-news).	150	1	5	3.09	.543
CI2	The company has a good reputation.	150	1	5	3.07	.564
CI3	The company is open and always interacts well with customers.	150	1	5	3.07	.580
CI4	The company always shows business ethics.	150	1	5	3.10	.553

Source: SPSS, prepared by the author

According to the statistics, the customers acknowledge the average mark for the "corporate image" factor with elements above 3. The highest impact is business ethics (3.10), while the figure for frequent appearances in media channels is lower at 3.09. It can be justified by the fact that customers put a high value on the business ethics of state-owned companies. The lowest mark factors are Reputation (3.07) and customer interaction (3.07).

Table 4. Descriptive statistics of Reasonable Price Factor scale

	Valid	N	Minimum	Maximum	Mean	Std. Deviation
RP1	The price for services is very reasonable.	150	1	5	3.41	.615
RP2	The calculation of testing fees is easy to understand.	150	1	5	3.40	.591
RP3	The price is in line with the services provided to you.	150	1	5	3.40	.635
RP4	The price of the service meets my expectation.	150	1	5	3.38	.598
RP5	The price of the services is good value relative to other available services.	150	1	5	3.36	.627
RP6	The price offered is fair.	150	1	5	3.33	.585

Source: SPSS, prepared by the author

As for the Reasonable price factor, customers are pretty satisfied with the reasonability of price (3.41), followed by calculation of fee (3.40) and the price in line with the services (3.40). The lowest mark (3.33) is the fair price.

Table 5. Descriptive statistics of Employee behaviors scale

	Valid	N	Minimum	Maximum	Mean	Std. Deviation
EB1	Employees are helpful and friendly at your request.	150	1	5	3.41	.557
EB2	Employees are always ready and willing to serve.	150	2	5	3.41	.533
EB3	Your questions are answered in a sincere and enthusiastic manner.	150	1	5	3.40	.579

Source: SPSS, prepared by the author

The friendliness and willingness of the employees are evaluated most positively with 3.41, while the lowest mark is left for the way they answer the questions from customers (3.40). However, the average impact is relatively high, demonstrating that customers still highly appreciate Quatest1's employee behaviors.

Table 6. Descriptive statistics of Service innovation scale

	Valid	N	Minimum	Maximum	Mean	Std. Deviation
SI1	The company has adopted new or significantly improved logistics.	150	1	5	3.31	.557
SI2	The company has adopted new or significantly improved methods of testing.	150	1	5	3.39	.588
SI3	The company has new business practices for organizing procedures.	150	2	4	3.34	.529
SI4	The company has implemented new or significantly improved methods of manufacturing.	150	1	5	3.23	.677
SI5	The company has adopted new methods of organizing human resources.	150	1	4	3.34	.566

Source: SPSS, prepared by the author

As shown in Table 6, the average mark for "service innovation" is relatively high with factors above 3, which offers the company success thanks to great effort in constantly researching and providing value-added services to customers. While the highest mark is the adoption of new or improved methods of testing (3.39), the lowest spot is new or improved methods of manufacturing (3.23).

However, the difference between the highest and lowest is relatively little.

Table 7. Descriptive statistics of Customer satisfaction scale

	Valid	N	Minimum	Maximum	Mean	Std. Deviation
SA1	Overall, I feel satisfied with the food testing service provided.	150	1	5	3.49	.599
SA2	Overall, I feel satisfied after each testing service of the company.	150	1	5	3.41	.592
SA3	Overall, I feel satisfied with the relationship between me and the company.	150	1	5	3.39	.612
SA4	In short, I feel satisfied with the company.	150	1	5	3.37	.608

Source: SPSS, prepared by the author

Table 7 reveals that customers are highly content with the food testing service, with a score of 3.49, which is closely followed by satisfaction with other testing services, with a difference of only 0.08. The remaining items in the table, namely those pertaining to the company and pleasure in general, are rated at 3.39 and 3.37, respectively.

Table 8. Analysis of Cronbach Alpha of dependent and independent variables

Item-Total Statistics			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Service Quality Factor: Cronbach alpha = 0.801			
SQ1	13.15	3.352	.722	.718
SQ2	13.19	3.441	.687	.730
SQ3	13.25	3.533	.674	.735
SQ4	13.16	3.585	.635	.747
SQ5	13.33	4.114	.275	.863
Corporate Image Factor: Cronbach alpha = 0.889			
CI1	9.24	2.318	.698	.879
CI2	9.26	2.247	.710	.875
CI3	9.25	2.083	.803	.839
CI4	9.23	2.136	.819	.834
Reasonable Price Factor: Cronbach alpha = 0.896			
RP1	16.87	6.157	.731	.875
RP2	16.88	6.469	.649	.888
RP3	16.88	6.079	.730	.876
RP4	16.90	6.426	.654	.887
RP5	16.92	5.980	.781	.867
RP6	16.95	6.179	.772	.869
Employee Behaviors Factor: Cronbach alpha = 0.895			
EB1	6.81	1.092	.777	.865
EB2	6.81	1.164	.746	.890
EB3	6.82	.981	.863	.788

Item-Total Statistics			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Service Innovation Factor: Cronbach alpha = 0.746			
SI1	13.29	2.866	.571	.680
SI2	13.22	2.737	.602	.667
SI3	13.27	3.043	.505	.705
SI4	13.38	3.110	.287	.795
SI5	13.27	2.720	.650	.650
Customer satisfaction: Cronbach alpha = 0.843			
SA1	10.17	2.319	.700	.792
SA2	10.26	2.328	.707	.789
SA3	10.27	2.361	.649	.814
SA4	10.29	2.356	.658	.810

Source: SPSS, prepared by the author

Table 8 that the "service quality" variable is measured by 05 observation items having 0.801 Cronbach Alpha. However, as item SQ5 correlates with $0.275 < 0.3$, the author decided to remove item SQ5 and keep the rest to analyze the following EFA.

- The "Corporate Image" variable measured by 04 observed items (with the code from CI1-CI4) has 0.889 Cronbach Alpha. This figure satisfies the correlation requirement as the correlation is more than 0.3, so four observed items are kept in the following EFA.

- The Reasonable Price Factor variable measured by 06 observed items (with the code from RP1-RP6) has 0.896 Cronbach Alpha >0.7, so its reliability is high. Observed objects correlate more than 0.3, satisfying the requirement; therefore, all experimental items are kept.

- The "Employee Behaviors" variable has Cronbach Alpha 0.895 with all the observed items higher than 0.3; therefore, it completely meets the requirement of regression analysis. All of the items will be kept to analyze EFA.

- As for the Service Innovation variable measured by five items from SI1 to SI5, although the Cronbach Alpha is 0.746, the observed item SI4 is $0.287 < 0.3$. Otherwise, when removing this item, Cronbach Alpha increases to 0.795. Therefore, the author decided to remove item SI4 and keep the rest to analyze the following EFA.

- "Customer satisfaction" dependent variable is measured by four items (SA1-SA4) having Cronbach Alpha as $0.843 > 0.7$; therefore, it meets the requirement. The correlation is higher than 0.3, so all items will be kept to analyze EFA.

After removing two items SQ5 and SI4, because of inappropriate scale, we rerun Cronbach Alpha with two variables, "service quality" and "service innovation".

Table 9. Analysis of Cronbach Alpha

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Service Quality Factor: Cronbach alpha = 0.863				
SQ1	9.96	2.347	.732	.817
SQ2	9.99	2.383	.723	.821
SQ3	10.06	2.446	.721	.822
SQ4	9.97	2.502	.670	.842
Service Innovation Factor: Cronbach alpha= 0.795				
SI1	10.07	1.808	.662	.715
SI2	9.99	1.805	.606	.744
SI3	10.04	2.066	.503	.791
SI5	10.04	1.797	.655	.718

Source: SPSS, prepared by the author

After adjusting, we only have 25 items belonging to 5 factors affecting customer satisfaction in the food testing service of Quatest1. All of these variables are > 0.7 and correlation is > 0.3.

Exploring factors analysis (EFA)

When running EFA for independent variables through SPSS software, the rotated component matrix shows that both EB3 and SI5 have 2-factor loading, but the difference between the two-factor loading of SI5 is less than 0.3; therefore, SI5 will be removed. After removing items SI5, because of inappropriate scale, we rerun EFA and have this Table:

Table 10. The result of KMO analysis and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.866
Bartlett's Test of Sphericity	Approx. Chi-Square	1,715.608
	df	190
	Sig.	.000

Source: SPSS, prepared by the author

KMO = 0.866 > 0.5 means that the factors are appropriate for data analysis with the meaning level 0.000 in Bartlett's testing. It can be concluded that there is a correlation among these factors and the requirement of factor analysis is satisfied. Then a rotation matrix with these loading factors is implemented.

Table 11. Rotated Component Matrix

Rotated Component Matrixᵃ

	Component				
	1	2	3	4	5
RP6	.838				
RP5	.817				
RP1	.764				
RP3	.746				
RP2	.737				
RP4	.706				
CI4		.895			
CI3		.872			
CI2		.840			
CI1		.806			
SQ2			.843		
SQ3			.786		
SQ1			.783		
SQ4			.703		
EB3	.309			.854	
EB1				.849	
EB2				.834	
SI3					.781
SI1					.758
SI2			.301		.735

Source: SPSS, prepared by the author

The value of the factors is more significant than 0.5 means that the requirement of factors is met. Therefore, five factors with 20 measurement items influence customer satisfaction.

- The 1ˢᵗ Component consists of six observed items from RP1-RP6, so the 1st scale is unchanged, and component 1 will be named the "Reasonable Price" variable.

- The 2ⁿᵈ Component consists of four items with the code from CI1-CI4, so "Corporate Image" is unchanged.

- The 3ʳᵈ Component consists of four items from SI1-SI4 so that the factor will remain as "service quality."

- The 4ᵗʰ Component includes three observed items from EB1-EB3, so the factor "Employee Behaviors" will be unchanged.

- The 5ᵗʰ Component includes three observed items, namely SI1, SI2, SI3, so the last factor of the model will remain as "Service Innovation."

The author's research model is based on five independent variables and one dependent variable. Four observed items measure the dependent variable.

KMO = 0.781 means it analyzes the relevant factors to data, with the meaning level 0.000 in Bartlett's testing. Therefore, the author completely rejects the hypothesis that uniform factors are dismissed. They correlate and meet the requirement in analyzing factors.

- Total extracted variance 68.096 % >50%

- Value of factors is > 0.5

Therefore, in conclusion, there is a component of dependent variables, and it is named customer satisfaction.

After conducting an analysis of Cronbach Alpha and EFA for both the dependent and independent variables, it has been determined that all variables meet the necessary requirements for regression analysis. The preservation model, which includes five independent variables that impact one dependent variable, is now ready for further analysis.

Multivariate regression model

Before a multivariate regression model, the correlation coefficient Pearson must be tested to verify the relation among dependent and independent variables.

Table 12. Correlations

		SA	RP	CI	SQ	EB	SI
SA	Pearson Correlation	1	.605**	.317**	.691**	.520**	.526**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	150	150	150	150	150	150
RP	Pearson Correlation	.605**	1	.288**	.459**	.480**	.261**
	Sig. (2-tailed)	.000		.000	.000	.000	.001
	N	150	150	150	150	150	150
CI	Pearson Correlation	.317**	.288**	1	.189*	.078	.173*
	Sig. (2-tailed)	.000	.000		.020	.343	.034
	N	150	150	150	150	150	150
SQ	Pearson Correlation	.691**	.459**	.189*	1	.456**	.459**
	Sig. (2-tailed)	.000	.000	.020		.000	.000
	N	150	150	150	150	150	150
EB	Pearson Correlation	.520**	.480**	.078	.456**	1	.282**
	Sig. (2-tailed)	.000	.000	.343	.000		.000
	N	150	150	150	150	150	150
SI	Pearson Correlation	.526**	.261**	.173*	.459**	.282**	1
	Sig. (2-tailed)	.000	.001	.034	.000	.000	
	N	150	150	150	150	150	150
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: SPSS, prepared by the author

The result reveals that all independent variables correlate with a 0.01 meaning level. In detail, SA has the correlation coefficient of 1, RP is 0.605; CI is 0.317, SQ is 0.691, EB is 0.520, SI is 0.526. The

Pearson coefficient of all variables is appropriate for regression model analysis.

Table 13. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.809ᵃ	.654	.642	.29758	2.085
a. Predictors: (Constant), SI, CI, EB, RP, SQ
b. Dependent Variable: SA

Source: SPSS, prepared by the author

$R^2 = 0.642$ means that 64.2% variability of the dependent variable can be explained, and sig = 0.00 confirms that the model has statistical significance.

Table 14. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.421	.255		-1.650	.101		
	RP	.272	.061	.270	4.460	.000	.654	1.530
	CI	.121	.053	.118	2.287	.024	.896	1.116
	SQ	.369	.061	.376	6.048	.000	.621	1.609
	EB	.144	.058	.147	2.486	.014	.688	1.454
	SI	.246	.062	.221	3.963	.000	.774	1.291
a. Dependent Variable: SA

Source: SPSS, prepared by the author

The above table shows that all five independent variables have Tolerance > $(1 - R^2)$, and all VIF are < 2 if multicollinearity doesn't affect the regression result.

Beta is positive, indicating that all independent variables in the model positively affect customer satisfaction in the food testing service of Quatest1. The Sig value of independent variables RP, CI, SQ, EB, SI is < 0.5, so the hypotheses H1, H2, H3, H4, H5 are accepted. In other words, reasonable price factors, service quality, corporate image, service innovation, and employee behaviors positively affect customer satisfaction in the food testing service of Quatest1.

The result of testing the hypothesis

Hypothesis 1: There is a positive relationship between reasonable price factor and customer satisfaction in the food testing of Quatest1.

Null Hypothesis: there is no relationship between Reasonable Price factor and customer satisfaction in the food testing of Quatest1.

Through table 4.4.2.1, we can see that beta =

0.270 >0, indicating a positive relationship between independent and dependent variables. Besides, t – value = 4.460, and p-value = 0.0000 < 0.05, the H1 hypothesis has statistical meaning; therefore, the null hypothesis is rejected and accept**s hypothesis H1**.

Hypothesis 2: There is a positive relationship between corporate image and customer satisfaction in the food testing of Quatest1.

Null hypothesis: there is no relationship between Corporate Image and customer satisfaction in the food testing of Quatest1.

From table 4.4.2.1, we can see that beta = 0.118 >0, indicating a positive relationship between Corporate image and Customer satisfaction in the food testing of Quatest1. Besides, t –value = 2.287, and p-value = 0.024 < 0.05, the H2 hypothesis has statistical meaning, so we can conclude that the null hypothesis is rejected and accept **the hypothesis H2**.

Hypothesis 3: There is a positive relationship between service quality and customer satisfaction in the food testing of Quatest1.

Null hypothesis: there is no positive relationship between Service Quality and customer satisfaction in the food testing of Quatest1.

From table 4.4.2.1, beta = 0.376 >0, indicating a positive relationship between Service Quality and Customer satisfaction in the food testing service of Quatest1.

Besides, t –value = 6.048, and p-value = 0.0000 < 0.05, the H3 hypothesis has the statistical meaning, so we can conclude that the null hypothesis is rejected and accept**s hypothesis H3**.

Hypothesis 4: There is a positive relationship between employee behaviors and customer satisfaction in the food testing of Quatest1.

Null hypothesis: there is no positive relationship between Employee behaviors and customer satisfaction in the food testing of Quatest1.

Table 4.4.2.1, beta = 0.147 >0, indicating a positive relationship between Employee behaviors and Customer satisfaction in the food testing of Quatest1. Besides, t –value = 2.486, and p-value = 0.014 < 0.05, the H4 hypothesis has the statistical meaning, so we can conclude that the null hypothesis is rejected and accept**s hypothesis H4.**

Hypothesis 5: There is a positive relationship between service innovation and customer satisfaction in the food testing of Quatest1.

Null hypothesis: there is no positive relationship between Service innovation and customer satisfaction in the food testing of Quatest1.

From table 4.4.2.1, beta = 0.221>0, indicating a positive relationship between Service innovation and customer satisfaction in the food testing of Quatest1. Besides, t –value = 3.963, and p-value = 0.0000 < 0.05, the H5 hypothesis has statistical meaning, so we can conclude that the null hypothesis is rejected and accept**s hypothesis H5.**

From the regression table, we can draw the equation showing the relation between customer satisfaction in the food testing service of Quatest1 and independent variables including reasonable price factor, service quality, corporate image, service innovation, employee behaviors as follows:

SA = - 0.421 + 0.272* RP + 0.121*CI + 0.369*SQ + 0.144* EB + 0.246 * SI

In short, after testing the regression model, we have the final model of Factors affecting customer satisfaction in the food testing service of Quatest1, including five factors with 20 items criteria.

In this study, ANOVA is applied for items including age, gender, occupation (see the Appendix), but there is no difference in these groups when assessing customer satisfaction. However, it is not the case for company types.

Figure 2. Final model of factors affecting customer satisfaction in Quatest1
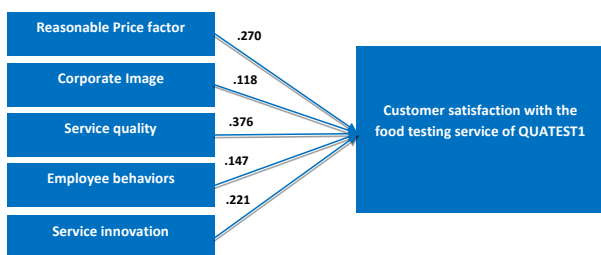
Source: SPSS, prepared by the author

Discussion of the research findings

The research aims to study the relationship and influence of factors on customer satisfaction. The thesis has a research model with one dependent variable and five independent variables to verify five hypotheses. The result is summarized as follows:

Table 15. Summary of hypothesis testing

Hypothesis	Beta	Sig.	Hypothesis	Tested results
There is a positive relationship between reasonable price factor and customer satisfaction in the food testing of Quatest1	.270	.000	H1	Supported
There is a positive relationship between corporate image and customer satisfaction in the food testing of Quatest1.	.118	.024	H2	Supported
There is a positive relationship between service quality and customer satisfaction in the food testing of Quatest1.	.376	.000	H3	Supported
There is a positive relationship between employee behaviors and customer satisfaction in the food testing of Quatest1.	.147	.014	H4	Supported
There is a positive relationship between service innovation and customer satisfaction in the food testing of Quatest1.	.221	.000	H5	Supported

Source: SPSS, prepared by the author

All five factors influence customer satisfaction in the food testing of Quality Assurance and Testing center 1. The findings confirmed the research hypothesis, in which the most prominent factor is Service quality with .376. While this result correlates with previous research studies (Nguyen et al., 2018; Lin et al., 2005; Davis and Mentzer, 2006; Zeithaml and Bitner, 1996; de Ruyter et al., 1997), it also gave an interesting view on the importance of service quality. Regarding service quality, while the provision of information access and the capability to perform service as promised seems to impact customers in this research significantly, Nguyen et al. (2018) asserted that the provision of the document has the highest degree of impact on customers. Based on a depth discussion with Associate Professor VU Tri Dung, this difference can be justified by the characteristics of the service area, more specifically, the conformity assessment sector. The subsequent factors are the reasonable price (with .270) and innovation (.221). This finding is identical to past studies of Vo (2015), Ehsani and Ehsani (2015), Malik et al. (2012), Athanassopoulos et al. (2001), Mahmoud (2017). Trying to interpret these results, according to KIM Duc Thu - Director of Quatest1, the nature of this conformity assessment industry and the need for innovation contribute to these results as customers pay much attention to the testing price and the ability to keep updated with the new testing methods that meet their demands.

Surprisingly enough, the influence of employee behaviors (.147) and corporate image (.118) was still positive but with a lower degree. Hu and Huang (2011) found similar results, although, in their research, the corporate image had a more significant impact statistically. Contrary to Lemmink and Mattsson (1998) and Brown (1996), it was not expected that the effect of employee behaviors on customer satisfaction would be minimal.

5. Conclusion and recommendation

The aim of the research was to determine the satisfaction level of customers with the food testing services of Quatest1 and to identify the factors that influence customer satisfaction. Five independent variables were examined, including service quality, employee behavior, service innovation, reasonable price, and corporate image, with customer satisfaction as the dependent variable. The results revealed that all five variables had a significant relationship with customer satisfaction, with service quality having the most significant impact, followed by reasonable price, service innovation, employee behavior, and corporate image. To attract more customers, Quatest1 should focus on improving service quality, reasonable price, and service innovation, while also addressing issues related to employee behavior and corporate image. The implementation of several practices, such as providing access to information on services offered, performing services as promised, introducing service contracts or testing requests clearly, and providing documents correctly, can help improve service quality and innovation. Additionally, implementing online testing requests, online tools to monitor service performance, and other practices can make the testing experience more interactive and convenient for customers. Improving the company's image on various media channels can also enhance customer satisfaction by improving the company's reputation and interaction with customers.

Managerial implications

The research findings suggest several managerial implications that Quatest1 should consider to improve customer satisfaction and enhance its reputation in the market. Firstly, the company should prioritize improving service quality, which is the most critical factor influencing customer satisfaction. Quatest1 should develop training programs for its employees to improve their skills and knowledge in providing high-quality services and regularly monitor and evaluate their performance to ensure they meet the required standards. Secondly, the company should maintain its strength in providing reasonable prices for its services and provide clear explanations and justifications to customers if it needs to increase prices. Thirdly, Quatest1 should focus on innovation to improve the testing experience for customers by introducing online testing requests, developing new testing methods, and providing more accessible and user-friendly testing reports. Fourthly, the company should address shortcomings related to employee behavior and corporate image by promoting ethical and professional behavior in its employees and improving its corporate image on various media channels. Finally, Quatest1 should regularly monitor and evaluate its service performance to ensure it meets customers' expectations by implementing an online tool to monitor service performance and providing easy access to testing results and feedback mechanisms for customers. By implementing these measures, Quatest1 can improve customer satisfaction, attract new customers, and enhance its reputation in the market.

Limitations and recommendations for future research

Despite the valuable insights gained from this study, there are several limitations that need to be acknowledged. *Firstly,* the sample size used in this study is relatively small and limited to customers of a single testing laboratory, Quatest1. This may limit the generalizability of the findings to other food testing service providers. Future studies should aim to use larger and more diverse samples to increase the generalizability of the results.

Secondly, this study only focused on customer satisfaction in the food testing service industry, without considering other factors that may influence customer loyalty, such as trust and perceived value. Future research could explore the impact of these additional factors on customer satisfaction and loyalty.

Thirdly, the study relied on self-reported data collected through a questionnaire, which may be subject to response bias. Future studies could consider using objective measures of customer satisfaction, such as customer retention rates, to complement self-reported data.

Based on the limitations identified, there are several recommendations for future research in this area. Firstly, future studies could adopt a

longitudinal design to explore changes in customer satisfaction over time, which could provide a more comprehensive understanding of the factors that influence customer satisfaction.

Secondly, future research could explore the impact of cultural differences on customer satisfaction in the food testing service industry. Cultural factors, such as communication style and service expectations, may vary across different regions and could influence customer satisfaction.

Thirdly, future studies could explore the impact of emerging technologies, such as artificial intelligence and automation, on customer satisfaction in the food testing service industry. These technologies have the potential to transform the industry and may have a significant impact on customer satisfaction.

Overall, further research is needed to provide a more comprehensive understanding of the factors that influence customer satisfaction in the food testing service industry. This would enable companies to develop effective strategies to attract and retain customers in an increasingly competitive market.

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APPLYING DIGITAL MARKETING TO DEVELOP THE DIGITAL BAKING BRAND OF VIETNAM'S COMMERCIAL BANKS

PhD. Nguyen Thi Nhung*

Abstract: *Apparently, technological developments, digital marketing and digital banking were born in the new era of connectivity, the customer journey changed from 4As: Aware - Attitude - Act - Act Again to 5As: Perceive (Awareness) - Complain (Attract) - Ask (Learn) - Act (Action) - Advocate (Share experience). In which, at the first stage of the customer journey-Awareness (Awareness), customers are passive before a series of brands of commercial banks in the market from past experiences, Dynamic Marketing Communications activities or sharing experiences from other users. With the qualitative research method, and surveying 850 customers who are using digital banking services of Vietnamese commercial banks, this's research author clarifies the effectiveness of applied digital marketing campaigns for enhancing the digital brand of Vietnamese commercial banks.*

• Keywords: *digital marketing, digital banking, brand.*

Tóm tắt: *Rõ ràng, sự phát triển của công nghệ, tiếp thị số và ngân hàng số ra đời trong kỷ nguyên kết nối mới, hành trình khách hàng thay đổi từ 4As: Aware (Nhận thức - Thái độ - Act - Act Again) sang 5As: Perceive (Nhận thức) - Complain (Thu hút) - Ask (Tìm hiểu)) - Act (Hành động) - Advocate (Chia sẻ kinh nghiệm). Trong đó, ở giai đoạn đầu tiên của hành trình khách hàng - Nhận thức (Awareness), khách hàng bị động trước hàng loạt thương hiệu của các ngân hàng thương mại trên thị trường từ những trải nghiệm trong quá khứ, các hoạt động Truyền thông Marketing năng động hay trải nghiệm chia sẻ từ người dùng khác. Với phương pháp nghiên cứu định tính, khảo sát 850 khách hàng đang sử dụng dịch vụ ngân hàng số của các ngân hàng thương mại Việt Nam, tác giả nghiên cứu làm rõ hiệu quả của các chiến dịch tiếp thị số được áp dụng nhằm nâng cao thương hiệu số của các ngân hàng thương mại Việt Nam.*

• Từ khóa: *tiếp thị số, ngân hàng số, thương hiệu.*

1. Introduction

Although Digital Marketing has only been prominent since the beginning of the 21st century, it has become a preferred marketing approach for many banks due to the rapid spread of digital tools. The concept utilizes three main channels: Earned Media, Paid Media, and Own Media, and is divided into five main techniques: Search Engine Marketing, Social Media Marketing, Email Marketing, PPC Marketing, PR Online, and PR Partnership. The key feature of Digital Marketing communication tools is that they offer easy measurement of results and cost savings compared to traditional marketing methods. Additionally, Digital Marketing has the ability to enhance brand recognition, particularly for digital banking brands. Given the limited marketing budgets and the high investment costs associated with branding efforts, Digital Marketing is an optimal method for commercial banks to build digital banking brands and create a sense of similarity. Unquestionably, as digitization strongly influences customer decision-making, Digital Marketing aligns with customer behavior.

In the process of applying Digital Marketing to develop a digital banking brand, commercial banks need to monitor and assess its effectiveness to make necessary adjustments and avoid wasted efforts. To evaluate the effectiveness of applying Digital Marketing to develop brands, commercial banks should base their assessments on three

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criteria: the Index of Visits per Unique Visitors (VPV) on the website, the number and speed of increasing the number of followers on social media channels, and the number of direct queries of the bank's name on search engines.

It is undeniable that digital banking, as a new business model delivered through multiple integrated e-banking channels, represents the future for every banking sector in an era of limitless technological innovation (Teuta Veseli-Kurtishi et al., 2020). Banks should ensure that customers can adapt to this new model by providing information on how to use digital banking. As adaptability increases, customer satisfaction levels also rise (Teuta Veseli-Kurtishi et al., 2020). Therefore, it is recommended that banks implement Digital Marketing strategies to enhance digital banking operations and increase brand awareness among customers, ultimately improving the availability and accessibility of digital banking services.

2. Theoretical framework

2.1. Digital Marketing

According to the American Marketing Association: *Digital Marketing is the use of digital or social channels to promote a brand or reach consumers. This form of marketing can be done on the Internet, social media, search engines, mobile devices and other channels (Philip Kotler).*

In fact, Digital Marketing involves the application of technological devices and digital media (collectively referred to as digital media) to achieve marketing objectives. These digital media channels may include search engines, social networks, mobile devices, and various other platforms.

To implement Digital Marketing, marketing managers still need to follow the marketing process, which starts with market research, market segmentation, target market selection, and product positioning. They also need to design marketing strategies and the marketing mix, and subsequently, carry out implementation and evaluation. However, unlike traditional marketing that relies on printed newspapers, outdoor billboards, leaflets, etc., digital marketing utilizes communication tools such as websites, emails,

social networks, and display ads, among others. Furthermore, digital marketing tools influence all activities of the marketing strategy, from market research to the marketing mix strategy.

There are 5Ds when managing Digital Marketing activities:

Digital devices: The target audiences interact with the business by using a wide range of devices such as smartphones, tablets, laptops, desktops, televisions, game devices, virtualization assistants and many other connected devices that make up the Internet of Things (IoT).

Digital platforms: Most interactions on these devices are done through a browser, apps from major platforms, or virtual services like Facebook™ (and Instagram), Google™, Twitter™, LinkedIn™, Apple™, Amazon™ and Microsoft™.

Digital media: Various media channels reach and engage their target groups, including advertising, email and messaging, search engines, and social networks.

Digital data: The thoughts and desires that businesses gather from their audience's profiles and interactions with them should now be protected by the laws of most countries.

Digital technology: This is the marketing technology - or Martech that businesses use to create interactive experiences from websites and mobile apps to in-store kiosks, and email campaigns.

2.2. Digital banking

According to Gaurav Sarma (2017), Digital Banking is a form of banking that digitizes all traditional banking activities and services. In other words, everything that customers can do at a traditional bank branch is digitized and integrated into a single digital banking application, eliminating the need for customers to physically visit the bank. Bank branches can still perform all transactions, and simultaneously, the bank's activities such as risk management, capital management, product development, marketing, sales management, etc., are also digitized. On the other hand, E-banking is an electronic banking service system (including services such as Internet Banking, SMS Banking, Mobile Banking) created

to supplement services on traditional banking platforms (digital out). In contrast, Digital Banking is a type of digital banking that encompasses all the functions of a bank, from its organizational structure to its working processes, products and services, and documents and transaction methods with customers (including digital in and digital out).

Clearly, digital banking places high demands on technology, including innovation in financial services for customers, strategies for digital application, application of artificial intelligence (AI), payment methods, RegTech, big data, blockchain technology, APIs, distribution channels, and overall technology (American banker, 2018). The development of digital banking helps banks save costs, increase competitiveness, improve compliance, and enhance transparency in business activities. From the customers' perspective, digital banking offers the convenience of utilizing banking services securely and efficiently, allowing cost savings and improved financial efficiency, and supporting online business development.

