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POLICY IMPLICATIONS FOR RENEWABLE ENERGY DEVELOPMENT IN VIETNAM

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Abstract: *This paper emphasizes essential policy implications for the development of renewable energy in Vietnam. Despite remarkable strides in harnessing renewable energy, the country confronts challenges such as infrastructure and financal limitations, lack of harmonized policies, and a shortage of qualified human resources. The integration of renewable sources into the national grid poses additional hurdles. To address these issues, the paper proposes policy recommendations, underscoring the importance of restructuring and national support for investment, research, and development in the renewable energy sector. The collaboration with other national entities and international organsations is highly encouraged, along with the implementation of a well-regulated grid system and human resource development. By adopting these policies, Vietnam can effectively address challenges and position itself in the global transition towards sustainable energy.*

1. Introduction

In the field of sustainable development, countries across the globe are turning to renewable energy as a important solution to adapt to the new context. With the world facing an urgent need to combat climate change and limit fossil fuel use, the focus is firmly on sources such as sunlight, wind, water, geothermal and biomass. Vietnam is blessed with abundant natural resources suitable for renewable energy development.

Despite some achievements, Vietnam still confronts a series of challenges. Financial constraints, infrastructure gaps and lack of sound regulations pose significant obstacles to the adoption of renewable energy practices. Acknowledging and addressing these challenges is imperative to developing the right policies, which not only contribute to solving current obstacles but also pave the way for a more sustainable development.

This paper, therefore, delves into the realm of policy implications crucial for advancing renewable energy development in Vietnam. The first part examines global trends of renewable energy developement, the second part assesses Vietnam's current position, the next part analyses main challenges for Vietnam, and proposing context-specific policies, this paper seeks to contribute meaningfully to the discourse on clean energy, with a particular emphasis on Vietnam's distinctive trajectory.

This article delves into the area of important policy implications for promoting renewable energy development in Vietnam. The first part of the article reviews global renewable energy development trends, the second part evaluates the current status of Vietnam's renewable energy development, the next part analyzes the main challenges for Vietnam and Proposing policies appropriate to the specific context, this article hopes to contribute meaningfully to clean energy research, with special emphasis on the case of Vietnam

2. Renewable energy development trend in the world

Today, for many countries around the world, renewable energy has become a leading solution in addressing energy needs and sustainable development. The use of renewable energy on a global scale is increasing, especially in the electricity production sector. The trend of developing renewable energy in recent years has created a turning point in the development of the global energy system.

The rapid growth of renewable energy is reflected in the commitments of governments around the world. More than 170 countries have established renewable energy targets and nearly 150 countries have issued preferential policies for renewable energy development. The private sector also plays an important role in developing renewable energy on a global scale. This signals a growing consensus that renewable energy technologies will be the engine for sustaining growth

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and creating momentum for economic development. According to IRENA estimates, doubling the share of renewable energy to 36% by 2030 is completely economically and technically feasible.

Renewable energy use increased by 3.7% in 2019 at the global level. The use of renewable energy in electricity supply accounts for the majority of overall growth due to falling technology costs. In 2019, global electricity output from renewable energy increased by 440 TWh (6.5% compared to the previous year), the second highest increase after 2018. Wind power, solar power and hydropower together accounted for more than 85% growth in renewable energy, supplemented mainly by bioenergy. Wind power output increased by about 150 TWh annually, a major achievement in renewable power generation technologies, increasing the electricity supply rate from 4.7% to 5.2% in 2019. European Union, China China and the United States led wind power output growth with a mix of offshore and onshore projects operating and favorable weather conditions.

Solar power generation increased by about 130 TWh globally in 2019, second only to wind in absolute terms. The European Union, China, India and the United States contribute largely to the increase in solar energy production. Southeast Asia has seen a strong increase in solar power driven by an increase in new capacity in Vietnam (6 GW in 2019, up from 0.6 GW in 2018). Solar energy accounts for nearly 3% of global electricity output.

Hydropower continues to play an important role in the clean energy transition by providing electricity services and low carbon emissions. Bioenergy electricity production increased by 8%, maintaining the share of global electricity supply at around 2.5%. Growth is mainly driven by new projects in China. Other regions have also seen significant growth in large-scale biomass projects such as the UK, the Netherlands and Denmark.

3. Renewable energy energy development goals in Vietnam

The Renewable Energy Development Strategy was approved by the Prime Minister in Decision 2068/QD-TTg dated November 25, 2015 approving Vietnam's Renewable Energy Development Strategy to 2030, vision to 2050, accordingly, the strategy aims to encourage the mobilization of all resources from society and people for renewable energy development to increase access to modern, sustainable, reliable energy sources at affordable prices. reasonable for all

people; Promote the development and use of renewable energy sources, increase domestic energy supply, gradually increase the proportion of renewable energy sources in national energy production and consumption to reduce dependence on renewable energy sources. fossil energy, contributing to ensuring energy security, mitigating climate change, protecting the environment and sustainable socio-economic development.

Table 1: Vietnam's renewable energy development goals

Subsectors	2015	2020	2030	2050
Production using renewable energy (MTOE)	25	37	62	138
Share of total primary energy (%)	31,8	31,0	32,3	44
Electricity produced from renewable energy (TWh)	58 (35%)	101 (38%)	186 (32%)	452 (43%)
Hydropower (TWh)	56	90	96	
Pumped storage hydropower (MW)			2400	8000
Biomass for electricity generation (TOE)	0,3 (1%)	1,8 (3%)	9,0 (6,3%)	20,0 (8%)
Biomass for heat production (TOE)	13,7	13,6	16,8	23,0
Biomass for bioenergy (TOE)	0,2	0,8	6,4	19,5
Wind power (TWh)		2,5 (1%)	16 (2,7%)	53 (5%)
Solar power (TWh)		1,4 (0,5%)	35,4 (6%)	210 (20%)

Source: Decision of the Prime Minister No. 2068/QD-TTg

Vietnam's renewable energy development strategy has two main goals: the first is to reduce greenhouse gas emissions in energy activities compared to the normal development plan: about 5% by 2020; about 25% in 2030 and about 45% in 2050. The second is to contribute to reducing imported fuel for energy purposes: reduce about 40 million tons of coal and 3.7 million tons of oil products by 2030; reduce about 150 million tons of coal and 10.5 million tons of oil products by 2050 (Table 1).

4. Renewable energy in Vietnam

The energy industry is encouraging the development and use of clean and renewable energy. Therefore, many mechanisms and policies to develop renewable energy have been issued, focusing on encouraging the development of power sources using renewable energy, especially wind power, solar power, and biomass... Thanks to that, power sources using renewable energy have made remarkable progress recently

4.1. Renewable energy in Vietnam's energy structure

In 2019, Vietnam's energy production exhibited the following distribution: 57% was attributed to coal and lignite, while natural gas and oil contributed 17% and 1%, respectively. Renewable energy accounted for 24.9% (International Trade Administration, 2022), as illustrated in Figure 1 depicting the energy structure in Vietnam in 2022 (International Trade Administration, 2022).

Figure 1: Energy structure in Vietnam, 2022
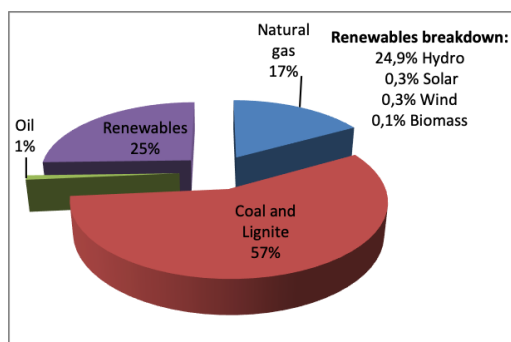
As of 2020, Vietnam's electricity system boasted a total installed capacity of approximately 76 GW, which includes rooftop solar power. Traditionally dominated by coal, natural gas, and hydro power, the system witnessed a significant increase in solar power installation, reaching 16.5 GW since 2019, with around 7.8 GW being rooftop PV. Furthermore, 4 GW of wind power is operational. Over the past three years, solar and wind energy installations have surged to meet the growing power demand. Although the output of solar tripled and wind reached 5 GW in 2022, the increase in coal-fired usage still outpaced these renewable sources. Hydropower remained relatively stable, indicating its nearing capacity limit. Therefore, exploring alternative resources to coal-fired becomes crucial (International Trade Administration, 2022).

4.2. Vietnam's renewable resources production

Examining Vietnam's renewable resources production, large and medium-scale hydropower has been extensively utilized, while small-scale hydropower remains underinvested. However, when compared to other resources, investing in small-scale hydropower might not be the most efficient option for coal-fired replacement. Regarding wind power, Vietnam's extensive coastline of 3,260 km presents a significant potential for both offshore and onshore wind power. A study by the International Renewable Energy Agency (Irena) suggests that the investment cost for wind power is lower than operating coal plants. While wind turbines require government and private investment, their efficiency depends on weather conditions.

Figure 2, depicting Vietnam's renewable energy capacity (International Trade Administration, 2022), highlights the increased utilization and efficiency of solar plants in recent years. Solar panels, easily installed at a lower cost by individuals or small organizations, offer an effective solution to meet the rising power demand. Biomass plants, mainly CHP biomass projects in sugar mills, face uncertainty in scalability and stability, requiring further study.

Figure 2: Vietnam's renewable energy capacity
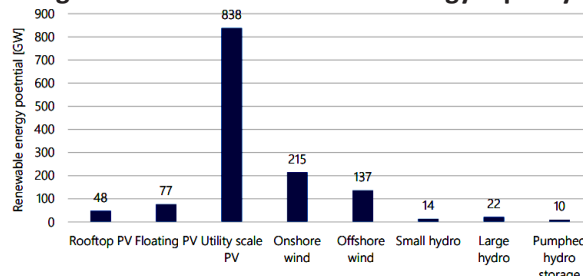
In the wind power sector, approximately 130 wind power plants exist in Vietnam, mostly concentrated in the Central and South Central regions. The total wind power output in 2022 is around 8.3 TW, with the majority of plants producing less than 100 MW. Medium-output plants include KOSY Bac Lieu (400 MW), Hai Phong (600 MW), and Ea Nam (400 MW) (International Trade Administration, 2022). Concerning solar energy, the total output of solar plants in 2022 reached approximately 27.18 TW, distributed across approximately 142 power plants. Most solar plants have outputs below 60 MW, with 18 plants ranging from 100 MW to 300 MW, and 5 plants (Loc Ninh 1 2 3, Xuan Thien Ea Sup, Trung Nam Thuan Nam, Dau Tieng 1 2, and BIM 1 2 3 Ninh Thuan) boasting outputs from 330 MW to 900 MW (ITA, 2022).

5. Challenges for renewable energy development in Vietnam

Vietnam, like many countries around the world, is witnessing increased interest in developing renewable energy to minimize the effects of climate change and ensure energy security. However, this transformation path is not without its challenges, especially in Vietnam, where initial investment costs, electricity and grid infrastructure, development planning, and social awareness still remain. are black spots that need to be thoroughly resolved.

One of the biggest challenges is the high initial investment costs when implementing renewable energy projects (Do, 2024). Faced with the rise of modern technology, investing in energy sources such as solar and wind power requires large amounts of capital. Therefore, the government needs to propose incentive policies, reduce taxes, and create favorable conditions to stimulate investment from businesses and investors. Not only is it a matter of cost, but also

the aspect of production and application of advanced technology for renewable energy sources. Vietnam needs to focus on training and developing quality human resources specializing in renewable energy. Skills shortages can lead to reduced project efficiency and increased risks in energy management.

The current electricity infrastructure and grid in Vietnam are still in the phase of innovation and expansion. This system is facing the challenge of integrating large-scale renewable energy sources. Upgrading transmission and distribution infrastructure is extremely important to ensure system stability and safety when integrating large amounts of renewable energy. Another aspect is the lack of a detailed renewable energy development plan and clear definition of the roles and responsibilities of stakeholders in the industry. It is necessary to have a development strategy that is flexible and responsive to technology and market fluctuations. Consensus between government, business, and community is essential to building a strong and efficient renewable energy system.

Storing and managing electricity from renewable energy sources is challenging, especially when using solar and wind power. Energy storage technology needs to be placed at the center to solve the problem of instability of renewable power sources and ensure a stable supply to the system. Finally, awareness of the benefits and potential of renewable energy remains limited in many communities and businesses. Information and education campaigns must be intensified, with active support from government and business. Creating incentive policies will promote the acceptance and use of renewable energy, opening up opportunities for sustainable development and green living in Vietnam.

In short, to overcome these challenges, consensus and close cooperation between government, businesses, and the community are needed. Developing renewable energy is not just a technical goal, but also a task that requires awareness, commitment, and innovation from all stakeholders. This will not only help Vietnam have a stable energy supply but also contribute to global efforts towards a sustainable future.

6. Policy implications for Vietnam to develop renewable energy

6.1. Restructuring and investment incentives

Faced with major challenges facing the energy industry, proposing solutions on restructuring and encouraging investment is extremely important to promote sustainable and effective development.

To achieve this goal, we need to take a series of comprehensive and skillful measures.

First, in restructuring state-owned enterprises in the energy sector, we need to focus on strong core areas. Applying an advanced governance model and improving the international credit rating is the key to promoting transparency and openness in operations. In addition, it is necessary to focus on improving the efficiency of exploitation and use of national energy infrastructure, as well as thoroughly restructuring ineffective state-owned projects and enterprises in the energy sector. Next, reviewing and adjusting specific mechanisms and policies for important projects is extremely important. Ensuring adequate capital for state-owned energy enterprises to implement strategic goals and tasks associated with national defense and security is a top priority. In addition, creating a favorable and transparent environment is the key to encouraging private participation in domestic and foreign investment. It is necessary to remove all unnecessary barriers to attract investment, especially in the fields of electricity generation and electricity wholesale and retail according to market mechanisms. At the same time, encouraging large-scale, quality and effective foreign investment in the energy industry is a specific goal.

6.2. Adjusting mechanisms and policies

In the context of climate change and limited energy resources, Vietnam is facing a big challenge in building a sustainable and synchronous energy system. To solve these problems, developing a synchronized energy market becomes a top priority.

First of all, there needs to be close links between energy sub-sectors, including electricity, coal, oil and gas and renewable energy. This connection not only creates efficiency in the production process but also helps optimize resource use. At the same time, connecting Vietnam's energy market with regional and international markets will bring great opportunities for sustainable development. More importantly, to ensure transparency in energy prices, it is necessary to remove all barriers and not impose cross-subsidization of electricity prices between customer groups and between regions.

In addition, reviewing and adjusting policies on land, compensation for site clearance, as well as encouraging non-state investment through the public-private partnership (PPP) model is necessary. Flexible financial policies and a legal basis for the establishment and effective operation of sustainable

energy development funds will help promote savings and efficiency in energy use. It is necessary to establish an electricity control and coordination mechanism, as well as promulgate a law on renewable energy to encourage the development and use of green energy sources. Another important aspect is to improve the quality of energy development strategies and planning, closely combining with local socio-economic development strategies and other sectors. Energy-related planning needs to be issued soon and adjusted according to the Planning Law to ensure stability and synchronization.

Finally, strengthening state management from central to local levels and implementing incentive policies will help promote competition and transparency in the energy market. This also helps quickly resolve difficulties and barriers, creating favorable conditions for businesses of all sizes.