2.3. Banking brand

The term "Bank brand" can be understood as a marketing concept representing the name of a bank in transactions, associated with its identity, reputation, and image to create a lasting impression on customers and differentiate it from other banks in the monetary-credit business and provision of banking services. In simpler terms, a bank's brand is the perception that customers have of the bank. Customers may not necessarily know the meaning behind a bank's name or symbol, but if they unconsciously choose that bank for their financial needs, it indicates that the bank has successfully built and established a strong brand in the minds of customers.

The continuous preference or disliking of customers towards the brand is referred to as the perceived brand attitude (Fishbein and Ajzen, 1980), representing the overall evaluation of the brand by the customers. Banks need to understand that the basis for assessing brand perception lies in the exceptional benefits or image of the brand to formulate effective brand development strategies. Generally, customers evaluate the exceptional benefits or usefulness of the services provided by the brand, which shapes their overall attitude towards the brand (Wilkie, 1986). This evaluation is the result of a comprehensive assessment, reflecting the customer's attitude towards the brand's attributes (MacKenzie and Spreng, 1992). A positive attitude towards a brand increases the likelihood of customers using that brand (Kotler and Keller, 2008). In the banking business, the core element of brand development is to establish trust with customers (Gamble et al., 2005).

3. Research methodology

The research uses qualitative research methods to discover and tackle the problems. In this research, the author conducted group discussions and in-depth interviews with 10 experts in marketing, banking and branding in order to collect multi-dimensional and complete information for the research content to assure the test objectives and refine the issues posed at the beginning. In order to ensure the quality of the interviews, to collect the complete information, and to achieve the research objectives, the interview questions focus on three main issues:

Firstly, exploring the influence of digital marketing on the development of digital banking brands of commercial banks

Secondly, affirming the relationship between digital marketing and digital banking brand.

Thirdly, comprehending comments about each specific content of the study, the words used in the research, or adding some additional content.

On the basis of discovering and confirming the research issues, the author will supplement and build a questionnaire to survey customers.

Time of implementation: group discussions and in-depth interviews were conducted from January to March 2023. Customer survey was conducted from April to May 2023.

The official research data were collected using non-probability quota sampling by region - the North, the South, and the Central of Vietnam responding to the call of recent studies on the diversity of geographical location (Khai, 2015; Ha et al., 2019; Nguyen et al., 2019a; Van Huy et al., 2019). Moreover, employees and customers

represent three regions, including Hanoi, Ho Chi Minh City, and Da Nang because these locations concentrate the majority of customers of commercial banks and account for a high percentage of customers using digital banking services.

4. Research results

The digital banking ecosystem is tending to be formed in 2025 due to changes in customer consumption trends, operating models, revenue, digital banking platforms, banking industry data and banking's value chain (Gasser et al., 2017). In fact, market participants in providing digital banking services in Vietnam are now relatively abundant, but commercial banks are still the key players in digital banking development. All banks consider digital transformation to be of vital importance. 96% of banks have been building development strategies based on 4.0 technologies and 92% of banks have developed application services on the Internet and Mobile (Nguyen The Anh, 2020). By the end of 2022, Vietnam had about 30 million people using the internet banking payment system every day. The growth rate of transactions on mobile banking in Vietnam is 200%. Furthermore, the value of money transactions with the mobile phone channel alone is currently about 300 trillion VND per day.

Table 1. Customer appraisal on applying digital marketing to develop the digital banking brand of Vietnam's commercial banks

No.	Criteria	Percentage					Mean value
		1	2	3	4	5	
1	Marketing-mix activities (product, price, place, promotion, people, process, physical evidence) to develop digital banking brand are being implemented effectively.	3.33	1.33	6.00	35.33	54.00	4.4
2	Market research activities on digital platforms have been effectively implemented	1.33	5.00	8.67	31.33	53.67	4.3
3	Market segmentation activities to increase brand awareness of digital banks are effectively implemented.	3.00	2.00	15.33	27.00	52.67	4.3

No.	Criteria	Percentage					Mean value
		1	2	3	4	5	
4	Communication management activities on digital platforms to increase digital bank brand awareness and create customer loyalty are being implemented effectively.	3.33	3.33	8.67	30.33	54.33	4.3
5	Digital banking brand is easily recognizable through digital marketing activities of commercial banks.	1.33	5.00	8.67	51.67	33.33	4.2
6	Digital marketing tools (Search Engine Marketing, SEO (Search Engine Optimization), Pay - Per - Click Marketing (PPC Marketing), Social Media Marketing, etc) to increase brand awareness of digital banks are being used effectively.	4.00	2.00	12.33	29.00	52.67	4.3

Source: Author's survey, 2023

Research results indicate that most commercial banks developing digital banking brands often use the following tools: advertising through modern online means such as websites, facebook, youtube, online newspapers, etc; mobile and email marketing by calling and emailing customers, through data collected at the branch itself, or through informational websites. Although bringing certain effects such as being able to communicate to the customers that the bank wants to target, as well as promoting its image, this method also brings some problems for customers such as: proximity spam, or annoying status.

SEO: Research results depict that commercial banks have developed digital banks on the basis of creating articles that appear on the first page of search results, which will increase the appearance of these brand factors to the target audience. In particular, when the content is consistent in bringing useful value to the user, it will convey other brand values depending on the message it wants to indicate. Even when a bank has formed in the customer's mind that they are a useful content provider about a particular piece of content, users tend to search directly for the issue that they are interested on the bank's website.

Social Media Marketing: The positive influence of Social Media Marketing activities in increasing

the bank's brand recognition is most evident through the two main activities of Social Media Marketing: Posting and Engaging which were rated relatively well by customers participating in the survey.

Email Marketing: Customers participating in the survey all identified Email Marketing as a tool capable of navigating content and reaching target audiences in a friendly and personalized manner based on the characteristics of a specific audience group. Hence, in addition to conveying useful content, Email Marketing connects and creates friendliness with the target audience. This tool is relatively and effectively deployed by Vietnamese commercial banks, which is seen as a useful way to increase brand awareness for digital banks.

Content Marketing: Customers participating in the survey said that when they interact with the bank's content enough and receive the right message through the articles, they will gradually form a pattern of perspective about that bank.

5. Conclusion and suggestions

In the digital age, banks are harnessing the power of technology to enhance marketing effectiveness on digital platforms, replacing traditional methods. During this time, a well-planned digital marketing strategy must target the right customers and provide them with the desired product and service experience. This not only raises customer awareness about the brand but also generates public support for Vietnam's commercial banks in the present context. In reality, to successfully apply digital marketing to develop the digital banking brand of commercial banks, they need to implement the following solutions:

Firstly, concerning search engines: Re-optimize articles that have yielded poor results on the website (articles with low access numbers and rankings compared to keyword competition). This includes addressing readers' needs when searching for keywords, upgrading the quality and reader-friendliness of articles, and optimizing technical SEO elements. Additionally, the bank system should review and completely remove backlinks from websites that do not drive effective traffic to the website and from sites that lack reputation. Forms of backlink placement that violate Google's

policies, such as excessive link exchanges and participation in blog networks, should also be avoided. Moreover, banks need to assess the causes of unoptimized errors on their websites and take necessary actions to fix them.

Secondly, regarding the mixed promotion strategy, banks are advised to develop and implement plans to improve the quality of digital banking products and services, ensure information security, and adopt new trends in developing digital services using technology. Additionally, they should devise plans to promote brands and digital services on media channels and social networks with high viewer/follower ratios. Banks should adopt digital communication methods that align with the trend of data personalization and automation in the communication cycle. Furthermore, adjusting the content-cost structure on digital media channels to represent at least 30%-40% of the total cost of communication activities is crucial.

In addition, commercial banks need to utilize effective methods to evaluate and measure the effectiveness of their digital marketing activities. This will aid in promoting successful digital-based marketing campaigns and, at the same time, help banks eliminate inappropriate and ineffective marketing activities.

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CHALLENGES WITH VIETNAM'S TEXTILE AND GARMENT EXPORTS TODAY IN THE CONTEXT OF THE INDUSTRIAL REVOLUTION 4.0

MSc. Vu Hong Nhung*

Abstract: *Industry 4.0 will be the foundation for the economy to transform powerfully from a resource-based model, low-cost labor to a knowledge-based economy. Like other industries, Vietnam's textile and garment, especially textiles and garments exports, faced many challenges before the 4.0 industrial revolution. In this article, the author will analyze Vietnam's textile and garment export activities in the context of the industrial revolution 4.0 and propose some solutions to develop textile export and towards international economic integration.*

• Keywords: *Vietnam's textile and garment export, industrial revolution 4.0, challenges.*

Tóm tắt: *Cách mạng công nghiệp 4.0 sẽ là nền tảng để kinh tế chuyển đổi mạnh mẽ từ mô hình dựa vào tài nguyên, lao động chi phí thấp chuyển sang kinh tế tri thức. Cũng như các ngành hàng khác, dệt may Việt Nam đặc biệt là xuất khẩu hàng dệt may đang chịu rất nhiều thách thức trước cuộc cách mạng công nghiệp 4.0. Trong bài viết này tác giả sẽ phân tích hoạt động xuất khẩu hàng dệt may của Việt Nam trong bối cảnh cách mạng công nghiệp 4.0 và đề xuất một số giải pháp để xuất khẩu dệt may phát triển và hướng tới hội nhập kinh tế quốc tế.*

• Từ khóa: *xuất khẩu hàng dệt may Việt Nam, cách mạng công nghiệp 4.0, thách thức.*

1. Introduction

The textile and garment industry has made substantial progress and played an increasingly important role in Vietnam's economy for many years. Of all the export industrial products in Vietnam today, the textile and garment industry is a high-growth industry and one of the critical export commodity groups, playing an essential role in the growth of Vietnam's economy. The annual export turnover of textiles and garments accounts for 12% of the country's total export turnover and is a large trade surplus of Vietnam. However, entering 2023, Vietnam's textile and garment industry faces many challenges due to declining orders, high-interest rates, and exchange rate differences.

In 2018, for the first time, Vietnam ranked second in the world in textile and garment export scale, only after China, and ranked fourth in the global textile and garment production scale. In recent years, Vietnamese textiles and garments have maintained the third position in export turnover globally, after China and Europe. In 2022, Vietnam's textile and garment export turnover will reach 37.57 billion USD, accounting for about 10% of the country's total export turnover. In addition, the role of the textile and garment industry in society is significant, creating jobs for about 10% of workers compared to industrial workers in the country. Thus, the textile industry, in general, and the export of textiles and garments, in particular, play an essential role in the socio-economic development of Vietnam.

The Industrial Revolution 4.0 has been in practice for ten years. It is expected to change production methods significantly, profoundly changing the product value chain from research - development to production, logistics services

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to customer service, etc., significantly reducing production, transportation, and distribution costs and increasing labor productivity and business efficiency. However, this is also a challenge for many Vietnamese textile and garment exporters, especially for small and medium-sized enterprises in the current context, because human resources to access the 4.0 industrial revolution are still limited. The investment in technology applications still needs to be improved, so it requires much effort from the entire textile and garment industry to meet the requirements of international integration.

2. Present situation of Vietnam's textile and garment exports

Vietnam's Textile and Garment Industry has made positive progress in production and export in recent years. As a result, in the first six months of 2023, Vietnam's textile and garment export turnover reached 18.6 billion USD, up 11.31% over the same period in 2022.

Figure 1: Vietnam's textile and garment exports in the period 2015-2022
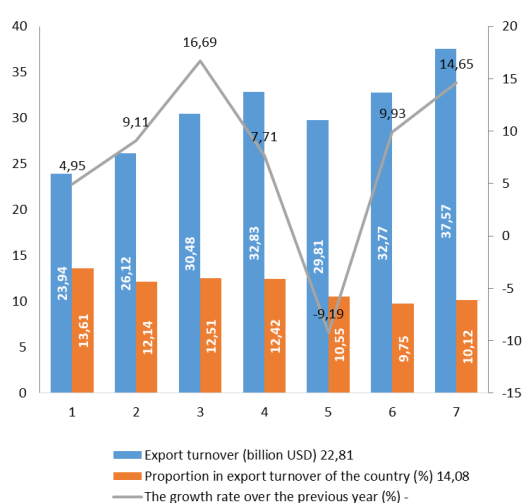
Source: Author compiled from data of the General Statistics Office of Vietnam

The average growth rate of textile and garment exports in 2015 - 2022 is 7.7 %/year. In 2018 alone, the growth rate was 16.69%. In 2020, textile and garment exports grew negative at -9.19% due to many negative and prolonged impacts of the Covid-19 pandemic. In the first months of 2021, the global textile and garment market tends to recover because of economic support packages and positive information on the deployment of a vaccine against

Covid-19; The demand for commodities in general and apparel, in particular, has partly recovered. In addition, in 2021, textile and garment enterprises will not face the problem of broken material sources as in the first months of 2020. Abundant orders and advantages in the export market have helped export. Vietnam's textile and garment exports gradually recovered, with export turnover growing monthly until mid-2021.

Although the Covid-19 epidemic has significantly affected Vietnam's textile and garment exports, this is only a short-term disruption, and textile exports are expected to recover in 2022. Turnover Vietnam's garment exports in 2022 reached 37.57 billion USD, an increase of 14.65% compared to 2021. Vietnam's garment exports slowed down in the last two months of 2022 and were two months of the growth rate of export turnover. Vietnam's garment exports decreased compared to the same period in 2021, after the lowest growth in October 2022. This result partly reflects the difficulties and challenges garment exporting enterprises face due to scarce orders and unpredictable fluctuations in the world market.

The structure of Vietnam's garment exports in 2015 - 2022 is relatively stable, with main products such as T-shirts, jackets, pants, children's clothing, fabrics, shirts, underwear... Several items, such as children's clothing, textiles, underwear, workwear, sweaters, swimwear, etc., achieved a very high average growth rate during this period everyday garments, with high convenience will be potential export products. Especially in the context of the epidemic, the proportion of exports of these items tends to increase rapidly.

Due to the impact of the Covid-19 pandemic, the supply of raw materials has been interrupted, the consumption market for apparel products has narrowed, and the demand for textile products has dropped sharply when consumers worldwide are only interested in clothes essential use and epidemic prevention. Vietnam's textile and garment industry has flexible and diversified production towards export to overcome difficulties and compensate for broken orders in epidemic purchases. In 2020, the export structure of textiles and garments will change significantly. Traditional items such as jackets, pants, shirts, and fashion and high-end clothes

are all reduced. The Covid 19 pandemic has also plummeted the world's fashion shopping demand, giving way to essential and disease-prevention items. Vietnamese enterprises have turned around step by step to meet the world's consumption needs and maintain production, export and retain workers by switching to production and increasing exports of necessary goods for the department's anti-epidemic and products used a lot at home to make up for the shortage of traditional export orders, including Masks reached about 817 million USD; protective gear reached 757 million USD (up 283%, equivalent to 559 million USD); curtains, blinds, carpets reached USD 415 million (up 3.7%, equivalent to USD 15 million); nightwear reached USD 222 million (up 12.5%, equivalent to USD 25 million); medical clothing reached USD 161 million (up 17.5%, equivalent to USD 23 million).

Table 1: Some types of textile and garment exports in 2020 compared to 2019

Categories	2020 (million USD)	Increase/decrease compared to 2019 (%)
Face mask	817	-
Labor protection gear	757	283
Curtains, curtains, carpets	415	3.66
Pyjama	222	12.5
Medical clothing	161	17.5

Source: Compiled from the data of the General Department of Customs

From the second half of 2021, Vietnam's textile and garment exports have shown more improvement compared to last year, thanks to the recovery of the production chain with the return of traditional orders.

Vietnam's textile and garment products are present in many countries and territories. In addition to maintaining good growth in major export markets such as the US, EU, Japan, and Korea, Vietnam's textile and garment has tried to break through in other markets such as China, Russia, Cambodia, Indonesia, and Thailand.

For the whole year of 2022, Vietnam's garment exports still increased quite well compared to 2021, thanks to a substantial increase in exports to most of the critical markets of the US, EU, Japan, and Korea... However, compared to before the Covid-19 epidemic, in 2021, Vietnam's garment exports to several markets had yet to recover. Export turnover still decreased, such as

China, Russia... Notably, compared to the time before the Covid-19 epidemic, Vietnam's garment exports to the markets of Canada, Australia, Mexico, Bangladesh, and ASEAN grew very high. Especially, Vietnam's garment exports to CPTPP member markets such as Canada, Australia, and Mexico are high, showing that businesses have effectively taken advantage of tariff preferences from new-generation FTAs. Mainly, exports to Canada from 2018 to now have grown enormously by over 20% per year (except in 2020 due to the impact of the Covid-19 epidemic) thanks to the effects and results of the CPTPP Agreement.

In 2022, garment exports, mainly jackets, t-shirts, and pants, have strong growth compared to 2021. Exports of categories such as jackets, vests, and shirts have increased sharply and almost returned to the pre-covid-19 phase.

Figure 2: Types of textile and garment exports of Vietnam in 2022
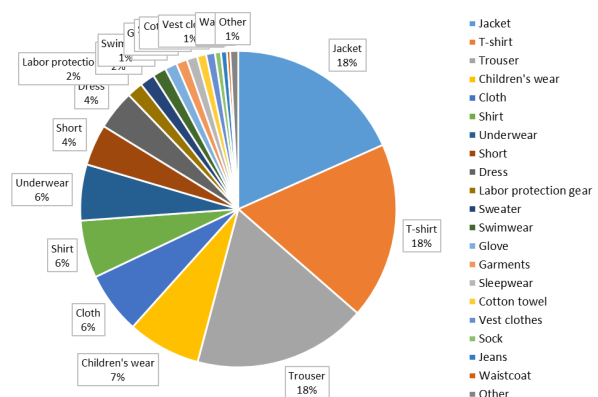
Source: Import and Export Report 2022 - Ministry of Industry and Trade

The overall view of Vietnam's textile and garment exports in recent years shows a change in the overall export trend of the country. Notably, in the context of many negative impacts of the Covid-19 epidemic, textile and garment exports still show a jump in growth from 2021 (V-shaped growth). The above results are because Vietnam's textile and garment industry has constantly tried to catch up with world trends. The most prominent is the initiative of enterprises to improve production capacity; improve skill level; shifting production from the form of only receiving outsourcing to the form of self-control of raw materials, self-design, and completion of products. In particular, the continued investment by enterprises in equipment

and automation technology is also one of the factors contributing to creating the foundation for the textile industry to withstand market pressures in terms of quality, quantity, and quality conditions that need fast delivery.

To achieve such encouraging achievements, the textile and garment industry has taken advantage of abundant skilled labor and a favorable geographical position to attract foreign investment. However, in the coming time, Vietnam's textile and garment industry will face many challenges, in which the advantage of abundant labor and low labor costs will gradually decrease. Under the impact of the industrial revolution 4.0, Vietnam's textile and garment industry must innovate technology, develop training strategies, and promptly convert high-quality human resources.

3. Challenges of the fourth industrial revolution with Vietnam's textile and garment exports

With the explosion of the industrial revolution 4.0, in Europe, sewing businesses appeared that completely use robots to sew standard products and almost did not use workers; productivity increased 5-6 times, income of employees is also significantly improved. However, Vietnam's textile and garment production is labor-intensive, facing many challenges from the 4.0 industrial revolution.

When applying the industrial revolution 4.0, automation will be connected based on the Internet of Things, cloud computing, 3D printing manufacturing technology, big data analysis, and artificial intelligence will gradually replace workers in factory production lines and the entire supply chain of textile products. In addition, in the context of integration, the trend of using green products, nanomaterials, and materials with unique features is increasingly popular worldwide. Therefore, the production technology of the textile industry must meet this trend to have export orders. In addition, the trend of using digitized and automated textile equipment, especially in the field of essential garment production (smart factory, 3D printing, 3D textile), will also have to follow this trend to connect transparent connections throughout the supply chain.

Vietnam's textile and garment industry has over 70% of small and medium-sized enterprises. This makes it challenging to invest in and apply new technologies. Statistics of the textile and garment industry show that only 30% of enterprises, including foreign-invested enterprises and large domestic enterprises, have used automation in each production stage, of which less than 5% have automation plans to deploy connection automation technology. Meeting the requirements of the industrial revolution 4.0 is a considerable challenge for domestic textile enterprises, tiny and medium enterprises.

Besides, the level of labor in Vietnam's textile and garment enterprises is still low (about 84.4% of workers have a general education), and only 0.1% of workers with university degrees.

In addition, in the context of international economic integration and the impact of the Covid-19 epidemic, the automatic ordering method based on artificial intelligence and robots will be widely applied in connecting businesses with customers. E-commerce will also be a widely developed sales channel in many supply chain stages, especially sales. That requires more and more textile and garment exporters to regularly update the world technology situation to access modern technology and have the proper investment orientation, avoiding backwardness causing loss of competitiveness.

Vietnamese textile and garment enterprises need more time to be ready for systematic investment in the trend of industrial revolution 4.0. The most difficult ones are still small and medium-sized enterprises with low economic potential (difficulty in capital). Meanwhile, keeping up with the industrial revolution 4.0 trend requires significant money, high interest paid for investment costs, and increased equipment depreciation. In the short term, businesses will invest in machinery, automation equipment, and local productivity solutions, mainly to compensate for labor shortages. In a long time, large enterprises, especially foreign-invested enterprises, will invest in management to digitize equipment to reduce labor and cope with the decreasing labor supply.

4. Solutions for exporting Vietnamese textiles and garments in the context of the industrial revolution 4.0

To meet the development needs in the coming time, Vietnam's textile and garment industry needs to have appropriate orientations in the context of

the industrial revolution 4.0, which focuses on automating enterprises' production lines according to the motto: "Do not automate at all costs." At the same time, prepare resources (people, capital, digital technology, information technology foundation) to modernize the selected stages and develop environmentally friendly technologies gradually. The textile and garment industry also needs to change its business methods, innovate its management, and progressively shift to exploiting the domestic market, paying attention to using the handmade market and developing a complete supply chain (yarn - textile - dye - sew). In addition, focusing on complex, high-value products is necessary, avoiding producing essential products and products with self-adhesive materials.

Vietnam's textile and garment industry needs to take very long preparation steps to adapt to the industrial revolution 4.0; otherwise, there will be significant risks affecting enterprises' production and business situation. To meet the development needs, domestic textile and garment enterprises need to focus on implementing several solutions as follows:

First, invest in science and technology development in the field of textiles. At present, sewing technology has been closely combined with machine manufacturing technology. However, in the future, the garment industry will likely apply information technology, cloud management system, AI technology, etc., to create a value system for businesses and users. Therefore, to develop, companies need to invest in accessing the world's leading textile technology to reduce the amount of labor per product. At the same time, strengthen the application of information technology in management and production to help textile enterprises accumulate resources to invest in new technology according to the trend of the industrial revolution 4.0.

Second, step by step, invest in applying achievements of the industrial revolution 4.0 in the textile industry. Specifically, businesses must invest in digital technology equipment in simple, highly repeatable stages to produce complex and high-fashion products, such as jackets and suits. At the same time, investing in an information technology platform and factory management software and proceeding to build an intelligent factory is necessary.

Third, human resource training. Textile products are highly fashionable and have many production stages. Industry 4.0 is challenging to simultaneously replace human manual labor in a short time, especially in the sewing stage. However, if enterprises still maintain the current operating model, labor quality, and outdated technology, the overcapacity crisis will become a severe problem in the long term. Therefore, it is necessary to have a plan to deal with redundant labor, develop a training strategy, and convert high-quality human resources promptly. This not only reduces the risk of labor fluctuations but also helps to increase the size of the textile industry in terms of both production capacity and export capacity. In parallel with upgrading the knowledge and skills of human resources in the textile and garment industry, they are opening more interdisciplinary training disciplines to approach the industrial revolution 4.0 and training lecturers on 4.0 technology, factory smart.

Fourth, it is necessary to have primary conditions from the State, such as building institutions, mechanisms, policies, and laws suitable for a digital economy to successfully apply the achievements of the 4.0 industrial revolution into practice. Accordingly, the State must develop a synchronous infrastructure system, including information technology infrastructure and highly qualified human resources, to meet working requirements. Besides, it raises awareness of leaders at all levels, sectors, localities, businesses, and society and prepares them to apply the industrial revolution 4.0.

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DIGITAL TRANSFORMATION OF THE COMMERCIAL BANKING SYSTEM IN VIETNAM - SITUATION AND SOLUTIONS

PhD. Dang Thi Lan Phuong*

Abstract: *The Industrial Revolution 4.0 will inevitably involve digital transformation, which presents an opportunity for enterprises, in general, and the Vietnamese banking sector, in particular, to advance and reinvent themselves, or at least rethink how they go about doing business. Therefore, if digital transformation is not the key concern of the banking system in Vietnam at the moment, its lack of progress will cause it to lag behind compared to other industries. This article discusses certain challenges related to digitization and digital transformation in commercial banking operations, as well as the state of the Vietnamese commercial banking system in terms of digital transformation. Based on this analysis, the authors propose a number of recommendations to promote the aforementioned digital transformation process. The main research methods used in the article are traditional research methods: desk research, data synthesis, and analysis, induction of collected foreign and domestic documents.*

• Keywords: *digital transformation, digital economy, commercial banking.*

Tóm tắt: *Cuộc cách mạng công nghiệp 4.0 chắc chắn sẽ kéo theo sự chuyển đổi kỹ thuật số, mang đến cơ hội cho các doanh nghiệp nói chung và ngành ngân hàng Việt Nam nói riêng thăng tiến và đổi mới chính mình, hoặc ít nhất là tư duy lại cách thức hoạt động kinh doanh. Vì vậy, nếu chuyển đổi số không phải là mối quan tâm hàng đầu của hệ thống ngân hàng Việt Nam ở thời điểm hiện tại, thì sự thiếu tiến bộ sẽ khiến hệ thống ngân hàng này tụt hậu so với các ngành khác. Bài viết này thảo luận về những thách thức nhất định liên quan đến số hóa và chuyển đổi số trong hoạt động ngân hàng thương mại, cũng như thực trạng của hệ thống ngân hàng thương mại Việt Nam về chuyển đổi số. Trên cơ sở phân tích này, nhóm tác giả đề xuất một số khuyến nghị nhằm thúc đẩy quá trình chuyển đổi số nói trên. Các phương pháp nghiên cứu chính được sử dụng trong bài viết là các phương pháp nghiên cứu truyền thống: nghiên cứu tại bàn, tổng hợp và phân tích số liệu, quy nạp các tài liệu trong và ngoài nước đã sưu tầm.*

• Từ khóa: *chuyển đổi số, kinh tế số, ngân hàng thương mại.*

1. Introduction and reason for choosing topic

The digital economy opens up new growth opportunities in many countries, helps promote economic competitiveness, and serves as the core driving force for national economic growth and research, ultimately contributing to solving socio-economic problems. In Vietnam, the development potential of the digital economy presents a new opportunity to bridge the development gap. In this context, the commercial banking system is identified as one of the top priorities for the national digital transformation strategy, aimed at "digitizing" the economy. For the State Bank,

the goal is to "comprehensively renovate the management activities of the State Bank in a modern direction, effectively applying and exploiting the achievements of Industry 4.0 technology, fully meeting the requirements of the State Bank of Vietnam set by the Government's digital transformation criteria." Meanwhile, commercial banks aim to "accelerate the digital transformation process, develop digital banking models, increase utility, enhance customer experience, and achieve the goal of financial inclusion. They also aim to achieve sustainable development by promoting the application of new and advanced technologies

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in management and the supply of products and services, focusing on process automation and optimization of business operations."

In this article, the authors focus on studying the theoretical framework of digital transformation for commercial banks, the current situation of digital transformation within the commercial banking system, and provide some recommendations to promote the digital transformation of the commercial banking system in Vietnam.

2. Basic issues of digital transformation in the operation of bank systems

2.1. Perspectives on digital transformation in banking operations

First of all, digital transformation, in general, according to Gartner, refers to the use of digital technologies to change business models, creating golden opportunities, generating new revenue, and adding value. Microsoft believes that digital transformation represents a new mindset that rethinks how enterprises organize all components, such as the workforce, data-driven processes, and operations, to create significant value. This transformation entails reshaping the entire operational model with the primary objective of increasing operational efficiency, enhancing customer satisfaction, and establishing a competitive advantage in the market. Digital transformation encompasses the application of digital technology in all aspects of human society, and during the transition phase, it enables new types of innovation and creativity in specific fields, going beyond merely enhancing and supporting traditional approaches.

As defined on Wikipedia, "Digital Transformation" goes beyond being solely about digital technology; it is a transformative step where digital technology aids in resolving traditional problems, given that people often prefer digital solutions over conventional ones. Consequently, digital applications open up new forms of innovation and creativity across various domains instead of just upgrading and supporting traditional methods. In a narrower sense, digital transformation can be exemplified by the concept of a "paperless office." To become a digital business, all elements, including business strategy, workforce, operating

processes, platforms, performance, communication methods, business-to-business relationships, and the enterprise's ecosystem, need to be digitized. These aspects also represent different levels (layers) of the digital revolution (see Figure 1).

Figure 1: Diagram of levels digital transformation
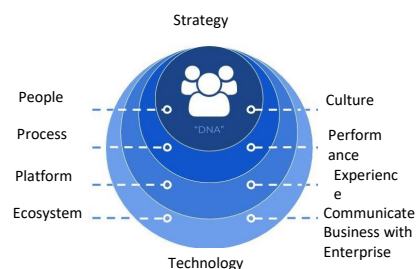
Source: Wikipedia.

Digital transformation involves the application of technologies and techniques created from the Fourth Industrial Revolution to automate and digitize the activities of an enterprise, thereby creating new value.

Similarly, the digital transformation of commercial banks is the process of applying new technologies such as big data, the Internet of Things, cloud computing, etc., to change operating methods, leadership, work processes, and company culture, transitioning from a traditional operating model to a modern business paradigm.

2.2. Levels of digital transformation in banking operations

Digital transformation is a complicated task that requires banks to identify goals, develop a long-term strategy, and choose the right level of transformation. Basically, the process of transforming banking operations digitally can be divided into three stages: (i) Digitalizing the interface (front-end only); (ii) Modular digitization (Wrap and digitize); (iii) Digital native bank (Digital native).

Front-end only stage:

This is the most basic stage of digital transformation. In this stage, banks mainly focus their resources on systems that interact directly with customers to enhance their experience while keeping the infrastructure and information processing system intact. For example, the bank provides an online or mobile banking interface

to its users but without any significant changes to the core banking system. Banks in the early stages of change, with limited financial resources or low risk appetite, are most suited for this strategy. Implementing a strategy to digitize the interface helps banks save money and time. However, since all processing is still based on the old core system, the quality is not guaranteed. Additionally, there are many limitations due to the lack of time and an advanced workforce to carry out research, test, and develop products and new services on the old system, as they need to be programmed to be compatible and integrated with this system.