6.3. *Training and developing qualified human resources*

In the context of the rapidly developing energy industry, the formation of a linkage mechanism between scientific and technological research and development forces with businesses and training institutions is a decisive factor for the development of science and technology, innovation and sustainable development. Science and technology programs play an important role in integrating research and development activities into energy development strategies, plans and plans. To encourage energy businesses to invest heavily in research and development, it is necessary to establish support mechanisms and establish innovation centers in the energy sector. The national key science and technology program on research, application, and development of energy technology will focus on manufacturing energy equipment, applying new forms of energy, renewable energy and savings energy.

In the future, reviewing and amending national standards and regulations in the energy sector will ensure compliance with international regulations and standards. Training of technical workers and energy sector staff will be enhanced, especially towards export. Remuneration policies will be issued to attract experts, scientists, and highly qualified human resources to work in the energy field. Cooperation and association with reputable training institutions both domestically and internationally will be the key to developing human resources in the industry. Policies for economical and efficient use of energy will also be completed and strongly implemented. Mandatory

standards with sanctions on energy efficiency will apply to fields, industries, and products with high energy consumption. At the same time, increased research and technology transfer will help improve efficiency and save costs in environmental protection. Finally, measures to monitor, observe and inspect environmental indicators as well as handle violations of environmental safety will play an important role in protecting the environment and ensuring the sustainability of the energy industry.

7. Conclusion

Renewable energy is becoming the focus of the world's energy revolution, and Vietnam is no exception. In fact, the development of renewable energy sources ở Việt Nam has achieved a number of important achievements. However, there are still many difficulties and challenges that need to be overcome for this industry to achieve sustainability and high efficiency. Some major difficulties facing Vietnam in developing renewable energy include inadequate technical infrastructure, limited financial resources, as well as challenges in managing and integrating new energy sources into the country national power grid. However, to overcome the above difficulties, Vietnam can take advantage of opportunities from national policies to support and encourage investment and research and development of renewable energy. Promoting cooperation, especially with international partners with experience in this field, is an important direction. At the same time, building a qualified human resource education and training system to meet the increasing requirements of the renewable energy industry also makes an important contribution to the sustainable development of this industry. In short, developing renewable energy in Vietnam is not only an urgent task but also an opportunity to reshape the energy supply in the future.

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THE CURRENT STATE OF THE LOGISTICS INDUSTRY FROM 2020 TO 2023 AND ITS FUTURE POTENTIAL IN VIETNAM

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Abstract: *Logistics plays a crucial role in the economy of every nation and region. Logistics services support most stages of business operations, from preparing raw materials, manufacturing, to delivering products to consumers. The increasing development of logistics services has reduced the shipping and transportation cost of raw materials, goods, becoming an opportunity for businesses to maximize their competitive advantages.*

• Keywords: *logistics, production, cost reduction, competition.*

1. Introduction

Logistics is one of the most significant industries in the modern economy. It contributes to sustainable economic development and plays a vital role in enhancing productivity, reducing the production costs, and meeting the increasing demands of customers.

According to the Organization for Economic Cooperation and Development (OECD), the logistics industry accounts for about 10% of the global GDP and employs over 40 million people worldwide. In Vietnam, logistics is experiencing robust development with an annual growth rate of about 12-14%. This indicates that the logistics industry has become one of the most important sectors in the Vietnam's economy with strong development potential in the future.

2. Overview of the Logistics Industry

2.1. Definition

According to the United Nations (UN), logistics involves managing the process of transporting goods and materials through different steps such as storage, production and delivering products to consumers according to their demand. According to the World Trade Organization (WTO), logistics is a supply chain of services, including planning, implementation, and control of the movement and storage of goods, services, and related information from production to consumption to meet the customers' requirements. Traditional logistics services include transportation, warehousing, distribution, and value-added services provided by third parties.

Therefore, the logistics industry in Vietnam can be defined as a service industry consisting of cargo transportation activities by rail, road, waterway, or air transportation methods and supporting services for cargo transportation activities such as seaports, river ports, airports, railway stations, loading and unloading, and warehousing.

2.2. Evaluation Indicators of a Country's Logistics Development

Logistics Performance Index (LPI): LPI measures the operational capacity of logistics activities of countries conducted by the World Bank (WB) and ranks countries worldwide. The LPI of a country is measured by the average (weighted) of 6 component indices, including:

Infrastructure: The quality of trade and transportation-related infrastructure (The infrastructure related to seaports, airports, railways, roads, water, aviation, vehicles, information technology infrastructure, and IT services,...);

International shipments: The ease of arranging transport of import and export goods with competitive prices, related costs such as agent fees, port fees, bridge tolls, warehouse fees, etc.;

Services quality: The capacity and quality of logistics service providers (such as transportation service providers, warehouse and distribution companies, freight forwarders, customs clearance companies, etc.);

Tracking and tracing: The ability to track and trace shipments;

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Timeliness: The timeliness of shipments reaching the destination compared to the predetermined deadline; clearing customs and on-time delivery of export and import shipments.

Customs: The effectiveness of border control agencies such as speed, simplicity, and predictability of procedures when clearing customs. These 6 component indices are scored from 1 to 5, with 1 being the worst performance and 5 being the best. Accordingly, the WB calculates the overall LPI for a country by averaging (weighted) the 6 component indices.

2.3. Factors Affecting the Prospects of the Logistics Industry in Vietnam

The logistics service industry in Vietnam is in the process of development, but it also faces many difficulties and challenges. In that context, identifying the prospects of the logistics industry requires considering and evaluating factors affecting the industry such as:

Legal Policies and Administrative Procedures: Logistics is a highly concerned and developed industry in Vietnam since the country implemented economic renovation policies and opened its economy. Many laws, operating policies, and support policies for developing logistics services in Vietnam have been issued in recent years. Administrative procedures and customs procedures are gradually being completed and simplified, helping to reduce time and costs for logistics.

Infrastructure: The logistics industry is greatly influenced by the transportation and logistics infrastructure. Attention and investment in upgrading transportation infrastructure (roads, waterways, railways, etc.), ports (river ports, seaports, airports), and enhancing planning and investment in logistics centers, warehouses, ICDs, etc., help accelerate the flow of goods both domestically and internationally.

Trade in Goods: In the process of developing the economy, the increasing exchanges, buying, and selling of goods both domestically and internationally have significantly expanded the role of logistics services, formed specialized enterprises providing services in the logistics chain. The development of the logistics industry is closely linked to the growth of the Vietnam's goods trade.

Technology: The application of information technology (IT), automation, and digitization has changed the global supply chain market. Superior technology can help logistics service businesses integrate, process, exchange, and manage information efficiently during the transportation process, as well as circulation and management of related documents easily and conveniently, reducing operational costs for the logistics industry.

Supply chain: A supply chain is a system of organizations, activities, information, people, and resources directly or indirectly related to the transportation of goods or services from producers and suppliers to consumers. Logistics is one of the most important processes in the goods supply chain. Improving the global supply chain lays a solid foundation for developing the logistics market in the future. Improving the global supply chain lays a solid foundation for developing the logistics market in the future.

3. The Logistics Market in Vietnam

3.1. Market Trends in the Vietnamese Logistics Industry from 2020 to 2023

From 2007 to 2023, Vietnam's National Logistics Performance Index (LPI) tended to rise, reflecting efforts to reform institutional policies, business environment as well as investment in upgrading logistics and transportation infrastructure in Vietnam in recent years. According to the latest announcement by the World Bank (3/2023), Vietnam's LPI reached 3.3 points, with an increase of 0.03 points compared to the previous evaluation period (3.27 points) in 2018. However, in terms of ranking, Vietnam dropped 4 places compared to the nearest evaluation period, ranking 43 out of 160 countries.

In addition, according to the Agility 2023 annual ranking, Vietnam is among the top 10 emerging logistics markets in the world and ranked 4th in Southeast Asia. Despite many limitations, the logistics industry in Vietnam has made significant strides, with an average growth rate of 14 - 16% per year during the period from 2000 to 2022. The scale in 2022 is estimated to reach 40 - 42 billion USD (according to the Vietnam Logistics Business Association - VLA), benefiting from favorable natural conditions and geographical advantages for the development of logistics services.

3.1.1. Transportation Services

3.1.1.1. Road Transport

Road transport is the most important domestic transportation method in Vietnam, accounting

for nearly 80% of the total volume of goods transported, mainly serving short routes between production and consumption centers; or to international transshipment points such as seaports, and airports...

According to the General Statistics Office of Vietnam, road freight transport continued to grow strongly in the first 8 months of 2023 despite unfavorable economic conditions both domestically and globally. The volume of goods transported reached 1,092.5 million tons, an increase of 12.5%; the freight turnover reached 71.5 billion tonne-kilometers, up 9.9% compared to the same period in 2022. The freight service rates have been continuously increasing since Q2 2022 and were moderated from Q4 2022 onwards due to the Government and Ministry interventions to control fuel prices in order to stabilize service rates in the market. Nevertheless, the road freight transport price index in Q2 2023 increased by 1.7% compared to the same period and was much higher than the previous period before the pandemic.

3.1.1.2. Rail Transport

Vietnam has a railway network connecting the two largest economic centers in the country, but rail freight transport has not yet been developed (accounting for only 0.3% of the total volume of goods) due to: i) The capacity to operate main railway lines only reaches about 1725 train teams per day/night, with an average train operation speed of 50-70 km/h, the railway system is too old to transport large volumes of goods; (ii) there is no synchronized connection with other transportation modes such as air transport, seaports, and there is no interregional connection, leading to high dual transport costs, reducing competitiveness compared to other transportation modes.

In the first 8 months of 2023, rail freight transport reached 3.0 million tons, a decrease of 24.1%; freight turnover reached 2.4 billion tonne-kilometers, down 22.5% compared to the same period in 2022 due to a decrease in import-export orders and facing fierce competition from waterway transport when railway freight rates sharply increased from the beginning of 2023. The average railway freight rates in Q2/2023 increased by 17% compared to the same period, and the increase slowed down compared to Q1 (increased by 28.6% compared to the same period).

Graph 1: The volume of goods and the road transport freight rate index, 2020 - Q2.2023
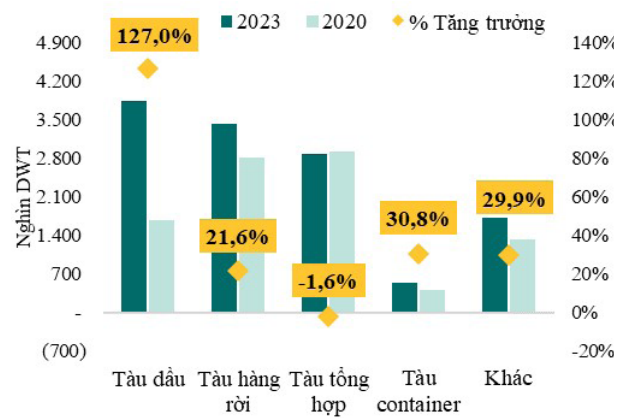
3.1.1.3. Inland Waterway Transport

The diverse topography of Vietnam with its extensive river system throughout the country creates favorable conditions for the development of inland waterway transport (accounting for 15.3% of the volume of goods). The total length of the country's inland waterways currently in operation is 17,026 km, including: 7,180 km of national inland waterway routes managed by the Inland Waterway Administration (Northern region: 3,044.4 km, Southern region: 2,968.9 km, Central region: 1,167.5 km). The network has planned 45 main waterway transport routes: 17 routes in the North, 10 in the Central region, and 18 in the South. Additionally, 21 coastal waterway transport routes have been planned. The Northern region has 6 routes, the Central region has 4 routes, the Southern region has 11 routes, and there are several routes shared with maritime shipping lanes.

According to the General Statistics Office of Vietnam, inland waterway cargo transport in the first 8 months of 2023 reached 323.1 million tons, an increase of 25.7%; the cargo turnover reached 70.2 billion tonne-kilometers, up 21.7% compared to the same period in 2022, thanks to the stability of transport tariffs, which led to a significant shift of goods from rail transport to inland waterway transport Moreover, many localities such as Ho Chi Minh City, Hai Phong, etc., have waived or reduced fees for the use of infrastructure at seaport border areas for goods transported by inland waterway due to either limited or no usage of the infrastructure at seaport border areas.

3.1.1.4. Maritime Transport

Maritime transport is one of the crucial transportation methods in Vietnam, both domestically and internationally, thanks to its long coastline and favorable geographical location in the region. Regarding maritime transport routes, Vietnam has established 32 routes, including 25 international shipping routes and 7 domestic shipping routes.

Graph 2: Total ship tonnage by ship type in Vietnam
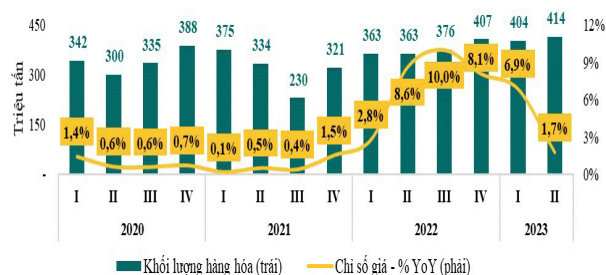
Regarding the fleet, according to the Vietnam Maritime Administration, from 2020 to 2023, Vietnam currently has a fleet of 1,563 ships, with a total capacity of about 7.7 million GT and a total tonnage of about 12.7 million DWT. From 2020 to 2023, the tonnage of the Vietnamese fleet witnessed growth in most types of ships: Oil tankers (increased by 127%), bulk carriers (increased by 21.6%), container ships (increased by 30.8%), etc. However, 77% of the total number of ships, including general cargo ships and bulk carriers, are small-sized (under 5,000 GT) and medium-sized (5,000 GT - 10,000 GT). There are only 13 ships over 30,000 GT, with an average age of about 16.8 years. The container ship group accounts for only 4.4% of the total tonnage with 45 ships.

In the first eight year of 2023, the volume of cargo transported by sea reached 78.2 million tons, an increase of 13.7%; the cargo turnover reached 167.5 billion tonne-kilometers, up 11.8% compared to the same period in 2022. With the decrease in fuel prices and the support policies from the government for transport services, transport tariffs have gradually dropped. However, most of the tariff segments have formed new price levels higher than those before the pandemic, ranging from 10% to 15%.

3.1.1.5. Air Transport

Air transport accounts for less than 1% of the cargo volume transported but represents up to 1/4 of Vietnam's annual commercial transport value. This is because air cargo mainly consists of high-value products with short delivery times such as the electronics, the components, the agricultural products, the textiles, and the garments. Conversely, in international transportation, foreign airlines hold over 80% market share, with domestic airlines only holding a small proportion.

According to the Civil Aviation Authority of Vietnam (CAA), as of the end of August 2023, Vietnamese airlines operated 68 international routes to 16 countries/territories, with a market share of only about 16% in Q2 2023. This reflects the weak competitiveness and low market penetration of Vietnamese airlines in the global aviation market.

According to the CAA, in Q3 2023, the volume of cargo transported by Vietnamese airlines was estimated at 172.9 thousand tons, up near 1.8%; the air cargo turnover reached 4.6 billion ton-kilometers, up approxiamately 37.3% compared to the same period in 2022. International cargo volume reached 77.2 thousand tons, down near 11%; domestic cargo reached 95.7 thousand tons, up 15.1% compared to the same period in 2022.

3.1.2. Port Services

3.1.2.1. Seaports

As of the end of 2022, Vietnam's seaport system consisted of 286 ports, distributed across 5 groups, with a total quay length of over 96 km, capable of handling over 700 million tons of cargo annually. Seaport operations in Vietnam are highly concentrated, with major gateway ports combined with international transshipment hubs in the North and South, such as Cai Mep (Ba Ria - Vung Tau), Lach Huyen (Hai Phong), etc.