Module digitization (Wrap and digitize):

By using this strategy, the bank modernizes the user interface and takes another step toward progressively replacing the outdated infrastructure with digital technology, integrating the functions of many departments and products. Application program interfaces (APIs), for instance, are utilized by a bank to integrate data between several product groupings and services. This integration layer facilitates the trader's ability to see the client holistically. It also means that product line or system upgrades can be done more quickly and efficiently. The banking transaction system becomes faster and more precise when data is incorporated throughout. As a result, in the era of Industry 4.0, customers can access all of their accounts with one login rather than having to log onto separate websites for their banks, cards, and loans. They can also start an app on their mobile device, switch to the desktop, and complete their transactions more quickly.

The banking phase is digital native:

This transformation is the highest level in the digital revolution, where a digital bank is conceived from the ground up with a fully digitized interface and processing system. A bank initially selects a minimum number of products and services it can offer, such as focusing on deposits, payments, or loans. This digital transformation approach is poised for explosive growth in services and increasing challenges for banking. In this way, startups can also offer products and services of financial institutions. However, the convenience and rapidity of transactions are the primary drivers behind banks' decisions to go digital. Digital-native banking

adapts well to rapid changes in customer tastes and allows the bank to test and restore processes instead of commitments and hopes. The digital core and open architecture also provide flexible approaches for the bank to partner with third parties to provide a wide range of products and services. By utilizing cloud-based or third-party architecture, the digital bank is designed with complete functionality. With modern infrastructure, banks can quickly adapt product offerings and services, such as new account types or advisory services, and change prices as needed. Under this model, customers can have a very different banking experience, and most will be more engaging: A seamless experience designed around the needs of the customer rather than the bank's attempt to sell them products. At the end of the digital transformation period, a commercial bank will be a smart bank that brings many benefits to customers (all banking services are provided online such as trade finance, rental, payment, ticketing, insurance, lending, e-wallet via mobile phone, peer-to-peer lending, crypto currency, mobile payment, crowd funding...).

Figure 2: Smart banking focuses on customer satisfaction
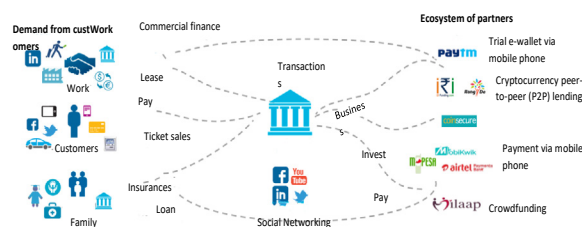
Source: Le Nhan Tam, IBM (2018)

3. Research methods

In the article, the authors use secondary data collected through the desk research method. The authors collect data from national and international documents. With the collected data, the authors use data processing methods such as statistics, analysis, synthesis... to draw the necessary lessons.

4. The state of digital transformation of vietnam's comercial banking system

4.1. The current situation of building digital transformation strategies of the commercial banking system

Recognizing the importance of digital transformation and banking digitization, most

commercial banks in Vietnam have developed this strategy. Specifically, according to the summary information from the survey in September 2020 by the State Bank on the digitization activities of commercial banks, 95% of commercial banks have been building or planning to develop a digital transformation strategy. Among them, 39% of banks have approved a digital transformation strategy or integrated it into the business/ information technology development strategy, and 42% of banks are currently building a digital transformation strategy.

Figure 3: Survey results on the level of digitalization strategy implementation of Vietnamese commercial banks

Not including strategy development (5%)

Not taking into account the development of a strategy that is intended to be implemented (14%)

Building a digital transformation strategy (42%)mation strategy (42%)

Built its own strategy on digital transformation / integrated in business strategy (39%)

Source: State Bank of Vietnam September 2020

4.2. Current status of digital transformation of Vietnam's commercial banking system

The digital transformation process of each commercial bank in Vietnam is at different stages. However, most commercial banks have successfully implemented phase 1 - digitizing transactions and are currently implementing phase 2 - modular digitization. For example: (i) OCB promotes retail and serves small and medium-sized enterprise customers, focusing on developing digital banking to bring the most convenience and services to customers. (ii) Timo digital bank (VPBank) is leading the digital banking revolution with the policy of reducing branches and transaction offices. (iii) TienPhongBank has a strategy towards network coverage with a density of automated

ATMs (LiveBank). (iv) Techcombank focuses on improving the UX/UI system and building an electronic payment solution based on maximizing customer experience. (v) MBB focuses on the development of customer communication channels to bring personalized digital experiences to customers. (vi) Maritime Bank also enhances the customer experience through the MSB plus utility on the Mobile banking application, providing a full package of services such as registering to open a credit card without requiring other proof of income, no waiting time for approval, and opening an online payment account. (vii) BIDV has expanded its ecosystem by connecting with most Fintech companies, nearly 1000 service providers, to deploy more than 1600 online payment services for customers with the goal of having 80% of customers accessing and using the bank's digital channels by 2025. (viii) VietinBank prioritizes digital transformation to improve customer experience, both at the counter, on smartphones, and through applications so that any customer can use the bank's services. (ix) LienVietPostBank optimizes customer experience in both forms: offline experience at branches and transaction offices, and online experience on websites, fan pages, and mobile apps, especially using cards.

In addition, a few banks are digitizing the data platform. In terms of the process, most of the top and middle banks (such as BIDV, TechcomBank, Vietcombank, TienPhongBank, VPBank, etc.) have all completed the automatic transaction system.

Figure 4: Digital transformation model of Vietnamese commercial banks today

Interface digitization (6%)

Modular digitization (75%)

Fully digitize & establish new digital banking distribution channels (13%)

Establishing a new digital banking brand/distribution channel (6%)
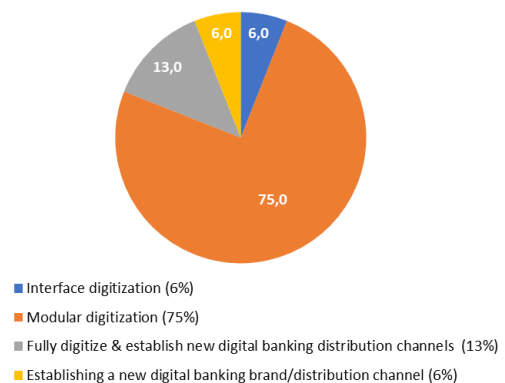
Source: State Bank of Vietnam September 2020

4.3. Current status of technology application in digital transformation of Vietnam's commercial banking system

Many commercial banks in Vietnam have applied artificial intelligence, big data, customer identification, and eKYC (electronic Know Your Customer) identification to maximize benefits for users, such as: (i) ShinhanBank Vietnam has cooperated with Zalo to provide a utility to look up and update information on account balances, credit card openings, consumer loans, home/car loans, and many other electronic services that will be further expanded in the future. This allows for answering and providing information to customers anytime, anywhere, timely, and completely free of charge. (ii) TienPhongBank introduced "T'Aio" on Facebook Fanpage since July 2017. This AI application has several benefits, including automatic response when receiving communication requests from customers in less than 5 seconds. It operates 24/7 and continuously learns, improving through customer support times to gradually become more intelligent and human-like, thanks to the application of artificial intelligence. (iii) NamABank has also successfully applied AI and Robots to the financial sector. The Bank has integrated Chatbot OPBA - a smart virtual assistant on NamABank's Fanpage, Open Banking, and the chat window of the Agent. The OPBA Chatbot can automatically engage in conversations with users on applications, respond to all questions regarding products and services 24/7, and meet all demands with a high rate of effectiveness. This enables better communication with customers while also fully satisfying their informational needs. (iv) VietinBank, with the Enterprise Data Warehouse (EDW) project, contributes to supporting the bank to improve management activities as well as monitoring and managing risks according to international economic standards. (v) VPBank of Vietnam applies IBM's data analysis technology to synchronize customer data and support quick customer behavior analysis. (vi) The five pioneering commercial banks implementing eKYC in Vietnam are VPBank, HDBank, TienPhongBank, Viet Capital Commercial Joint Stock Bank, and NCBank. VPBank allows customers to open 100% online payment accounts for immediate transactions. HDBank provides customers with iMoney accounts on the bank's app to perform many online transactions. TienPhongBank uses eKYC to ensure accurate customer verification, checking relevant documents such as ID/CCCD, passport, driver's license, through the bank's app. Viet Capital Commercial Joint Stock Bank has implemented an eKYC process to quickly and efficiently verify customer information. NCBank uses eKYC to open an online bank account quickly.

In addition, some commercial banks have also applied open banking technology. OCB is one of the pioneering banks with this model. Through the OCB Omni application, users can not only use pure banking services such as money transfer and savings but also experience products and services from affiliated partners. Currently, the bank has linked with AirPay, VnPay, Momo, and others to help customers pay electricity, water, Internet bills, recharge phones right on the OCB Omni application, or transfer money through wallets for shopping and payment service. Customers of OCB Omni can access many financial investment products such as buying insurance (travel, motorbike, accident) or investing in Vinacapital fund certificates completely online right on the application. The application also integrates many financial services from Fintech companies such as UrBox to bring added value to customers through the program of accumulating points, exchanging gifts, paying rewards, and offering discounts.

By April 2019, NamABank deployed the Ommi Channel - Open Banking system, breaking through all limits and catching up with the 4.0 technology revolution trend with a series of outstanding features and utilities such as Chatbot virtual assistant, Share bill, Accumulate on demand, Schedule payments, Centralized card management. NamABank's Open Banking application "liberates" customers from the usual definitions of a bank when they can experience a completely new digital banking, multi-channel transactions, multi-utility integration, an ecosystem of digital banking, and more. The comprehensive and out-of-the-box feature ecology focuses on the non-physical card ecosystem, education, insurance, healthcare, and multi-payments.

In addition, in Vietnam, there are 15 banks that are using the method of sharing data through web

services, while 4 other banks have used the data sharing method of Open API. Banks that have shared APIs available to partners have a high level of availability when implementing Open API. Regarding the need to deploy Open API, most banks have suggested that there is a need for a common connection standard to share data.

Blockchain technology and cloud computing have also been successfully tested by NAPAS and three banks, including VietinBank, VIB, and TienPhongBank. HSBC has also successfully implemented L/C (Letter of Credit) transactions on the Blockchain platform.

As a result, the digital transformation process of the commercial banking system in Vietnam has achieved initial results. However, the Vietnamese commercial banking sector still faces many obstacles related to the legislative environment, technological infrastructure, network security, competition from Fintech businesses, and human resources.

5. Some recommendations to promote the digital transformation of the commercial banking system in Vietnam

5.1. Some recommendations to the Government

The State Bank strengthened the assessment of disbursement progress according to the approved capital plan to determine the effectiveness of information technology projects at credit institutions. On the other hand, the Government needs to actively build a digital government platform to integrate and share the national database, facilitating open connectivity for banks to access according to approved authority and providing a legal framework for data sharing with third parties.

The Government should focus on investing in developing the system of science and technology infrastructure to create a modern technical and technological environment, enhancing learning, and facilitating technology transfer to support banks in applying new technologies during the digital transformation process.

5.2. Some recommendations to the State Bank

Firstly, the State Bank should strengthen the assessment of disbursement progress according

to the approved capital plan to determine the effectiveness of information technology projects at credit institutions. Simultaneously, the management, inspection, and supervision of the banking industry should be carried out based on new criteria, along with the ranking of credit institutions, to establish a supervisory inspection system that keeps pace with the financial and banking industry worldwide. As a result, the State Bank will be able to effectively manage commercial banks.

Secondly, the State Bank needs to complete and apply mechanisms to encourage the growth of financial technology as soon as possible, especially focusing on the completion and application of the Regulatory Sandbox for financial technology development. Currently, the State Bank of Vietnam is in the process of developing an experimental legal framework for financial technology (Fintech Regulatory Sandbox). The experimental regulatory framework should clearly define the scope of activities, products, and services, taking into account the interests of consumers and the economy. It should also outline the test level, report registration process, testing, monitoring, announcement of successful products and services, and the potential for replication.

Thirdly, the State Bank needs to strengthen communication through various forms such as seminars, workshops, and organizing the implementation of numerous scientific studies on digital applications for the banking industry in the context of the Fourth Industrial Revolution. Additionally, the State Bank should promote financial education and communication programs to improve the workforce's knowledge and skills in accessing financial products and services.

5.3. Some recommendations for the commercial banking system

First: Banks need to promote innovation and the application of modern technologies. Banks should prioritize the development of the following technology platforms to serve banking activities in the future: Big Data, cloud computing, biometrics, artificial intelligence, and the Internet of Things. These technologies will have a far-reaching influence on banking activities in Vietnam. Besides, Big Data must be effectively used in conjunction

with all three of the aforementioned technological platforms. Additionally, other modern technologies such as sensor systems, control systems, communication networks, business applications, and customer service should also be a key concern for banks. Banks can also build electronic portals that integrate with electronic services on the Internet.

Second: Banks need to orient towards building a modern branch model that optimizes customer experience and helps customers interact better. The construction of these branches is mainly based on the automation technology platform, multi-dimensional connectivity, and the intelligence of the Fourth Industrial Revolution. Accordingly, branches with modern and convenient transaction spaces, attractive and timely seating, and large TV/tablet screens can help customers interact and experience services without the assistance of traditional tellers, along with the support of technologies such as web-chat and Skype communication. Additionally, banks must discover a transactional mechanism that can appeal to some customers' new behavior while also satisfying the psychological needs of traditional customers who are unable to alter their behavior.

Third: Banks can coordinate with technology companies to develop new software that is suitable for the specific operation of banks. Additionally, based on assessments of challenges facing State management agencies and reference to international experiences, banks can deploy in three stages to create a development environment suitable for their needs in the Fourth Industrial Revolution. These stages include setting up a consultation group, organizing a pilot or setting up a sandbox for new technology applications, and building a legal framework. Throughout these three phases, the State management agency will play a key role, acting as a supervisory unit, coordinating resources and participating units, and resolving disputes and outstanding problems. Moreover, experts especially emphasize the importance of organizing a pilot program or setting up a test environment (phase two). The sandbox model will help to effectively and quickly put breakthrough new technologies to the test in an independent environment and also help "zone" for management, avoiding

complex effects and potential risks of breaking existing regulations. In case the test results show that there is a need to adjust and supplement the legal framework, the State management agency will also have a more complete information base in persuading and coordinating with ministries, committees, and relevant industries to design appropriate regulations.

Conclusion

Digital transformation is an inevitable and irreversible trend in the global economy. Generally, digital transformation in the commercial banking industry plays an important role in promoting the digital revolution. Nowadays, the commercial banking sector in Vietnam has experienced substantial changes recently as a result of the country's digital revolution. However, for this strategy to be truly effective, the government, the State Bank, the pertinent ministries and agencies, as well as each commercial bank itself, must all work together to create new value.

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THE RELATIONSHIP BETWEEN THE INDUSTRY 4.0 AND THE SUPPLY CHAIN MANAGEMENT SYSTEM OF FMCG

Assoc.Prof.PhD. Pham Hung Cuong*

Abstract: *Through an investigation the analysis was 283 customers live in Vietnam and who bought goods and services from various FMCGs in Vietnam, the research is aimed at analysing the relationship to Industry 4.0 and FMCG supply chain management and the implementation framework is focused on the influence of Industry 4.0 in the supply chain with respect to FMCG, which seeks to increase the customer experience of the company. Industry 4.0 is anticipated to raise fresh problems and possibilities for potential supply chains. The research addressed many problems in adoption and suggested a roadmap for the successful application of Industry 4.0 to supply chain management in FMCG include: (1) sourcing, (2) warehousing, (3) logistics, (4) sales and delivery.*

• Keywords: *FMCG, industry 4.0, supply chain management, brand equity, consumer goods.*

Tóm tắt: *Thông qua điều tra phân tích 283 khách hàng sống tại Việt Nam và đã mua hàng hóa, dịch vụ từ nhiều FMCG khác nhau tại Việt Nam, nghiên cứu nhằm mục đích phân tích mối quan hệ giữa công nghiệp 4.0 và quản lý chuỗi cung ứng FMCG. Khung triển khai tập trung vào ảnh hưởng của công nghiệp 4.0 trong chuỗi cung ứng đối với FMCG, nhằm tìm cách nâng cao trải nghiệm của khách hàng đối với công ty. Công nghiệp 4.0 được dự đoán sẽ đặt ra những vấn đề và khả năng mới cho các chuỗi cung ứng tiềm năng. Nghiên cứu đã giải quyết nhiều vấn đề trong quá trình áp dụng và đề xuất lộ trình ứng dụng thành công Công nghiệp 4.0 vào quản lý chuỗi cung ứng trong FMCG bao gồm: (1) tìm nguồn cung ứng, (2) kho bãi, (3) hậu cần, (4) bán hàng và giao hàng.*

• Từ khóa: *hàng tiêu dùng nhanh, công nghiệp 4.0, quản lý chuỗi cung ứng, giá trị thương hiệu, hàng tiêu dùng.*

1. Introduction

Digitalization has a huge effect on the way we interact, live and function today. Digital business models undermining conventional economies is one of the effects of digitalisation and therefore shifts competitive laws. In new

study and manufacturing, Business 4.0 is a buzzword. However, amid this restricted study, an organisation concentrated on the potential advantages of Business 4.0 technology and its effect on the supply chain. In addition, the element of consumer service in the modern supply chain Industry 4.0 is being important. There is limited research in Industry 4.0 deployment strategies for FMCG. Investment plans must now be agreed to guarantee leadership positions and a major comparative edge in future (Bag, Wood, Mangla & Luthra, 2020). Governments and industrial firms spend extensively in advanced technology to reduce cost of development and retain competition on the sector (Ghadge et al., 2020).

In new study and manufacturing, Business 4.0 is a buzzword. However, amid this restricted study, an organisation concentrated on the potential advantages of Business 4.0 technology and its effect on the supply chain. In addition, the element of consumer service in the modern supply chain Industry 4.0 is being important. In this article, an in-depth FMCG case study explores this gap and illustrates how the business will develop competitive advantages. Second, there was a framework to assess the achievement of expected benefits for industry 4.0 for FMCG,

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which was evaluated in a case business. Based on the literature, conceptual framework of Industry 4.0 is developed. It allows professionals to assess the exact state of the business in the sense of the introduction of Industry 4.0.

2. Literature review

The study aims to examine the effect of Industry 4.0 on supply chains and build an application structure, taking into consideration the paradigm of future drivers and challenges for Industry 4.0 (Ghadge, 2020). The key factors and hurdles for the realisation of Industry 4.0 in four market dimensions: strategic, operational, technical, and legal and ethical are examined in relevant literature. A device dynamic model was later developed to explain the effect of the introduction of Industry 4.0 on supply chain parameters, including both the motive factors and obstacles found. The findings of the simulation process are used to build and drive Industry 4.0's computational model of supply chains. The future supply chains are expected to introduce fresh threats and opportunities to Business 4.0. The report addressed many problems in adoption and suggested a roadmap for the successful application and transformation of business 4.0 to supply chains. This research would benefit supply chain management to consider the barriers to incorporate Industry 4.0 in their network. Study has been carried out and the supply chain management optimises manufacturing processes to improve productivity and performance (Reza, 2020).

Pace and reliability are critical to improving quality of service and maintaining product distribution as quickly as possible. Automation, computer collection and exchange, cyber-physical networks, the Internet of things and industry cloud technologies are being widely utilised. Modern plants face a continuous transition that influences not just the organisation of industrial operations but also the activity of supply chains. For First Moving Consumer Products (FMCG), proper supplier chain management practise is critical since consumers select the business that meets their requirements the most rapidly.

Competitive advantages in the sector with efficient supply chain management under Industry 4.0 are also significant. This paper discusses the problems raised by the fourth industrial revolution for existing supply chains. It aims to address the query how often Business 4.0 impacts the organisation of goods and the transfer of knowledge in supply chains. Sustainability of the supply chain (SCS) is an increasing field of study in the era of Industry 4.0 (Chalmeta, 2020).

However, there are no frameworks and comprehensive studies classifying the various study styles and analysing general developments in this research field. The article discusses sustainability, broad data, business 4.0 and supply chain management literature released as early as 2009 and offers a detailed description of the area by utilising bibliometrical and network research techniques. In the last 10 years 87 publications have been reviewed and main contributors, countries and study topics listed. In addition, the most significant works focused on quotations and PageRank were obtained and contrasted. Finally, six areas of study were proposed to enable researchers to extend Big Data and Business 4.0 research into SCS. This paper adds to the SCS literature in the age of Industries 4.0 by addressing the problems of ongoing science, but most specifically by defining and recommending six areas of research and possible avenues for research.

Andreas (2016) carried out analysis that the current debates around a digital transformation - and revolutionary strategic advantages - have contributed to a market vision such as - Industry 4.0. However, the concept and much more the real effect on corporations remain uncertain. This article explores the gap and specifically discusses the consequences and prospects of Industry 4.0 for procurement, sourcing and distribution management positions. A mixture of literature-based deductions and qualitative research data were used to investigate the phenomena. The results suggest that Industry 4.0 innovations legitimise the next stage of procurement maturity (Procurement & Supply Management 4.0). These philosophical considerations are accompanied by observational evidence that expose optimistic aspirations.

The survey consists of seven sectors and the approach used is qualitative (telephone and face-to-face interviews). The empirical results are just the foundation for more quantitative study but affirm the need and nature of maturity. Furthermore, the results reflect scepticism due to high investment costs, but still rather high aspirations. Because recent findings on digitalization are very unusual in the sense of single business functions, this study helps to explain scanning and supply management. Digitalization and artificial manufacturing intelligence are the necessities of today's market (Vaidya, 2018).

At present, the automotive sector is switching from industrial production to custom production. The rapid development in production technology and applications in the sector helps improve efficiency. The word "Industry 4.0" stands for the fourth industrial revolution and is described as a new level of organisation and control over all of the value chain of the product lifecycle. Industry 4.0 is still futuristic but a practical term like the Internet of Things, Industrial Technology, intelligent development, and cloud-based output. Industry 4.0 is obsessed about stringent human incorporation into the production chain, to continuously develop and concentrate on added benefit operation and waste reduction. This paper is intended to provide an outline of Industry 4.0 and to explain the implementations and the next technological transformation of the nine foundations of Industry 4.0, but it is more systemic and impacts on political society, government and institutions and human identification, in addition to economic/manufacturing consequences. It has recorded an analysis that shows that the environment around us and the growth of human society have changed every day (Korcock, 2017).

Technical and technical changes in manufacturing are also often evolving. Industry 4.0 is a concept demonstrating how factory activity meets recent trends and time shifts. The guy, machine and output themselves thus shape the power in a smart and autonomous network. This paper attempts to demonstrate the potential growth of Business 4.0 as well as the future ideas of the Plant of the Future. The use of digital technologies focused on cyber physical networks and the Internet would offer major changes, such as a rise in automation and a shortening duration between creating a new product and introducing its business. There is limited research has done till date which did the quantitative analysis to identify the impact of Industry 4.0 characteristics on SCM in FMCG. Therefore, Present research made an effort to overcome this gap.

3. Research methodology

Data Collection: The present research attempted to examine the relationship between Industry 4.0 and supply chain management. This research was performed by primary sources. The sample size of the analysis was 283 customers live in Vietnam and who bought goods and services from various FMCGs in Vietnam. The answers were earned by way of a structured questionnaire.

Dimensions Under the study: The dependent variables under study are Supply Chain Management, namely, Procurement, Transportation, Logistics, Selling and Distribution. Independent variables understudy is Integration of stakeholder, Brand Equity, Customization, Automatization, Process transparency, Flexibility in production, Resource efficiency, Real-time data, Increase in customer satisfaction.

4. Results and discussion

The descriptive measure evaluated in the third step of research and in the final phase the correlation coefficient test and a linear regression test to determine interaction and effect of industrial dimensions 4.0 variables and supply chain management within the FMCG field in Vietnam. The results of the reliability test showed that the alpha value for the 8 things was 0.728. The scale chosen in the study is also accurate, indicating the interiors are reasonably consistent.

Demonstrated the results of the analysis of variance (ANOVA) among Industry 4.0 and Supply Chain Management, Vietnam. Primarily, the influence of Procurement factor scrutinized. The integration of stakeholder, brand equity, customization, automatization, flexible in

production, resource efficiency, increase in customer satisfaction are highly influenced. Therefore, one-way ANOVA, analysis indicated that industry 4.0 have significant impact on element of Procurement. Therefore, impact of industry 4.0 present in procurement (Table 1).

Table 1: ANOVA (procurement)

		Sum of Squares	df	Mean Square	F	Sig.
Integration of stakeholder	Between groups	148.214	5	29.643	8.709	.000
	Within groups	1289.984	379	3.404		
	Total	1438.197	384			
Brand Equity	Between groups	315.441	5	63.088	17.945	.000
	Within groups	1332.445	379	3.516		
	Total	1647.886	384			
Customization	Between groups	391.330	5	78.266	24.081	.000
	Within groups	1231.776	379	3.250		
	Total	1623.106	384			
Automatization	Between groups	271.284	5	54.257	11.693	.000
	Within groups	1758.679	379	4.640		
	Total	2029.964	384			
Process transparency	Between groups	3.346	5	.669	.443	.819
	Within groups	572.887	379	1.512		
	Total	576.234	384			
Flexibility in production	Between groups	85.501	5	17.100	5.413	.000
	Within groups	1197.314	379	3.159		
	Total	1282.816	384			
Resource efficiency	Between groups	80.234	5	16.047	5.600	.000
	Within groups	1086.010	379	2.865		
	Total	1166.244	384			
Increase in customer satisfaction	Between groups	234.207	5	46.841	42.701	.000
	Within groups	415.751	379	1.097		
	Total	649.958	384			

Source: Compilation of authors

Demonstrated the results of the analysis of variance (ANOVA) among Industry 4.0 and Supply Chain Management, Vietnam. Firstly, the influence of warehousing factor observed. The integration of stakeholder, brand equity, customization, automatization, flexible in production, increase in customer satisfaction are highly influenced. Thus, one-way ANOVA, analysis indicated that industry 4.0 have significant impact on element of warehousing Therefore, impact of industry 4.0 present in warehousing. (Table 2)

Table 2: ANOVA (warehousing)

		Sum of Squares	df	Mean Square	F	Sig.
Integration of stakeholder	Between groups	115.607	5	23.121	6.626	.000
	Within groups	1322.590	379	3.490		
	Total	1438.197	384			
Brand equity	Between groups	222.652	5	44.530	11.842	.000
	Within groups	1425.234	379	3.761		
	Total	1647.886	384			
Customization	Between groups	320.966	5	64.193	18.684	.000
	Within groups	1302.140	379	3.436		
	Total	1623.106	384			
Automatization	Between groups	281.615	5	56.323	12.209	.000
	Within groups	1748.348	379	4.613		
	Total	2029.964	384			
Process transparency	Between groups	13.430	5	2.686	1.809	.110
	Within groups	562.804	379	1.485		
	Total	576.234	384			
Flexibility in production	Between groups	110.782	5	22.156	7.165	.000
	Within groups	1172.033	379	3.092		
	Total	1282.816	384			
Resource efficiency	Between groups	50.531	5	10.106	3.433	.005
	Within groups	1115.714	379	2.944		
	Total	1166.244	384			
Increase in customer satisfaction	Between groups	147.757	5	29.551	22.302	.000
	Within groups	502.201	379	1.325		
	Total	649.958	384			

Source: Compilation of authors

Demonstrated the results of the analysis of variance (ANOVA) among Industry 4.0 and Supply Chain Management, Vietnam. Initially, the impact of logistics factor observed. The integration of stakeholder, brand equity, customization, automatization, flexible in production, increase in customer satisfaction are highly influenced. Therefore, one-way ANOVA, analysis indicated that industry 4.0 have significant impact on element of logistics. Therefore, impact of industry 4.0 present in logistics. (Table 3)

Table 3: ANOVA (logistics)

		Sum of Squares	df	Mean Square	F	Sig.
Integration of stakeholder	Between groups	126.997	5	25.399	8.347	.000
	Within groups	1153.247	379	3.043		
	Total	1280.244	384			
Brand Equity	Between groups	222.652	5	44.530	11.842	.000
	Within groups	1425.234	379	3.761		
	Total	1647.886	384			

		Sum of Squares	df	Mean Square	F	Sig.
Customization	Between groups	320.966	5	64.193	18.684	.000
	Within groups	1302.140	379	3.436		
	Total	1623.106	384			
Automatization	Between groups	281.615	5	56.323	12.209	.000
	Within groups	1748.348	379	4.613		
	Total	2029.964	384			
Process transparency	Between groups	2.872	5	.574	.375	.866
	Within groups	580.790	379	1.532		
	Total	583.662	384			
Flexibility in production	Between groups	110.782	5	22.156	7.165	.000
	Within groups	1172.033	379	3.092		
	Total	1282.816	384			
Resource efficiency	Between groups	50.531	5	10.106	3.433	.005
	Within groups	1115.714	379	2.944		
	Total	1166.244	384			
Increase in customer satisfaction	Between groups	147.757	5	29.551	22.302	.000
	Within groups	502.201	379	1.325		
	Total	649.958	384			

Source: Compilation of authors

Hypothesis Testing 1: As the present research has witnessed that majority of the factors of Industry 4.0 are significant at 0.00 in all ANOVA analysis therefore, null hypothesis which is there is no significant association among factors influencing industry 4.0 and SCM in FMCG is rejected and alternative is accepted.

The results of KMO and Bartlett Sphericity have been seen to be necessary to explain adequacy of the sampling to undertake factor analysis. The KMO test requires a measure of the sample size, which indicates that the sample size was high enough to evaluate the factor. The study has taken a survey of 385 participants in Vietnam and the sample dimension is now broad enough, which allows the test outcome from the Bartlett sphericity test results relevant for testing homogeneity of variances while not statistically checking. The approximate KMO test is 0.738, near 1 (acceptable limit) and also above 0.50 and adequate for the success of exploratory factor analysis (EFA). Factor analysis should also be done in the data as the test value of Bartlett is important (0.00) in the performance. The approximate Chi-Square is 1056.995.

The loading part of 3 variables used in factor analysis was also seen. The loading factor defines the interaction strength between a factor and its variables. Or the loading part is the fundamental mixture of the variables. The higher the charging ratio, the greater the factor. In specific, the factor loading is like the linear weight relative to the variable factor. Factor loads below 0.40 were excluded as they were not considered significant. The first factor 'Procurement' comprises of five variables observed. The loading component was respectively 0.55 and 0.867. The second element 'Warehousing' also had three observed loading variables. The loading of minimal and maximum element was 0.576 and 0.769. The third factor 'Logistics' also included two loading variables. The minimum and median factor loads were 0.439 and 0.537 respectively (Table 4 & 5).