According to the Vietnam Maritime Administration, the total cargo throughput of Vietnam's seaport system during the period 2020 - 2022 continued to grow at an average rate of ~3% per year, reaching 733.2 million tons in 2022. This result was largely contributed by domestic cargo, which reached 342.8 million tons in 2022, up 13.1% due to relatively stable domestic consumption. Meanwhile, export and import cargo in 2022 reached 179.1 and 209.3 million tons, respectively, down 2.9% and 2.2% compared to 2021 due to China's Zero-Covid policy and economic recession in major export markets of Vietnam.

Northern port region: Hai Phong and Quang Ninh are the most active container port areas in the North. The Hai Phong port system along the Cam River includes major ports such as Hai Phong, Dinh Vu, Nam Hai - Dinh Vu, Nam Dinh Vu, Green Port, Hai An, etc. In 2018, the deep-water Lach Huyen port (HICT) became operational, being the largest dedicated container port in the North, with a handling capacity of 1.1 million TEUs per year and capable of receiving vessels up to 145,000 DWT. In Quang Ninh province, Cai Lan port is the largest and it is capable of accommodating vessels with a tonnage of 40,000 - 50,000 DWT.

Central port region: The Central region currently has few container ports, with most ports focusing on bulk cargo. Danang and Quy Nhon are the two largest port areas, accounting for 25% and 21% of the total cargo volume in the Central region, respectively. However, the majority of container cargo in the Central region passes through Da Nang port (accounting for up to 71%), while Quy Nhon port ranks second (only accounting for 15%) due to relatively small industrial capacity and inefficient industrial zones in the region, resulting in insufficient and unstable cargo sources for seaports.

Southern port region: The Southern region is the busiest port area in Vietnam, accounting for 60% of the total cargo volume through ports in 2022. TP. Ho Chi Minh City and Ba Ria - Vung Tau are the key cargo transshipment centers in the Southern region and internationally, concentrating the highest cargo volume in the country, with major seaports such as Tan Cang - Cat Lai, the Cai Mep - Thi Vai port cluster, etc. The average annual cargo growth rate through Ho Chi Minh City seaports is 9.95% and Ba Ria - Vung Tau is 15.5% during the above period.

3.1.2.2. Airports

As of the end of 2022, there are 22 airports operating nationwide with a total area of 11,859 hectares, including 9 international airports and 13 domestic airports, including: (i) Northern region with 7 airports including Noi Bai, Van Don, Cat Bi, Tho Xuan, Vinh, Dien Bien, and Dong Hoi; (ii) Central region with 7 airports including Da Nang, Cam Ranh, Phu Bai, Phu Cat, Tuy Hoa, Pleiku, and Chu Lai; (iii) Southern region with 8 airports including Tan Son Nhat, Can Tho, Phu Quoc, Buon Ma Thuot, Lien Khuong, Rach Gia, Con Dao, and Ca Mau.

According to the CAA, the cargo volume through airports in the first 7 months of 2023 reached 675.3 thousand tons, down 18.4% compared to the same period in 2022 (*with international cargo down 27.1% and domestic cargo up 16.3%*), mainly due to a sharp decline in import-export cargo. This also led to a slowdown in airport infrastructure investment in recent years, partly due to the impact of the pandemic, but mostly due to limited investment capital.

3.1.2.3. Dry Ports, Inland Container Depots (ICDs)

ICDs (Inland Container Depots) are domestic clearance ports, a part of transport infrastructure, serving as hubs for organizing container freight transport linked to activities of seaports, airports, road border crossings, and international railways. Key services provided at dry ports and ICDs in Vietnam include: cargo storage services, customs warehouses, CFS warehouses; container yard services (for regular cargo, empty containers, and refrigerated cargo); oversize/overweight cargo transshipment services, and other cargo services.

In the Northern region, the dry port and ICD system has not significantly contributed to the transportation organization system due to the predominant use of road transport, resulting in high transportation costs. The proportion of container cargo through dry ports and ICDs is low, accounting for only ~3% of container cargo through seaports. The percentage of cargo passing through dry ports as the destination port is insignificant. Dry ports mainly operate warehouse services and handling, with a few only offering transportation services.

In contrast, the Southern region's dry port and ICD system has provided greater support to the seaport system, especially in Ho Chi Minh City's port area, by cost-effectively utilizing inland waterways. The percentage of cargo passing through dry ports as the destination port is significant. Additionally, ICDs facilitate import-export businesses by reducing time, costs, and warehouse requirements.

3.1.3. Warehousing and Freight Forwarding Services

3.1.3.1. Warehousing Services

According to Cushman & Wakefield, by the end of 2022, the supply of ready-built warehouse space increased significantly in both the Northern (up 78%) and Southern (up 39% compared to 2021)

regions, meeting the trend and demand for renting warehouse space to save costs by businesses. The occupancy rate of ready-built warehouses in 2022 continued to remain high for both the Northern (72%) and Southern (76%) regions; however, it slowed down (a decrease of 13 percentage points for the North and 9 percentage points for the South) due to increased new supply and decreased manufacturing activities in Q4/2022 amid unfavorable international conditions.

In addition to increasing the scale and forms of warehouse development from traditional warehouses to distribution centers, processing and sorting centers, and cargo handling centers, warehouse services have also seen increased investment in equipment, technology, and human resources. The adoption rate of warehouse management systems (WMS) reached 41.4% in 2022 (according to the Ho Chi Minh City Department of Industry and Trade). HCM).

3.1.3.2. Freight Forwarding and Delivery Services

Along with international economic integration and post-COVID-19 recovery, the logistics sector in Vietnam has many potentials and room for development. In particular, freight forwarding and delivery services have experienced strong growth as e-commerce develops rapidly, and consumers increasingly shop online in 2022. According to the Ministry of Information and Communications (2023), the revenue of postal services in 2022 is estimated at 52.3 trillion VND, up 16.2%; the volume of parcels and packages reached 1,550 million items, up 33.4% compared to 2021.

New consumption trends and post-COVID-19 e-commerce are strongly impacting the transformation and shaping of strategies for freight forwarding and delivery businesses in Vietnam. According to Allied Market Research (2022), large enterprises operating in the Vietnam express delivery service market include Giao Hang Nhanh (GHN), BEST Express Vietnam (BEST Inc.), Giao Hang Tiet Kiem, J&T Express, Kerry Express, Nasco Logistics JSC, Nhat Tin Logistics, Ninja Van, Swift247, Viettel Post, and VNPost. To meet the constantly changing needs of customers, businesses must ensure flexible requirements and provide specialized services tailored to specific customer groups. Fast delivery speed and cost efficiency are among the crucial competitive criteria in the express delivery service business today.

4. The potential of the Logistics Industry

4.1. Short-Term Outlook

To assess the prospects of the Logistics industry in Vietnam, we examine the two most important activities of the industry: (i) freight transport and (ii) freight forwarding and delivery. While freight forwarding and delivery activities have seen positive growth due to changes in consumer habits after the pandemic, freight transport has been negatively impacted by reduced production amid declining international demand. Therefore, the short-term prospects of the logistics industry in Vietnam are assessed as Neutral, specifically as follows:

Regarding the operating environment:

The domestic economy continues to face many difficulties and challenges (with 3.72% growth in the first half of 2023). Amid the challenging global economic conditions, Vietnam's import-export activities in 2023 are expected to decline compared to 2022. Business operations face clearer difficulties due to the combined impact of the international environment and internal factors of the Vietnamese economy (reduced industrial production, narrowed export orders, etc.). It can be seen that the factors affecting the operating environment of the logistics industry are forecasted to remain Negative until the end of 2023, with expectations of improvement to Neutral in 2024 as both global and domestic economies recover more clearly.

Supply-demand situation in the industry:

For freight transport activities: The demand for freight transportation is expected to continue to grow positively in the near future, but there is high differentiation among transportation methods:

Road transport: Holds the largest share in the value structure of transported goods and is expected to continue growing positively due to increased demand for domestic and intra-regional freight transport in the second half of 2023.

Railway transport: The demand for railway freight transportation is forecasted to decline due to limitations in railway infrastructure development and fierce competition from other modes such as maritime and inland waterway transport.

Air transport and airports: Economic difficulties worldwide, especially among Vietnam's major

partners like China, the US, and Europe, have led to a sharp decline in air cargo transportation. However, the expected increase in domestic cargo volume is expected to offset the decline in international cargo demand. The prospects for the air transport and airport segment in 2024 could be assessed as Neutral as domestic and global economic conditions ease.

For freight forwarding and delivery activities: According to the "e-Conomy SEA Report 2021" by Google, Temasek, and Bain & Company, Vietnam's e-commerce market size is forecasted to reach $39 billion by 2025, with an average annual growth rate of 31.6% from 2021 to 2025, ranking second in Southeast Asia, after Indonesia ($104 billion), and on par with Singapore. Accordingly, freight forwarding and delivery services are expected to maintain positive growth in the near future, especially last-mile delivery activities due to the e-commerce boom.

Input cost trends:

Prices of major transport fuels are currently trending upward after reaching a low point in mid-2023. However, the prices of RON 95-III gasoline and E5 RON 92-II gasoline are currently stable compared to the same period in 2022, increasing by 2.6% and 0.5%, respectively. Diesel and fuel oil prices are currently more than 10% lower than the same period last year. According to the US Energy Information Administration (EIA - 9/2023), the average Brent crude oil price in 2023 is expected to reach $84.46 per barrel, a 16.3% decrease from 2022 ($100.94 per barrel). The EIA also forecasts that the average Brent oil price in 2024 could recover to $88.22 per barrel, a 4.5% increase from 2023. With such forecasts, prices of major fuels may continue to be slightly adjusted upwards in the fourth quarter of 2023 and 2024. This negatively impacts the input fuel costs of transportation, freight forwarding, and delivery companies, as road transport remains the primary mode.

Output service price trends:

By the end of the second quarter of 2023, prices of services in the logistics chain have all increased compared to the same period in 2022.

For the transport sector, road and waterway transport continue to demonstrate advantages in transport capacity, and the service prices of these two modes are expected to remain stable. Meanwhile, air cargo transport, heavily affected

after the pandemic, along with a significant increase in A1 jet fuel prices, is expected to see a sharp increase in service prices, with forecasts to remain high shortly. For loading and delivery services, service prices are expected to maintain a slight upward trend in the range of 1 - 5% compared to the same period due to high demand but also facing fierce internal competition within the industry.

Therefore, summarizing the analyzed factors above, the short-term prospects of the logistics industry in Vietnam (until the end of 2024) are assessed as neutral, specifically as follows:

Table 2: The short-term prospects of the logistics industry in Vietnam (until the end of 2024)

Prospect	Very positive	Positive	Neutral	Negative	Very negative
Freight transport activities		Waterway	Road transport Aviation	Railway	
Port activities		Seaport	Airport		
Freight forwarding and delivery activities			Freight forwarding and delivery		

4.2. Mid-term Outlook (2025-2027)

According to Agility 2023, the compound annual growth rate (CAGR) of Vietnam's logistics market is forecasted to reach 5.5% per year by 2027, along with a strong economic recovery. The logistics industry in Vietnam is expected to continue its positive growth trajectory in the mid-term, benefiting greatly from increased trading demand and the global e-commerce boom:

With its favorable geographical location, long coastline, and political stability, Vietnam has significant opportunities for logistics development. Alongside the global supply chain development trend, as Vietnam signs and implements various Free Trade Agreements, it is expected to become a hub for goods transit in Asia, a crucial link in the global supply chain. This will drive further development and improvement in logistics chain services.

The trend of outsourcing logistics services in Vietnam is increasing, particularly in supply chain management areas such as inventory management and supply sourcing. (i) Increasing foreign investment in Vietnam, bringing specialized production thinking and leading to higher rates of outsourcing logistics services; (ii) Domestic

businesses are gradually shifting focus to core business activities, hence increasing outsourcing activities.

According to Allied Market Research (2022), the express delivery service market in Vietnam reached a value of 0.71 billion USD and is estimated to grow at an average rate of 24.1% per year from 2022 to 2030, projected to reach 4.88 billion USD by 2030. The e-commerce boom along with rapid development in international commercial services is one of the key factors driving the long-term growth of the freight forwarding and delivery market. However, the logistics industry still faces some challenges, such as:

Transportation costs are a major concern for logistics operations in Vietnam. Transportation costs account for up to 60% of logistics costs due to heavy reliance on road transportation methods with high fees. Additionally, primarily using road transportation leads to infrastructure overload, increased maintenance costs, fuel consumption, environmental pollution, and traffic accidents.. Meanwhile, inland waterways and railways, which have lower costs, are not yet strongly invested in development Therefore, it is necessary to focus on investing in and developing other transportation methods to reduce pressure on the road system and cut logistics costs for the economy.

With the analyzed factors above, the mid-term prospects of the logistics industry in Vietnam (from 2025 to 2027) are assessed as positive, specifically as follows:

Infrastructure Investment: The Vietnamese government is actively investing in transportation infrastructure, including ports, airports, roads, and railways. These improvements enhance the capacity for transporting goods and create favorable conditions for logistics operations.

Regulations and Policies: The Vietnamese government has introduced various policies and regulations to promote the development of the logistics industry. The Logistics Law enacted in 2017 provides a legal framework for logistics activities and attracts investment.

E-commerce Boost: The growth of e-commerce in Vietnam is driving the demand for delivery and logistics services. Logistics companies are adapting and providing smart and efficient delivery solutions to meet this increasing demand.

Table 3. The mid-term prospects of the logistics industry in Vietnam (From 2025 to 2027)

Prospect	Very positive	Positive	Neutral	Negative	Very negative
Freight transport activities		Waterway Road transport Aviation	Railway		
Port activities		Seaport Airport			
Freight forwarding and delivery activities		Freight forwarding and delivery			

4.3. Long-term Outlook

The long-term outlook for the logistics industry in Vietnam is quite positive, supported by several factors and development trends:

Economic Growth: Vietnam is becoming a key manufacturing and export hub in the Southeast Asia region. Stable economic growth and rapid urbanization generate increasing demand for logistics services.

Technological Innovation: Technology is transforming the operations of the logistics industry. Logistics companies in Vietnam are adopting smart technologies such as real-time tracking and communication, automated inventory management, and route optimization.

Economic Integration: Vietnam has signed multiple free trade agreements, including the CPTPP and EVFTA, creating opportunities for both exports and imports. This leads to increased cross-border transportation and international Logistics activities.

However, there are also challenges that the logistics industry must address, including intense competition, inadequate infrastructure, and difficulties in supply chain management. Nevertheless, with the development and efforts of logistics companies and support from the government, the long-term prospects for the logistics industry in Vietnam remain promising.

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PROPOSING A MODEL TO RESEARCH THE IMPACT OF TAXATION ON SMALL AND MEDIUM ENTERPRISES' SUSTAINABILITY

MSc. Pham Thi Thu Hong*

Abstract: *Vietnam has introduced tax policies that support, encourage, and promote production and business activities of enterprises in general, and SMEs in particular, contributing to creating favorable conditions for businesses to accumulate capital to increase and reinvest. SMEs are a central focus when considering the impact of tax policy on their sustainable development for several reasons: (i) from the taxpayer's perspective; (ii) business scale; (iii) most large businesses originated as SMEs before expanding; (iv) with the removal of trade and other barriers, the world has transformed into a global village, leaving SMEs struggling to survive in a fiercely competitive environment both domestically and internationally. This article reviews some studies on the impact of tax policy on the sustainable development of SMEs, thereby proposing a model to research the impact of tax policy on the sustainable development of small and medium enterprises in Vietnam.*

• Keywords: *SMEs, tax policy, tax incentives…*

Introduction

Tax policy is one of the tools for the government to encourage eco-entrepreneurship, eco-innovation, and eco-adoption. Changes in the government's tax scheme can promote greening among SMEs and subsequently reduce their burden.