Table 4: Factor loading (exploratory factor analysis)-a

	Component		
	Procurement	Warehousing	Logistics
Integration of stakeholder	0.847	0.071	0.179
Brand Equity	0.867	0.063	0.067
Customization	0.72	0.24	0.439
Automatization	-0.002	0.769	-0.409
Process transparency	-0.343	0.576	0.537
Flexibility in production	0.276	0.717	-0.334
Resource efficiency	0.828	-0.168	0.003
Increase in customer satisfaction	0.55	-0.269	-0.459
Extraction Method: Principal Component Analysis.			
a. 3 components extracted.			

Source: Compilation of authors

Table 5: Factor loading (exploratory factor analysis)-b

	Component		
	Procurement	Warehousing	Logistics
Integration of stakeholder	0.847	-	-
Brand Equity	0.867	-	-
Customization	0.72	-	0.439
Automatization	-	0.769	-
Process transparency	-	0.576	0.537
Flexibility in production	-	0.717	-
Resource efficiency	0.828	-	-
Increase in customer satisfaction	0.55	-	-
Extraction Method: Principal Component Analysis.			
a. 3 components extracted.			

Source: Compilation of authors

Table 6 and 7 (A and B), exhibits the performance of the model computation framework. The load of the factor is very similar to the EFA loads. In CFA the factor load is larger than the EFA factor loads since cross loading in a confirmatory approach is not enabled. The loads are greater than 0.50 as can be seen (except one). The factor loads above 0.50 are considered high and indicate a good overall model health. Factor loading above 0.5 suggested a high level of convergent model validity. The measurement model is said to be convergent if all parameters of goodness are sufficient.

Table 6: Cross loading (confirmatory factor analysis)-a

Industry 4.0	Procurement	Warehousing	Logistics
Automatization	-0.2691	-0.114	-0.2404
Brand Equity	0.7503	0.3354	-0.1584
Customization	0.6633	0.3949	0.011
Flexibility in production	-0.0553	-0.1622	-0.2353
Increase in customer satisfaction	0.701	0.5296	0.2795
Integration of stakeholder	0.7247	0.2717	0.0108
Logistics	0.6318	0.9006	0.6992
Process transparency	-0.0739	0.0322	0.1366
Procurement	0.5602	1	0.7709
Resource efficiency	0.746	0.2312	-0.0333
Warehousing	0.1706	0.7709	1

Source: Compilation of authors

Table 7: Cross loading (confirmatory factor analysis)-b

Industry 4.0	Procurement	Warehousing	Logistics
Automatization	-	-	-
Brand Equity	0.7503	-	-
Customization	0.6633	-	-
Flexibility in production	-	-	-
Increase in customer satisfaction	0.701	0.5296	-
Integration of stakeholder	0.7247	-	-
Logistics	0.6318	0.9006	0.6992
Process transparency	-	-	-
Procurement	0.5602	1	0.7709
Resource efficiency	0.746	-	-
Warehousing	-	0.7709	1

Source: Compilation of authors

Composite reliability is a second and better reliability measure (CR). It is greater than the Cronbach alpha, since the factor scores are used as weights to measure the participation of each element in a building assessment. It is stronger than the alpha in Cronbach as it uses factor values as weights to determine the participation of each measurement component in the estimate of a build. As in the test, CR is greater than 0.70 in all three constructs. For composite durability, the minimum CR recorded was reveals that all systems have CR greater than 0.70. The minimum composite durability CR report was 0.7197.

Descriptive industry characteristics 4.0 statistics on the FMCG supply chain in Vietnam were carried out in the report. The research analyses Industry 4.0 features and evaluates the utility of the SCM in the study.

Table 8: Descriptive statistics

Descriptive Statistics			
	Mean	Std. Deviation	N
Procurement	2.40	1.935	385
Warehousing	2.37	1.072	385
Logistics	2.62	0.056	385

Source: Compilation of authors

Hypothesis Testing 2: As the present research has witnessed that majority of the factors of Industry 4.0 are significant and having EFA AND CFA values above 0.40 and 0.50 in most of the cases. Therefore, null hypothesis which is there is no significant association among Industry 4.0 and SCM in FMCG is rejected and alternative is accepted.

The results have shown that Vietnam's consumers who buy products in FMCG are mainly male. The results have shown that Vietnam's consumers who buy products in FMCG are mainly married. The results have shown that Vietnam's consumers who buy products in FMCG are mainly having age between 18-25 years. The study's demographic figures indicate that most consumers who buy products in FMCG are postgraduates. Demographic profiles suggest that most customers buying from FMCG are employed. The results reveal that the automatization and process are the elements of Industry 4.0 indicated the least relation with Supply Chain Management. The results revealed that the purchase intentions have a strong association with perceived quality. The results

documented that the logistics factor is strongly influenced from Industry 4.0 elements. (Table 12)

5. Conclusion

This study aims to fill the gap in the adoption of Industry 4.0 technology in the supply chain, particularly in warehouses, logistics and procurement (Bag, Telukdarie, Pretorius & Gupta, 2018). The analyses found that transportation and warehousing are the sectors that are more impacted by the implementation of Industry 4.0. From a study done, it can be found that outcomes can both result in opportunities by incorporating such innovations such as augmented and increased worlds, 3D printing and simulation (Kiel, Müller, Arnold & Voigt, 2017). The businesses could also see possibilities or obstacles for large-scale data analyses, cloud infrastructure, cyber defence, IoT, miniaturisation of devices, AIDC, RFIS, robotics, drones and nanotechnology, M2M and BI. Since such innovations may lead to both advantages and threats, all separate fields are related together, without specified boundaries, and may have a positive or negative connotation, whether it is evaluated. The launch of Industry 4.0 reveals strong advantages (Bienhaus & Haddud, 2018).

More stability, quality standards, reliability and competitiveness are the most significant advantages (Tjahjono, Esplugues, Ares & Pelaez, 2017). This will allow mass personalization to satisfy consumer needs and create demand by continuously launching new goods and services on the market (Glas & Kleemann, 2016). In addition, cooperation between machines and people could have a social effect on the lives of potential employees, particularly when improving decision-making (Nicoletti, 2017). Given the fact that this paper has addressed the impacts of Industry 4.0, due to its theoretical character, there are some questions that remain to be answered which thus restrict the generalizability not just in its execution, but also in its management (Julian M. Müller & Voigt, 2018b). So, we are calling for observational studies in this area. As the introduction of these innovations is followed by a modern world in which people operate with equipment, we think that it is important to address legal aspects, liability, insurance and ethics (Vaidya, Ambad, & Bhosle, 2018). This paper was our first effort to help businesses grasp more the consequences of business 4.0 and its technology for the realisation of the New Supply Chain or the Supply Chain 4.0. We continue our study with analytical analysis and review on how businesses integrate their supply chain digitally.

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FACTORS AFFECTING THE RETURN ON ASSETS OF COMMERCIAL BANKS IN VIETNAM

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Abstract: *The article studies the factors affecting the return on assets of commercial banks in Vietnam over the period 2014 to 2020. To complete the research objective, the authors have exploited the data of 15 commercial banks with relatively accurate data, ranging in size from small to large and accounting for 62.9% of total assets in the banking system, almost representing the overall. The author used regression methods according to fixed and random effects based on balanced panel data. The research results show that while the return on assets of commercial banks is positively correlated with the bank's asset scale, equity scale, liquidity risk, interest income and non-interest income, it is negatively correlated with administrative costs, credit risk and taxes.*

• Keywords: *ROA, asset size, equity size, net interest income, net non-interest income.*

Tóm tắt: *Bài viết nghiên cứu các nhân tố ảnh hưởng đến tỷ suất sinh lời trên tổng tài sản của các ngân hàng thương mại Việt Nam giai đoạn 2014 đến 2020. Để hoàn thành mục tiêu nghiên cứu, nhóm tác giả đã khai thác dữ liệu của 15 ngân hàng thương mại với dữ liệu tương đối chính xác, có quy mô từ nhỏ đến lớn và chiếm 62,9% tổng tài sản trong hệ thống ngân hàng, gần như đại diện cho tổng thể. Tác giả sử dụng phương pháp hồi quy theo tác động cố định và ngẫu nhiên dựa trên dữ liệu bảng cân bằng. Kết quả nghiên cứu cho thấy trong khi tỷ suất sinh lợi trên tổng tài sản của các ngân hàng thương mại có tương quan thuận với quy mô tài sản, quy mô vốn chủ sở hữu, rủi ro thanh khoản, thu nhập lãi và thu nhập ngoài lãi của ngân hàng, thì nó lại có tương quan nghịch với chi phí quản lý, rủi ro tín dụng và thuế.*

• Từ khóa: *ROA, quy mô tài sản, quy mô vốn chủ sở hữu, thu nhập lãi thuần, thu nhập ngoài lãi thuần.*

1. Introduction of the research problem

Observing the survey data of 15 commercial banks over the period 2014-2020, ROA of commercial banks tends to range from 0.5% to 1%. Only a few commercial banks achieve ROA in the range of 1% - 2%. In particular, there was 1 commercial bank with an abnormal ROA of over 2.5%. Although ROA of commercial banks is at an acceptable level, ensuring safety in operation, ROA of Vietnamese commercial banks is recommended to increase from 1% to 2%. To achieve the above goal, it is necessary to study the factors affecting the profitability of Vietnamese commercial banks, as a basis for recommendations and policy implications.

2. Research data and models

2.1. Research data

This study was conducted with the dataset collected over the period 2014-2020 of 15 Vietnamese commercial banks: An Binh Commercial Joint Stock Bank (ABBank), Asia Commercial Joint Stock Bank (ACB), Joint Stock Commercial Bank for Investment and Development of Vietnam (BID), Vietnam Joint Stock Commercial Bank for Industry and Trade (CTG), Vietnam Commercial Joint Stock Export Import Bank (EIB), Ho Chi Minh City Development Joint Stock Commercial Bank (HDBank), Military Commercial Joint Stock

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Bank (MBB), Mekong Development Joint Stock Commercial Bank (MDB), Oriental Commercial Joint Stock Bank (OCB), Saigon-Hanoi Commercial Joint Stock Bank (SHB), Saigon Thuong Tin Commercial Joint Stock Bank (STB), Vietnam Technological and Commercial Joint Stock Bank (Techcombank), Commercial Joint Stock Bank for Foreign Trade of Vietnam (VCB), Commercial Joint Stock Bank for Vietnam Prosperity (VPBank).

These are 15 banks with relatively accurate data, ranging in size from small to large and accounting for 62.9% of the total assets of the commercial banking system, almost representing the overall. The remaining banks are not assembled because the data in the financial statements are not clear and cannot serve the factors included in the model. The database is collected from the annual financial statements of banks and reports of the State Bank over the period 2014-2020, the General Statistics Office and the World Bank to form a detailed data table.

2.2. Research model and hypothesis

Scientific research based on the model of these following authors: Halil Emre (2012) with factors affecting the profitability of commercial banks in Turkey from 2005-2010, Angela Roman (2013) with factors influencing the profitability of commercial banks in Romania from 2003-2011 and Tomola (2013) with factors affecting the profitability of 20 commercial banks in Nigeria from 2006-2012. From those studies, the author applied multiple linear regression models to determine the relationship and sensitivity of factors (independent variables) affecting bank profitability.

$$Y_{it} = \alpha + \sum_{k=1}^{k} \beta_k X_{it} + \varepsilon_{it}$$

Variables:

Y_{it} is the dependent variable representing the profitability of the ith bank with i = 1, 2, 3,…, 25 at time t with t = 2014, 2015,…, 2020.

X_{it} is the independent variable representing the factors affecting the profitability.

α is a constant or coefficient of freedom that indicates the mean of the Y variable when the X variables are 0.

β_k is the correlation coefficient or individual regression coefficient indicating the influence of each independent variable on the mean value of the dependent variable while the remaining variables are kept constant with k being the number of independent variables in the model.

ε_{it} is the regression error.

Table 2: Summary of the Model's independent Variables and Expectations

Variable	Sign	Measure	Expected Impact ROA
Capital	EA	$\dfrac{Equity}{Total\ Asset}$	+
Bank Size	SIZE	Log (Total Asset)	+
Operation Expensive	OE	$\dfrac{Management\ costs}{Total\ Asset}$	-
Liquidity Risk	LDR	$\dfrac{Indebtedness}{Total\ deposit}$	+
Credit Risk	CR	$\dfrac{Provision\ for\ credit}{Total\ Loans}$	-
Yearly growth of deposits	GFD	$\dfrac{Deposit\ this\ year - Deposit\ last\ year}{Deposit\ last\ year}$	-
Net Interest Margin	NIM	$\dfrac{Interest\ income - Interest\ expense}{Profitable\ Assets}$	+
Non-Interest Income	NII	$\dfrac{Non\_Interest\ income - Non\_Interest\ expense}{Total\ Asset}$	+
Total Debt to total assets Ratio	LA	$\dfrac{Odd\ debt}{Total\ Asset}$	+
Interest Cost	IC	$\dfrac{Interest\ expense}{Total\ depossit}$	-
Tax	TAX	$\dfrac{Total\ bank\ income\ tax}{Total\ profit\ before\ tax}$	-
GDP Growth	GDP	$\dfrac{GDP\ this\ year - GDP\ last\ year}{GDP\ last\ year}$	+
Inflation	INF	$\dfrac{This\ year'\ sprice\ index - last\ year'\ sprice\ index}{last\ year'\ sprice\ index}$	-

From the original referenced multiple regression models of authors around the world and the status of preliminary analysis of factors synthesized from previous studies that are considered to affect the profitability of Vietnamese commercial banks, the authors propose the following research model:

$$ROA_{it} = \beta_0 + \beta_1 * EA + \beta_2 * SIZE_{it} + \beta_3 * OE_{it} + \beta_4 * LDR_{it} + \beta_5 * CR_{it} + \beta_6 * GFD_{it} + \beta_7 * NIM_{it} + \beta_8 * NII_{it} + \beta_9 LA_{it} + \beta_{10} * IC_{it} + \beta_{11} * TAX_{it} + \beta_{12} GDP + \beta_{13} INF + \varepsilon_{it}$$

3. Research results

3.1. Descriptive statistics

Table 3: Descriptive Statistics of Variables

Variable name	Number of observations	Mean value	Standard deviation	Minimum value	Maximum value
ROA	105	0.0097789	0.0065117	0.0002411	0.0286223
EA	105	0.0781516	0.0236631	0.0406177	0.1697322
SIZE	105	14.42108	0.3741558	13.59212	15.1809
OE	105	0.0176009	0.0048424	0.0096095	0.0328927
LDR	105	0.8947619	0.157737	0.53	1.37
CR	105	0.0111921	0.0026398	0.0069483	0.020605
GFD	105	0.1481745	0.113404	-0.2531426	0.5761144
NIM	105	0.0345714	0.0148083	0.02	0.09
NII	105	0.0077229	0.0051071	-0.0012265	0.0266231
LA	105	0.7173373	0.0736587	0.5010082	0.8476699
IC	105	0.0472602	0.0101608	0.0277477	0.078775
TAX	105	0.2104692	0.0390163	0.0359478	0.4854458
GDP	105	0.0609857	0.0136138	0.0291	0.0708
INF	105	0.0276	0.0124277	0.0063	0.0474

Source: Research data processing results

The average ROA of 15 banks was 0.98% and fluctuated significantly from 0.02% to 2.86%. With the average value of each VND of assets spent, the bank earned 0.0097 VND of profit after tax. With a standard deviation of 0.65%, the differences in efficiency among 15 banks are almost similar.

The CR variable with an average value of 1.11% implies that the average total credit provision accounts for about 0.0111 of their average total outstanding loans.

The LDR variable with an average of 89.48%, representing a bank lending of 0.8948 VND per deposit. The standard deviation of 15.77% and the range of variation from 0.53 to 1.37 show a high degree of volatility and dissimilarity among 15 banks.

The variable EA represents the average equity value and accounts for 7.82% of the average total assets of banks. The standard deviation is 2.36% and the disparity ranging from 4.06% to 16.97% indicates a dissimilarity in the bank's equity scale. Besides, the standard deviation of 2.36% and the disparity ranging from 4.06% to 16.97 % indicate a high degree of disparity among banks.

The variable OE has an average value of 1.76%, representing the average administrative cost, accounting for 1.76% of the average total assets of the bank. The range of variation from 0.96% to 3.28% shows that the level of administrative expenses among banks is unequal.

The variable LA represents the ratio of outstanding loans to the total assets of the bank. The average balance accounted for 71.73% of the average total assets of commercial banks. The wide range of variation indicates a high degree of disparity among 15 banks. The highest level is 84.77%, showing that the bank's assets are mainly from loans. The higher the loan level is, the higher the profit would be made. However, the risk of bad debt cannot be eliminated over the period from 2014-2020.

The NII variable has an average value of 0.77%, showing that non-net interest income has a relatively small proportion compared to the total assets of the bank. In contrast, net interest income (NIM) has an average value of 3.46%, showing that this factor accounts for a higher level of net non-interest income compared to total earning assets. It is apparent that most of the bank's income come from traditional activities and lending activities bring a major income to the bank.

The SIZE variable with an average value of 14.42 and a range from 13.59 to 15.81 shows that the total asset scale is not similar among 15 banks.

3.2. Correlation analysis

Table 4: Correlation Analysis

	ROA	EA	SIZE	OE	LDR	CR	GFD	NIM	NII	LA	FC	TAX	GDP	INF
ROA	1.00													
EA	0.586*	1.00												
SIZE	0.252*	-0.309*	1.00											
OE	-0.466*	0.432*	-0.298*	1.00										
LDR	0.468*	0.071	0.279*	0.244*	1.00									
CR	-0.323*	-0.038	0.255*	0.164	0.0081	1.00								
GFD	0.101	-0.131	0.038	-0.004	0.0752	-0.028	1.00							
NIM	0.703*	0.436*	0.010	0.080	0.0940	0.227*	0.072	1.00						
NII	0.741*	0.105*	0.195*	0.063	0.2427*	0.144	0.023	0.409*	1.00					
LA	0.252*	-0.291*	0.565*	-0.002	0.0630	-0.147	-0.075	-0.182	-0.003	1.00				
IC	0.088	-0.092	-0.085	0.186	0.0526	-0.001	-0.157	0.368*	-0.005	0.086	1.00			

	ROA	EA	SIZE	OE	LDR	CR	GFD	NIM	NII	LA	FC	TAX	GDP	INF
TAX	-0.285*	0.010	-0.026	0.091	0.198*	0.108	-0.056	0.079	0.002	-0.153	-0.018	1.00		
GDP	-0.155	-0.119	-0.131	0.074	-0.086	-0.053	-0.069	-0.059	-0.148	-0.123	0.042	-0.031	1.00	
INF	0.101	-0.122	0.102	0.030	0.170	-0.045	0.226*	0.033	0.118	0.154	0.059	-0.044	0.154	1.00

Source: Research data processing results

Based on the Pearson correlation coefficient of the correlation coefficient matrix table, on one hand, ROA has a statistically significant positive relationship with EA, SIZE, LDR, NIM, NII and LA, valuing 0.586; 0.252; 0.486; 0.703; 0.741 and 0.252 respectively. On the other hand, ROA has a negative relationship with OE, CR and TAX with respective correlation coefficients of 0.466; 0.323 and 0.285.

3.3. Checking for multicollinearity

To ensure the accuracy of the estimations in the model, a multicollinearity test was conducted using the variance exaggeration factor VIF.

Table 5: Testing for Multicollinearity

	NIM	OE	LA	LDR	SIZE	EA	NII	IC	CR	GFD	INF	GDP	TAX
VIF	4.73	4.29	2.79	2.67	2.62	2.47	1.92	1.83	1.32	1.29	1.19	1.15	1.14
1/VIF	0.211205	0.233185	0.358632	0.374984	0.381402	0.404875	0.521296	0.546108	0.758176	0.776180	0.839824	0.871981	0.878983

Source: Research data processing results

The calculation of variance inflation factors shows that all variables in the model satisfy this requirement: VIF is less than 10. Therefore, these variables will be used to run the regression model.

3.4. Regression results

Table 6: Regression Results

VARIABLES	Pool OLS	FEM	REM	HC
EA	0.0521***	0.0921***	0.0725***	0.0921***
	(0.0183)	(0.0180)	(0.0180)	(0.00390)
SIZE	0.00152	0.00744***	0.00254*	0.00744**
	(0.00119)	(0.00278)	(0.00147)	(0.00343)
OE	-0.230*	-0.411**	-0.214*	-0.411***
	(0.118)	(0.161)	(0.129)	(0.0596)
LDR	0.00526*	0.00410	0.00548*	0.00410**
	(0.00286)	(0.00384)	(0.00321)	(0.00166)
CR	-0.371***	-0.349***	-0.386***	-0.349***
	(0.120)	(0.119)	(0.116)	(0.0637)
GFD	0.00178	-0.000100	0.000869	-0.000100
	(0.00276)	(0.00233)	(0.00249)	(0.00123)
NIM	0.239***	0.152***	0.203***	0.152***
	(0.0405)	(0.0439)	(0.0421)	(0.0238)
NII	0.578***	0.478***	0.564***	0.478***
	(0.0748)	(0.0808)	(0.0755)	(0.0211)
LA	0.00509	0.00885	0.00120	0.00885***
	(0.00626)	(0.00779)	(0.00673)	(0.00281)
IC	-0.0449	0.0394	0.00148	0.0394
	(0.0367)	(0.0492)	(0.0402)	(0.0408)
TAX	-0.0156**	-0.0104*	-0.0129*	-0.0104***
	(0.00754)	(0.00601)	(0.00669)	(0.00147)
GDP	-0.00706	0.0231	-0.00154	0.0231
	(0.0217)	(0.0189)	(0.0191)	(0.0142)
INF	0.0127	-0.000434	0.0111	-0.000434
	(0.0242)	(0.0194)	(0.0212)	(0.00982)
Constant	-0.0166	-0.114***	-0.0376*	-0.114**
	(0.0166)	(0.0389)	(0.0204)	(0.0468)
Observations	105	105	105	105
R-squared	0.837	0.839	0.808	0.839
Number of name		15	15	
Number of groups				15
Prob>F/ Prob>Wald Chi 2	0.000	0.000	0.000	0.000
Hausman Prob>chi2		0.000		
Modified Wald test Prob>chi2		0.000		
Wooldridge test Prob > F		0.000		

Source: Research data processing results

The results of the model estimation by the random effects method for the Wald value - Chi-squared with the p-value less than 0.05 - show that the random effects model is more suitable than the Pool OLS estimate. The Hausman test was carried out to choose between a fixed effect model and a random effect model. The test result shows that the p-value is equal to 0.000 (less than 0.05). Thus, the hypothesis Ho is rejected, the fixed effect model is more suitable than the random effect model.

To check the phenomenon of heteroskcedasticity, the Wald test was conducted. The statistical result of Chi-squared has a p-value of 0.000 (less than 0.05). Thus, the phenomenon of heteroskedasticity exists in the equation. To check the autocorrelation in the model, the Wooldridge test was conducted. The statistical result shows that the p-value is 0.000 (less than 0.05). Thus, the phenomenon of autocorrelation exists in the equation. Despite the existence of

these two phenomena, the OLS estimation is still consistent and unbiased. However, it is no longer the best (the most effective) estimation. Then, the regression coefficient tests and the F-test of the model become unreliable. Therefore, the Driscoll-Kraay standard error estimate is used to calibrate the model.

The results of the calibrated model:

The variable EA has a positive statistically significant effect on ROA of Vietnamese commercial banks over the period 2014-2020. This shows that the larger the bank's equity scale is, the greater the bank's profitability would be. That corresponds to the actual operation of banks because equity has the regulation function of the bank's scale of operation. When the equity increases, banks have a basis for increasing the scale of mobilised capital, the scale of outstanding loans and investment activities to increase income. This result accords with the research results of Athanasoglou (2008), Samy Ben Naceur (2003), Alper and Anbar (2011) and Paolo Saona (2011).

The variable SIZE has a positive statistically significant effect on ROA of Vietnamese commercial banks over the period 2014-2020. This shows that when a bank's total assets increase (credit balance accounts for a major proportion of total assets, which is the main profitable asset item of commercial banks), the bank's ROA also tends to increase. This result accords with the results of Alper and Anbar (2011).

The variable OE has a negative statistically significant effect on ROA of Vietnamese commercial banks over the period 2014-2020. This shows that when the bank's operating expenses increase, the profitability of commercial banks decreases. This result accords with the research results of Athanasoglou (2008), Andreas Dietrich (2011) and the fact that profit and cost are the two quantities that fluctuate in opposite directions.

The variable CR has a negative statistically significant effect on ROA of Vietnamese commercial banks over the period 2014-2020. When the credit risk increases, the credit risk provision of commercial banks also increases. The increase in allowance for credit losses

reduces profit, leading to a decrease in ROA. This result corresponds to the actual operation of commercial banks and accords with the research results of Halil (2012) and Suflan (2009).

The variable NIM has a positive statistically significant effect on ROA of Vietnamese commercial banks over the period 2014-2020. When the net interest income of commercial banks increases, the total income of commercial banks will also increase (in Vietnam, net interest income is the main source of income of commercial banks). ROA increases when earnings increase, assumed expenses remain unchanged or the income growth is greater than the cost growth and the corporate income tax rate remains unchanged. This result accords with the results of Andreas Dietrich (2011).

The variable NII has a positive statistically significant effect on ROA of Vietnamese commercial banks over the period 2014-2020. When non-interest income (income from non-credit services fees) increases, the bank's ROA will also increase. This result accords with the research results of Angela Roman (2013) and Alper & Anbar (2011).

The variable LA has a positive statistically significant effect on ROA of Vietnamese commercial banks in the period 2014-2020. The increase in loan balance and the bank's efficient loan quality management are conditions for increasing interest income and ROA. This result is consistent with the research results of Angela Roman (2013), Alper & Anbar (2011).

The variable LDR has a positive statistically significant effect on ROA of commercial banks over the period 2014-2020. This shows that there is a positive correlation between liquidity risk and expected rate of return. A commercial bank that uses too much mobilised capital for lending will reduce the fund's scale. An increase in outstanding loans is one of the conditions for the bank to increase interest income. However, the decrease in funds leads to higher liquidity risks. This result accords with the research results of Kosmidou (2008) and Brouke (1989).

The variable TAX has a negative statistically significant effect on ROA of Vietnamese

commercial banks over the period 2014-2020. This shows that when the income tax increases with the assumption that the before-tax income does not change or the growth rate of corporate income tax is greater than the growth rate of before-tax income, ROA of commercial banks will decrease. This result accords with the research results of Toloma Marshal Obamuyi (2013).

4. Some recommendations to improve profitability of Vietnamese commercial banks

The regression result shows that profitability is positively correlated with a bank's asset size, equity size, liquidity risk, interest income and non-interest income but is negatively correlated with administrative costs, credit risk and taxes. The above results are the basis for the following proposed recommendations:

4.1. Recommendations for commercial banks

First, commercial banks continue increasing the core capital.

Increasing the core capital's scale is a condition for commercial banks to increase the credit balance scale, the profitable assets' scale, thereby increasing the interest income. This is an important goal of commercial banks in 2021 to ensure the minimum capital adequacy ratio (CAR) according to Circular 41/2016/TT-NHNN. To achieve the above goal, joint-stock commercial banks can issue more new shares via public offering or private placement to foreign strategic shareholders and increase the rate of retained earnings after tax to supplement charter capital (in this case, joint stock commercial banks do not pay dividends to shareholders in cash but pay dividends in shares). Besides, banks can increase their Tier 2 core capital by issuing convertible bonds.

Second, commercial banks need to increase the scale and the quality of assets, especially profitable assets.

Profitable assets are the basis of interest income, which is the most important source of income for commercial banks in Vietnam nowadays. Commercial banks need to focus on prioritised careers, high-quality enterprises which belong to sectors such as post and telecommunications, pharmaceuticals and medical equipment. Commercial banks should have diverse preferential interest rates which are applicable for each customer and each customer segmentation. Commercial banks need to proactively operate lending programs with reasonable interest rates, diversify credit products and develop consumer loan product packages to meet the needs of customers' legitimate life in order to limit usury, consider extending debt, adjust repayment terms when customers face difficulties due to legitimate reasons and cannot repay on time, prevent customers from taking loan sharks to mature. Commercial banks need to simplify the lending process, improve the appraisal ability to shorten the loan settlement time and strictly manage loans to ensure loan quality.

Third, commercial banks need to strengthen the management of administrative costs.

In order to increase profits, it is necessary to increase revenue through increasing the size of assets and to have a reasonable cost-cutting plan. Commercial banks need to analyse, evaluate and consider the location for newly established branches, transaction offices and banking products to meet the customer's needs and secure the local customer facilities, to avoid wasting establishment costs and operational management costs. Commercial banks focus on developing products and services by taking advantage of the strength of the internet to expand modern distribution channels in order to save time and costs for both banks and customers in transactions. Commercial banks cut management costs by streamlining the operation apparatus as well as spreading cost-conscious thinking to employees to reduce costs and to protect the environment by using electricity, water, stationery, etc sparingly.

Fourth, commercial banks need to increase interest income and non-interest income.

In the model, these are two variables that have a large positive impact on ROA. To increase interest income and non-interest income, each commercial bank needs to have a system of integrated solutions such as increasing mobilised capital by improving the bank's reputation and brand, improving customer service quality, focusing on training dynamic staff with excellent

communication skills, friendly service style and the ability to quickly and promptly satisfy customers' expectations for the bank's products, thereby creating customers' satisfaction, building trust and maintaining long-term relationships with customers. Commercial banks need to promote the marketing mix strategy, including: diversify and improve products, advertise and market products, strengthen network operations and valuate products and services appropriately. Commercial banks need to balance the prices, product and service fees with the general level of the industry to avoid losing customer trust and retain the bank's market share.

Fifth, commercial banks strengthen credit risk management.

In the model, contingency cost for loans has a negative impact on the profitability of commercial banks. This completely accords with the reality in Vietnam because lending accounts for most of the bank's assets, but the management of the loan portfolios is inefficient, leading to the formation of bad debts in recent years. According to the component coefficients in the credit risk minimization model, commercial banks need to manage their loan portfolio and be more active in making provisions and handling bad debts. For loan portfolio management, banks need to apply science and technology with goals and action strategies to assess the macroeconomic situation, helping to allocate the proportion of the loan portfolio in accordance with each adopter category and geographic region. Each commercial bank needs to improve its credit rating by improving techniques, technology and independent operating between the credit department and the credit rating department. In addition, commercial banks need to carefully consider the business project before lending, examine whether the use of loan portfolios meets the initial commitment and adjust the provisioning level according to the Law.