Sustainable development is becoming an inevitable trend of the future, bringing new values and visions. Every member of the economy is aware of the responsibility to contribute to the sustainable development of the country. This leads to the issue of sustainable business development, which means that businesses adopt strategies and activities that meet the current needs of the business and its stakeholders while maintaining, protecting, and enhancing the human and natural resources needed for the future (World Business Council for Sustainable Development, 2000).

In Vietnam, in recent times, the State has also introduced a system of financial policies, especially tax policies, that support, encourage, and promote production and business activities of enterprises. Enterprises in general, and SMEs in particular, contribute to creating favorable conditions for businesses to accumulate capital to increase and reinvest. This article reviews some studies on the impact of tax policy on the sustainable development of SMEs, thereby proposing a model to research the impact of tax policy on the sustainable development of small and medium enterprises in Vietnam.

Reviewing some studies and proposing a model to research the impact of tax policy on the sustainable development of small and medium enterprises in Vietnam

What does tax policy mean for the sustainable development of SMEs? That is the question posed in Aderemi's (2021) study. The study conducted a survey of 120 SMEs in Nigeria through questionnaires. The research results showed that SMEs paid 10 types of taxes, with the correct payment rate according to regulations reaching 48.9%. The research proves that there is a close relationship between tax policy and the sustainable development of SMEs. Although tax collection rates are quite low, efforts towards creating understanding and achieving higher compliance rates are indispensable for fostering more sustainable businesses and creating a more sustainable business environment.

Kacem & Omri's (2021) study examines the impact of tax incentives on corporate social responsibility in the practical context of companies in Tunisia. The study conducted an investigation through a questionnaire on whether tax incentives

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promote socially responsible businesses. It uses multiple regression models to evaluate the effectiveness of tax incentives for businesses to take responsible actions. The study was conducted on 71 Tunisian companies operating in different sectors. The results show a negative and sizable association between tax incentives and social enterprise practices. Therefore, the use of these forms of incentives is ineffective. The study has made theoretical contributions, mainly related to the originality of the developed conceptual model, the literature review, and the mobilized theoretical foundations. In fact, the uniqueness of this study is demonstrated by the scarcity of previous research on the relationship between tax incentives and social enterprises. To the best of the authors' knowledge, this study is one of the first to investigate the impact of tax incentives on social enterprise practices.

Picas et al.'s (2021) study evaluates the impact of fiscal and financial incentives and government support on the profitability of SMEs from 2010 to 2019 in Portugal. What are the consequences of high financial and tax burdens on SMEs for their development? The study analyzes the various incentives offered by the Portuguese government to reduce this burden and improve business profits. It uses panel data with fixed effects from five different sources of information, including five types of internal tax subsidies, three different financial program projects of the European Union, and three types of specific fees from the national budget. The results show that tax incentives impact the profits of SMEs, but other government financial incentives do not. Financial incentives positively determine ROA and negatively impact ROE, contributing to sustainable performance.

Hristov & Chirico's (2019) study examines the impact of tax policies on sustainable development in Ondo State, Nigeria. The study conducted a survey with a sample size in 18 local government areas, applying a multi-stage sampling technique to select the sample size of nine local government areas where SMEs were duly registered. The collected data were estimated using ordered logistic regression to test the formulated hypotheses. The study shows that three explanatory variables (types of taxes, tax rates, and tax incentives) account for 43% of the change in the sustainability of SMEs with p-value < 0.05, $\alpha = 0.0029$. It also found a

significant negative influence between various taxes and corporate sustainability, while tax rates and tax incentives have a positive but statistically insignificant relationship with corporate sustainability. Based on empirical evidence, the study recommends that the government provide favorable tax regimes to encourage sustainable entrepreneurship and reduce social problems.

Based on the overview of the above studies, the author proposes a model to research the impact of taxes on the sustainable development of small and medium-sized enterprises in Vietnam, as shown in Figure 1. The study also further develops the theoretical framework and adds new factors compared to the models used in previous studies.

Figure 1: Proposed research model
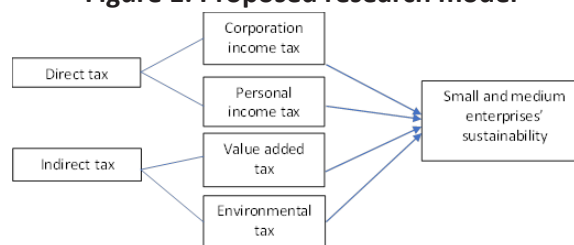
Source: Suggested by author

Conclusion

Tax policy is one of the important financial tools of a country and through tax policy the government can achieve many socio-economic and environmental development goals in the context of sustainable development. solid. Small and medium-sized enterprises are one of the businesses that need attention due to the very important role this type of business plays in the economy. Sustainable development must come from many sides, so the author's proposed model to evaluate the impact of tax policy on the sustainability of small and medium-sized enterprises is meaningful both theoretically and practically.

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MODERNIZING THE BANKING INDUSTRY: ARTIFICIAL INTELLIGENCE AS THE KEY TO SUCCESS

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Abstract: *In recent years, the application of Artificial Intelligence (AI) in the banking industry has brought significant improvements and new breakthroughs. AI has been used to optimize processes and enhance service quality, from automating tasks to intelligent data analysis and financial fraud detection. Additionally, AI plays a crucial role in providing personalized services, enhancing risk management, and ensuring information security. The combination of AI and the banking industry has provided better customer experiences and met the increasingly diverse needs of customers. With unlimited potential, AI is changing the way the banking industry operates and bringing numerous benefits and competitiveness to this sector.*

1. Introduction to Artificial Intelligence

Artificial Intelligence (AI) is a field of research and development in computer science and information technology, focusing on building systems and computer programs that have the ability to learn and perform tasks that previously only humans could do. AI utilizes algorithms and technologies to learn and self-adjust from data, enabling computers to recognize, understand, and respond like humans. AI technology has made significant advancements in recent years and is being widely applied in various fields, including the banking industry.

2. The Role of AI in the banking industry

AI is used to automate processes and enhance work efficiency in the banking industry. For example, intelligent chatbots help reduce waiting time and improve customer experience by interacting and answering queries automatically. AI is also used for data analysis and intelligent decision-making, from predicting consumer behavior to providing personalized financial advice. Additionally, artificial intelligence plays a crucial role in fraud detection and information security. AI has the ability to analyze big data and automatically detect fraudulent activities, helping banks prevent dishonest practices and protect customer information. The combination of AI and the banking industry has brought new conveniences and competitiveness while meeting the increasingly diverse needs of customers.

3. Applications of Artificial Intelligence in the banking industry

Customer service experience

Artificial Intelligence (AI) has brought significant applications in improving the customer service experience in the banking industry. One of them is intelligent chatbots, which allow customers to receive fast and accurate automated responses and advice. Chatbots enable account inquiries, balance checks, bill payments, and information about banking products and services. This is a convenient and continuous communication channel that saves time and increases convenience in interacting with the bank. Bank of America has deployed Erica, an AI-powered virtual assistant, to provide services and support to customers. Erica has the ability to answer questions, provide information about accounts and banking transactions, as well as assist in budget management and offer suggestions for savings and investments. Customers can access Erica through mobile applications or supported virtual assistant devices. The implementation of Erica has enhanced the quality of service and interaction with customers, providing a personalized experience and better convenience.

Big data collection and analysis

Artificial Intelligence (AI) has widespread applications in big data collection and analysis. AI

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systems automatically gather data from various sources such as websites, social media, emails, and others. The AI then processes and preprocesses the data to eliminate noise and standardize it. The AI system also analyzes big data to identify patterns, trends, and important insights. Additionally, AI predicts and forecasts events and outcomes based on historical data. Finally, AI optimizes processes and makes intelligent decisions based on big data. BIDV Bank has made a significant advancement in enhancing data storage and processing capabilities by implementing Oracle's Hadoop big data infrastructure. Hadoop is an open-source platform that enables processing and storing large datasets, providing analytical capabilities and flexible scalability. This deployment allows BIDV to collect, store, and analyze data from various sources, giving the bank a comprehensive view of customers and the market.

Asset management and investment portfolio management

In today's banking industry, there is a growing application of Artificial Intelligence (AI) in making investment decisions and supporting research in the field of investment banking. Financial service companies also provide robo-advisors to help customers manage their funds more securely. Customer information and needs are automatically collected through chatbots. These robots provide investment advice and are readily available to assist customers. With AI, banks reduce risks, save costs, increase profits, and protect customer rights. For example, banks such as UBS (Switzerland) and ING (Netherlands) have used AI systems to monitor the market for untapped investment opportunities and notify their trading systems and algorithms.

Enhancing transaction quality

Thanks to its ability to analyze and process data accurately and quickly, AI helps increase the accuracy and efficiency of transactions. AI systems automate transaction processes, reducing errors and increasing order matching. Additionally, AI is also used to detect and prevent fraud and risks in transactions, ensuring security and reliability for all parties involved. As a result, transaction quality is improved, providing satisfaction and meeting the needs of customers in the best possible way. ICICI Bank is the largest private sector bank in

India with a network of 4,867 branches and 14,367 ATMs nationwide. The bank faced challenges in processing customers' daily emails and routing emails to the appropriate department for processing. After analyzing the customer's workflow and requirements in detail, Datamatics proposed a TruAI solution based on Artificial Intelligence (AI) to automate various stages of processing these requests.

Enhancing risk management and information security

AI analyzes and processes big data, helping to detect and prevent security threats. It automatically identifies patterns and abnormal behaviors, alerting and preventing cyber-attacks, viruses, or fraudulent activities. AI provides secure encryption and decryption of information, ensuring the security of critical data. It also continuously checks the security system, detects vulnerabilities, and provides solutions to enhance the security and reliability of the information system. Visa utilizes Artificial Intelligence (AI) to combat financial information attacks. They employ Visa Account Attack Intelligence (VAAI) to identify and assess transactions that do not use physical cards on the VisaNet server system. VAAI detects data patterns that are difficult for humans to recognize, such as mass payment account attacks based on predictive scenarios. This tool helps Visa eliminate inaccurate information and quickly identify complex attacks while evaluating the impact of new attacks.

Fraud Detection and Anti-Money Laundering

AI systems detect fraud patterns and provide immediate alerts when violations occur, helping banks mitigate risks and protect customer rights. NatWest Group, a major bank in the UK, uses Nuance's voice biometrics technology to detect fraud in call centers and organized criminal activities across customer interaction channels. HSBC collaborates with Quantexa to deploy Artificial Intelligence (AI) software to prevent money laundering. By analyzing data from internal, public sources, and customer network transactions, HSBC identifies suspicious activities and mitigates money laundering risks. HSBC has also established a joint venture with Ayasdi, an AI startup, to automate the anti-money laundering investigation process, reducing the number of staff involved. Previously, anti-money laundering investigations required

thousands of people, but with the support of AI, this process is automated and more efficient.

Detecting fraudulent websites

AI has the ability to analyze and identify fraudulent websites. By processing data and applying classification algorithms, AI can detect patterns and characteristics of fraudulent websites. This helps users and organizations avoid contact and risks from unreliable websites, protecting personal information and online assets. Wells Fargo, a US bank, has deployed AI technology to assess the credibility of websites that customers access. The AI system automatically checks the URL, SSL certificates, content, and other characteristics to determine the accuracy of the website. If the system detects suspicious signs, it alerts the user and provides detailed information about the fraud risk. This helps users avoid contact with fraudulent websites and protect their personal information and assets.

Credit scoring

Artificial Intelligence (AI) can assist in credit scoring for individuals and businesses. AI utilizes data analysis algorithms to evaluate financial information, credit history, and other factors to determine the risk level and repayment ability of customers. Automating the credit scoring process helps AI make accurate and efficient decisions regarding credit approval and setting appropriate interest rates. This enables financial institutions to make quick and reliable decisions regarding credit services and credit risk management.

Capital One, a leading bank, has implemented Artificial Intelligence (AI) technology to automatically analyze and evaluate customer's financial information. Capital One's AI system uses data analysis algorithms to examine income, credit history, account quantity, and previous loans. By automatically analyzing and evaluating this information, Capital One's AI system generates a credit score for each customer. This credit score is used to decide on credit approval, interest rates, and loan terms provided by the bank.

Implementing AI technology helps Capital One increase accuracy and efficiency in assessing customers' repayment ability and credit risk. Additionally, automating the process of analyzing and evaluating financial information saves time and optimizes the loan application process.

4. Conclusion

AI is having a significant impact on the banking industry. This technology has brought many benefits and new opportunities for financial institutions, enhancing efficiency, improving customer experience, and better risk management. However, implementing AI in banking requires not only financial and technological investments but also careful consideration and leadership. Implementing AI in banking is not simply about adopting new technology. Banks need to invest heavily in infrastructure and human resources to successfully deploy AI. This requires financial capabilities to invest in the necessary hardware and software systems, as well as training and hiring employees with knowledge and skills in AI. Additionally, data security is a crucial factor that needs to be carefully considered. With the use of AI, banks will collect and process large amounts of customers' personal data, thus strong security measures are needed to ensure the safety and protection of customers' personal information.

Furthermore, deploying AI in banking also poses challenges regarding transparency and accountability. AI algorithms can be complex and difficult to understand, requiring clear and transparent explanations for customers to comprehend and trust the bank's decisions. Bank leadership needs to ensure that the processes and algorithms used in the AI system are fair and do not harm customers.

To successfully implement AI in banking, leadership needs to have a clear roadmap and appropriate strategy. They need to assess the organization's skills and financial capabilities to ensure they can invest in and maintain an AI system. Additionally, leadership needs to enhance their knowledge and application capabilities in managing AI technology. This can be achieved through employee training and organizing update sessions on AI to disseminate and create awareness of technological transformation within the organization.

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LABOR LITERACY RATE AND ECONOMIC DEVELOPMENT IN THE MEKONG DELTA, VIETNAM

MSc. Nguyen Vu Duy*

Abstract: *Education is always an important issue mentioned in each country's development policy, especially basic education. The article aims to analyze the impact of the labor literacy rate on the economic development in the Mekong Delta region, Vietnam. The authors used the generalized least squares (GLS) estimation method to process data from 13 provinces/cities in the Mekong Delta in the period 2010 - 2021. Research results show that the literacy labor rate has a positive impact on economic development in the Mekong Delta, Vietnam at the 1% significance level. The government and local authorities need to focus on educational policies to improve qualifications and skills for workers, thereby increasing labor productivity and promoting economic development.*

1. Introduction

Labor is one of the important factors that determines the fluctuation of production output, thereby affecting the economic growth and development of a country (Smith, 1776). In order to evaluate the quality of labor resources, two main factors that were selected include health and qualifications (Lim et al., 2018). According to the current trend of sustainable development, countries in general and Vietnam in particular pay the most attention to education levels. There are many different measures of educational attainment, from the most basic method like literacy rate to primary, secondary, and university enrollment rates (Mak & Chung, 1997; Mehmood et al., 2014). To be able to achieve higher levels, workers need to reach the most basic level. This proves that the literacy rate is the key to helping workers improve their qualifications, thereby increasing output and promoting economic development.

Reality also shows that Africa has a very high illiteracy rate (40%) and 22/25 of the world's poorest countries are in Africa. From affirming the importance of educational level to the economic development of a country, many authors provided empirical evidences through researching the relationship between human capital and economic growth. Khan and Chaudhry (2019) studied the impact of human capital on unemployment rate and economic growth in developing countries. In which variables representing human capital included spending on education and life expectancy. Also approaching the relationship between human capital and economic growth, Ali et al. (2018) again used the variable average years of schooling to represent human capital. In addition, spending on education and health was also mentioned when considering the impact of human capital on economic growth (Keji, 2021).

However, in almost studies evaluating the impact of education on economic growth, the education variable was mainly measured through investment in education (public spending on education) or enrollment rate (primary school, high school, university). Only a few studies used the literacy rate as a proxy for the level of human capital when examining this relationship. Typically, there was research by Mehmood et al. (2014) when studying the relationship between health spending, literacy rate and economic growth in Asian countries. The result confirmed that a long-term and positive relationship exists between literacy rate and per capita income (economic growth). Juliannisa and Siswantini (2020) pointed out that the human development index depends on the aspects of average life expectancy, literacy rate, average years of

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schooling and purchasing power parity. In addition, within the limits of the research, the authors had not found empirical evidence in Vietnam on studying the impact of literacy rate on economic growth, especially in key economic regions. Through reviewing previous studies and identifying research gaps, the authors decided to choose the research topic: "Labor literacy rate and economic development in the Mekong Delta, Vietnam".

2. Research summary

Keji (2021) empirically examined the relationship between human capital and economic growth in Nigeria from 1981 to 2017. The author used an observed variable representing human capital related to education, which was the student enrollment rate. Research results show that human capital (education) has a lasting and significant impact on economic growth in Nigeria.

Juliannisa and Siswantini (2020) studied literacy to improve the Human Development Index (HDI) in Cibadak Village. Research shows that local authorities have to pay more attention to supporting reading and writing training of leaders because human resources are the driving force to promote economic development.

Khan and Chaudhry (2019) analyzed the impact of human capital (life expectancy and education expenditure) on GDP and employment growth in developing countries using panel data for the period 1996 -2018. Empirical results show that human capital variables (life expectancy and education expenditure) are drivers of growth and employment opportunities in developing countries.

Ali et al. (2018) used data from 132 countries over 15 years to study the relationship between human capital (average years of schooling) and economic growth. Empirical results show that human capital only plays a positive role in GDP per capita growth when there are better economic opportunities and high-quality legal institutions. Mehmood et al. (2014) examined the relationship between health spending, literacy rate, and economic growth in a sample of 26 Asian countries with data from 1990 to 2012. The results show the presence of long-term relationships between per capita income, health expenditure and literacy rate.

3. Research data and models

3.1. Data

The article uses balanced panel data including 156 observations compiled from the statistical yearbook of Vietnam's provinces. The data set includes data from 13 provinces and cities in the Mekong Delta over a 12-year period (2010 - 2021).

3.2. Research models

Based on the research model of Mehmood et al. (2014) the authors proposed the following research model:

$$PTKT_{i,t} = \beta_0 + \beta_1 * TLBC_{i,t} + \beta_x * Z_{i,t} + \varepsilon_{i,t}$$

In which: i represents the province and t represents the time.

$PTKT_{i,t}$ - GRDP per capita of province i in year t

$TLBC_{i,t}$ is the literacy rate of province i in year t

Z is the set of control variables including TTLD - labor force growth rate, VNN - foreign direct investment, LP - inflation rate, TM - trade openness

β_0 is the intercept coefficient

β_1 và β_x are regression coefficients

ε: is the corresponding error.

3.3. Variables

- Dependent variable: Economic development (PTKT) is measured by gross national product per capita. This indicator reflects the efficiency of the economy of a region, province or country. This measurement method has also been used in many previous research (Amna Intisar et al., 2020; Hanushek & Woessmann, 2020; Muhammad & Khan, 2019)

- Explanatory variable: The working-age literacy rate (TLBC) is measured by the number of literate working-age people compared to the total population. Mehmood et al. (2014) affirmed that a high literacy rate is the desire of any country when it wants to promote economic development.

- Control variables: Control variables include labor force growth rate (TTLD), foreign direct investment capital (VNN), inflation rate (LP), and trade openness (TM). These variables are also used by many studies such as Khan and Chaudhry (2019); Mehmood et al. (2014).

4. Results and discussion

4.1. Research results

Table 1: Descriptive statistics of variables

Các biến	Số quan sát	Giá trị trung bình	Độ lệch chuẩn	Giá trị nhỏ nhất	Giá trị lớn nhất
PTKT	156	6,463536	0,225776	5,934041	7,741665
TLBC	156	1,969061	0,012722	1,929419	1,985426
VNN	156	-0,14851	0,780409	-2,8394	1,308038
LP	156	0,630492	0,339167	-1,22185	1,465977
TM	156	19,34207	0,24303	18,46981	20,01633
TTLD	156	0,093479	0,454574	-2,64344	0,954259

Source: Authors compiled from STATA results

Table 2: Correlation coefficient

	PTKT	TLBC	VNN	LP	TM	TTLD
PTKT	1					
TLBC	0,3131***	1				
VNN	0,3007***	0,2665***	1			
LP	-0,2095***	-0,0411	-0,0021	1		
TM	0,0262	0,4324***	0,2405***	-0,0693	1	
TTLD	0,0088	-0,1533*	-0,1797**	-0,0314	0,1855**	1

Source: Authors compiled from STATA results

Table 3: VIF and mean VIF values

Biến	VIF	1/VIF
TM	1,39	0,717742
TLBC	1,35	0,743075
TTLD	1,16	0,863465
VNN	1,14	0,874406
LP	1,01	0,994347
Mean VIF	1,21	

Source: Authors compiled from STATA results

Table 4. Summary of regression results

	OLS	FEM	REM	GLS
TLBC	6,287***	12,00***	10,30***	5,193***
	-4,28	-4,27	-4,34	-4,35
VNN	0,0842***	0,0555	0,0598	0,0544**
	-3,82	-1,5	-1,81	-3,07
LP	-0,137**	-0,127***	-0,127***	-0,0461
	(-2,88)	(-3,72)	(-3,78)	(-1,89)
TM	-0,223**	-0,273***	-0,273***	-0,195***
	(-2,85)	(-3,80)	(-3,94)	(-3,74)
TTLD	0,0762*	-0,00078	0,00672	0,0465
	-2	(-0,02)	-0,19	-1,71
Constant	-1,516	-11,80*	-8,436	0,00719
	(-0,58)	(-2,06)	(-1,76)	0
No, of obs	156	156	156	156
No, of groups	13	13	13	13
Prob>F/Prob> chi2	0,000	0,000	0,000	0,000
R-squared	0,2367	0,1855	0,1976	
White's test	Prob > chi2 = 0,0000			
Wooldridge's test	Prob > F = 0,0005		Prob > F = 0,0005	
Hausman test	Prob>chi2 = 0,8332			
Modified Wald's test	Prob>chi2 = 0,0000			

*Note : t statistics in parentheses * p<0,1; ** p<0,05; *** p<0,01*

Source: Authors compiled from STATA results

4.2. Discussion

Table 1 describes the statistics of variables related to economic development, literacy rate and other control variables. The authors took samples from 13 provinces and cities in the Mekong Delta in the period from 2010 to 2021. Through the descriptive statistics table, it can be seen that the number of observations is 156, the maximum value and the minimum value as well as the variation of the data through the Coefficient of Variation of the data (Coefficient of Variation). Most of the data fluctuates at an average level with CV coefficients less than 1, except for foreign direct investment data (VNN) and labor force growth rate (TTLD) which have CV fluctuation coefficients >1.

Table 2 shows the correlation coefficient between the dependent variable and the independent variables and the correlation coefficient between the independent variables. The results show that the dependent variable economic development (PTKT) has a strong correlation with the variable that needs to be explained, the literacy rate (literacy rate) at the 1% significance level. Besides, there is no multicollinearity phenomenon because the correlation coefficient between independent variables is less than 0.7. At the same time, the VIF and Mean VIF coefficients are both less than 2 (Table 3). Table 4 summarizes the regression results of the model with the following methods: least squares (Pool OLS), fixed effects model (FEM), random effects model (REM) and estimated squares method. minimum quantity (GLS). The tests performed by the authors include: White's test/ Modified Wald's test/ Breusch and Pagan test for heteroscedasticity, Wooldridge's test for autocorrelation and Hausman test for FEM and REM models. With the Pool OLS least squares method: White's test results in p-value = 0.0000 < 0.05, so the model has problems with heteroscedasticity at the 95% confidence level; Wooldridge's test tested for autocorrelation and resulted in p-value = 0.0005 < 0.05, showing that the model has autocorrelation with a confidence level of 95%. These two tests show that the model suffers from autocorrelation and heteroskedasticity problems, so using Pool OLS is almost meaningless. The authors continued to use the fixed effects model (FEM) and random effects model (REM) based

on the Hausman test. When using the Hausman test, the result was p-value = 0.8332 > 0.05, so the authors chose the REM fixed effects model. With the REM model, the authors used Modified Wald's test to test for heteroskedasticity with the result p-value = 0.0000 < 0.05, showing that the model suffers from heteroskedasticity with a 95% confidence level. At the same time, the model cannot overcome the autocorrelation phenomenon when the Wooldridge's test results show that p-value = 0.0000 < 0.05. Finally, the authors used General Least Square (GLS) which can overcome the problem of heteroscedasticity and autocorrelation. And after using the estimated least squares (GLS) method, we have overcome two problems of the model and produced regression results with significance levels of 1% and 5%.

Regression results using the GLS method in table 4 show that the literacy rate has a positive impact on economic development when the TLBC has a positive sign with regression coefficient = 5.193, with a significance level of 0.01. This result provides further empirical evidence that the labor literacy rate increases per capita gross domestic product, promoting economic development. When the rate of literate workers increases, workers have basic qualifications and have the conditions to improve their own knowledge, have the ability to learn and improve their expertise, thereby increasing labor productivity and promoting economic development (Mehmood et al., 2014).

The impact of foreign direct investment (VNN) variables on economic development is positive with a regression coefficient of 0.0544 and a significance level of 0.05. Meanwhile, trade openness (TM) inhibits economic development with a regression coefficient of - 0.195 and a significance level of 0.01.

5. Conclusion and policy implications

The authors used the least squares (GLS) estimation method on data from 13 provinces and cities in the Mekong Delta, Vietnam in the period from 2010 to 2021 in order to examine the impact of labor literacy rate on economic development. Research results show that: (i) The rate of literate labor has an impact on promoting economic development. The rate of literate workers increases, workers have improved qualifications and are able to apply technical advances in production to increase output and increase economic efficiency. (ii) Foreign direct investment has a positive impact on economic development. This means that policies to encourage foreign investors into Vietnam will help have more capital to invest in economic development. (iii) On the contrary, trade openness (TM) has a negative impact on economic growth. This can be explained because fluctuations in import and export can affect the prices of domestic goods, thereby affecting the ability to consume domestic goods and reduce economic efficiency.

The national government and local authorities need to focus on policies to support workers in studying to improve their qualifications, improve their skills, and improve their expertise to promote economic development and learn practical experiences from abroad as well as apply them to our country.

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THE IMPACT OF MACROECONOMICS FACTORS ON VIETNAMESE STOCK MARKET PERFORMANCE

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Abstract: *The Vietnamese stock market has become a prominent participant in the global financial landscape, demonstrating substantial expansion and attracting increasing interest from investors worldwide. Establishing a comprehensive understanding of the intricacies and fluctuations of this sector is crucial for both local and global investors aiming to capitalize on its inherent possibilities. This study utilizes statistical analysis methods, specifically the Bayesian Vector Autoregression (BVAR), to examine the complex connections between several macroeconomic variables and the performance of the stock market in Vietnam. Through this sophisticated regression technique, our objective is to offer a comprehensive understanding of the impact of macroeconomic variables, including export, inflation, exchange rate, and industrial manufacturing performance, on the fluctuations of the stock market in Vietnam. Our research not only adds to the current knowledge on the Vietnamese stock market but also provides vital insights for policymakers, investors, and researchers dealing with this ever-changing financial environment.*

• Keywords: *emerging stock market, VAR, macroeconomic.*

1. Introduction

The purpose of this study is to examine the complex correlation between macroeconomic variables and the performance of the Vietnamese stock market. The research aims to analyze the impact of macroeconomic factors, namely inflation, exchange rates, exports, and the Industrial Manufacturing Index, on the performance of the Vietnamese stock market from 2008 to 2022. The study uses the Bayesian Vector Autoregressive (BVAR) model to analyze the dynamic dependency between macroeconomic variables and the stock market index. The BVAR model utilizes Bayesian techniques to estimate parameters, allowing for a comprehensive understanding of how variables interact over time. It provides valuable insights into the factors that shape the Vietnamese financial environment. This report offers significant insights that can assist investors, policymakers, and market participants in better understanding the macroeconomic dynamics influencing the Vietnamese stock market.

2. Literature review

The relationship between financial development, macroeconomic conditions, and economic growth has been a central focus of economic research for many years. Although most research assumes a connection between these variables, the exact nature of this link has yet to be thoroughly understood. Economists hold various opinions on how macroeconomic variables and financial systems interact. Schwert (1989) did a study to comprehend the fluctuation of stock returns over a period. Nevertheless, the results of his investigation on the causal relationship between stock returns and oscillations in macroeconomic factors were unclear. The basis of extensive research on the correlation between the stock market and macroeconomic factors is rooted in the Arbitrage Pricing Theory (APT), first proposed by Ross in 1976. APT creates a correlation between the profits of individual assets and portfolios and many independent macroeconomic variables. The elements that usually impact stock prices are inflation, lending rates, economic activity, and exchange rates. These factors are widely acknowledged as significant. Bekhet (2013) and Fama (1981) have emphasized the significance of these macroeconomic issues in influencing the stock market dynamics. Although there has been significant focus on this subject, there is still a requirement for additional research to accurately define the connection between financial development, macroeconomic variables, and economic growth. While several studies argue that these characteristics have a direct cause-and-effect relationship, others propose a more intricate and multifaceted interaction. The continuous discussion highlights the significance of ongoing empirical investigation and theoretical advancement. By enhancing our comprehension

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of the interplay between financial systems and macroeconomic variables, policymakers and practitioners can make more knowledgeable choices to promote enduring economic growth and stability.

Gunasekarage et al. (2004) conducted an extensive study to examine how macroeconomic variables affected the equity values of Sri Lanka's stock market from 1985 to 2001, covering 17 years. The researchers utilized a range of statistical tests, including unit root tests, cointegration tests, Vector Error Correction Model (VECM), Impulse Response Functions (IRFs), and Variance Decomposition Analysis (VDCs), to identify both long-term and immediate relationships between variables. The study's results demonstrated that macroeconomic issues substantially impact the stock market, demonstrating a strong statistical correlation between these variables (Gunasekarage et al., 2004). In a study undertaken by Khan et al. (2015), the researchers examined the influence of macroeconomic variables on stock values in four South Asian countries. It was discovered that these variables substantially impact stock values when they are accurately recognized and studied. Furthermore, it was shown that global concerns such as financial hazards significantly influenced the stock market, especially for countries closely connected to the global economy (Khan et al., 2015).