4.2. Some recommendations for the Government and the State Bank

First, the Government needs to manage the banking system properly by continuing deploying the restructuring banking system project. The Government should continue taking measures to encourage weak banks to merge into banks with sufficient financial capacity and effective governance to improve the operational efficiency of the banking system.

Second, the Government needs to give commercial banks the opportunities to expand their operation scale, diversify services, improve business efficiency, especially in the process of international integration and the ASEAN economic community as well as allow labour turnover liberalisation, capital and goods, and develop foreign investment markets.

Third, the State Bank should actively inspect and review commercial banks' credit activities and provisioning in order to ensure credit quality, minimise risks and maintain the bank's liquidity. In addition, if there are irrational problems in the monitoring process, the State Bank of Vietnam should promptly promulgate additional circulars to solve these problems.

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RESEARCH ON CORPORATE SOCIAL RESPONSIBILITY IN VIETNAM

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Abstract: *The exercise of corporate social responsibility is the act of solving social problems for charitable and humanitarian purposes. Implementing social responsibility (CSR) will bring many benefits, help promote the brand, build trust with the public and increase competitive advantages for businesses. However, not all businesses in Vietnam adhere to business ethics and fulfill social responsibility. Stemming from the reality of implementing the social responsibility of businesses in Vietnam today, the article proposes a number of solutions to contribute to raising awareness and supporting Vietnamese businesses to effectively fulfill social responsibility.*

• Keywords: *social responsibility, corporate, effective social responsibility.*

Tóm tắt: *Việc thực hiện trách nhiệm xã hội của doanh nghiệp là hành động giải quyết các vấn đề xã hội vì các mục đích từ thiện và nhân đạo. Thực hiện trách nhiệm xã hội (CSR) sẽ mang đến nhiều lợi ích, giúp quảng bá thương hiệu, tạo dựng niềm tin đối với công chúng và tăng lợi thế cạnh tranh cho doanh nghiệp. Mặc dù vậy, không phải doanh nghiệp nào tại Việt Nam cũng tuân thủ đạo đức trong kinh doanh, thực hiện trách nhiệm đối với xã hội. Xuất phát từ thực tế thực hiện trách nhiệm của mình với xã hội của các doanh nghiệp tại Việt Nam hiện nay, bài viết đề xuất một số giải pháp góp phần nâng cao ý thức, hỗ trợ các doanh nghiệp Việt Nam thực hiện hiệu quả trách nhiệm xã hội.*

• Từ khóa: *trách nhiệm xã hội, doanh nghiệp, hiệu quả trách nhiệm xã hội.*

1. Study overview

Corporate social responsibility (CSR) generally refers to a firm's responsibilities toward the community and environment in which it operates. CSR typically includes economic, legal, ethical, and philanthropic responsibilities (Carroll, 1991). Despite early opponents to CSR argue that managers' only responsibility is profit maximization (Friedman, 1970), investment in CSR activities has shown an increasing trend worldwide because of CSR's strategic implications (McWilliams et al., 2006). Taking the social expenditure dimension as an example, public social spending has comprised approximately 21% of the gross domestic product across Organisation for Economic Co-operation and Development (2016) countries since 2009.

Given widespread CSR practices, the disclosure of CSR activities is of particular interest to various stakeholders. An increasing number of firms are choosing to voluntarily disclose their CSR practices. The literature documents favorable consequences of voluntary CSR disclosure, as it can reduce the cost of equity capital (Dhaliwal et al., 2011), improve the accuracy of analyst forecasts (Dhaliwal et al., 2012), mitigate corporate tax aggressiveness (Lanis and Richardson, 2012), increase the value of cash holdings (Lu et al., 2016), discourage high-profile misconduct (Christensen, 2016), and lower stock price synchronicity (Grewal et al., 2017).

Despite its potential benefits, however, the disclosure of CSR activities is typically self-regulated. Regulators in some capital markets (e.g., Australia, Belgium, China, Denmark, France, Malaysia, Sweden, and the United

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Kingdom) mandate certain types of firms to disclose their CSR activities, whereas other markets (e.g., Hong Kong) plan to mandate CSR disclosure. Mandatory disclosure differs from voluntary disclosure in several ways. First, it is nonreversible and typically involves nontrivial costs for the disclosing firms (e.g., Dye, 1990, Fishman and Hagerty, 2003). Second, compared with voluntary disclosure, mandatory disclosure is less costly for information users to obtain because it is usually made through prescribed channels and with prescribed timing. Third, although a firm's voluntary disclosure is endogenously determined (Verrecchia, 1983) and can be influenced by mandatory disclosure (Einhorn, 2005, Bischof and Daske, 2013), mandatory disclosure substantially mitigates concerns over endogeneity issues. Because of these differences, it is ex-ante unclear whether and to what extent the previously documented financial and/or informational benefits of voluntary CSR disclosure apply to mandatory CSR disclosures (Chen et al., 2018).

2. Theory of corporate social responsibility

The concept of social responsibility was presented by Abrams (1951) in an article in the Harvard Business Review on managerial responsibility in a complex world (Abrams, 1951). Following this, an American businessman Howard Bowen published a book on corporate social responsibility in 1953 (Bowen, 2013), which emphasized corporate responsibility for the rights and interests of its stakeholders. This concept was further developed by many later authors and understood at various senses.

Carroll (1991) argues that social responsibility involves the operation of a business for economic benefit, law enforcement, ethics and social support. Being socially responsible means achieving profitability and obeying the law is a top priority condition when talking about company ethics and the extent to which it contributes to society through various forms.

According to Prakash and Sethi (1975), corporate social responsibility implies raising corporate behavior to a level consistent with prevailing norms, values and social expectations. As such, CSR is a cluster concept that encompasses many other concepts such as business ethics, corporate corporate citizenship, sustainability and environmental responsibility (Matten and Moon, 2004).

There are many different definitions of Corporate Social Responsibility (CSR) depending on the angle, own views, conditions, characteristics, and development level... of each organization, company, and government. However, the definition of the World Business Council for Sustainable Development is quite commonly used, considered complete and clear; accordingly, "Corporate social responsibility is the commitment of enterprises to contribute to sustainable economic development, through compliance with standards on environmental protection, gender equality, occupational safety, labor rights, fair pay, employee training and development, etc community development, product quality assurance... in a way that benefits both businesses as well as the overall development of society". Corporate social responsibility is expressed in a specific way on factors and aspects such as environmental protection; contributing to the social community; fulfilling responsibilities to suppliers; ensuring the interests and safety of consumers; good relations with employees; ensuring benefits for shareholders and employees in the enterprise. In particular, the first four elements represent the external responsibility of the enterprise; The last two factors represent the internal and internal responsibility of the business. The implementation of CSR makes businesses develop sustainably and contributes to society's sustainable development in general.

Currently, in developing countries, there exist two opposing views on CSR. The first view is that enterprises have no responsibility to society, but only to shareholders and employees of the enterprise; The State must be responsible to society because enterprises have been responsible through paying taxes to the State. The second view holds that as one of the actors of the economy, businesses have used the resources of society, exploited natural resources and in the process they caused harm to the natural environment; Therefore, in

addition to paying taxes, businesses must also be responsible for the environment, community, employees ... According to the general trend of social development, the implementation of CSR in developing countries is inevitable; contribute to controlling unpredictable development risks, meeting the needs of current generations and ensuring that the resources of future generations are not threatened.

Although there are many statements related to CSR, in general, "CSR (Corporate Social Responsibility) is the commitment of enterprises to contribute to sustainable economic development, through compliance with standards on environmental protection, gender equality, occupational safety, labor benefits, fair pay, employee training and development, community development, product quality assurance ... in a way that benefits both businesses as well as the overall development of society.

3. Benefits of businesses when implementing social responsibility well

The better enterprises show responsibility for the environment, care about occupational health and safety, and create quality products to supply to domestic and foreign consumers, the higher the competitive advantage of enterprises.

In the short term, an enterprise that performs well in social responsibility may face costs such as the cost of building a waste treatment system from industrial production, insurance costs, protection for workers, or higher input costs from quality materials and meeting safety standards.

In the long run, businesses will reap great intangible values, which is the brand, trust and trust of consumers. Products of enterprises that fulfill social responsibility will also have easier access to international quality standards. Thus, when implementing social responsibility well, enterprises will increase their competitive advantages and sustainable development such as: Improving the reputation and image of the business; strengthening the position and expanding the market share of the enterprise; motivating workers and attracting talent; improving quality, increase productivity in the long term…

Milton Friedman's "representative" management theory and the opposing school

According to Milton Friedman (1970), enterprises have only one responsibility to maximize profits, and increase shareholder value, within the framework of the market rules of honest and fair competition. That is, business managers are people who represent the owner who manages the company. The main goal of a business manager is to make as much profit as possible, and they are accountable only to the company owner who has chosen them as their representative. The responsibility of enterprises to the State is to contribute taxes. It is the responsibility of the State to use that tax money most effectively in the public interest. Thus, if enterprises also fulfill social responsibilities, there will be duplication and enterprises will become both taxpayers and decide the spending of that tax. Therefore, the anti-CSR school argues that programs take the name "corporate social responsibility" only to PR for reputation, artificial, the ultimate goal of the business is still for profit.

The pro-CSR school does not reject all of the above arguments, but they offer another very convincing argument that the company itself operates like a living organism, using the resources of society, so enterprises must be aware of the impacts of their production and business activities and be responsible with his own behavior before society. If enterprises simply recognize that enterprises operate solely for profit and only have tax obligations to offset social costs, they will see that the problem of environmental pollution and social costs caused by enterprises can be much greater than the tax that the company has paid to the State.

Moreover, there are environmental and health and safety losses for the community that cannot be restored with money. Therefore, it is impossible to completely separate between economic and social nature when looking at the nature and operation of enterprises. Therefore, business managers need to fulfill social responsibilities for the obligations and interests of the enterprise itself.

4. Corporate Social Responsibility in Vietnam

Under pressure from the public and the law, most large companies in the world as well as in Vietnam have actively integrated CSR into production and business processes. Many programs have been implemented such as: Using renewable fuels, reducing industrial emissions, building green industrial parks and charity activities for the community.

A 2007 McKinsey survey found that 84 percent of senior executives said that contributing to community social goals should be done in tandem with increasing shareholder value, while only 16 percent said profits were the only goal. 51% and 48% of opinions respectively said that the environment is the top issue that attracts public attention and has the most negative or positive effect on shareholder value. When asked about the negative impact that large companies can have on the community, 65% said that it is environmental pollution, 40% put profits above human health and 30% exert political pressure. In terms of positive impacts that businesses bring, job creation ranked highest with 65% of opinions, followed by scientific and technological progress with 43%, providing products and services for human needs 41% and paying tax 35%.

Currently, in Vietnam, there are many businesses that perform very well in CSR, of which some can be mentioned as:

(i) Vinamilk Vietnam Dairy Joint Stock Company is one of the enterprises that develops sustainably through the good implementation of environmental-social-governance (ESG) investment criteria on ethics and social responsibility. In 2020, Vinamilk is among the pioneering enterprises and highly appreciated by investors for applying ESG criteria in business operations with ESG scores 58% higher than the industry average. The idea of building a circular economy model with biogas systems at dairy farms, turning waste into resources such as fertilizer, water, gas ... has helped Vinamilk reduce waste and greenhouse gases, and operate environmentally friendly farms.

Moreover, Vinamilk has implemented many large-scale and long-term nutrition programs for children such as the Reach Higher Vietnam Milk Fund or the School Milk program. In the context of the COVID-19 pandemic, these activities were not only uninterrupted but also promoted by Vinamilk to ensure nutrition for children according to the company's commitments. Also during the pandemic, the Company has actively contributed to epidemic prevention and control, purchasing medical equipment and supporting the community together with frontline forces across the country.

(ii) FPT Corporation has developed the same 3P (Profit, People, Planet) strategy. Accordingly, besides making profits, the Company is also interested in practical activities such as: Improving the quality of life, improving the working environment and participating in charity activities, blood donation.

(iii) VinGroup has established the Charity Heart Fund and the Innovation Fund to serve charity activities for the community, actively in the fight against the COVID-19 pandemic, with many important contributions not only to the people and frontline forces fighting the epidemic but also to business partners.

(iv) P&G Vietnam demonstrates its social responsibility by promoting the advancement of women, building charity houses for the poor in the Mekong Delta, the Clean Drinking Water Program for children, especially COVID-19 prevention activities and providing emergency assistance in localities severely affected by natural disasters, flood.

(v) Coca-Cola with the Ekocenter initiative - based on providing 4 main benefits to local communities (clean drinking water, women's empowerment, cultural and spiritual development, and waste solutions to protect the environment) has also created practical values for society.

Although understanding the long-standing principle, there are still many Vietnamese businesses that shy away from implementing social responsibility. A series of violations, seriously affecting social benefits, such as Vedan Company discharged industrial waste into the Thi

Vai River in 2008, causing mass death of seafood and the health of people in the surrounding area. This company has discharged into the environment, arbitrarily increased the capacity of production sites by two to three times and has no environmental impact assessment report. After the above violations, Vedan Company was forced to stop all discharge activities, and temporarily suspend production activities that generate wastewater and waste until measures are taken to treat them.

In addition, Vedan Company has to pay the cost of taking measures to remedy environmental pollution and is responsible for compensating for economic losses. The company must be fully responsible for ensuring the interests of employees during the temporary suspension of production activities in accordance with current laws. Although the Company has made efforts to address the consequences of such violations, all such contributions are not enough to recover from the environmental damage caused by the Company.

In 2020, La Ivory Sugar Joint Stock Company in Dong Nai also had to suspend operations due to violations of social responsibility, for discharging dust, emissions exceeding regulations and discharging wastewater into water sources, seriously affecting people's health and life. Or a series of violations of industrial clusters in Bac Ninh in 2021, these companies have discharged wastewater exceeding environmental indicators; production activities without a certificate of completion of environmental protection works; improper, inadequate periodic waste monitoring.

Specifically, Tien Manh Paper Production and Trading Co., Ltd.; My Paper Production and Trading Co., Ltd. and Viet Tien Production and Trading Services Co., Ltd. did not have approved environmental impact reports according to regulations. Hoang Ngan Paper Joint Stock Company and Van Production and Trading Company have discharged wastewater containing environmental parameters exceeding normal waste technical regulations. Thanh Ha Paper Production Co., Ltd. and Long Khanh Joint Stock Cooperative do not build and install environmental protection works according to regulations.

In 2021, the case of smuggling counterfeit petroleum across southern provinces (Dong Nai, Ho Chi Minh City, Ba Ria - Vung Tau, Can Tho, Vinh Long, Long An) was detected and handled. The amount of poor-quality gasoline supplied to the market not only harms the environment but also affects the property of individuals and economic organizations. This is a serious social responsibility violation that deserves condemnation and needs to be dealt with seriously.

5. Conclusions and recommendations

In order to implement CRS well, developing countries like Vietnam need to synchronously apply some of the following solutions:

First: Continue to disseminate and increase awareness of CSR among stakeholders

Propaganda and education are very important, because all human behaviors are through human consciousness, controlled by consciousness. Therefore, it is necessary to propagate and educate all businesses, first of all business owners about CSR; must make them understand that CSR is not confined to charitable work; making CSR implementation the internal engine of business owners. The implementation of CSR should be seen as an ethical behavior and driven by moral motives. Propagate, disseminate, and raise awareness about CSR in a stronger way; The scope and audience are wider, and should not be confined to businessmen, businesses, agencies, or organizations ... but must go to local and residential communities, including in general education programs. Businesses and stakeholders need to be positively aware of CSR, especially in the context of deeper and deeper integration.

Second: It is necessary to build a legal corridor that obliges businesses to fully and seriously implement social responsibility

Social responsibility is an inevitable global trend; CSR implementation is to increase competitiveness and international integration, not to contradict the economic interests of enterprises. The State should be responsible for

creating an environment and legal framework for enterprises to operate. The legal framework is the most effective measure for the implementation of CSR; At the same time, it is an effective support solution for ethical solutions, making moral motives regularly strengthened and increasingly effective in practice.

The role of the government in promoting CSR is to create a complete legal environment, a level playing field for businesses; provide information, consulting, guiding and promulgating incentive mechanisms and policies for enterprises; create conditions for enterprises to better comply with the requirements of the Labor Law, the Enterprise Law and the Investment Law; manage, raise labor standards and promote competition, create conditions for perfecting and raising labor standards according to international trends.

Third: Early formation of standards and codes of conduct on CSR at sectorial and national levels

The experience of developed countries shows that CSR depends heavily on the will and interests of the business itself. However, CSR becomes more popular, and more substantive and makes businesses implement stronger after the official CSR standards and standards are applied. Developing countries have barely developed a CSR code of conduct. A small number of businesses, if they want to implement, are also very difficult to implement systematically. Therefore, it is necessary to develop a set of CSR assessment standards for developing countries based on international experience, taking into account actual domestic conditions. Along with that is an independent, responsible CSR evaluation system.

Fourth: Step by step take CSR as a criterion to select investors

Through the experience of developed countries, enterprises that implement CSR well are also enterprises with capital capacity, technology, business ethics and a sense of contribution to the local community where the enterprise does business. The implementation of harmonious, long-term and sustainable business strategies of foreign-invested enterprises that well implement CSR can bring learning opportunities for businesses in developing countries; forcing domestic enterprises to gradually raise awareness and social responsibility to be able to participate in the production networks of foreign companies.

Fifth: Regularly organize awards to encourage the spirit of businesses to perform social responsibility well

The organization honoring businesses needs to include more criteria related to CSR implementation. Businesses that perform well in CSR need to be honored promptly and deservedly. Encourage businesses to incorporate CSR into their business strategies in the long term. CSR awards have encouraged businesses to fulfill social responsibility and share experiences and effective solutions in labor management, improving working conditions, taking care of workers' health, enhancing exchanges, and cooperation in environmental protection and community development. The State should also promulgate policies to create more favorable operating conditions for enterprises to fulfill their obligations and responsibilities to society.

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IMPACT OF GREEN MANAGEMENT ON ENVIRONMENTAL PROTECTION BEHAVIOUR

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Abstract: *Apparently, changing individuals' perspective and behavior can make a valuable contribution in the fight against resource depletion, climate change and its negative impacts on society that increasingly become topic of interest. Therefore, applying green management in connection with environmental protection behavior will promote the role of enterprises in environmental protection, which is the key solution to tackle environmental pressures currently. With the qualitative research method, the article focuses on an overview of studies to understand the influence of green management in promoting environmentally responsible behaviors of organizations. As a result, the orientation for further research will provide effective solutions in green management and environmental protection behaviour.*

• Keywords: *green management, environmental protection behavior.*

Tóm tắt: *Rõ ràng, việc thay đổi quan điểm và hành vi của mỗi cá nhân có thể đóng góp giá trị trong cuộc chiến chống cạn kiệt tài nguyên, biến đổi khí hậu và những tác động tiêu cực của nó đối với xã hội đang ngày càng trở thành chủ đề được quan tâm. Vì vậy, áp dụng quản lý xanh gắn với hành vi bảo vệ môi trường sẽ phát huy vai trò của doanh nghiệp trong bảo vệ môi trường, là giải pháp then chốt để giải quyết các áp lực môi trường hiện nay. Với phương pháp nghiên cứu định tính, bài viết tập trung tổng quan các nghiên cứu nhằm tìm hiểu ảnh hưởng của quản lý xanh trong việc thúc đẩy các hành vi có trách nhiệm với môi trường của các tổ chức. Từ đó, định hướng cho các nghiên cứu tiếp theo sẽ đưa ra các giải pháp hiệu quả trong quản lý xanh và hành vi bảo vệ môi trường.*

• Từ khóa: *quản lý xanh, hành vi bảo vệ môi trường.*

1. Introduction

Currently, the environment with many challenges such as climate change and global warming has become one of the most difficult issues for every country because of its negative effects on the survival of people and all living species. In fact, Vietnam is no exception because this is the country that is also suffering the terrible consequences of global climate change. Over the past years, in order to cope with increasing environmental degradation, Vietnam has issued a wide range of policies to promote sustainable development, typically the National Green Growth Strategy 2011-2020 and the Vision to 2050 has been approved by the Prime Minister in Decision 1393/QD-TTg. However, the discharge and environmental pollution have not been significantly improved. As of 2019, Vietnam had a total CO2 emission from primary energy consumption of 285.9 million tons, accounting for 0.8% of the world's total CO2 emissions and an average per capita emission level of 2.96 tons/person.

In reality, the total consumption of primary energy is only 0.7% of the world, but the scale of emissions accounts for 0.8% of the world. Statistically, the amount per capita of primary energy consumption is only 56.4% of the world but the per capita emissions make up 66.8% of the world. In addition, the growth rate of CO_2 emissions is very high, 20.6% in 2019 alone and 8.5%/year in the period 2008-2018, nearly 8 times higher than the growth rate of the world (Nguyen Canh Nam, 2020). Actually, the causes of these existing natural disasters can be attributed to rapid population growth, economic growth,

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overconsumption of natural resources and commercial activities. They are really of great concern to both businesses and governments. For businesses, certainly, the depletion of national resources by companies will not only detract from the ecological sustainability but also the financial sustainability of organizations (Hawken, Lovins & Lovins 1999). Hence, employee behavior towards the environment is recognized as one of the important factors for attaining environmental sustainability goals. In fact, organizations carry out environmental management through various green management activities such as human selection and performance appraisal.

Since awareness of environmental sustainability has increased in recent years, the concept of green management has emerged with the development of different institutions towards effective environmental management. Actually, there is a close connection between the environmental management system and the green management system of enterprises.

2. Literature review

2.1. Definition

It is green management that is regarded as the activities of creating environmentally friendly products and minimizing environmental impact through green production, green research and development, and green marketing (Peng & Lin, 2008). Nevertheless, the term does not refer to factors such as strategic integration or sustainability, so this definition does not capture the true meaning of green management. Although great efforts have been made by researchers to develop concepts and types of green management, a widely accepted definition of green management does not seem to be a priority. Apart from the fact that green management is a fairly new term, and the confusion surrounding the range of practices that actually make up green management, another obstacle in determining a solid definition for the term is that green management is often labeled with another name such as corporate environmentalism, environmental management or corporate sustainability.

In fact, green management is a type of environmentally conscious business management that focuses on voluntarily preventing or further reducing pollution, waste and emissions. Through experimental examination of the literature with historical, practical and theoretical perspectives, Pane Haden et al. define green management as "*the organization-wide process of applying innovation to obtain sustainability, reduce waste, achieve social responsibility and competitive advantage through continuous learning and development and by a thorough understanding of environmental goals and strategies that are fully integrated with the organization's goals and strategies.*"

After having a meticulous review of previous reviews and supplementary literature based on history, practice, and theory related to green governance, a number of recurring concepts have been identified. In reality, the repetition of similar concepts into three different perspectives reinforces the importance of their inclusion in the following definition of green management (Haden, Oyler, & Humphreys, 2009): "*Green management is the process of applying innovation in the organization to achieve sustainability, waste reduction, social responsibility and competitive advantage through continuous learning, development and embracing environmental goals and strategies fully integrated with the organization's goals and strategies*".

2.2. Roles of green management

Figure 1. Hart's framework for green management

Approach	Approach
Preven pollution	**Clean technology**
Minimize waste and pollution from factory operation	Develop sustainable capabilities and breakthrough innovations
Reward: reduce cost and risks	Reward: innovation and repositioning
Approach	Approach
Product management	**Sustainability vision**
Increase accountability and transparency	Create a common process to meet unmet needs
Reward: fame and legitimacy	Reward: attaining growth trajectory

Source: Hart 1996

In reality, green management of companies

must go beyond legal issues and involve conceptual practices and tools such as green manufacturing, green marketing, green design, and a combination of considerations about factor "green" into the organization's long-term goals. Actually, it reveals a strategic framework that describes how enterprises can use green management practices to increase profits and promote the green sustainability of the company.

Using a natural resource-based perspective, enterprises are constrained and dependent on ecosystems. In other words, strategy and competitive advantage will likely be based on the qualities that enable eco-friendly economic activity. Therefore, the sustainable performance of the company has become the main target of business and academic studies. Following a three-factor approach, corporate sustainability is measured across three essential metrics: social, environmental and economic. Initially, economic performance is assessed by operational and financial indicators. This activity relates to the organization's ability to reduce input prices, energy consumption, waste treatment and disposal. Financially, it is measured by market share, profitability, and return on investment (ROI). Undoubtedly, environmental performance is related to a business's ability to conserve energy, reduce waste and reduce the use of hazardous inputs. In reality, social performance measures the extent to which an organization contributes to society in addition to economic benefits, so that the industry is able to make profits and its operations do not harm society.

Handoko realized that green management positively affects financial performance, market efficiency and social welfare. Specifically, green management positively affects operational and financial performance through reducing production costs, minimizing environmental damage, efficient energy consumption, waste minimization, and recycling adoption, saving raw materials and water consumption, and opening up potential opportunities for unrecognized green markets. Furthermore, green management helps to enhance the companies' image and green technology, improve the strategy for the company's competitiveness and increase the social and health benefits as well as positively affect economic efficiency of the economy.

In fact, green management is an activity that plays a critical role in implementing corporate social responsibility, raising awareness and green behavior of employees, and contributing to the realization of sustainable development goals. Researchers, policymakers and business administrators have been interested in green management for more than 10 years and consider it an initiative to explore green economic aspects of business. Currently, green HR initiatives have been considered as a strategy to promote business activities in a sustainable way. Particularly, green management promotes the implementation of environmentally friendly HR initiatives that lead to greater efficiency, lower costs, and increased employee engagement. As a result, helping businesses reduce their employees' carbon footprint by electronic filing, car sharing, job sharing, teleconference and virtual interviews, recycling, remote power off, virtual training, building energy-saving office space, etc. Apparently, through green management, enterprises not only improve the level of environmental protection in terms of their output, such as: cost savings, pollution reduction, harm reduction and job security, thereby helping to improve the company's environmental performance index (EP), and have great significance for the natural environment. (Sumittra Jirawuttinunt & Kunnika Limsuwan, 2019; Pham et al., 2018).

In addition, green management will affect the organizational citizenship behavior for the environment (OCEB) of employees, forming certain values and building an internal culture of enterprises (Pham et al., 2018). Actually, green management contributes to spreading the sense of green living and responsible living to each member of the business - active members of society to join hands to make the Earth become green. From being concerned about waste management, environmental pollution, limiting and overcoming their negative impacts, the business community contributes to spreading awareness of the use of natural resources to society in a more conscious and protective way, encouraging the use of environmentally friendly products. Consequently, enterprises that pursue an environmentally friendly management model will benefit more because they create satisfaction for employees and consumers.

Moreover, green management contributes to enhancing the competitiveness of enterprises, contributing to organization performance - OP, thereby helping to develop production and business activities of enterprises. Indeed, green management is of prime importance in achieving broader goals such as: (i) developing a green lifestyle and creating a new friendly, cost-effective environment due to greater efficiency in the use of energy, water and raw materials; (ii) acquiring and managing talent, helping retain employees and reduce labor turnover, stimulate employee innovation, helping employees achieve satisfaction to improve productivity; (iii) building brand image and reputation, creating positive public relations, increasing sales, gaining advantage over competitors and bringing competitive advantage to enterprises; (iv) increasing business opportunities for enterprises when some government agencies, commercial enterprises and non-profit organizations require that only enterprises that meet specific green standards be able to bid for contracts. Studies have also shown that environmental performance leads to business performance and stability (Russo, 1997; Wong et al., 2013). In fact, environmental standards that businesses care about will bring relative advantages and improve productivity for businesses (Siyambalapitiya et al., 2018). Undoubtedly, environmental improvement in businesses is important and is considered an aspect of operational efficiency because it helps to reduce environmental problems (Jabbour and Santos, 2008) and increase financial efficiency (Ramanathan, 2008).

2.3. Elements of green management

(a) Social Responsibility

Social responsibility is viewed as the moral and ethical obligation of every business group to work for the good of society. The problems of society should be considered as the concern of businesses and enterprises should contribute some useful solutions. Currently, the world is facing a number of problems such as deterioration of air, soil and water quality due to the mining behavior of the industrial sector in the past. Therefore, it is time for managers to choose green programs and plans to meet social needs. For instance, in 2015,

Shell Oil Development agreed to clean up large oil slicks in the Bodo community in the Niger Delta and indicate the scale of the problem. In fact, the cleanup is expected to cost around $500 million and will take up to ten years to complete. In a rare success for such communities, Shell has also agreed to pay £55 million ($84 million) to settle the Bodo community for the devastating effects of the oil spill. (Yomi, 2018).

(b) International Standard Norm

The International Organization for Standardization has issued a number of rules and regulations for member states to follow in order to reduce pollutant emissions. Moreover, International inspection body EMS14001 certification is provided to enhance compliance with environmental regulations, i.e., process innovation and environmental products, such as new specific types of green and clean products innovation technologies including new products and processes to avoid or reduce the environmental burden. Additionally, certificates awarded by ISO represent statements and comments about a company's dynamic performance. It can not be denied that such a certificate provides a basis and benefits for the company, in the long run, to stay afloat.

(c) Statutory Law

In reality, many laws are being revised by state management agencies to protect and prevent pollution of the natural environment. Such legislation is also associated with the protection of the interests of consumers and society. The revised laws have important implications for the company's strategy to adopt green management. To comply with the standards of government policy, the company must apply green management. In Nigeria, for example, it is important for business operators to be aware of NIGERIA's national environmental standards and regulation enforcement body (Nesrea) that defines the 2007 code as responsibility for regulations, permits and environmental compliance. Section 7 of this code indicates the provision of authority to ensure compliance with environmental laws, local and international, for sanitation and pollution prevention and control through monitoring and regulatory measures. In section 8, the Legislature

is empowered to review air and water quality regulations, emission restrictions, and control of hazardous substances and other forms of pollution and sanitation. Section 27 prohibits the release of hazardous substances into the environment without legal authority. This offense is punishable under this section with a fine not exceeding N1,000,000 (One Million Naira) and imprisonment for 5 years. In the case of a company, there will be an additional fine of N50,000 if the violation lasts every day.

(d) Growth and Opportunity

Companies that strive to become more environmentally friendly have conquered the needs of customers as well as society. Those who care more about the environment create another segment of the market to accommodate the growth of the company and to attract more market share. In reality, some companies have found a new source of revenue or, eventually, an entirely new product at the start of their sustainability efforts. Actually, choosing green management helps neutralize the pressure of environmental activists, moreover, some of them become promoters of business initiatives for their companies.