Chen and Wu (2013) examined the correlation between macroeconomic indicators and the performance of stock markets in South Asian countries. By utilizing Principal Component Analysis (PCA), they could pinpoint crucial components among a wide range of domestic and foreign variables. Their research emphasized the significance of precisely measured interest rates, exchange rates, and trade in setting stock market valuations in these countries. Moreover, Chen and Wu (2013) proposed that international investors could gain advantages in portfolio diversification by investing in South Asian economies. These markets demonstrate a comparatively low correlation with global financial markets.

In a study conducted by Ratanapakorn (2007), the relationship between macroeconomic parameters and U.S. stock prices was examined. It was discovered that the money supply had a negative correlation with stock prices, but industrial production, inflation, and the exchange rate showed positive relationships. The researcher ascribed the contrasting results about interest rates to variables such as enhanced productivity leading to elevated overall interest and speculation, ultimately culminating in the escalation

of interest rates. In addition, Ratanapakorn (2007) observed a more pronounced correlation between long-term interest rates and stock prices than short-term interest rates. By applying a bound testing method, Bekhet (2013) established a correlation between macroeconomic parameters and stock market behavior. This finding provides additional evidence supporting the idea that there is a strong connection between macroeconomic factors and the behavior of the stock market (Bekhet, 2013). The nascent stock market in Malaysia demonstrates an intricate correlation with diverse macroeconomic factors. More precisely, it was noted that there was a negative correlation between it and the production cost index, M3 (a metric for money supply), Consumer Price Index (CPI), and exchange rate. On the other hand, it positively correlated with gross domestic product (GDP) and stock prices (Author, Year). These findings indicate that a blend of local economic factors impacts the performance of the Malaysian stock market.

Wang (2012) discovered a strong correlation between investor emotion, market momentum, and macroeconomic indicators in a study conducted on the Taiwan Stock Exchange. This highlights the complex and diverse dynamics involved in stock market behavior, where elements outside solely economic indicators can influence market emotion and momentum. Similarly, Basci (2013) examined the correlation between imports, exchange rates, and the ISE 100 index using Vector Autoregression (VAR) analysis. The results indicated that these macroeconomic factors had a noticeable impact on the Istanbul Stock Exchange, emphasizing the interdependence between global trade dynamics and the stock market's performance. Ozcan (2012) examined the enduring balance between the industrial index of the Istanbul Stock currency and several macroeconomic indicators such as interest rates, currency rates, money supply, gold prices, commodity volumes, oil prices, and current account deficits.

The study discovered compelling evidence of a consistent correlation between these macroeconomic variables and the performance of the Istanbul Stock Exchange. This highlights the significance of considering various economic indicators when assessing stock market activity. Furthermore, a study conducted by Ozcan in 2012 found that the historical values of stocks listed on the Istanbul Stock Exchange significantly influenced market dynamics. This suggests a reciprocal relationship between past performance and current market sentiment. These

findings emphasize the complex relationship between macroeconomic fundamentals and stock market movements in various geographical situations. Gaining a comprehensive understanding of these relationships is paramount for investors, policymakers, and market players in effectively navigating financial markets and making well-informed decisions.

3. Research methodology

3.1. Data sources

The study employs a time series dataset consisting of secondary data sources, covering the period from January 2008 to December 2022. The dataset contains 180 monthly observations in total. Investing has provided the VNindex data, a representative benchmark for the Vietnamese stock market. Furthermore, supplementary data from the International Financial Statistics of the International Monetary Fund have been obtained to encompass broader economic indicators not limited to the stock market. These variables comprise the exchange rate, inflation rate, and exports.

Furthermore, the study incorporates information regarding the Industrial Production Manufacturing Index obtained from the General Statistics Office of Vietnam. The aforementioned index is an essential metric utilized to evaluate the expansion and progress of the Vietnamese manufacturing industry. By employing this comprehensive dataset, the study aims to examine and assess the interconnections that exist among these varied economic variables and the performance of the stock market in Vietnam.

3.2. Estimation method

The methodology utilized in this research employs a rigorous and all-encompassing approach to estimation to elucidate the complex interplay of macroeconomic variables affecting the Vietnamese stock market. At the core of this methodology lies the application of the Bayesian Vector Autoregressive (VAR) model, which is widely recognized for its capacity to account for uncertainty by utilizing posterior distributions (Lutkepohl, 2005). This model functions as a potent instrument for mitigating the difficulties associated with limited sample sizes and sparse data while also skillfully capturing the intricate interconnections among variables. In addition, the Bayesian VAR model exhibits robustness when confronted with structural discontinuities and aids in generating accurate predictions and impulse response analyses. Incorporating prior knowledge and adaptable modeling methodologies significantly improves the

ability to generate perceptive interpretations of the data (Lutkepohl, 2005). Furthermore, by utilizing Bayesian model comparison criteria, researchers can select the most appropriate model for their particular dataset and research goals. Consequently, by integrating the theoretical foundations of the Bayesian VAR model and a meticulous estimation methodology, this research endeavor endeavors to provide all-encompassing perspectives on the interplay between macroeconomic factors and the dynamics of the Vietnamese stock market.

The model used by the study can be expressed as below:

$$VNI_t = \Phi_0 VNI + \Phi_1 VNIVNI_{t-1} + \Phi_2 VNIVNI_{t-2} + \Phi_1 EXPEXP_{t-1} + \Phi_2 EXPEXP_{t-2} + \Phi_1 INFINF_{t-1} + \Phi_2 INFINF_{t-2} + \Phi_1 ERER_{t-1} + \Phi_2 ERER_{t-2} + \Phi_1 EAEA_{t-1} + \Phi_2 EAEA_{t-2} + \epsilon_t VNI$$

Where:

VNI_t: represent Vnindex at time t.

EXP_t, INF_t, ER_t, EA_t: represents Export, Inflation, Exchange Rate, and Industrial Manufacturing Index at time t respectively.

Φ_0, Φ_1, Φ_2 are coefficients associated with the lagged values of the variables.

ϵ_t is the error term

4. Result and discussion

4.1. Descriptive statistic

	Exchange Rate	Export	Industrial Production Manufacturing Index	Inflation	Vnindex
Mean	9.963	9.464	5.007	4.915	6.488
Median	9.990	9.519	4.987	4.975	6.384
Maximum	10.120	10.460	5.790	5.193	7.312
Minimum	9.675	8.142	4.367	4.329	5.504
Std.Dev.	0.101	0.599	0.256	0.224	0.410
Skewness	-1.194	-0.286	0.699	-0.893	0.227
Kurtosis	3.596	2.055	4.349	2.615	2.167
Jarque-Bera	45.445	9.154	28.347	25.037	6.742
Probability	0.000	0.010	0.000	0.000	0.034
Sum	1793.453	1703.681	901.412	884.791	1167.965
Sum Sq.Dev.	1.849	64.340	11.756	9.044	30.186
Observations	180	180	180	180	180

A thorough examination of essential economic indicators unveils noteworthy patterns within the market. With a mean of 9.963 and a standard deviation of 0.101, the exchange rate exhibits minimal variability but deviates from the expected pattern, implying the possibility of unanticipated occurrences. The variability of export activity is substantial, as indicated by its standard deviation of 0.599, which makes it vulnerable to external influences. The industrial production average of 5.007 demonstrates significant skewness and kurtosis, which underscores susceptibility to extreme events. In the same way, inflation, which exhibits a consistent mean value of 4.915, demonstrates a non-normal distribution, thereby emphasizing the critical need for strong risk management. The VNindex exhibits

a moderate degree of volatility, which requires investors to exercise vigilant surveillance. It is imperative for policymakers to recognize the widespread occurrence of non-normal distributions among various indicators and contemplate the adoption of risk mitigation and resilience-enhancing strategies.

4.2. Correlation matrix

	Vnindex	Export	Exchange Rate	Industrial Manufacturing Index	Inflation
Vnindex	1	0.850**	0.686**	0.230**	0.750**
Export	0.850**	1	0.901**	0.252**	0.952**
Exchange Rate	0.686**	0.901**	1	0.145	0.970**
Industrial Production Manufacturing Index	0.230**	0.252**	0.145	1	0.146
Inflation	0.750**	0.952**	0.970**	0.146	1
** Correlation is significant at the 0.01 level (2-tailed)					

Utilizing a correlation matrix unveils complex interrelationships among pivotal economic factors in Vietnam. A robust positive correlation (0.850) between exports and the Vietnam Stock Market Index (VNindex) suggests a symbiotic association; a thriving stock market is accompanied by heightened export activity, which may indicate enhanced confidence among investors and businesses. Moreover, an exchange rate and VNindex exhibit a moderate positive correlation (0.686), indicating that the stock market may play a role in enticing foreign investment, which could affect the value of the domestic currency. Nevertheless, the industrial manufacturing index exhibits a weak positive correlation of 0.230 with the VNindex, suggesting that the stock market's performance might not be a dependable indicator of industrial output. In the interim, the VNindex exhibits a noteworthy positive correlation of 0.750 with inflation, indicating a tendency for stock market performance to correspond with inflationary forces, which increased consumer expenditure and investment may stimulate.

Furthermore, strong positive correlations (0.901 and 0.952) between exports and both the exchange rate and inflation highlight the exchange rate's crucial impact on the competitiveness of exports and its contribution to inflation. The strong positive correlation between the exchange rate and inflation (0.970) highlights the exchange rate's direct influence on price levels, explicitly affecting the costs of imported products and overall inflation patterns. On the contrary, the Industrial Manufacturing Index exhibits a scant response to fluctuations in exchange rates, as indicated by the moderate positive correlation (0.145) between the two variables. Similarly, the nominal positive correlation (0.146) observed between inflation and the Industrial Manufacturing Index suggests that the influence of industrial production on inflation may not be substantial, with other determinants presumably exerting a more substantial impact.

4.3. Bayesian VAR model

Bayesian VAR Estimates
Prior type: Litterman/Minnesota
Initial residual covariance: Full VAR
Hyper-parameters: Mu: 0.L1: 0.1. L2: 0.99. L3: 1

	Exchange Rate	Export	Industrial Production Manufacturing Index	Inflation	Vnindex
Exchange Rate(-1)	0.765	0.250	0.353	0.046	0.3922
	(0.043)	(0.523)	(0.773)	(0.022)	(0.33501)
	[17.542]	[0.477]	[0.457]	[2.036]	[1.1707]
Exchange Rate(-2)	0.114		-0.027	0.018	-0.019
	(0.039)	(0.472)	(0.697)	(0.020)	(0.302)
	[2.897]	[-1.191]	[-0.039]	[0.879]	[-0.0638]
Export(-1)	-0.0028	0.198	-0.0189	0.005	0.0689
	(0.445)	(0.055)	(0.081)	(0.0024)	(0.03517)
	[-0.631]	[3.617]	[-2.233]	[2.373]	[1.9589]
Export(-2)	0.0018	0.098	0.00012	0.0018	0.0298
	(0.003)	(0.039)	(0.0578)	(0.00171)	(0.03517)
	[0.575]	[2.493]	[0.0021]	[1.0741]	[1.1889]
Industrial Production Manufacturing Index(-1)	-0.0013	0.065	0.521	-0.0021	0.0333
	(0.003)	(0.035)	(0.052)	(0.0015)	(0.02245)
	[-0.475]	[1.861]	[10.028]	[-1.3567]	[1.4864]
Industrial Production Manufacturing Index(-2)	0.0017	-0.042	0.119	0.000123	0.004
	(0.002)	(0.027)	(0.0399)	(0.036)	(0.017)
	[0.771]	[-1.570]	[2.977]	[0.1044]	[0.22988]
Inflation(-1)	0.085	3.248	-0.305	1.056	0.0426
	(0.068)	(0.829)	(1.223)	(0.036)	(0.532)
	[1.239]	[3.918]	[-0.249]	[28.9203]	[0.080]
Inflation(-2)	-0.044	-1.756	0.151	-0.210	-0.221
	(0.065)	(0.786)	(1.161)	(0.034)	(0.505)
	[-0.676]	[-2.233]	[0.130]	[3.480]	[-0.438]
Vnindex(-1)	-0.0025	0.207	0.0555	0.0033	0.791
	(0.0055)	(0.066)	(0.097)	(0.0029)	(0.043)
	[-0.449]	[3.123]	[0.567]	[-0.232]	[18.503]
Vnindex(-2)	0.0052	0.109	0.024	-0.0006	0.065
	(0.0055)	(0.066)	(0.087)	(0.00259)	(0.038)
	[1.076]	[1.853]	[0.283]	[-0.2321]	[1.702]
C	0.985	0.266	-1.032	-0.405	-3.022
	(0.224)	(2.707)	(3.9938)	(0.1176)	(1.726)
	[4.398]	[0.098]	[-0.258]	[-3.443]	[-1.7503]
R-squared	0.990	0.961	0.574	0.9993	0.967
Adj. R-squared	0.990	0.958	0.548	0.9992	0.965
Sum sq.resids	0.015	2.387	4.968	0.0057	0.983
S.E. equation	0.009	0.119	0.172	0.0058	0.076
F-statistic	1763.410	414.728	22.537	24161.460	494.661
Mean dependent	9.967	9.477	5.009	4.922	6.487
S.D. dependent	0.097	0.590	0.257	0.218	0.412

Using Bayesian Vector Autoregression (VAR) estimates provides a more comprehensive comprehension of the complex mechanisms that impact the Vietnam stock market index's (Vnindex) performance. The model-derived coefficients provide insights into the strength and direction of the associations between a range of economic indicators and the Vnindex. To begin with, the exchange rate is identified as a crucial factor, influencing the performance of the Vnindex considerably with both contemporaneous and deferred values. The coefficient of 0.765 for the exchange rate (-1) indicates that all else being equal, a one-unit increase in the exchange rate causes a 0.765 unit increase in Vnindex. Conversely, the coefficient of 0.114 for the exchange rate (-2) signifies a marginally lesser yet still significant impact. This suggests that an exchange rate environment favorable to the Vietnamese stock market is conducive to higher stock prices, potentially due to increased foreign investment inflows and enhanced competitiveness of export-oriented companies.

Additionally, it is worth noting that exports significantly influence the performance of the Vnindex, albeit to a slightly lesser extent than the exchange rate. The exports coefficient of -1 indicates that an increase of one unit in exports corresponds to a 0.198 unit rise in the Vnindex. This finding underscores the significance of export performance as a gauge of investor sentiment and the economy's overall health.

Furthermore, it is worth noting that the manufacturing and industrial production indices demonstrate a strong positive correlation with Vnindex. The coefficients for the latency values of 0.521 and 0.119, respectively, indicate this. This highlights the significance of industrial activity as a prescient predictor of stock market performance, signifying that upward trends in the manufacturing industry indicate favorable returns on the stock market.

Nevertheless, the correlation between inflation and the Vnindex's performance seems more intricate. As indicated by the coefficient of 3.248 for inflation (-1), current inflation positively affects Vnindex. This suggests that investors may expect increased corporate earnings in environments with high inflation. However, lagged inflation has a detrimental effect on Vnindex, as demonstrated by the coefficient of -1.756 for inflation (-2). This dichotomy posits moderate inflation may engender investor confidence and stimulate economic activity. In contrast, persistently high or escalating inflation rates may undermine market sentiment and erode purchasing power, thereby forcing stock prices downward.

Moreover, it is important to highlight the autocorrelation of the Vnindex, which has present and lagging values that substantially impact its performance. This observation suggests momentum effects within the Vietnamese stock market, whereby recent fluctuations in the Vnindex impact present pricing. This may be attributed to investor clustering behavior or a lack of innovation in trading strategies.