(e) Competition

One of the main factors promoting the application of green management for businesses is improving their competitiveness and the desire to maintain their competitive position in the market.

In reality, enterprises compete for a better brand and create an image in the eyes of society, helping businesses maintain sustainability. Furthermore, going green also helps manage risks more effectively, penetrate new markets, use resources more efficiently and improve competitive position. Indeed, green management brings advantages in the competitive arena for enterprises.

Apparently, green organizations are the one that managers want to possess and any potential employer would love to be associated with such managers to learn and add value to their profile (Pandey, Viswanathan & Kamboj, 2016). This implies that organizations that practice green management have a competitive advantage over others in terms of having competent employees. In reality, a larger number of candidates increases the chances of an employer getting more desirable employees. In fact, many green companies today boast low turnover rates compared to their unsustainable counterparts (Sharma, 2016). From this point of view, employee retention can be achieved through green management practices. As organizations suffer financial losses due to employee turnover, green management practices can be viewed as one of the effective solutions to the problem. Tiwal & Bangwal (2015) remind that organizations that are not aware of green concepts, green practices and policies can lose their talented employees or their creativity to companies that have adopted this system.

Actually, companies that adopt green practices often build their image as an environmentally friendly company and offer socially responsible incentives. Indeed, the practice of green management leads to the development of sustainability because it focuses on conserving natural resources, while minimizing waste. Hence, there exists a very close correlation between Corporate Social Responsibility (CSR), Green Human Resource Management (GHRM) and environmental sustainability (Chowdhury, Sanju, & Asaduzzaman, 2017). Through green management, organizations can not only aim to provide complete goods and services, but also contribute to protecting the planet from environmental degradation. This is also part of corporate social responsibility. Sharma (2013) suggests that corporations that emphasize corporate social responsibility often have an easier experience dealing with politicians and government regulators. In contrast, enterprises that identify a reckless disregard for social responsibility tend to find their own way against various claims. In general, different stakeholders find it preferable to work with or affiliated with socially responsible organizations.

3. Research methodology

The research utilizes the qualitative research method including the comparative approach and integrated approach method through synthesizing academic material on virtual platform and academic documents under hard copies form. It also generalizes and builds a complete theoretical framework on the influence of green governance on environmental protection behavior in universities in

particular and employees in enterprises in different fields in general.

4. Research results

Through the process of reviewing research materials that the author has access to, the authors found that in the study, there are still many gaps related to the application of green management in universities, including the following:

Initially, there are a number of scientists in several countries around the world who have studied on green management in enterprises in different industries. Nevertheless, in Vietnam, there are very few studies on green management in enterprises, especially in universities or educational field. Specifically, there has not been a thesis or a research work assessing the actual level of the influence of green management on environmental protection behavior at universities.

What's more? Research works on green management in Vietnam currently only stop at providing concepts and determining the role of green management. In fact, there is no work that identifies an overall view of the theoretical basis of green management, assessing the impact of green management on the economy, as well as on enterprises.

Figure 2: Model related to the impact of green management on environmental protection behavior
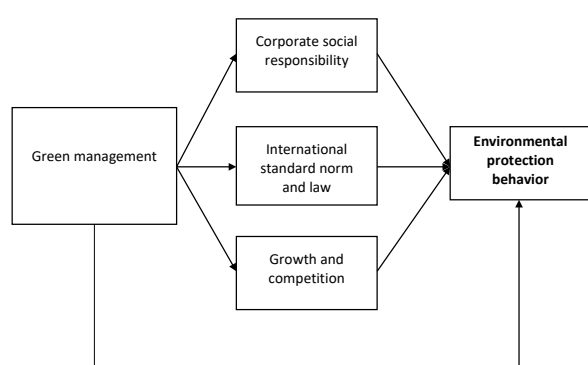
Source: Suggested by author

From the above research gaps, the author has determined the research direction as follows: (1) The author has based on the theory of green management 2) The author evaluates the current situation of the application of the green management system, and builds a model to assess the influence

of green management on the environmental protection behavior of teachers at universities in Hanoi; (3) Based on the research results, the author has proposed solutions and recommendations to promote the application of the innovation system in universities in Hanoi.

5. Conclusion and future research orientation

There is no doubt that green management is an important direction of international economic and social development. In reality, green management practices of enterprises are decisive factors for implementing green development. Research results depict that green management awareness and capacity positively affect environmental protection behavior of enterprises. Undoubtedly, companies should invest in technology, apply efficient processes, and establish policies that enable the delivery of products at competitive prices that satisfy people's needs and deliver a high quality of life, while simultaneously gradually reducing environmental impact and resource consumption over its lifetime to a level which is at least equivalent to the estimated carrying capacity of the earth. Hence, the challenge to attain a society in which environmental sustainability - where people can turn to nature and live a healthy life - remains strong now and in the future.

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THE INFLUENCE OF MACROECONOMIC VARIABLES ON THE PERFORMANCE OF SMALL AND MEDIUM-SIZED ENTERPRISES IN VIETNAM

MSc. Luu Huyen Trang*

Abstract: *In Vietnam, small and medium-sized enterprises (SMEs) are a potential sector and make an important contribution to the economy. In recent years, the activities of SMEs have shown a strong positive development in parallel with the fluctuations of macroeconomic variables. This study was conducted to clarify the impact of macroeconomic variables on SME activities in Vietnam during 2011-2020 through theory and practice analysis. The results show that the macroeconomic variables have positive changes that have a good impact on the performance of SMEs during the study period. This is the basis for the government to take policy measures to control the macroeconomic variables to promote the activities of SMEs in the coming period.*

• Keywords: *SMEs, economic growth, inflation, macroeconomic variables.*

Tóm tắt: *Tại Việt Nam, doanh nghiệp nhỏ và vừa (DNNVV) là khu vực giàu tiềm năng và đóng góp quan trọng cho nền kinh tế. Trong những năm gần đây, hoạt động của các DNNVV đã có những bước phát triển tích cực mạnh mẽ song song với sự biến động của các biến số kinh tế vĩ mô. Nghiên cứu này được thực hiện nhằm làm rõ tác động của các biến số kinh tế vĩ mô đến hoạt động của DNVVN tại Việt Nam giai đoạn 2011-2020 thông qua phân tích lý thuyết và thực tiễn. Kết quả cho thấy các biến kinh tế vĩ mô có sự thay đổi tích cực có tác động tốt đến hiệu quả hoạt động của các DNVVN trong thời gian nghiên cứu. Đây là cơ sở để Chính phủ đưa ra các biện pháp chính sách nhằm kiểm soát các biến số kinh tế vĩ mô nhằm thúc đẩy hoạt động của các DNNVV trong giai đoạn tới.*

• Từ khóa: *doanh nghiệp nhỏ và vừa, tăng trưởng kinh tế, lạm phát, các biến số kinh tế vĩ mô.*

1. Introduction

In Vietnam, the Resolution of the 5th Central Committee of the 12th term (2017) affirmed that "The development of the private sector is an important driving force of the socialist market economy". The Resolution has important implications for the direction of private sector development. Indeed, the majority of private enterprises in Vietnam are small and medium-sized enterprises (SMEs), which are a potential sector and an important contributor to the economy.

In 2011-2020, SMEs account for more than 97% of enterprises in Vietnam on average (The white book on Vietnamese businesses, 2021). Among them, the number of micro enterprises always accounts for about two-thirds of enterprises and almost one-third of the total number of small enterprises. Statistics show that this industry contributes about 45% of GDP and 31% of total state budget revenue, and creates jobs for over 5 million workers (Ministry of Planning and Investment, 2021).

The performance of SMEs is due to the contribution of many factors, especially macroeconomic variables. During the period 2011-2022, Vietnam's economic situation is subject to many fluctuations, which are reflected in macroeconomic indicators such as GDP growth, inflation, public debt, institutional environment, and so on. Basically, macroeconomic indicators have shown positive development over the years. Economic growth has gradually increased,

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inflation and government debt have been stably controlled, and the institutional environment has improved over the years. The positive changes in macro variables have helped to promote the activity of SMEs during this period.

There are few studies on the influence of macro variables on SME performance in Vietnam. The studies have many limitations and the analysis techniques are simple, the influence has not been clearly demonstrated. This study was conducted to clarify the impact of macroeconomic variables on SMEs' activities in Vietnam in 2011-2020 through the analysis of theory and practice.

2. Literature review

Macroeconomic variables include figures that actually reflect economic results, economic phenomena or economic development processes in the national economy. Thus, macroeconomic variables reflect the quality of the economy or the operating environment of enterprises, which have a direct and indirect impact on the activities of SMEs. Lumpkin & G Dess (1996) showed that the external environment affects the operation and growth of the firm regardless of the firm's orientation or available resources. Janssen (2002) summarized the external macro environment in terms of prosperity, dynamism, and complexity. While prosperity reflects the positive development trend of the economy, dynamism and complexity are related to the volatility of the market. The macroeconomic variables can be summarized as follows:

Economic growth

When the economy is growing, the GDP index reflects the growth rate of the economy and creates investment capital and a stable operating environment for SMEs. A high GDP growth rate creates a positive environment conducive to business operations and growth, regardless of the company's orientation or existing resources. An unstable macroeconomic environment affects the characteristics and behavior of businesses, especially small businesses (Smallbone & Welter, 2001a). When GDP declines and persistent unemployment leads to lower real incomes, this reduces business prospects in the economy (Earle & Sakova, 1999; Smallbone & Welter, 2001b). Specifically, the decline in GDP means a reduction in market size, a reduction in resources for production, and a reduction in business opportunities for firms, especially SMEs, which directly and indirectly affects firm activity.

Inflation rate

The goal of countries is to control the inflation rate and keep it stable in the single digits (4-5%). If inflation is too high, it will affect the standard of living of households and the production and business activities of companies. On the other hand, if the inflation rate is too low, it will not promote economic growth. To stimulate demand and promote growth, countries will maintain a certain level of inflation to allow the economy to expand gradually.

In addition, stable prices create a better investment environment or secure capital for business expansion (Earle & Sakova, 1999). When prices are unstable, banks are often unwilling to lend money to businesses. Macroeconomic instability is reflected in a high inflation rate, which hinders business activity and reduces the value of sales contracts entered into between trading partners (McMillan & Woodruff, 2002). Contracts are difficult to conclude when managers cannot predict movements and prices in the market. In addition, inflation makes it difficult for companies to predict the future, especially when some SMEs operating in the international market have a fluctuating exchange rate.

Per capita income

Per capita income affects the business activities of companies in general and SMEs in particular. When income falls, household consumption of goods declines and the market shrinks, affecting consumption and corporate revenues. According to the Keynesian theory of aggregate demand (Keynes, 1936), when household disposable income falls, consumption falls, and aggregate demand in the economy falls accordingly, resulting in a decline in economic output. According to the acceleration theory, on the other hand, private sector investment is a function of the output Y of the economy: $I_t = g(Y_{(t+1)} - Y_t)$ (Harrod, R., 1936). Here, I_t is private investment in year t; g is the coefficient reflecting the level of investment as a function of the change in output. When output increases, firms in the economy increase investment to match this change, resulting in higher income for firms.

Institutional and legal environment

The institutional and legal environment plays an important role in the impact of macro variables on SMEs, and a high quality regulatory environment also promotes SME activities. An institutional environment that is suitable for SMEs and easily accessible for administrative procedures promotes the establishment and development of SMEs. The development of a complete legal system of commercial law, copyright law, bankruptcy law, real estate law, and labor law supports business relations and facilitates companies' access to financial resources. SMEs consider the unstable legal environment as the biggest obstacle to business operation (Manolova & Yan, 2002). However, even if the legal or institutional system is ideal for businesses, frequent changes in economic laws and tax regulations adversely affect businesses. These changes create instability and increase information and compliance costs (Hoshi, Balcerowicz & Balcerowicz, 2003).

The inability of public sector officials to provide adequate services to businesses and cumbersome administrative procedures are also problems that hinder business operations.

Theories and research reports show that macroeconomic variables play an important role in creating a business environment for SMEs. A favorable environment encourages business activity, while an environment with poor macro indicators inhibits business.

3. Methodology and research model

The study uses the method of synthesis, analysis and systematic evaluation of theoretical and experimental studies on macroeconomic variables and their impact on the activities of SMEs. With the quantitative research method, the study builds models and uses econometric techniques FEM and SEM to measure the effects of macroeconomic variables on the activities of SMEs using the software Stata16.

The fixed effects model (FEM) confirms the existence of a specific difference between companies and over time, this difference is correlated with the independent variables and FEM evaluates this specific difference for the dependent variable. The FEM model is estimated using the classical least squares method with dummy variables or longitudinal estimation. The random effects model (SEM) assumes that there is a characteristic difference between units, but it is random (within random error) and not correlated with the explanatory variable. The Hausman test (Hausman, 1978) is performed to select the FEM or SEM model. For H0, there is no difference between the two models.

Based on the theoretical basis, the research model has the following form:

$$Y_{it} = \alpha_0 + \alpha_1.G_{it} + \alpha_3.X_{it} + \alpha_4.Z_{it} + u_{it}$$

In which:

The dependent variable (Y_{it}) represents the firm's performance. is the change in revenue of firm i at time t.

The group of independent variables includes:

Group of variables (X_{it}): Represent macroeconomic variables that affect each company i in year t, including: GDP growth rate, inflation rate, indicators reflecting the institutional business environment of the company.

Group of variables (Z_{it}): Reflect the characteristics of firm i in year t, including: Age of the company, number of employees, share of fixed assets of the company.

The data used in the model include both enterprise micro data and aggregate macro data representing external factors, so the data come from many different sources.

First, the data on SMEs come from the General Statistics Office's enterprise survey from 2011 to the end of 2020, which is a dataset that is sent to enterprises annually through a questionnaire to fully and comprehensively assess the operating situation and information of enterprises.

Second, the data on business and institutional environment comes from the provincial competitiveness assessment dataset conducted by the Vietnam Chamber of Commerce and Industry (VCCI) from 2011 to 2020.

Third, the data on economic growth of communes comes from the statistical dataset on commune activities compiled by the General Statistics Office.

Fourth, the data on inflation comes from the core inflation data calculated by the General Statistics Office and the annual statistics based on CPI data.

4. Results

The regression results on the influence of macro factors on SME performance are consistent with economic theories and are shown in Table 1. First of all, the economic growth rate of the province has a positive effect on the sales performance of enterprises operating in the area, but the degree of influence is not really obvious. This is also consistent with the study of Earle & Sakova (1999) and Smallbone & Welter (2001b). When local GDP increases, more workers are employed, generating more income, and private consumption expenditures increase, so firms sell more products and increase their revenues. Places with high economic growth attract many businesses because they are large product consumption markets and businesses have the opportunity to increase their market share and operating revenues.

During 2011-2019, the economic growth of places is subject to some fluctuations, and there are differences between places in different geographic areas. In the 2011-2015 period, the growth rate of localities slowed down as a result of the 2008-2009 global financial crisis, and during this period, the government also took many measures to revive the economy. Therefore, this is a difficult time for SMEs to operate. However, in 2016-2019, the economic growth of municipalities resumed and created favorable conditions for SMEs in the region. As a result, the performance of SMEs increased, reflecting the development of enterprises in this period.

Economic growth in different localities also varies: localities that are centrally located cities have high and stable growth rates compared to localities in remote areas. As a result, SMEs in large cities perform well and have relatively stable growth.

On the other hand, if inflation increases, the operating results of enterprises will decrease if there are no fluctuations in the internal conditions of the enterprise and no external factors. The negative impact of price on enterprise performance has been confirmed in many previous studies (Earle & Sakova, 1999); (McMillan & Woodruff, 2002)

In 2011-2019, with the exception of the first three years of 2011, 2012 and 2013, the inflation rate in Vietnam was above 5%, and in the other years, the inflation rate was well controlled and below 5%; in particular, in 2015, the lowest inflation rate was only 0.63%. The good control of inflation rate in 2011-2019 has helped to promote economic activity, and the decreasing inflation rate has increased the revenue of enterprises. The government's measures to stabilize market prices have helped stabilize input and output prices for enterprises in general and SMEs in particular, thereby stabilizing enterprises' production and business activities. Thus, inflation was essentially well under control during this period, so the impact of inflation on enterprises was negative but not too large.

Table. Results of the estimation of the impact of macroeconomic variables on SME activity

Model	FE	Robust FE
Variables	Change in revenue (*D.log_doanhthu*)	
Economic growth rate	0,000764	0,000764
Inflation	-0,00754***	-0,00754***
Business and institutional environment	0,00149**	0,00149**
Age of enterprise	-0,0262***	-0,0262***
Number of employees	0,134***	0,134***
Proportion of fixed assets	-0,0444***	-0,0444***
Block coefficient	-0,0342	-0,0342
coefficient	0,032	0,032
No of observations	641.456	
No of enterprises	80.182	

*Note: Regression coefficient * $p<0.1$, ** $p<0.05$, *** $p<0.01$*

Source: Results from Stata

At a 1% significance level, business activity outcomes will change positively given business conditions and an improvement in the economic institutional environment, as measured by the *PCI variable*, under the same macroeconomic conditions. A high PCI reflects an improved institutional environment that helps to promote the positive effects of macroeconomic variables on SMEs' operations. Companies have more resources for production and business as a result of the government's preferential policies, so operating income increases. Specifically: First, SMEs have easy access to land and can use it stably as a basis for production and business, which is a crucial factor for the existence and development of the production and business process of enterprises. Second, the information is public and transparent, and SMEs have equal access to information on preferential measures. The problems of enterprises

in the implementation of policies are solved in a timely and transparent manner, so that the interests of enterprises are safeguarded. Third, it is necessary to eliminate or reduce informal costs for SMEs. This cost reduction not only makes it easier for SMEs to take advantage of incentives, but also helps reduce capital and product costs and improve the competitiveness of these enterprises. Fourth, the fast and simple administrative procedures speed up the implementation of preferential measures for SMEs and make it easier for enterprises to access incentives. With the improvement in the quality of the institutional environment in municipalities, as evidenced by an increase in PCI, enterprises can better take advantage of the successes of the economy. The companies that benefit from these measures have the conditions to expand their production and business activities and increase their competitiveness.

In addition, provinces with a good institutional environment are also places with a good business environment. Investments and activities in places with a transparent and favorable institutional environment help businesses reduce time and operating costs, which leads to higher business productivity and thus higher operating income.

For the factors reflecting the characteristics of SMEs, at a 1% significance level, all variables have an impact on the change in the company's revenue. Specifically: Young enterprises tend to be more dynamic and adaptable to the economy, so their performance results are higher. The proportion of fixed assets has a negative impact on the performance of SMEs. When enterprises increase the proportion of fixed assets, the resources for profitable activities in the period decrease, as the turnover of enterprises decreases. The larger the enterprises are, as reflected in the high number of employees, the better their performance.

Thus, in addition to external macroeconomic variables, the activities of SMEs are also influenced by factors of enterprise characteristics, or in other words, the business performance of enterprises is influenced by both internal and external factors.

5. Conclusion

From the regression results, it can be seen that in the first period of study, 2011-2015, as a result of the global financial crisis of 2008-2009, which led to constant fluctuations in macroeconomic variables,

the activity of SMEs still faced many difficulties. During this period, the financial industry faced many difficulties. In parallel with fiscal policy, monetary policy was actively and thoroughly used to overcome the consequences of the crisis. In the period from 2016 to 2019, the economy developed stably and flourished, with macroeconomic variables showing a stable, positive trend, and the activity of SMEs was promoted. However, the epidemic in 2020 significantly affected SMEs in particular and the economy in general, thwarting most socioeconomic development plans. In the coming period, when the evolution of macroeconomic variables is volatile and difficult to predict, it is important to improve the potential of SMEs through their development strategies along with other policies. Government support is essential. This ensures stability and growth. of SME activities in the face of changes in the overall economy.

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THE APPLICATION OF RESPONSIBILITY ACCOUNTING TOWARDS THE SUSTAINABLE DEVELOPMENT OF VIETNAMESE ENTERPRISES IN INTEGRATION STAGE

PhD. Chu Thi Huyen*

Abstract: *Finitions of responsibility accounting (RA) to see the conceptual development of RA. Especially, the study focuses on the current practices of RA in Vietnam. By using qualitative research method, the findings show that the application of RA in local enterprises has implemented, but the manifestation of RA is not clear. Based on the research results, the author give discussions and recommendations to improve and further promote the adoption of RA in Vietnamese companies towards the sustainable development in integration stage.*

• Keywords: *Vietnamese enterprises, responsibility accounting, sustainable development.*

Tóm tắt: *Kết luận của kế toán trách nhiệm (RA) để quan sát sự phát triển khái niệm của RA. Đặc biệt, nghiên cứu tập trung vào thực tiễn hiện nay của RA ở Việt Nam. Bằng phương pháp nghiên cứu định tính, kết quả cho thấy việc áp dụng RA tại các doanh nghiệp địa phương đã được triển khai, nhưng biểu hiện của RA chưa rõ ràng. Trên cơ sở kết quả nghiên cứu, tác giả đưa ra các thảo luận và khuyến nghị nhằm hoàn thiện và thúc đẩy hơn nữa việc áp dụng RA tại các doanh nghiệp Việt Nam hướng tới sự phát triển bền vững trong giai đoạn hội nhập.*

• Từ khóa: *doanh nghiệp Việt Nam, kế toán trách nhiệm, phát triển bền vững.*

1. Introduction

In the context of international economic integration, businesses should rely on advanced management techniques for better decision-making. Among them, the one that helps businesses develop sustainably is responsibility accounting (RA) (Tran, 2017). Starting with Higgins' research in 1952, RA is an interesting research topic for more than 70 years. Research findings show that RA has made a significant contribution to the success of businesses operating in different fields around the world, such as manufacturing (Akenbor et al., 2013), bank industry (Pajrok, 2014) and healthcare services (Nyakuwanik et al., 2012). However, not all businesses can successfully apply RA.

In Vietnam, RA is a new concept in both theoretical and practical aspects and not widely adopted by local companies. The number of empirical studies of RA is quite limited, only conducted in a number of specific fields such as milk production, construction, cement production... One of the reasons for this is that Vietnamese enterprises' awareness of RA in general and its role in particular is limited. On the other hand, Vietnamese economy has been constantly integrating into the world, so having a balance between the financial performances with sustainability is a major challenge for businesses while RA is an effective governance tool to execute control over both financial and strategic aspects, strengthen sustainable development of enterprises in integration stage (Tran, 2017). Therefore, it is essential to understand and realize the role of RA as well as having solutions to improve and further promote the adoption of RA in Vietnamese companies towards the sustainable development

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in integration period. This is the main reason motivated the author to do this research.

This article aims to clarify the the different definitions of RA to see the conceptual development of RA. Especially, the study focuses on the current practices of RA in Vietnam. Based on that, the article gives discussions and recommendations to improve and further promote the adoption of RA in Vietnamese companies.

The paper is structured as follows. The next section presents methodology. The third section is results. Finally, the paper concludes with conclusions

2. Research methodology

The study is carried out by studying and analyzing previous topics. The study collected, analyzed and systematized of previous studies in the world and Vietnam related to the concept, content of RA and the role of RA in enterprises. This study indicated to 35 articles, 6 theses and 8 generic works, which has been conveyed to decide any materials should be incorporated into this search. After reading the most related articles that they have gathered, it was chosen the best that fit with the paper's aim.

3. Research Results

3.1. An overview of responsibility accounting

3.1.1. Responsibility accounting concept

RA is a part of management accounting, studied by many domestic and foreign authors. However, there is no unified concept of RA until now.

The first concept of RA was initiated by Higgins (1952), in which RA is designed to control expenditures, directly relating the reporting of expenditures to the individuals in an organization who are responsible for their control. Agreeing with Higgins, Kellogg (1962) approached RA relating to the providing of financial information about costs. Besides, the author clarified the relationship between RA and cost accounting. The research showed that RA has a close relationship with cost accounting. One of the RA's important goals is to control

costs for any level of management, from directors, to supervisors.

In 1997, Atkinson et al. developed the concept RA, whereby RA provides not only expenses information such as the earlier approach of Higgins (1952) and Kellogg (1962) but it also gives financial information related to both incomes and results. They defined RA is a part of management accounting that collects, summarizes and provides information related to expenses, incomes and performance of each responsible department. Obviously, according to this concept, the RA information content is broader, including financial information of costs, incomes and results. On the other hand, the research also clarified that the basic idea behind RA is that a manager should be held responsible for those items - and only those items - that the manager can actually control to a significant extent. Similarly, Weygandt et al. (2013) also said that RA is an important part of management accounting. RA involves accumulating and reporting costs (and revenues, where relevant) on the basis of the manager who has the authority to make the day-to-day decisions about the items. Under RA, a manager's performance is evaluated on matters directly under that manager's control. In the above concepts, only those items over which a manager has direct control are included in the responsibility report for that management level. Any revenue and expense items that cannot be directly controlled are not included.

Otherwise, Atkinson et al. (2001) developed the concept of RA by adding the "uncontrollable" factors related to costs and incomes of managers as follows: RA is a part of management accounting that collects, summarizes and provides information related to expenses, incomes and performance of each responsible department. This system will provide information to evaluate the responsibilities and performance of each manager. RA reports controllable and uncontrollable items related to expenses, incomes for managers.

Therefore, this approach is to include all revenue and expense items that can be traced

directly or allocated indirectly to a particular manager, whether or not they are controllable. It can be seen that in this concept, the RA content has been more expanded, from purely financial information related to controllable costs and incomes to financial information related to uncontrollable costs and incomes. This is more suitable with the increasing decentralization of management since it considers of the relationship between upper-level managers and lower-level managers.

In 2012, Martin extended that RA information provides not only related to revenues, costs, profits as mentioned above, but it also gives efficiency and investment information. Accordingly, RA is an accounting system that distributes information about the results and performances of departments in an organization. It is a tool to measure and evaluate the performance of the departments related to investment, profits, revenues and costs that each department has control and responsibility.

If all above concepts have common characteristics when only referring to the financial information supplied by RA, the later concepts of the authors such as Hansen and Mowen (2007), Tran (2015), Ngo (2018) show a comprehensive development of RA information, whereby RA not only provides financial information, but also it gives non-financial information. For example, Hansen and Mowen (2007) defined RA is a fundamental tool of managerial control and is defined by four essential elements: (1) assigning responsibility, (2) establishing performance measures or benchmarks, (3) evaluating performance, and (4) assigning rewards. In which, measuring and evaluating performance is based on both financial information and non-financial information.

Based on the above analysis, it can be seen that the concept of RA was developed from focusing on providing controllable costs (Higgins, 1952; Kellog 1962) then extended to uncontrolled costs, revenues, profits and investments (Atkinson et al., 2001). That means the RA content increases with the responsibility decentralization as well as the higher managerial

decentralization of the accounting unit. RA information is purely financial information, then develops to include non-financial information.

3.1.2. The contents of responsibility accounting

According to researchers: Atkinson et al., (1997), Hansen and Mowen (2007),… RA content in enterprises includes some basic issues as followings:

- Divide the units into responsibility centers: responsibility center is a part or a function whose achievements are directly responsible by a specific administrator. There are four types (Garrison et al.,2009): cost centers, revenue centers, profitability centers and investment centers.

- Decentralization and assignment of responsibilities to managers in responsibility centers: The superior administrators need to authorize subordinate administrators in responsibility centers with clear authority to manage and the administrators of each responsibility centers are responsible for the results as well as the effectiveness of their implementation in their centres. Administrators need to be authorized in accordance with the activities in the responsibility centers that they undertake to make the right decisions to achieve planned results.

- Budget: The managers in each responsibility centers are responsible for estimation. After the budget has been approved, the budget is the basis for the superior leaders to allocate resources, as well as a basis for subordinate leaders to perform their tasks to achieve the set objectives. For example, with the cost center making budget such as direct raw material cost, direct labor cost, overheads cost... With the revenue center, making budget of product consumption, sales volumes.

- Implementing: In order to collect information processed in responsibility centers, RA applies general accounting methods such as invoice method, account method, price calculation method and balance synthesis (Luong, 2018) and technical methods of management

accounting suitable for each center (Tran et al., 2020). For example, to collect performance information of cost centers, RA bases on related invoices such as invoices of materials delivery, tools, spreadsheets and fixed asset depreciation amortization...

- Performance evaluation in responsibility centers: RA evaluates the achievements as well as the responsibility of the managers at the responsibility centers by taking the performance results of responsibility centers, comparing with the original estimate data. In which, the criteria for estimating, implementing as well as evaluating the responsibility centers assigned must be associated with the tasks that enterprises have assigned to responsibility centers (Doan et al., 2015). Thus, it is possible to generalize the contents of RA in enterprises as Diagram 1 below:

Diagram 1: The responsibility accounting contents in enterprises
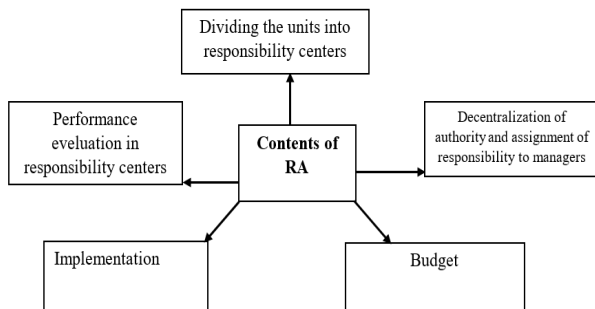
Source: Authors synthesized

3.2. The current situation of the RA in Vietnam and solutions to help businesses develop sustainably

3.2.1. The reality in Vietnam

In Vietnam, because of the switching's economy to a market economy for more than 20 years, the knowledge about management accounting in general and RA in particular is slight new. In terms of legality, RA is mentioned in Circular 53/2006/TT-BTC issued on 12/06/2006 by the Ministry of Finance guiding the application of management accounting in enterprises. However, regarding RA, the circular only mentions the following two concepts: (1) Responsible center is a division (workshop, production line; a department; a company or whole company) in one organization of which the manager is entitled to manage and responsible for arising incomes, costs or the investment capital used for the business activities. (2) Cost center is the responsible center of which the manager is entitled to manage arising expenses of the division under his/her management. A cost center might be a division (workshop, team, group…) or each operation period (rough processing stage, cutting stage, polishing stage…). Due to this regulation is not clear and specific, leading to different levels of RA adoption of enterprises.

In practical terms, the application of the contents of RA is still a very new issue and has not attracted much attention from firms. As a result, RA has been only adopted by firms in the past few years. Nevertheless, the RA application in each enterprise is different and still not thorough, shown in some typical works as follows:

The study of Nguyen (2013) showed that RA system in Vietnam dairy production companies is not really established and implemented. Targets system in centers is just established and implemented for financial accounting. Similarly, in terms of construction, research by Nguyen (2014) also concluded that RA in particular in construction corporations have not yet been implemented. Although the corporation has decentralized management to its member units and divisions, it has not yet formed responsibility centers associated with management levels. Tran's conclusion (2015) also showed that the level of applying RA in Vietnamese cement manufactured firms is approximately moderate. In terms of beer production, Cao's findings (2020) depicted that although RA has been formed in some large manufacturing enterprises, estimation criterias are not distinctive according to responsibility centers and not diverse. Moreover, the system of acquisition, processing, analyzing and providing information according to responsibility centers and the reward system has not been associated with management efficiency. Likewise, when it comes to automobile manufacturing firms, the

application of RA in these enterprises has begun to be implemented, but the manifestation of RA is not clear (Chu, 2021).

3.2.2. Solutions for promoting the application of responsibility accounting in Vietnamese enterprises

Based on the above research results, the author proposes some solutions to improve the adoption of RA in Vietnamese enterprises as follows:

For the State agencies

The Ministry of Finance need to improve the legal framework on management accounting, including the introduction of basic regulations on RA, especially the content of RA in enterprises.

The State agencies should continue improving the business and investment environment, creating motivation for the development of the market economy as well as open information environment so that enterprises can access and realize that RA has can help provide useful information for management levels in measuring the performance of departments as well as assessing the responsibilities of managers in each responsibility center, on that basis, making decisions to achieve the goals of each department and the whole enterprise. From there, it will promote reforms in corporate governance and as a result will promote the development of management accounting in general and RA in particular. On the other hand, when traditional techniques are no longer enough to meet management requirements in the new business context, Vietnamese enterprises will prioritize applying modern techniques, including RA.

In addition, State agencies should have support programs such as organizing seminars, opening training courses to help businesses get closer to modern management methods and tools, updating international trends. The training content not only focuses on financial accounting but also needs to develop the contents of management accounting, including RA. The State agencies should consider management accounting as a consulting profession to grant practice certificates as internal audit services in developed countries. Along with that, the State

agencies needs to build and develop programs, organize training and issue managemen accounting practice certificates, of which RA is a basic part.

Moreover, the State agencies should require and encourage accounting training institutions to include RA content in training programs to provide learners - the future managers and accountants at enterprises understand the importance and apply RA to specific businesses.

For the enterprises

In the coming time, enterprises need to invest and organize the application of RA in their unit - one of the important tools help businesses survive and develop sustainably in the new context. The building of the RA system in each enterprise is different and consistent with the characteristics of each business

Enterprises not only need to raise awareness for managers about the important role of RA but also improve the qualifications of the accounting team in general and responsibility accountants in particular. It is necessary to have proper awareness and evaluation from both sides, which are managers and employees, to coordinate the implementation of RA work.

Enterprises should continue innovating and modernizing production technology because new technology will force managers to change the management way. Thereby it poses a higher level of information demand which leads to RA having to innovate to satisfy the more diverse information of managers.

For the training institutions

Business administration and accounting training institutions play an important role in disseminating new knowledge to increase usability and implementation. Therefore, the institutions need to be more specialized in management accounting module in general and RA in particular, and consider it equal to financial accounting. In order to do this, the institutions need to clearly define the objectives of training accounting students.

Furthermore, the institutions should train in both aspects of accounting science and

accounting practice, in which, it is necessary to include RA as an important content in the training program. In the current condition, the training program is designed according to credits, divided into blocks of knowledge with elective and compulsory subjects as at present, the institutions should include management accounting in general and RA in particular as one of the core contents and as a compulsory subject for students in accounting and economic majors.

The institutions should train teams of lecturers who have experiences and are professional in theory and reality in management accounting. Furthermore, it is necessary to invite excellent experts from enterprises to exchange and share experiences for students.

For professional associations

The role of the Association is also shown as a "bridge" among enterprises in the industry, introducing advanced and effective management models including RA. On that basis, Association members can exchange in the form of visits, learn experiences, organize intensive seminars to replicate the application of RA in the Association.

In addition, there should be coordination and cooperation among the Associations: Association of Accountants and Auditors (VAA), Vietnam Association of Certified Public Accountants (VACPA) and the Association of Enterprises in each specific industry and field in training and dissemination knowledge about management accounting in general and RA in particular. On the other hand, associations need to improve the effectiveness of training and education courses, which can combine various types of training such as concentrate courses or on job training.

4. Conclusions

In the increasingly competitive business environment, companies are required to utilize all of their resources to pursue competitive advantage. RA is a way to gain sustainable competitive advantage through helping manager to have valuable information in making decisions in order to achieve general objective, strengthen sustainable development of enterprises. Therefore, the application of RA is necessary for Vietnamese enterprise in the current context. Nevertheless, the application of RA in local enterprises is quite limited, only conducted in a number of specific fields such as milk production, construction, cement production... To improve and further promote the adoption of RA in Vietnamese companies, there must be coordination from the State, firms, educational institutions as well as professional associations.

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THE IMPACT OF MONETARY POLICY OF US AND CHINESE ON THE SOUTHEAST ASIAN COUNTRIES STOCK MARKET

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Abstract: *In terms of GDP growth during the past several years, China and the US have the two largest economies in the world. The stock markets of Southeast Asian nations would therefore experience immediate changes if the monetary policies of the US and China alter. This study focuses on examining the effects of US and Chinese MP on the stock market of Southeast Asian nations, including Thailand, Singapore, and Vietnam, from 2007 through 2022. To better understand the connection between monetary policy and stock market, the estimation of the Garch regression model, PP tests, and ADF are used.*

• Keywords: *monetary policy, US, China, stock market, Southeast Asian.*

Tóm tắt: *Xét về tốc độ tăng trưởng GDP trong nhiều năm qua, Trung Quốc và Mỹ là hai nền kinh tế lớn nhất thế giới. Do đó, thị trường chứng khoán của các quốc gia Đông Nam Á sẽ trải qua những thay đổi ngay lập tức nếu chính sách tiền tệ của Hoa Kỳ và Trung Quốc thay đổi. Nghiên cứu này tập trung xem xét tác động của nghị sĩ Hoa Kỳ và Trung Quốc lên thị trường chứng khoán của các quốc gia Đông Nam Á, bao gồm Thái Lan, Singapore và Việt Nam, từ năm 2007 đến năm 2022. Để hiểu rõ hơn về mối liên hệ giữa chính sách tiền tệ và thị trường chứng khoán, ước tính của Mô hình hồi quy Garch, kiểm định PP và ADF được sử dụng.*

• Từ khóa: *chính sách tiền tệ, Mỹ, Trung Quốc, thị trường chứng khoán, Đông Nam Á.*

Introduction

According to Mishkin (2013), "Monetary policy (MP) is the process of managing money supply by the central bank to achieve certain goals such as controlling inflation, maintaining exchange rate stability, achieving full employment or increasing economic growth". The US Federal Reserve System (FED) stated that MP is viewed as a mandatory action of economic regulators in order to bring the economy back in line with the initial economic development goals they set out

for the United States. This is done by affecting the money supply and available credit with a variety of control tools. The United States' MP will serve as a model for many international markets in general and is very relevant to all kinds of commodities, including stocks, dollars, gold, and real estate,… The FED's decision will affect the price of various assets, particularly stocks or the stock market in general. These impacts have been researched and quantified by scientists.

China's MP is unique and has experienced significant shifts recently. The shutdown of China due to Covid in the years 2020-2022, the world's manufacturing, has led to significant fluctuations in the global economy. The quantity of commodities in the economy, the number of labourers needed to produce them, the ease with which things may be transported internationally, etc., all confront challenges and force the global economy to alter how it runs in order to survive. This is also seen by how the FED and PboC conduct MP differently.

When the FED continues to battle inflation, the PboC finds methods to continue helping the economy's recovery by maintaining the low interest rate policy. Southeast Asia in particular, as well as emerging or frontier markets like Vietnam, Thailand, and Singapore, would be significantly impacted by this. The unique aspect of the aforementioned markets is that only Singapore's stock market is designated by FTSE as belonging

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to the group of nations with established capital markets, whereas Vietnam and Thailand are categorised as frontier markets (FTSE, 2020).

Regarding the Vietnam stock market, HSBC (2021) stated that the Vietnam stock market (VNIndex) is the marginal market that is interested and favoured when the trading liquidity achieves the greatest level in the study "The numbers behind the growth story" higher than Malaysia and Indonesia, very near to STE. Political stability and the successful management of the Covid-19 outbreak have contributed to the rapid growth of the VNIndex, which will reach more than 1500 points in 2022 with an average trading value of roughly VND 35,000 billion every session. In order to raise money for increasing their company and production, several corporations and banks have taken advantage of the stock market's growth period by issuing shares and convertible bonds.

Literature review

The transmission mechanism of MP is defined by Mankiw and Taylor (2001) as the procedure by which changes in interest rates or money supply by the MP operator (Central Bank) lead to changes in variables in the economy (market interest rates, asset prices, exchange rates, cash flow, credit supply of banks, private consumption, etc.), with the ultimate goal of achieving economic growth, employment rate, etc.

Five channels via which MP is conveyed, according to a group of NCM (New Consensus Macroeconomics) writers, are the term structure of interest rates, credit, expectations, asset prices, and exchange rates (Kuttner & Mosser, 2002; Mishkin, 1995, 1996). This mechanism essentially explains the links between interest rate, total demand, and price in the transmission of MP.

Mishkin (2001) thinks that the stock market's movements are impacted by MP and have significant effects on the economy at a more detailed level, which is the spillover mechanism of MP to the stock market channel. Thus, the following factors influence the stock market as a result of the MP's spreading mechanism: (1) Interest rate; (2) Investors; (3) Enterprises' balance sheets; (4) Finance Household Wealth and Expenditures; (5) Household Wealth Effect.

Smirlock and Yawitz (1985) assert that market interest rates will be used to conduct MP, indirectly altering stock prices through two primary pathways. First off, because the interest rate utilised in the stock pricing model is equal to how to discount the dividend stream, if the central bank conducts MP indirectly by raising the policy interest rate and the prime interest rate, the market interest rate will also change. Second, changes in expectations for future capital flows, such as corporate earnings, have an impact on the stock market. The interest rate risk premium can also be impacted by MP, including predictions, which will lower stock values. More particular, it is projected that when a restrictive MP is put in place, economic growth expectations will be just as low as inflation. Because of this, a lot of investors would consider equities to be high-risk financial assets and will ask for an even larger discount rate to account for the losses incurred. As a result, the stock price also changes in a negative way.

The money supply M2 and refinancing interest rate were also employed by Tran Thi Xuan Anh and Ngo Thi Hang (2012) to measure MP, whereas the liquidity measurement variable was the average monthly trading volume on HOSE between August 2000 and August 2012. According to the findings of the OLS model, the refinancing interest rate has a negative relationship with liquidity, but the M2 money supply has a positive relationship.

Tran Thi Hai Ly (2015) analyses data from 643 firms listed on HOSE and HNX to conduct research on the period from September 2007 to November 2014 using two MP variables, including money supply growth and interbank interest rates, and four liquidity indicators. The findings demonstrate that unanticipated changes in two MP variables have no appreciable impact on market liquidity. Improvements in liquidity were also facilitated by rising market returns, inflation, and industrial production growth.

In addiction, Le Dat Chi and Hoang Thi Phuong Thao's (2016) research also looks at how the global financial crisis of 2008 affected the liquidity of the Vietnamese stock market using a variety of liquidity indicators and numerous data sets. Between the fourth quarter of 2007 and the fourth quarter of 2013, unbalanced tables were gathered from 609 businesses. When compared to the post-crisis period, the GMM technique causes a fall in stock

liquidity during the crisis. Additionally, market factors like capitalization value and profitability ratio have a significant influence on any stock's liquidity. Leverage, cash flow, and firm profitability are the factors with minimal impact on the liquidity indicator.

Research model and method

The author moves on to develop his research model using the following particular variables from the study goal of analysing the effect of MP of the US and China on the stock markets of Southeast Asian (SA) countries:

Table 1. Description of variables

Symbol	Variables	Sign exp	Measures of Variables
Dependent Variables			
VNI	VN Index		Monthly VN Index
FTSE_S	Singapore Index		Monthly FTSE_S - Straits Times Index
SETI	Thailand Index		Monthly SETI - Stock Exchange Thailand Index
Independent Variables			
FFR	FED Rate	-	FED Rate (Monthly)
TBR	US Treasury Bill Rate	+	US Treasury Bill Rate (3 months)
INF	US Inflation	-	US Inflation (monthly)
MS	US Money Supply 2	+	US Money Supply 2 (Monthly)
LR	US Lending Rate	+	US Lending Rate (Monthly)
CIR	China Interbank Offered Rate	-	China Interbank Offered Rate (Monthly)
CTBR	China Treasury Bill Rate	+	China Treasury Bill Rate (Monthly)
CINF	China Inflation	-	China Inflation (Monthly)
CMS	China Money Supply 2	+	China Money Supply 2 (Monthly)
CLR	China Lending Rate	+	China Lending Rate (Monthly)

Source: The result of researchers

The following two regression models for time data were created by the authors using the assumptions and the variables listed in Table 1 of the study model:

Model of how US MP has affected several SA nations' stock markets

$$I_{i,t} = \alpha + b_1 \times FFR + b_2 \times TBR + b_3 \times INF + b_4 \times MS + b_5 \times LR + \varepsilon_t$$

$$\sigma_t^2 = \omega + (\alpha + \gamma I_{t-1})\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2$$

$$With\ I_{t-1} = \begin{cases} 1 & if\ \varepsilon_{t-1} < 0 \\ 0 & if\ \varepsilon_{t-1} \geq 0 \end{cases}$$

In which: $I_{i,t}$ is the country-specific stock index, which includes stock indices for Thailand (SETI), Vietnam (VNI), and Singapore (FTSE_S). FFR stands for Federal Reserve Interest Rate, TBR for US Three-Month Treasury Bill Rate, INF for US Consumer Price Index Percentage Change, and MS for M2 Money Supply Percentage Change. and the standard US Lending rate is called LR. The estimate parameters are and b_, and the error term is ε_t.

Model of how China MP has affected several SA nations' stock markets

$$I_{i,t} = \alpha + b_1 \times CIR + b_2 \times CTBR + b_3 \times CINF + b_4 \times CMS + b_5 \times LR + \varepsilon_t$$

$$\sigma_t^2 = \omega + (\alpha + \gamma I_{t-1})\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2$$

$$With\ I_{t-1} = \begin{cases} 1 & if\ \varepsilon_{t-1} < 0 \\ 0 & if\ \varepsilon_{t-1} \geq 0 \end{cases}$$

In which: $I_{i,t}$ is the stock index of country i, including stock indexes in Vietnam (VNI), Singapore (FTSE_S), Thailand (SETI). CIR is China's interbank overnight lending rate, CTBR is China's 3-month Treasury bill rate, CINF is the percentage change in China's consumer price index, CMS is the percentage change The change of the M2 money supply and the CLR is China's prime lending rate. α and b_ are the estimation parameters, ε_t is the error term.

The study's data was gathered by the authors between January 2007 and July 2022 (monthly data) from the official websites of the Federal Reserve (fred.stlouisfed.org), the country's central bank, the Bank of England (bankofengland.co.uk), the Bank of France (banque-france.fr), National Data (China), and investing.com for five different countries, including the US, China, Singapore, Thailand, and Vietnam.

Research results

Table 2. Results of the effect analysis of US MP

Coefficients	SAIPHAN_VNI	FTSE_S	SAIPHAN_SETI
CONST (b0)	-23.6768	432.11***	544.6149***
FFR (b1)	-49.3479	39.998***	154.2209**
TBR (b2)	39.2361	9.3131	13.3426
INF (b3)	10.5979	8.7749**	-3.2541
MS (b4)	-8.3883**	-5.1468***	8.4315
LR (b5)	10.2513	-39.428***	-171.5079***

Note: *, **, *** are corresponding to the levels of significance 10%, 5%, 1%

Source: The result of researchers

The regression results indicate that as FFR rises, FTSE_S and SETI will also rise. On the other hand, a rise in LR will result in a decline in the aforementioned indicators. Additionally, Singapore's stock index will fall as the US MS climbs.

Table 3. Results of the effect analysis of China MP

Coefficients	SAIPHAN_VNI	FTSE_S	SAIPHAN_SETI
CONST (b0)	1.5635	333.4083***	32.0615**
SAIPHAN_CIR (b1)	37.4128	0.9589	-38.5250
CTBR (b2)	-0.6207	0.2364	-10.4591
CINF (b3)	10.9780**	-2.7276**	1.9233
SAIPHAN_CMS (b4)	-0.2227	-1.8837***	-2.2459
CLR (b5)	0.3773	-2.3699	4.8482

Note: *, **, *** are corresponding to the levels of significance 10%, 5%, 1%

Source: The result of researchers

The regression findings indicate that, in contrast to the Singapore stock market, the VNIndex will rise when China's inflation rises. Additionally, the FTSE_S index decreased as China's M2 money supply rose. Statistics indicate that China's MP has little impact on SETI.

Conclusions and policy implications

The author thinks that it is still prudent to focus more on US MP at the moment. Every shift in US MP generates issues for top officials in other nations since the US is a country with a currency that has the potential to control the global economy.

The dollar has influence and exerts pressure on each nation's exchange rate regime. The whole stock market trembles as a result of every Fed decision, and the US stock market is no different.

In particular, the US stock market and the stock market in Southeast Asia frequently move in lockstep. Trading data demonstrates that the SETI, FTSE_S, and Vietnam stock markets frequently do not reflect as favourably as Wall Street. The strength of other nations' domestic currencies will weaken due to the dollar's rise, and as a result, so will the value of their stock markets.

However, the study's findings indicate that China's MP also exerts significant pressure on the stock market in the area, in addition to the US's MP, which has a spillover impact on the stock markets

of Asian nations. It may be claimed that each shock to China's MP will result in a variety of responses in various nations and time periods.

As a result, central banks of nations whose economies are impacted by the Great Powers' MP must always develop prompt reaction plans for every possible situation (negative, neutral, or positive).

To make it simple to test adjustments, central banks should decompose their MP goals. By doing this, they may anticipate opportunities and reduce risks for the financial sector, particularly the stock market.

The capacity of the central bank to employ MP instruments to accomplish the goals specified by the government is promoted by an independent central bank, which boosts the efficiency of MP execution.

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INTERNATIONAL ECONOMICS AND FINANCE

SUSTAINABLE DEVELOPMENT OF CORPORATE BOND MARKET: INTERNATIONAL EXPERIENCE AND SOLUTIONS FOR VIETNAM

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Abstract: *The study examines the current situation of the corporate bond market in Vietnam in the period of 2012-2022. The results from descriptive and comparative statistical methods show that the Vietnamese corporate bond market has achieved certain achievements, including impressive growth rates, affirming the role of an important capital mobilization channel. However, the market still has limitations such as signs of hot growth, low transparency of the market, low liquidity in the secondary market, and unsynchronized development of technical infrastructure. From lessons learned in the US and Japan, the study proposes a number of solutions to sustainably develop the Vietnamese corporate bond market.*

• Keywords: *bond market, corporate bond, sustainable development, Vietnam.*

Tóm tắt: *Nghiên cứu xem xét thực trạng thị trường trái phiếu doanh nghiệp tại Việt Nam giai đoạn 2012-2022. Kết quả từ phương pháp thống kê mô tả và so sánh cho thấy thị trường trái phiếu doanh nghiệp Việt Nam đã đạt được những thành tựu nhất định, trong đó có tốc độ tăng trưởng ấn tượng, khẳng định vai trò là kênh huy động vốn quan trọng. Tuy nhiên, thị trường vẫn còn những hạn chế như có dấu hiệu tăng trưởng nóng, tính minh bạch của thị trường chưa cao, thanh khoản trên thị trường thứ cấp thấp, hạ tầng kỹ thuật phát triển chưa đồng bộ. Từ bài học kinh nghiệm của Mỹ và Nhật Bản, nghiên cứu đề xuất một số giải pháp nhằm phát triển bền vững thị trường trái phiếu doanh nghiệp Việt Nam.*

• Từ khóa: *thị trường trái phiếu, trái phiếu doanh nghiệp, phát triển bền vững, Việt Nam.*

1. Introduction

Since the beginning of 2020, the Covid-19 pandemic has caused serious harm to more than 205 countries and territories worldwide, in all aspects, both economic and social, from micro to macro level, from immediate to long term. According to the International Monetary Fund (IMF), in 2020, global GDP will grow negative 4.2 - 4.4%; global trade fell by more than 10%; FDI has decreased by about 40%; world public debt skyrocketed, now equivalent to more than 103% of global GDP. According to the report of the General Statistics Office (2020), Vietnam has 46.6 thousand enterprises suspending business for a definite time, nearly 37.7 thousand enterprises suspending operations pending dissolution procedures, nearly 17.4 thousand enterprises completed dissolution procedures, on average, nearly 8.5 thousand Vietnamese enterprises withdrew from the market every month. These unprecedentedly large numbers have prompted governments around the world, including Vietnam, to change their approach to the pandemic, moving from "no Covid" to "safe and flexible adaptation, effectively control the Covid-19 epidemic". Therefore the New Normal was born, opening a new page for the recovery of the global economy after more than two years of straining with the pandemic.

Since 2020, the Vietnamese Government has continuously offered very synchronous, timely and effective financial solutions to support businesses affected by the Covid-19 epidemic including the policies of postponement, exemption and reduction of taxes, fees, charges, tax incentives; promoting disbursement of

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public investment capital for key political tasks in 2020 and 2021; the program to support 2% interest rate for business households, cooperatives and enterprises; guiding credit institutions to restructure debt repayment terms, exempting fees, maintaining the same debt group to support customers affected by the Covid-19 epidemic; ... However, due to the sudden increase in demand for loans while the credit limit that the State Bank grants to offer institutions every year is limited, businesses have switched to issuing corporate bonds - medium and long-term debt instruments, with simpler capital mobilization procedures. Over the past 10 years, from 2012 to the end of 2021, the total size of bond outstanding loans in Vietnam has grown by an average of 23% per year, of which, outstanding loans of corporate bonds have grown by more than 42% per year, twice nearly 2.5 times the growth rate of total outstanding government bonds of all kinds (18% each year). In particular, this number will be 56% in 2021, ranking first in Asia and far ahead of many developed countries in the world. The corporate bond market in Vietnam has really become the main capital channel, the second blood vessel of the economy, significantly reducing pressure on the bank credit channel, keeping the balance for the capital market in particular and the financial market in general.

The use of corporate financial leverage is also a double-edged sword when it can increase the return on equity for businesses with a good business model, an effective capital use plan, but at the same time, it also increases the burden of interest expense and debt repayment pressure, reduces the profits of weak enterprises, mobilizes capital for unclear purposes, and uses capital inefficiently. The phenomenon of issuing corporate bonds massively in Vietnam in the past 5 years has caused the total outstanding loans of corporate bonds to increase by nearly 50% per year, with more than 90% of the market share being issued by private placement. Nearly 80% of issuers which are unlisted enterprises (excluding commercial banks) have raised big questions about the transparency of the market in general and the efficiency of capital use of

issuers in particular. Therefore, it is necessary to study experience from the operation of the bond market in developed countries to propose solutions for the sustainable development of the corporate bond market in Vietnam.

2. Situation of Vietnamese corporate bond market

In Vietnam, the bond market in general and the corporate bond market in particular have formed before the stock market since the 1990s and began to develop in 2000s with the establishment of Ho Chi Minh city Stock Exchange (HOSE). In the period from 2007 to now, the corporate bond market has grown stronger to meet the capital mobilization needs of Vietnamese enterprises in the process of international economic integration.

Regarding the market size, the size of total bond outstanding in Vietnam from 2012 to 2021 has grown by an average of 23% per year, from about 538 trillion dong at the end of 2012 to more than 3600 trillion dong by the end of 2021. In which, outstanding balance of corporate bonds increased from 63 trillion to 1500 trillion dong, an average annual growth of more than 42%, nearly 2.5 times the growth rate of total outstanding loans of government bonds of all kinds (18% per year). In particular, in the past 3 years (2018-2021), the size of the corporate bond market in Vietnam has witnessed a sudden growth in total outstanding loans, up to nearly 48% per year.

**Figure 1: Size of total bond outstanding balance in Vietnam (2012 - 2021)**
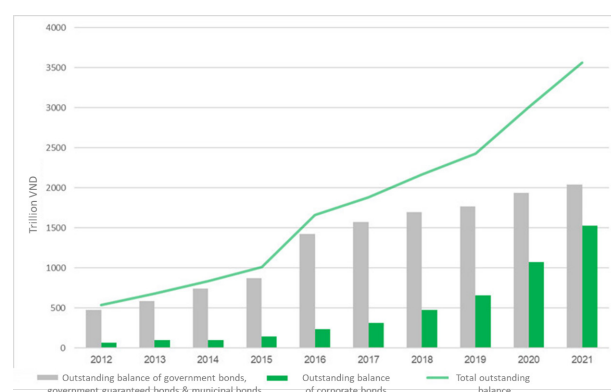
Source: Author compiled from Asian Bonds Online

In terms of the scale of issuance over the past 10 years, the corporate bond market has also marked remarkable growth. If the scale of issuance of corporate bonds only fluctuated around 32 trillion dong each year from 2012 to 2015, an average of 350 trillion dong was issued each year within the last 6 years (2016-2021), increasing 10 times compared to the previous period. In particular, from Figure 2, the scale of corporate bond issuance only accounted for 12% of the total issuance size of the bond market and was equal to 1/5 of the government bond issuance scale in 2012. However, by 2021, the corporate bond market has accounted for nearly 66% of the total issuance volume of the entire bond market in Vietnam, double the issuance size of the government bond market in the same period. It can be seen that 2021 is really a sublime year for the corporate bond market in Vietnam. According to VBMA report (2021), there were total of 964 domestic corporate bond issuances with a total value of 595 trillion dong. The cumulative issuance volume in December 2021 shows that businesses are "rushing" to issue before a number of new regulations tightening the operation of the corporate bond market will take effect at the beginning of 2022 as Circular 16/2021/TT-NHNN stipulating the purchase and sale of corporate bonds by credit institutions and foreign bank branches. In addition, a draft decree amending and supplementing a number of articles of Decree No. 153/2020/ND-CP on private placement of corporate bonds is also expected to be issued soon and Circular 122/2020/TT-BTC providing guidance on information disclosure and reporting prescribed in Government's Decree No. 153/2020/ND-CP.

Due to the influence of recent drastic actions to correct the operation of the stock market from the Government, the total value of corporate bonds issued in the first half of 2022 is estimated at 176,867 billion dong, a sharp decrease of 23.7% over the same period in 2021. The value of corporate bonds issued in Q2/2022 was only 111,814 billion dong, down 43.7% over the
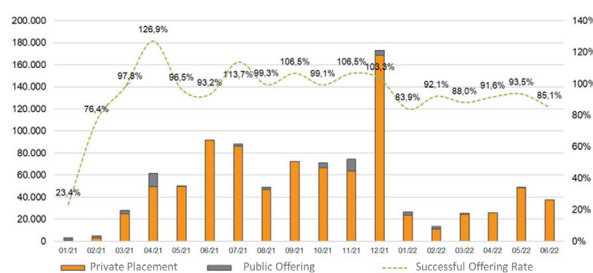
same period last year.

Figure 2: Issue size of the bond market in Vietnam (2012 - 2021)
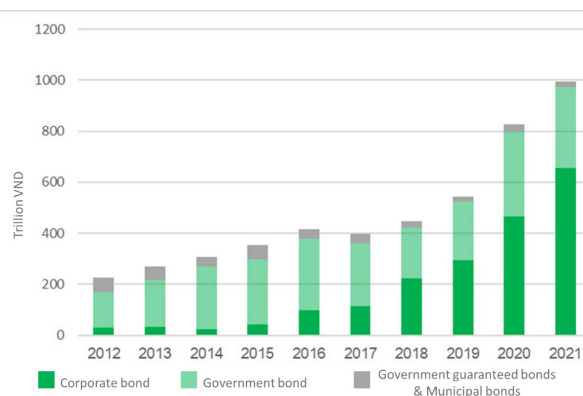
Source: Author compiled from Asian Bonds Online

Figure 3: Value and successful issuance rate of corporate bonds (January 2021-06/2022)

Source: Fiinpro, VNDIRECT RESEARCH

Thus, it can be assessed that the corporate bond market in Vietnam has recently developed very quickly and got some certain achievements. Firstly, the market has recorded an impressive growth rate. From 63 trillion dong in 2012, the scale of outstanding loans of corporate bonds has increased to 1500 trillion dong by the end of 2021, an increase of nearly 24 times. The scale of outstanding loans of corporate bonds accounts for more than 18% of nominal GDP, equivalent to the size of the Japanese market, and 2.5 times the size of the Philippine market, 9 times the size of the Indonesian market. This impressive growth rate shows that the market-building efforts of the Vietnamese Government over the past 30 years since the 1990s, especially since joining the WTO until now, have achieved proud achievements. Secondly, the market has affirmed its role as an important capital channel in the economy. The corporate bond

market witnessed growth in both the number of issuers and investors buying bonds, growth in both the size of the primary issue and the volume of secondary transactions, showing that the market's liquidity has improved significantly. Obviously, the corporate bond channel in Vietnam has tended to balance with the bank loan channel, reducing pressure on the system of credit institutions, contributing to the sustainable development of the capital market in Vietnam.