5. Conclusion and policy implication

Examining the Bayesian VAR estimates in conjunction with the given data highlights the complex interplay between the VNIndex and various economic indicators, thereby requiring a nuanced approach to policymaking. The substantial impact that exchange rates have on the performance of the VNIndex underscores the critical need for policymakers, particularly central banks, to maintain a stable exchange rate regime. Exchange rate stability is of utmost importance for companies that rely on exports, as it also enhances investor confidence in the stock market. A stable exchange rate creates an atmosphere favorable for growth focused on exports, improving the international competitiveness of domestic industries and stimulating overall economic expansion.

Although export performance significantly influences economic growth, exercising judicious control over inflation is equally critical. Prolonged inflation presents significant threats to economic stability as it undermines the currency's purchasing power and may erode the competitiveness of exported goods. While the immediate consequences of inflation on the VNIndex may appear insignificant, its broader implications require ongoing surveillance and proactive policy interventions to ensure price stability.

Moreover, the positive correlation observed between the VNIndex and the Industrial Production Index underscores the significance of nurturing a robust manufacturing and industrial sector. Robust industrial activity indicates the economy's general state and dynamism, suggesting prospective avenues for investment and expansion. Establishing regulatory frameworks that encourage technological innovation and foster industrial investment is vital for maintaining sustained economic growth.

Given these findings, it is recommended that policymakers embrace a comprehensive strategy that harmonizes support for industrial development, management of inflation, and maintenance of exchange rate stability. Enhancing logistical infrastructure, eliminating trade barriers, and fostering innovation are all strategies that can be implemented to increase export competitiveness and stimulate economic growth. Furthermore, by adopting a proactive approach to managing inflation and implementing policies that promote industrial investment, the Vietnamese economy can strengthen its resilience in an increasingly interconnected global environment and sustainably expand its economy.

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DETERMINANTS OF CONSUMER PURCHASE INTENTION TOWARD INCONSPICUOUS LUXURY PRODUCTS: AN EMPIRICAL STUDY IN VIETNAM

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Abstract: *This study examines several determinants of purchase intention toward inconspicuous luxury products with the focus on the impact of need for status. A survey of 328 Vietnamese consumers was conducted, and the research model was tested using structural equation modeling (SEM). The findings indicate that need for status has significant impact (both direct and indirect through attitude) on purchase intention toward inconspicuous luxury products. In addition, attitude and perceived behavioral control play significant roles in predicting purchase intention, while subjective norm is not found as a predictor.*

• Keywords: *need for status, inconspicuous luxury products, purchase intention.*

1. Introduction

Extant literature has suggested significant changes in the luxury landscape (Eckhardt et al., 2015). There is a shift in luxury practices from consuming conspicuous to less conspicuous luxury brands, which is known as inconspicuous consumption (Berger & Ward, 2010). Consequently, the demand for inconspicuous luxury products has been increasing. For instance, the new collection of Tiffany's jewelry which incorporates the letter "T" as a subtle symbol rather than prominently displaying its full branding, has significantly boosted sales. Several recent media reports such as "New Ways the Wealthy Express Their Affluence" and "The Wealthy: Shifting Towards Discreet Consumption," which were highlighted in BBC News and The Wall Street Journal, respectively, indicate a new consumer behavior with an emphasis on the inconspicuousness in luxury. This trend toward inconspicuous luxury suggests an intriguing research direction.

The emergence of the subtle luxury practice has prompted scholars to shift their research emphasis from conspicuous to inconspicuous luxury consumption. The seminal work of Berger and Ward (2010) initiated scholarly interest in inconspicuousness by investigating the utilities of subtle signals. Inconspicuous consumption is

defined as "the use of subtle signals, which are unidentifiable by the mainstream but instantly observable to those that possess the needed connoisseurship to decode its meanings" (Berger and Ward, 2010, p. 556). Despite scholars paying much attention to investigate this new consumption, the factors driving inconspicuous luxury consumption still need to be clarified (Eckhardt et al., 2015; Wu et al., 2017). Hence, there is a pressing need to investigate the motivations behind luxury consumers' engaging in this emerging behavior.

Previous research defines that inconspicuous luxury consumers as those who do not publicly display their social status (e.g., Berger and Ward, 2010). Additionally, Han et al. (2010) pointed out that people who consume inconspicuous luxury brands are low in need for status. However, in the field of luxury consumption literature, previous studies indicate that social status serves as a substantial antecedent motivating luxury consumption (O'Cass and McEwen, 2004), especially in emerging countries (Mai and Kuan, 2011). A recent qualitative study by Nguyen et al. (2023) has suggested that among various determinants, status-seeking is a salient motivation when consumers engage in inconspicuous luxury consumption in Vietnam, an Asian emerging economy, and called for empirically testing in future research.

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This study aims to investigate the role of need for status as a determinant of inconspicuous luxury purchase intention based on the extended framework of the Theory of Planned Behavior (TPB). Specifically, in our research model, we examine both direct and indirect impact of need for status on purchase intention toward inconspicuous luxury products. To shed light on this issue, we conducted a questionnaire-based survey with 328 Vietnamese consumers in Hanoi, a capital city of Vietnam. This study makes contributions to the existing literature on inconspicuous luxury consumption by filling several gaps: First, there seems to be very little research effort investigating the important relationship between need for status and purchase intention toward inconspicuous luxury products. In addition, there is a lack of empirical evidence about the role of status motivation in the context of inconspicuous luxury consumption, especially in an emerging economy such as Vietnam. Finally, this study advances the TPB model by integrating the need for status as a determinant of purchase intention toward inconspicuous luxury products.

2. Theoretical background and hypotheses

Inconspicuous luxury consumption

In marketing literature, luxury consumption has been associated with conspicuous consumption for a long time, which involves individuals flaunting their possessions to display their wealth and enhance their social standing. In this view, the visibility of luxury products plays an important role in conveying meaning and displaying the social status of consumers. Wealthy consumers interested in signaling status may spend a large share of their income on highly visible luxury products (e.g., Berger and Ward, 2010). Luxury consumers utilize conspicuous signals in luxury products to demonstrate their affluence (Han et al., 2010) and attain social status (O'Cass and McEwen, 2004). However, some scholars argue that not all luxury products are visible and easily recognizable. While some products prominently display highly visible logos and noticeable patterns, others feature subtle branding cues, which are recognizable only by consumers who are "in the know" (Han et al., 2010).

In the contemporary market, the decoupling of luxury from conspicuousness results in the rising preference for subtle luxury brand consumption, signaling a shift in consumer behaviors. According

to Eckhardt et al. (2015), sophistication and subtlety are the key factors in this inconspicuous consumption trend. Consumers are drawn to subtle indicators rather than overt brand names when selecting luxury goods (Berger and Ward, 2010; Eckhardt et al., 2015). The phenomenon of inconspicuous consumption has been noted in previous studies, including Vietnam (Nguyen et al., 2023), but the motivations driving luxury consumers to purchase inconspicuous luxury products still need more investigation.

Berger and Ward (2010) define inconspicuous consumption as the use of subtly marked products that are misrecognised by most observers but facilitate interaction with those who have the requisite cultural capital to decode the subtle signals. In their recent conceptual review, Eckhardt et al. (2015) have highlighted the dilution of traditional luxury brands and the increase in consumer needs for subtle designs and uniqueness. Past research has examined various drivers of inconspicuous luxury consumption, encompassing personal factors, psychological factors (e.g., Jiang et al., 2022), as well as cultural factors (Eckhardt et al., 2015).

Although researchers put much effort into exploring the antecedents of purchase intention toward inconspicuous luxury products, the influence of status motivation, especially in emerging markets, remains to be determined. Thus, in this research, we focus on examining the impact of need for status on consumer purchase intention toward inconspicuous luxury products in the emerging market of Vietnam.

Theoretical framework and hypotheses

The TPB (Ajzen, 1991) has been widely applied in explaining and predicting behaviors across a variety of domains. The TPB model defines three important antecedents of purchase intention, namely attitude toward the behavior, subjective norms, and perceived behavioral control. Based on the TPB model, in this study, attitude (ATT) refers to the consumer's positive or negative evaluation of purchasing inconspicuous luxury products; subjective norms (SN) refer to perceived social pressure that encourages one to engage in purchasing inconspicuous luxury products; and perceived behavior control (PBC) refers to the difficulty or ease perceived by an individual to perform the purchase of inconspicuous luxury products.

Previous studies have provided much empirical evidence supporting the influence of the TPB antecedents on purchase intentions toward luxury products (PI). However, the impact of these three antecedents have remain unclear in the context of inconspicuous luxury consumption. In this research, we aim to test the relationships between these three factors and PI among Vietnamese consumers and we expect to see the similar findings regarding the positive impact of ATT, SN and PBC on PI. Thus, the following hypotheses are presented:

H1. The consumer attitude toward inconspicuous luxury purchase is positively related to PI.

H2. The consumer subjective norms toward inconspicuous luxury purchase is positively related to PI.

H3. The consumer perceived behavioral control toward inconspicuous luxury purchase is positively related to PI.

According to Eastman et al. (1999), status is the position, rank, social honor, respect, or prestige awarded to an individual by others. To evaluate the status of a person, members of society can rely on visual cues in the form of visible possessions to convey status. Eastman at al. (1999) defines that consumption-related need for status as a motivational process whereby individuals choose to consume products that confer and symbolize status for both the individual and surrounding significant others. A person's need for status serves as a powerful motivation to gain social prestige from the acquisition and consumption of status goods. Past research has provided empirical evidence for the impact of need for status on purchase intention of luxury products (e.g., Eastman et al., 2018).

In emerging markets such as Vietnam, many consumers tend to purchase luxury products to display their social status (Mai and Kuan, 2011). In the context of inconspicuous luxury consumption, however, the role of the need for status in influencing consumers' purchase intention needs further clarification. A qualitative study by Nguyen et al. (2023) suggests that the status-seeking is a prominent motivation driving inconspicuous luxury purchase behaviors in Vietnam because it serves as a powerful motivation to appear prestigious to others (i.e. important "insiders"). Hence, this discussion leads to the following hypothesis.

H4. Need for status is positively related to PI.

In the luxury consumption domain, need for status can be an important driver of one's attitude and behavior. According to Han et al. (2010), in inconspicuous luxury context, wealthier consumers may prefer more subtle signals of status that are noticeable only within their social group. It is expected that those consumers who hold a higher level of need for status, are more likely to place importance on products with status, and so, may have more favorable attitude toward purchasing inconspicuous luxury products. The theory of reasoned action (Ajzen and Fishbein, 1975) also supports the idea that need for status can relate positively to attitude towards inconspicuous luxury purchases. Thus, the following hypothesis is presented.

H5. Need for status is positively related to attitude toward inconspicuous luxury purchase.

The proposed theoretical framework is presented in Figure 1.

Figure 1. Theoretical framework
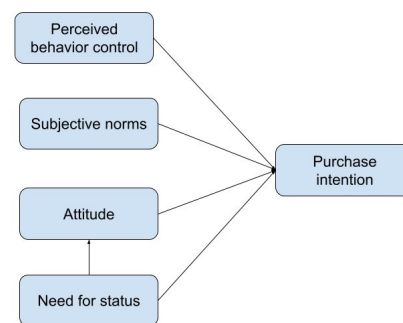
3. Research methodology

Sample and data collection

To test the proposed research model, we collected a set of survey data in Hanoi, the capital of Vietnam. Choosing Hanoi for data collection is appropriate and it ensures the necessary conditions for the occurrence of luxury consumption (Mai and Kuan, 2011). Luxury fashion products are one of the main categories in luxury consumption, and this product category has been used in a recent study on inconspicuous luxury consumption in Vietnam (Nguyen et al., 2023). Thus, in this study, luxury fashion products were used in data collection. Our final sample included 328 consumers. In the sample, there are more females (57 percent) than males (43 percent). The respondents' ages ranged from 25 to 53. All respondents held bachelor's degrees and above. The sample covered a wide range of income levels.

Measures and questionnaire development

All the constructs in this study were measured by the scales which have been adapted from past research. Specifically, the scales measuring the constructs in the TPB (i.e. ATT, SN, PBC, and PI) were adapted and modified based on Ajzen (1991), and each includes four items. The five-item scale of Need for status (NS) was adopted from Eastman et al. (1999). All the scale items are scored on a five-point Likert-type format ranging from "strongly disagree" (1) to "strongly agree" (5).

In this study, the questionnaire was developed, including all the scale items measuring five constructs in the research model. In addition, demographic questions (e.g. gender, age, education level, and income) were included at the end of the questionnaire. The research team also provided the definition of inconspicuous luxury products at the beginning of the questionnaire to ensure a common understanding among respondents. All the scale items originally in English were first translated into Vietnamese and then translated back into English, following the back-and-forth translation process. An English-fluent scholar carefully checked the translated versions and the original one in English for necessary adjustments.

4. Results

Scale assessment

To assess the measurement validity, we conducted confirmatory factor analysis (CFA). The full measurement model was analyzed. The initial measurement model was constructed including all the scale items as indicator variables and five constructs as latent variables. During the process of conducting CFA, one item measuring PBC and one item measuring SN were dropped due to the undesirable values of standardized residuals associated with them (> 2.5). The results of CFA, using AMOS22 software, demonstrated a good level of fit (Chi-square/df < 3; CFI, GFI and TLI > 0.90; RMSEA < 0.80). All t-tests of the observed variables were significant at the 0.01 level. In addition, we ran discriminant validity test using Fornell–Larcker criterion. The results showed that the square root of the average variance extracted (AVE) of each construct was larger than its highest correlation with any other constructs, confirming the discriminant validity of all the constructs in our model.

To assess the measurement reliability, the Cronbach Alpha was calculated for each scale. The coefficients ranged from 0.826 (for PBC) to 0.891 (for PI), exceeding the cut-off value of 0.70, thus this demonstrated a satisfactory level of reliablity. In addition, we also reasessed the scale relibility after comfirmatory analyses by examining factor loadings, composite reliability (CR) and AVE. Satisfactory results were found that all factor loadings were significant (p < 0.01), and all CRs and AVEs were above the cut off values of 0.70 and 0.50, respectively.

The structural equation model and hypothesis testing

The results of the structural equation analysis indicated that the model achieved an acceptable level of fit. Specifically, Chi-square/df = 2.932, p < 0.01; CFI = 0.919, GFI= 0.889, TLI = 0.900, and RMSEA = 0.077. The R^2 for ATT was 0.101 and the R^2 for PI was 0.428.

In this study, five hypotheses were tested and four of them received support from the data. As our expectation, ATT and PBC were found to be significant predictors of PI (β = 0.42, t-value = 7.256; γ = 0.272, t-value = 4.744, respectively), thus H1 and H3 received support from the data. Unlike our expectation, the path from SN to PI was not statistically significant (p > 0.05), thus H2 was not supported. Regarding the impact of need for status, as our expectation, NS was found to have significant impacts on PI, both direct and indirect through ATT. Specifically, the results showed a significant path from NS to PI (γ = 0.276, t-value = 4.575) and from NS to ATT *(γ = 0.32, t-value= 4.716)*, lending support for H4 and H5. The results of hypothesis testing are summarized in Table 1.