However, besides the achieved results, the Vietnamese corporate bond market still has some limitations. At first, the corporate bond market is showing signs of hot growth. Despite the context of the Covid-19 pandemic when the production and business situation is facing difficulties, many businesses, especially the real estate sector, still massively mobilized corporate bonds in large volume with short term, pushing up interest rates up very high (10-13%) exceeding the financial capacity of the enterprise. In particular, the volume of corporate bonds to maturity concentrated in the period of 2023-2024 is very large, at 271,400 billion dong and 329,500 billion dong, respectively (VBMA report, 2022), mainly bonds of real estate businesses and credit institutions. The hot growth of the corporate bond market over the past time has raised concerns about risks when production and business activities face difficulties and cannot issue new issuance to "reverse debt" due to legal regulations increasingly strict, many enterprises will be at risk of not being able to pay bond principals and interests according to bond commitments. Second, the transparency of the market is not high. On the issuer's side, many businesses take advantage of the issuance of corporate bonds to raise capital for impure purposes such as acquiring assets, projects, blowing up real estate prices, blowing up stock prices... There are new businesses established, weak financial capacity, information about the business is still very vague but still issued bonds without secured assets. Some securities companies and commercial banks are also showing signs of aiding these businesses in

issuing bonds when they become primary buyers, issuance consultants, and underwriters... Many businesses are slow in disclosing information, publishing false information or hiding information in issuance activities... The corporate bond market is increasingly large, but lacks publicity, transparency, basically does not comply with the provisions of the law in information disclosure, there are many risks to the financial market when some businesses take advantage of issue corporate bonds to launder money; manipulate financial markets, real estate through acquisition of businesses, land; debt reversal; legitimize cash flow; tax evasion... and other illegal acts. Third, liquidity and trading in the secondary market are still low. After buying bonds in the primary market, except for securities companies, which will mainly sell to individual investors, the remaining professional investors will mainly hold bonds until the maturity date or until the date the issuer exercises the right to buy before the due date. Therefore, liquidity and transactions on the secondary market of corporate bonds are still not active. Finally, technical infrastructure is not yet developed synchronously. The quality of technical infrastructure is considered one of the important factors for sustainable development of the corporate bond market and promoting market liquidity through simplifying and digitizing transactions. However, compared with international practices and the domestic stock market, the Vietnamese corporate bond market still does not have a number of systems such as registration for issuance/licensing online offering; Standard bidding system,...

3. International experience and solutions for sustainable development of the Vietnamese corporate bond market

US corporate bond market

The United States financial market, including the corporate bond market, is the largest market in the world, having undergone nearly 200 years of establishment and development. The bond market plays an important role in the US financial system because of the participation of many investment banks, large investment funds,

especially the pension fund of the American people (pension fund). In the US, both bond issuers and bond mutual funds and exchange-traded funds are required to submit periodic reports to the U.S. Securities and Exchange Commission (SEC). The company that issues bonds to the public must report quarterly using Form 10-Q and annually using Form 10-K, in addition to many other forms of SEC that regulate information disclosure of the company. Investors can use these reports to learn and monitor the financial health of companies. Mutual funds and exchange-traded funds are required to submit annual and semi-annual reports detailing the investment performance and performance of the fund. Investors can easily find these reports on the SEC's website or the websites of these investment funds.

The US corporate bond market has a special area for foreign businesses to issue and trade bonds in the US in USD called the Yankee bond market. Yankee bonds have similar characteristics to domestic corporate bonds, but differ only in equitization and tax mechanism. Yankee bonds can bring a number of benefits to both issuers and investors, such as: low cost of raising capital due to lower bond interest rates in the US than in other countries, size of US bond markets and the dynamism of the US bond market. Investors here facilitate large-volume corporate bond offerings, lending conditions in the US are somewhat "easier" allowing equitization to be more flexible in terms of offering .

The US financial market in general and the US corporate bond market in particular has experienced many ups and downs, typically the 2008 financial crisis, through which many lessons have been learned. Firstly, the implementation of fiscal-monetary policy must be extremely sensitive and flexible, loosening to promote economic growth must go hand in hand with regulation and control of capital flows, preventing the free flow of capital. and then flows into real estate, causing economic bubbles, while businesses that really need capital for production and business, recovering after the pandemic, do not have access to capital flows. Secondly, the role of regulatory agencies in regulating market operations and timely regulatory action for new financial products is extremely important. Failure to fully identify risks, shortcomings in relevant legal provisions and loose control in the mass issuance of securitization instruments, to then invisibly created tools for credit institutions to take advantage of, continuously pumped money and poured into subprime loans, which was the main cause of the real estate bubble and the 2008 US financial crisis. Thirdly, the capacity and professional ethics of credit rating agencies are very important in the financial market in general and the corporate bond market in particular.

Japanese corporate bond market

The corporate bond market in Japan consists of three components: the listed bond market (mainly convertible bonds) managed by the Japan Stock Exchange, the over-the-counter (OTC) corporate bond market managed by JSDA, and the corporate bond market for Professional Investors (Tokyo Pro Bond) under the management of Tokyo AIM Exchange. In Japan, most transactions are done via the system and rarely through order-matching because bond transactions are usually large value transactions.

Bonds issued to the public in Japan are required to have credit rating agencies. There are 7 credit rating agencies licensed to operate in Japan, and the corporate bond ratings given by these agencies have a great influence on the decision making of investors in Japan. On the initial steps of building a system of credit rating companies, Japan encourages the establishment of credit rating companies on the basis of association with prestigious international organizations including S&P, Moody's and Fitch, then step by step proceed to establish social enterprises of its own in the Japanese market.

After the Asian financial crisis in 1998 and the global financial crisis in 2008, the Japanese government recognized the importance of an efficient and sustainable corporate bond market

in providing medium and long-term loans for business. The Japanese Government together with related agencies and financial institutions have researched, proposed and applied many reform contents in order to accelerate the development of the corporate bond market.

Solutions for the Vietnamese corporate bond market

Based on lessons from developed corporate bond markets comprising the US and Japan, a number of solutions are proposed to sustainably develop the Vietnamese corporate bond market as follows. First, capacity building of bond issuers in order to gradually develop the market in a sustainable and progressive direction, in line with international practices and to keep up with developed markets. It is necessary to start right from the enterprise - the first entity that arises the need for capital. and issue corporate bonds. Therefore, businesses need to carefully research and consult with legal consulting organizations and issuance consultants to ensure a clear understanding of the provisions of the law related to the field of operation of the business as well as the law. regulations related to corporate bond issuance. At the same time, issuers need to respect the law, absolutely comply with relevant laws as well as do not take advantage of loopholes to circumvent the law in corporate bond issuance and use post-issuance capital to avoid possible risks, especially legal risks. Moreover, businesses need to actively transform and apply International Financial Reporting Standards (IFRS), build a solid corporate risk management framework and apply for a credit rating. The application of IFRS and risk management framework not only helps businesses in Vietnam improve their management capacity, accounting reporting according to international standards but also a transparent basis to attract investors, especially foreign investors. In addition, reporting according to IFRS standards with many strict regulations also helps to make business activities more transparent than the old Vietnam Accounting Standards (VAS), helping investors to analyze, evaluate and compare businesses. businesses with each other, helping

credit rating organizations have a clearer basis to make ranking decisions that are closest to the financial health of businesses. Last but not least, businesses need to be more proactive, apply more flexibly and diversify capital mobilization methods to optimize. Recently, many businesses still rely too much on corporate bonds as a tool to easily issue debt when they cannot borrow from banks, use capital arbitrarily, ineffectively, and easily face maturity risks, or the risk of illiquidity when it is not possible to issue further to reverse debt in the context of the frozen bond market. Besides the corporate bond channel, businesses can optimize capital through mobilizing from shareholders, from retained earnings, from bank loans, or by optimizing receivables and payables to compensate temporary liquidity in case of need. In addition, currently when medium and long-term capital mobilization channels such as corporate bonds and bank credit are facing difficulties, businesses can consider changing their strategies and business models to optimize their resources.

Second, developing the market for credit rating and rating services. The development of the credit rating service market in both quantity and quality is an urgent solution at present, in order to increase publicity, transparency, and improve the quality of issued corporate bonds. Simultaneously, it helps investors get used to using credit rating results to assess the risks of bonds, approaching international practices. Thus, it is necessary to coordinate with some of the world's leading reputable credit rating agencies including Moody's, Fitch, S&P and request the support of international organizations such as ADB, World Bank to develop credit rating services in the country towards international standards, with high use value and widely recognized. Forms of cooperation can be through dissemination activities, market training on credit rating activities or the establishment of joint venture enterprises, capital contribution between foreign credit rating agencies and domestic enterprises to provide services in the Vietnamese market. The combination of analysis, evaluation and rating models, reputable

worldwide proven methodologies of major rating agencies with the deep understanding of Vietnam's financial market of enterprises in the world. Furthermore, it is essential to expand the scope of compulsory corporate governance for public offerings and private placement as well as increase the awareness of investors (both individuals and organizations) in the use of credit rating results through educational activities, propaganda, conferences, seminars, and information sharing to investors about credit rating activities concurrently. On the other hand, specific incentives and mechanisms for newly established credit rating companies are necessary to promote the development of the credit rating service market. However, it must be accompanied by the promulgation of very strict regulations to manage the activities of this field so as to maintain independence and objectivity in the credit rating, to avoid negative situations and collusion between credit rating agencies and bond issuers.

Third, strengthen the capacity of intermediary institutions. In order to improve the efficiency of capital mobilization along with saving time and costs of issuance, it is important to promote the role of intermediary institutions providing services to the corporate bond market consisting of underwriting, payment guarantee, distribution agent, depository agent, special asset management agent, clearing center, stock exchanges, independent audit unit, valuation unit,… Currently, the legal framework on organization, operation and responsibilities of service providers in the corporate bond market has been promulgated in the Law on Securities and the accompanying Decrees and Circulars. Therefore, one of the key solutions to develop a healthy and sustainable market in the coming time is to improve the capacity and compliance of these organizations. Hence, it is necessary to regularly organize seminars, training conferences, and short-term training courses for staff to improve professional capacity, update new knowledge and products, along with strengthening deliberately comply with the professional ethics rules of the aforementioned

intermediary organizations. Only when these members really comply with professional ethics rules, maintain independence and objectivity along with regular professional training, can they operate the corporate bond market in a healthy and safe manner. efficient, closer to international standards. In addition, it is indispensable to continue to amend and complete the provisions of the law related to the operation of these organizations, to strengthen the responsibility of these organizations regulated by the law if there are any violations; at the same time, strengthen inspection and examination of issuance consultancy, underwriting, bond depository, bond distribution & brokerage, special asset management,... at securities companies and commercial banks, and strictly handle the case of violations, strengthen transparency for the market, protect investors.

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E-WALLET POLICY IN MALAYSIA AND LESSON LEARNED FOR VIET NAM

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Abstract: *The use of digital payment solutions such as e-wallets in Southeast Asia has exploded over the past few years. Malaysia is quite a successful country in terms of e-wallets when the Government introduced a series of measures to boost the number of users using e-wallets. The Covid-19 pandemic has brought significant changes in consumers' lifestyles, especially affecting the use of e-wallets in Malaysia. Currently, more than half of Malaysia's population is using e-wallets on a daily basis, making it one of the rapidly growing payment methods in the country. This paper aims to study the policies that the Malaysian Government has implemented to develop e-wallets to achieve the goal of non-cash payment. From the experiences of Malaysia, this paper will propose some lessons for Vietnam in order to improve the policy to support the use of e-wallets in Vietnam today.*

Tóm tắt: *Việc sử dụng các giải pháp thanh toán kỹ thuật số như ví điện tử ở Đông Nam Á đã bùng nổ trong vài năm qua. Malaysia là quốc gia khá thành công về ví điện tử khi Chính phủ đưa ra hàng loạt biện pháp nhằm thúc đẩy số lượng người dùng sử dụng ví điện tử. Đại dịch Covid-19 đã mang đến những thay đổi đáng kể trong lối sống của người tiêu dùng, đặc biệt ảnh hưởng đến việc sử dụng ví điện tử tại Malaysia. Hiện tại, hơn một nửa dân số Malaysia đang sử dụng ví điện tử hàng ngày, khiến nó trở thành một trong những phương thức thanh toán đang phát triển nhanh chóng tại quốc gia này. Bài viết này nhằm mục đích nghiên cứu các chính sách mà Chính phủ Malaysia đã thực hiện để phát triển ví điện tử nhằm đạt được mục tiêu thanh toán không dùng tiền mặt. Từ kinh nghiệm của Malaysia, bài viết này sẽ đề xuất một số bài học kinh nghiệm cho Việt Nam nhằm hoàn thiện chính sách hỗ trợ sử dụng ví điện tử ở Việt Nam hiện nay.*

• Từ khóa: *ví điện tử, chính sách, Malaysia.*

1. Introduction

Southeast Asia is considered a potential market in many digital fields, including the electronic

payment sector. Malaysia is considered one of the leading countries in the development of the fintech industry in Southeast Asia. With high mobile phone and internet usage rates and strong government support for the digital economy, Malaysia is positioned to take advantage not only of financial technological innovation but also of strong growth in this sector. Electronic payment built by the Malaysian Government is a gateway to support the deployment of a cash-free ecosystem. The Malaysian government has introduced many policies to motivate and encourage users to use more cashless payments, including electronic wallets. The electronic wallet is a digital version of the physical wallet that people usually carry theo (Singh, Sinha, & J. Liébana-Cabanillas, 2020). Using an electronic wallet helps users to trade efficiently and quickly (Karim, Haque , Ulfy, & Hossain, 2020).

In Malaysia, Bank Negara Malaysia (BNM), the national financial industry regulator, has issued 49 licenses to non-banking electronic money issuers and 6 banks so far (Bank Negara Malaysia, 2023). The Covid-19 pandemic has hit Malaysia's economy hard, but it has also created opportunities and circumstances for electronic wallets to grow stronger due to the need for

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non-contact payments, even without Covid-19. Malaysia's electronic wallet market is poised for strong growth partly due to the region's favorable demographics and many government initiatives to promote a cashless society. So far, the Malaysian Government has come up with many policies to help the e-wallet grow in this country.

In Vietnam, after Covid-19, more than 80% of consumers are using cards, paying through QR codes and electronic wallets at least once a week, and nearly 76% of current consumers are using electronic wallets (VISA, 2022). According to the State Bank, from May 2020 to October 2022, the number of non-bank institutions issued by the State Bank for Intermediary Service Provision increased from 34 companies to 48 companies. In the report of Meta and Bain & Company, Vietnam is expected to be the fastest-growing e-commerce market in Southeast Asia by 2026 (SYNC, 2022). In the Vietnamese e-commerce White Paper publication in 2022, Vietnam was identified as the second largest market after Indonesia, in the Southeast Asian e-commerce sector (Vietnam E-commerce and Digital Economy Agency, 2022)

With the potential to develop e-commerce as it is today, Vietnam is a potential market to facilitate the development of e- wallet payment services. However, in order for the development of the e-wallet to be in the right direction, it is necessary to learn experiences in policies and regulations for developing e-wallets such as Malaysia to learn practical lessons for Vietnam, thereby giving consumers more experience and better protection when using e-wallets.

2. Overview of the electronic wallet market in Malaysia

2.1. Regulations regarding the release of Electronic Wallets in Malaysia

Electronic money is stored in an electronic wallet. Electronic money in Malaysia is regulated under the Financial Services Act 2013. Electronic money is defined as a payment tool, tangible or intangible, that store's electronic money in exchange for money paid to the issuer and can be used as a means of payment to anyone other than the issuer (Malaysian Government, 2013).

Under Section 11 of the Financial Services Act 2013, approval from Bank Negara Malaysia (BNM) must be obtained before issuing any designated means of payment, including electronic money. The electronic wallet in Malaysia must obtain a license from Bank Negara Malaysia (BNM). An electronic money issuing organization (EMI) is defined as any person who is responsible for payment obligations and is legally responsible for electronic money issued. Before 2005, electronic money was only allowed to be issued by banks. However, the position changed after 2005 and non-banking organizations were allowed to issue electronic money after obtaining approval from the BNM.

BNM has issued the Electronic Money Manual, which will be followed by EMI or those seeking approval to become EMI. The guidance provides specific and operational requirements that EMI must meet or comply with. The main regulatory objective of the Guide is to promote the safety and soundness of the electronic money system, thereby strengthening users' confidence in the use of electronic money.

* How to register an electronic wallet license in Malaysia

The Registrar for Electronic wallet business license shall send a written application to the BNM with a letter of recommendation and documents to be prepared in accordance with the instructions given in the Request to the Application for approval of the operation of the payment system or the Issuance of the Designated Payment Instruments or to be provided to the Seller.

* Electronic wallet compliance and operation requirements

- The guidelines for electronic money clearly state that the electronic wallet must submit to the bank annual audited financial statements and monthly statistical reports on the operation of the electronic money program

- Maintain separate records and accounts for electronic money activities from other business activities

- Money will not be invested in any asset other than bank deposits

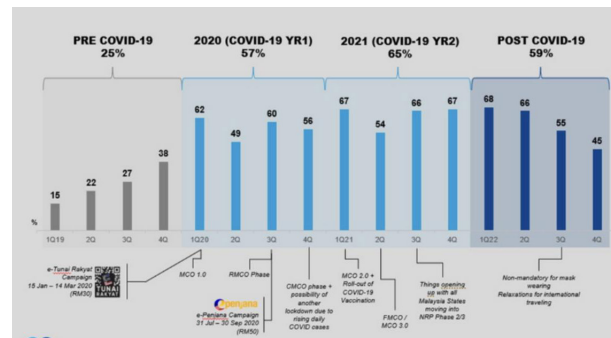### 2.2. Actual use of electronic wallets in Malaysia

According to the 2021 Mobile Wallet report (Boku, 2021), Malaysia is a country with nearly 3 times more GDP per capita than Indonesia and the Philippines. As of 2022, Malaysia achieved a GDP of 383.8 billion MyR (nearly USD 85 billion) in the third quarter of 2022 (Department of statistics Malaysia official portal, 2022). The slow adoption of mobile payments in Malaysia is due to the slower entry of the electronic wallet market than other countries in Southeast Asia. However, according to this report, the electronic wallet market in Malaysia will grow exponentially in the next 5 years with the number of users tripling and transactions increasing by 10 times. A 2022 study by Paynet (Paynet, 2022) found that 96% of Malaysians who use the electronic wallet application are monthly users. As you can see, the e- wallet is quickly becoming one of the most popular payment methods for online shopping in Malaysia.

Malaysia has many kinds of digital wallets available. Samsung Pay, which was introduced in 2017, is one of the first electronic wallet brands and is closely followed by other familiar names such as Alipay and BOOST, which have been popular so far. Touch 'n Go, GrabPay, and WeChat Pay entered the market in 2018 and quickly became popular in the Malaysian market. In 2020, Shopee Pay was introduced in line with the rapid growth of Shopee usage among Malaysian consumers. The entry of many e- wallet providers led to increased competition among e-wallet brands in Malaysia, some of which had to stop operating in this fierce game such as V Cash and Razer Pay.

According to OPPOTUS (Oppotus, 2022) report: As of the fourth quarter of 2021, more than 50% of Malaysia's population uses electronic wallets every day for payment. The average Malaysian spend on electronic wallets remains stable every year (about RM265 equivalent to nearly USD 60 per month). Among them, the highest was during the Covid-19 period with social reform, where the Malaysian government used incentives by giving free credit when registering to use electronic wallets, which

greatly increased the use of electronic wallets in Malaysia.

Figure 1: Number of electronic wallets over periods Q1/2019-Q4/2022

Source: (Oppotus, 2022)

3. Policies to Promote the use of Electronic Wallet in Malaysia

3.1. Financial stimulus packages offered by the Malaysian Government

* eTunai Rakyat Initiative - 450 million RM ($110 million) stimulation package through e-wallet players

The e-Tunai Rakyat initiative - an initiative to promote digital culture and transition to a cashless community designed to expand domestic digital payment options and encourage the adoption of digital payment between Malaysian consumers and traders, especially small retailers. The initiative helps the government to ease concerns about the cost of living in the country. This is part of the government's commitment to implement a common well-being program by reducing barriers to access to digital technology, making digitalization comprehensive for all and improving domestic financial comprehensiveness.

Accordingly, in January 2020 the Malaysian government gave a total of 450 million RM (110 million USD) to about 15 million citizens of the country to promote digital transactions, which is a great motivation for electronic wallet companies. Those eligible for support including all Malaysians aged 18 and over and earning less than 100,000 ringgit a year (more than $22,000) will be eligible for a one-time purchase allowance worth RM30 through one of the electronic wallets.

Selected electronic wallet organizations include: Boost, GrabPay, and Touch'n Go.

Participating e- wallet service providers were selected based on four criteria:

+ Large number of active users: This is to ensure that the e-Tunai Rakyat initiative has a wide range of access to eligible Malaysians.

+ Broad commercial network: This is to enable many traders to take advantage of incentive spending, while consumers can enjoy a wide range of options for goods and services.

+ Technical expertise, financial and human resources to develop systems, processes and procedures necessary for the initiative and ability to handle large amounts of transactions in a short period of time.

+ Electronic wallets have invested significantly in their respective services in Malaysia.

The participation of the three largest electronic wallet players in Malaysia in e-Tunai Rakyat also encourages healthy competition among these players, which is great news for consumers.

The eTunai Rakyat initiative will provide tremendous benefits to Malaysian consumers and traders while achieving the stated goals of continuing Malaysia's transformation towards becoming a vibrant digital society and economy.

The government's initiative on electronic wallets will be a driving force for growth and enable the development of a secure and continuous e-commerce industry.

* *PRIHATIN rakyat economic stimulus package worth 250 billion RM ($56 billion)*

The PRIHATIN Rakyat economic stimulus package is a government policy and initiative, following the e-Tunai Rakyat package to help boost the economy during a recession or recession.

The package's money has been allocated to:

+ Protect the welfare of the people

+ Support for small and medium enterprises

+ Support the medical front in the fight against Covid-19

Similar to the e-Tunai Rakyat initiative package. The number of government subsidies to the people was also transferred to the electronic wallet during the period when Malaysia was heavily influenced by Covid-19 while providing maximum support in promoting electronic payment through the development-oriented electronic wallet to a cashless society in Malaysia.

* *Short-term economic recovery plan (PENJANA)*

In 2020, in order to revive the economy that has been weakened by the Covid-19 pandemic, a series of economic stimulus plans were introduced by the Malaysian government. The Malaysian government has announced an allocation of 750 million RMs to promote the application of electronic wallets in Malaysia. One motivation comes from the short-term National Economic Recovery Plan, which is designed to boost domestic spending for local merchants and increase the rate of electronic and mobile payments for offline goods and services and domestic materials. That includes the ePenjana program worth 176 million U.S. dollars that provides subscribers with free government-sponsored 11.76 U.S. dollars (along with other 11.76 U.S. dollars discount, refund, and bonus points from ePenjana providers themselves) set to run from July to September 2019. (Giachi, 2021).

The National Economic Recovery Plan (PENJANA) is a deployment plan to revive the nation's economy, which has been adversely affected by the COVID-19 global pandemic.

PENJANA outlines a short-term recovery plan based on sessions involving more than 100 stakeholders including the public and private sectors.

The implementation of PENJANA is guided by four (4) key principles:

+ PENJANA's initiatives will be constantly perfected based on priorities and needs.

+ Public-private sector cooperation, not limited to Government-affiliated firms or Government-affiliated investment firms.

+ Transparent and open to the public all initiatives and their results.

+ Each initiative is monitored to allow measures to be refined as quickly as necessary and to ensure that assistance reaches target beneficiaries quickly and accurately. Data from 53 ministries and agencies were collected, analyzed and shared with implementing agencies to achieve continuous improvements through the LakSANA unit, namely the National Inter-sectoral Economic Coordination and Implementation Unit under the Ministry of Finance.

* Other regulations

In early 2021, the federal government introduced "eBelia," which brings Malaysian teenagers eligible for one-time credit RM150 into their e- wallet accounts: Boost, ShopeePay, Touch'n Go or BigPay (Ministry of Finance Malaysia, 2021).

On May 5, 2021, former Prime Minister Tan Muhyiddin Yassin awarded "Jaringan Prihatin" worth 3.5 billion RM of a support program for registration of broadband internet package and mobile smartphone for convenience purchase (Malaysian Communications and Multimedia Commission, 2021). The Government has implemented the Small Business Digital Rights Program to encourage digitalization and improve non-cash transaction management. The government earmarked 200 million RMs for MSMEs and 100 million RMs for SMEs (Malaysian Communications and Multimedia Commission, 2021). "eBelia" was renamed "eBelia Pemmerkasa" for young people in the same category in the second half of 2021 through Boost, Touch'n GoeWallet and GrabPay (Ministry of Finance Malaysia, 2021).

In a similar way, the Sarawak government has subsidized non-contact payments to small businesses and street vendors starting in 2020. Unlike the federal government, Sarawak Government focuses on penetrating Electronic Wallet among Sarawakian retailers. In 2020 and 2021, the Sarawak government launched "Bantuan Khas Sarawakku Sayang (BKSS) 2.0" and "BKSS 6.0," in which each eligible recipient will receive 1,500 RMs in two phases (a total of 3,000 RMs) through Sarawak Pay from September 2021.

3.2. Regulations for the use of electronic wallets

In order to ensure the benefit of users and promote the use of electronic wallets the Malaysian government has issued regulations and guidelines in the Financial Services Act 2013 (758) clearly showing the Official Laws and Regulations for Electronic wallets. The general principles and minimum standards must be followed specifically by the E-Money wallet/electronic money issuer specifically instructed. With such distinct regulations, it is simple for individuals in Malaysia to register and for organizations providing electronic wallet services in Malaysia to comprehend their roles and responsibilities when participating in the provision of such services. To accelerate the transition to electronic payment such as mobile electronic wallets, Bank Negara Malaysia has made great efforts by introducing several frameworks to facilitate the transition such as Interoperability Credit Transfer Framework (ICTF) and Real-Time Retail (RPP). Through these efforts from Bank Negara Malaysia, many local e-money issuers including banks and non-banking are increasing the supply of mobile e-wallet platforms.

Several interventions have reshaped Malaysian consumers' perceptions of e-payment in general, contributing to its healthy growth.

+ Malaysia's implementation of the Motion Control Order (MCO) has shifted retail operations to online locations, leading to growth in digital payments.

+ The need has led to the conversion of electronic wallets, the most common among cautious demographic groups such as senior citizens and migrant workers, who initially did not use electronic payment technology but now use such services regularly.

+ The Malaysian government has started initiatives to encourage the use of electronic wallets.

3.3. Regulations on risk management of Electronic wallets

The problem of fraud, and insecurity is one of the biggest obstacles to using electronic wallets. In

addition to regulatory documents and guidelines on security when using electronic wallets, the Malaysian Government and the organizations that supply electronic wallets in Malaysia take various measures to strengthen the protection and security of user accounts. With the increase in reported fraud cases, the Malaysian government has set up a National Fraud Response Center to streamline cross-agency coordination to respond quickly to online financial fraud cases. On the online website of Bank Negara Malaysia, as well as those of service providers of e-wallet services, user manuals and precautions are offered to protect users from engaging in fraudulent online financial activity.

4. Lessons learned from Malaysia and recommendations for Vietnam

Currently, Malaysia is one of the countries with the highest rate of development of electronic wallets in Southeast Asia. So far, Malaysia is getting closer with the goal of targeting the cash-free economy in this country. It can be said that Covid-19 is also a major cause for people to change their payment habits. In particular, the Malaysian government plays a very important role in adopting economic policies to stimulate the use of electronic wallets. Although there are still many shortcomings in the design and implementation of policies on electronic wallets, the Malaysian government has generally introduced various measures and policies to facilitate the development of domestic electronic wallets. The delivery of economic stimulus packages through electronic wallets has achieved the expected results of the Malaysian government - helping the number of electronic wallet use increase after each policy package was introduced.

In Vietnam, the trend of electronic wallets is also growing. According to the current Visa (Visa, 2021), payment by electronic wallet in Vietnam is about 15%, which is twice as high as other forms of electronic payment. So far, the Vietnamese government has also taken many initiatives to promote the development of electronic payments, especially during the complicated Covid-19. The Government has introduced several policies to promote non-cash use, such as Decision 2545/QD-TTg, 30 December 2016, by the Prime

Minister, on approval of the development project of non-cash payments in Vietnam between 2016 and 2020; Directive 22/CT-TTg, 26 May 2020, by the Prime Minister on the promotion of non-cash payment development solutions in Viet Nam; the Ministry of Industry and Trade submitted to the Government a proposal for the National e-commerce Development Master Plan 2021-2025 and adopted in Decision 645/QD-TTg dated 15 May 2020. Decision 316/QD-TTg on the pilot approval of the application of telecommunications accounts for the payment of small-value goods and transactions was issued by the Prime Minister on March 9, 2021. With this decision, the government has accelerated the completion of non-cash payment procedures. The subjects of pilot application of telecommunications accounts for payment of small-value goods and services under this decision are enterprises. These businesses must have a license to provide electronic wallet services and establish a public terrestrial mobile telecommunication network. Policies and regulations introduced as government efforts to create a legal corridor, creating a favorable environment for the development of electronic payment systems including electronic wallets are also emphasized.

Vietnam is considered a potential development country for electronic wallets in Southeast Asia. Through market research and e-wallet policy in Malaysia, a number of lessons can be learned for Vietnam as follows:

Firstly, the development of the e-wallet requires robust government support and a commitment to fostering investor stability and confidence as a precondition for success. The government needs to finalize the legal documents on electronic wallet payments. Currently, regulations on electronic wallets in Vietnam are not comprehensive enough, so the government needs to provide a clear, concrete, tight legal framework to ensure that electronic wallets operate safely, thereby providing the basis for promoting the development of electronic wallets in Vietnam. A strong enough legal framework is a necessary and important tool for more efficient management of electronic wallet service providers, prevention

of unfair competition, prevention of risks in electronic payments, protection of user rights as well as delivery organizations and creating a sustainable development environment for the financial technology sector, pay without cash.

Secondly, necessary policies should be promulgated to boost the economy through electronic wallets. Financial stimulus programs such as expenditure assistance packages, subsidies, or investments through electronic wallets are effective measures to attract and encourage people and businesses to use electronic wallets more. These solutions promote growth and enable the development of secure and instant e-commerce.

Thirdly, there is a need for harmony between policies to encourage the development of electronic wallets and policies to manage and supervise modern financial services to promote electronic payments, including the promotion of the use of electronic wallets. Therefore, it is required to enhance legislation on information security and transparency in financial institutions while using e-wallets in order to protect the interests of parties, especially the user. This should be done in addition to stimulating the growth of e-wallet utilities. It is imperative that the rights and duties of the subjects that are engaged in payment activities be defined in a clear manner. From there, assure compliance with international standards and practices, as well as control hazards in accordance with rules. These practices and standards are either advocated by worldwide monetary and financial institutions or are typically utilized in a significant number of nations throughout the world.

Forthly, the inspection, supervision, and prevention of money laundering in the provision of electronic wallet services should be strengthened. Authorities shall strengthen investigation, detection, and handling of illegal acts (avoiding the use of e-wallet services for illegal activities); amend and supplement regulations related to prevention, prevention of money laundering, and administrative penalties for violations in the area of provision of payment intermediary services.

Fifthly, safety, security and cybersecurity are factors that have a huge impact on consumers' use of electronic wallets, so in addition to improving the legal framework, the government needs to take strong measures to promote people in the prevention of fraud, cyber fraud and establish specialized departments address security-related issues in electronic payments.

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