Table 1. The results of hypothesis testing

Hypotheses	Structural path			P-value
H1	PI	<---	ATT	< 0.01 (s)
H2	PI	<---	SN	> 0.05 (ns)
H3	PI	<---	PBC	< 0.01 (s)
H4	PI	<---	NS	< 0.01 (s)
H5	ATT	<---	NS	< 0.01 (s)

Note: s- the hypothesis is supported; ns- the hypothesis is not supported

5. Discussion and implications

This study investigated several determinants of purchase intention toward inconspicuous luxury products among Vietnamese consumers with the focus on the effect of need for status. In this study,

an extended TPB model with the integration of need for status was proposed. The findings suggest that attitude toward inconspicuous luxury purchase is the most salient determinant of purchase intention. This is in the line with the findings from many previous studies in the field of luxury consumption (e.g., Zhang and Kim, 2013). Perhaps, in Vietnam, where people are just starting to learn about and buy subtle luxury items, it is important for forming a favorable attitude toward buying inconspicuous luxury products in enhancing consumer purchase intention. The research results also indicate that perceived behavior control is an important determinant of Vietnamese consumers' purchase intention towards inconspicuous luxury products. This suggests that Vietnamese consumers feel confident and less confused during the process of purchasing inconspicuous luxury products. Unlike the previous results, subjective norms were found to have insignificant effect on Vietnamese consumers' purchase intention toward inconspicuous luxury products. It means social pressure from family, friends, or people who are important to them does not have a significant impact on their purchases of subtle luxury goods. Perhaps, the consumers in our sample are highly educated and independent in their purchase behavior. This issue should be further investigated in future studies.

Importantly, the results of our study showed that need for status has both direct and indirect effects on Vietnamese consumer's purchase intention towards inconspicuous luxury products. The finding suggests that consumers in emerging markets like Vietnam tend to purchase luxury products for reasons of displaying their social status, even though these products are subtle and difficult to recognize by the mainstream. It may be different from the practice in matured markets where many luxury consumers may no longer need to show-off wealth to disassociate themselves from the masses. This study also demonstrates the significant relationship between need for status and consumer attitude toward inconspicuous luxury purchases. It means that consumers with stronger need for status are more likely to have a positive attitude toward inconspicuous luxury purchase. For them, when they find some luxury products to satify their need in status, subtle luxury products may be favorable choices.

Theoretically, the research findings of this study contribute to the extant literature by enriching our understanding of inconspicuous luxury purchases and their determinants in the context of emerging countries, especially enhancing our knowledge of the direct and indirect effects of need for status on inconspicuous luxury purchase intention. The findings of this study also yield noteworthy practical implications for marketers and luxury brand managers. First, marketers benefit from developing relevant marketing communication strategies that focus on inconspicuous luxury consumers. Second, luxury brand managers can extend the application of inconspicuousness in luxury to encompass other categories within the domain of luxury consumption. This extension allows them to attract a wider range of customers and make their brands even more appealing.

6. Limitations and future research directions

Our research has some limitations that suggest venues for future studies. First, geographically this study only focuses on consumers in Vietnam, an emerging economy. It would be interesting and meaningful to explore the role of cultural factors in inconspicuous luxury consumption by conducting a cross-cultural study. Next, this study only collected data regarding luxury fashion products. Future investigations could include more diverse luxury product categories such as gourmet food and fine wines, as well as luxury service sectors such as hotels, cruises, and education. This broader scope would provide deeper insights into inconspicuousness across various consumer behaviors.

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APPLICATION OF ARIMA MODEL FOR FORECASTING PRICES OF SOME BANKING STOCKS

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Abstract: *The stock market is always attractive to organizations and individuals to invest because of its high profitability, especially for banking stocks. The factors affecting the Vietnamese market are very diverse and change unpredictably. Besides, behavioral factors dominate most market fluctuations. Therefore, forecasting stock prices faces many difficulties. Autoregressive Integrated Moving Average (ARIMA) is a popular and effective forecasting tool for time series data such as stock prices. Forecasting the rise and fall of stocks in general and banking stocks in particular helps investors recognize the price fluctuation trends of stocks to plan appropriate investment strategies. Within the scope of this article, the author focuses on forecasting the prices of some bank stocks in the short term using the ARIMA model with the Box-jenkins method in 4 steps: identify, estimate, check and predict. And from the research results, recommendations will be made to investors on the application of the ARIMA model.*

1. Introduction

Forecasting stock prices has been a subject of immense interest and considerable research within financial economics, owing to its profound implications for investors, financial analysts, and policymakers. Among various sectors, the banking industry plays a pivotal role in the economy, and predicting the stock prices of banks can provide valuable insights into the financial health and future prospects of the sector. Accurate forecasting models not only help investors make informed decisions but also aid in risk management and regulatory planning. This study aims to forecast bank stock prices using the Autoregressive Integrated Moving Average (ARIMA) model, a widely recognized econometric tool for time series analysis.

The ARIMA model, introduced by Box and Jenkins (1976), is one of the most effective and versatile methodologies for time series forecasting. It integrates three components: autoregression (AR), differencing to achieve stationarity (I for Integrated), and a moving average (MA). The AR component models the relationship between an observation and a certain number of lagged observations, while the MA part captures the relationship between an observation and a residual error from a moving average model applied to lagged observations. By combining these components, the ARIMA model can effectively capture various patterns in time series data, including trends and seasonality, making it a robust tool for financial forecasting.

Despite the plethora of models available for stock price prediction, such as GARCH (Generalized Autoregressive Conditional Heteroskedasticity) models, neural networks, and machine learning algorithms, the ARIMA model remains popular due to its simplicity, interpretability, and strong theoretical foundation. Its ability to handle different types of time series data and provide reasonably accurate forecasts with relatively low computational costs makes it particularly suitable for practical applications in financial markets.

In this research, we apply the ARIMA model to forecast the stock prices of selected banks. The choice of banks is based on their significant impact on the financial markets and their representativeness of the banking sector as a whole.

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We employ historical stock price data, which are inherently stochastic and exhibit characteristics such as volatility clustering and mean reversion, typical in financial time series. The methodology involves identifying the appropriate ARIMA model parameters through a systematic procedure that includes model identification, parameter estimation, and diagnostic checking.

Firstly, we conduct a preliminary analysis of the stock price data to assess its statistical properties and ensure it meets the assumptions required for ARIMA modeling, such as stationarity. This involves visual inspection of the time series plot and conducting unit root tests like the Augmented Dickey-Fuller (ADF) test. Once stationarity is achieved, we identify the initial parameters (p,d,q) using autocorrelation function (ACF) and partial autocorrelation function (PACF) plots.

Next, we estimate the model parameters using maximum likelihood estimation (MLE) and refine the model by iteratively adjusting the parameters to minimize the Akaike Information Criterion (AIC) or Bayesian Information Criterion (BIC), which balances model fit and complexity. We then perform diagnostic checks, including residual analysis, to ensure that the model adequately captures the underlying data structure and that the residuals are white noise.

Finally, the selected ARIMA model is used to generate forecasts for the bank stock prices. We evaluate the model's performance using out-of-sample testing and accuracy metrics such as Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE). The results provide insights into the model's predictive power and its practical applicability for financial forecasting.

In conclusion, this study demonstrates the application of the ARIMA model in forecasting bank stock prices, highlighting its methodology and effectiveness. The findings contribute to the literature on financial econometrics and offer practical tools for investors and financial institutions in managing and predicting market behavior.

The rest of the paper is devided into 4 sections: Section 2 is devoted to Literature review; Methodology and Research data is introduced in Section 3; Section 4 presents the empirical results and discussion.

2. Literature review

The forecasting of bank stock prices has garnered significant attention in financial economics due to its crucial role in investment decision-making and risk management. Among the various econometric models employed for this purpose, the Autoregressive Integrated Moving Average (ARIMA) model has been extensively studied and applied. This literature review delves into the methodological aspects of using the ARIMA model for bank stock forecasting, synthesizing key findings from prior research.

The ARIMA model, conceptualized by Box & Jenkins (1976), has been a cornerstone in time series forecasting due to its flexibility and efficacy in modeling univariate data. Box & Jenkins (1976) provided a comprehensive framework for model identification, parameter estimation, and diagnostic checking, which remains fundamental to ARIMA's application. Their work laid the groundwork for numerous subsequent studies that applied ARIMA to financial time series forecasting, including stock prices.

Pioneering studies by Fama (1970) and Mandelbrot (1963) discussed the random walk hypothesis and the fractal nature of financial markets, respectively. These foundational concepts underscored the stochastic nature of stock prices, justifying the use of models like ARIMA that can handle randomness and identify underlying patterns in time series data.

A pivotal study by Mills (1990) applied ARIMA models to forecast stock prices and found that despite the efficient market hypothesis, significant short-term dependencies exist in stock returns, which ARIMA models can exploit. Mills (1990) demonstrated that ARIMA models could effectively capture these dependencies, providing more accurate forecasts compared to naive models.

In the context of bank stocks, studies by Cheung & Lai (1995) and Pan et al. (2007) specifically examined the ARIMA model's performance. Cheung & Lai (1995) applied ARIMA models to forecast the Hong Kong stock market, including bank stocks, and found that ARIMA outperformed simpler models in terms of forecast accuracy. Their study highlighted the importance of careful

model specification and parameter selection to enhance predictive performance.

Pan et al. (2007) focused on the predictive power of ARIMA models for Chinese bank stocks. Their empirical analysis revealed that ARIMA models, when appropriately specified, provided reliable short-term forecasts. They emphasized the significance of incorporating both autocorrelation and partial autocorrelation structures in capturing the time series dynamics of bank stock prices.

More recently, studies by Patel et al. (2015) and Shah et al. (2019) explored the application of machine learning techniques in conjunction with ARIMA models. Patel et al. (2015) combined ARIMA with artificial neural networks (ANN) to forecast Indian bank stocks, demonstrating that hybrid models could leverage the strengths of both traditional econometric and modern machine learning methods.

Shah et al. (2019) further investigated hybrid models, combining ARIMA with long short-term memory (LSTM) networks. Their research indicated that while ARIMA models are robust for linear components, incorporating LSTM networks can effectively capture non-linear patterns, thereby enhancing forecast accuracy for bank stocks.

Recently, Chen & Xinmiao (2024) forecasted the value at risk (VaR) of crude oil futures presents a significant challenge for investors due to the high volatility of these prices, using a hybrid model, ARIMA-SVR-POT, which integrates the autoregressive integrated moving average (ARIMA), support vector regression (SVR), and peak over threshold (POT) method from extreme value theory.

In summary, the ARIMA model has proven to be a robust and versatile tool for forecasting bank stock prices. Its methodological rigor and adaptability make it suitable for various financial time series applications. The integration of ARIMA with other models and techniques continues to show promise in improving predictive performance, reflecting ongoing advancements in econometric modeling and financial forecasting.

3. Methodology and research data

3.1. Methodology

The Box-Jenkins ARMA model is a combination of AR (Autoregressive) and MA (Moving Average) models as follows:

$$y_t = \beta_0 + \beta_1 y_{t-1} + ... + \beta_p P_{t-p} - \alpha_1 u_{t-1} - \alpha_2 u_{t-2} - ... - \alpha_q u_{t-q} + u_t \quad (1)$$

The Box-Jenkins method includes the following procedures:

- Establishing the stability of the time series: The autocorrelation function (ACF) as well as the Augmented Dickey-Fuller (ADF) (1979) and Phillips-Perron (1988) tests are used to test the stationarity of the series time.

- Pattern identification of ARMA (p, q) model: To determine the order of ARMA (p, q), we use the pattern of autocorrelation function (ACF) and partial autocorrelation function (PACF). of static string. These two parts are used to suggest the model we should build. The parameter p of the autoregressive operator is determined by the partial autocorrelation coefficient, and the parameter q of the moving average operator is specified by the autocorrelation coefficient. In fact, the author uses limits $\pm 2/\sqrt{n}$ gives the significance levels of the two functions, so we will have some ARIMA model (a, b), where $0 \le \alpha \le p$, $0 \le \beta \le q$. To select the optimal model, the author uses the criteria of Akaike (AIC) and Schwartz (SIC).

- Model estimation: Testing the existence of white noise in the ARIMA model requires a nonlinear iterative process in estimating the parameters. The maximum likelihood estimation method is considered the appropriate technique in this situation.

- Model testing: The purpose of modeling is to see whether the model is appropriate and statistically significant, that is, whether it fits the data set used or not. Box and Jenkins provide a procedure for testing the ARIMA model, which is to test the randomness of the residuals, that is, to check whether the residuals from the estimated ARIMA model must be white noise and not correlated with each other.

- Forecasting: One of the main reasons for analyzing time series models is forecasting. The accuracy of forecasts depends on the forecast error. Additionally, several statistical measures are used for this purpose, such as root mean squared

error (RMSE), mean absolute error (MAE), Mean Absolute Percentage Error (MAPE) and Theil's Inequality Coefficient (U).

Then, the forecast value after one period conditional on all information over time t, is given at time t + k, as follows:

$$y_{t+k} = (\beta_1 + 2)y_{t+k-1} - (1 + 2\beta_1)y_{t+k-2} + \beta_1 y_{t+k-3} + \alpha_1 \varepsilon_{t+k-1} + \varepsilon_t \qquad (2)$$

3.2. Research data

This article will focus on short-term forecasts of 4 banking stocks that are considered worth investing in 2024, including stocks as shown in Table 1 below.

Table 1. Some banking stocks

No	Bank name	Stocks	Listing floor
1	Vietcombank bank	VCB	HOSE
2	Techcombank bank	TCB	HOSE
3	ACB bank	ACB	HOSE
4	BIDV bank	BID	HOSE

Source: Compiled by author

The prices of 4 stocks were taken from investing.com, from January 31, 2023 to January 31, 2024 to estimate the best ARIMA model to forecast stock prices, in which stock prices from January 31 /2023 to January 24, 2024 is used to estimate the model, the last 7 days of stock prices are used to compare with the forecast price, helping to evaluate the model's forecast results.

Table 2 below presents the statistical descriptive results of the variables studied in the model.

Table 2. Descriptive statistics of research variables in the model

	VCB	TCB	ACB	BID
Mean	83913.68	31131.45	22049.46	40462.32
Median	85150.00	31175.00	21950.00	39955.00
Maximum	93400.00	35750.00	26300.00	49850.00
Minimum	72058.00	26200.00	19923.00	35496.00
Std. Dev.	5203.312	2479.405	1404.385	2670.469
Skewness	-0.304931	-0.182762	1.136655	1.289245
Kurtosis	1.871450	2.104731	4.233393	5.417624
Jarque-Bera	17.55259	9.974556	71.35145	133.2642
Probability	0.000154	0.006824	0.000000	0.000000
Observations	256	256	256	256

Source: Compiled by author

The statistical table shows basic statistical values of each variable such as average value, maximum value, minimum value, standard deviation. In particular, the prices of all 5 stocks have a normal distribution. The following graph

of each variable visually shows the movement of each stock's price over a year.

Figure 1. Graph depicting stock price fluctuations
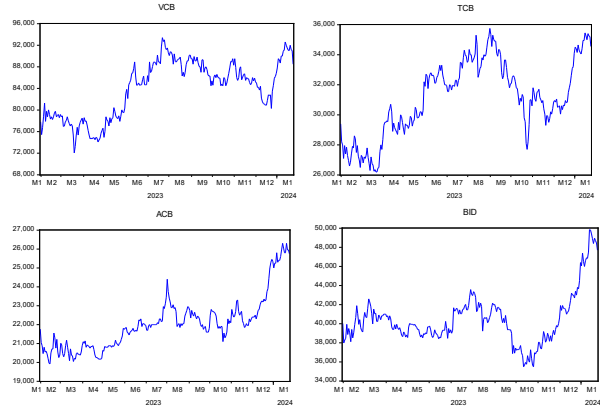
Source: Author

In addition to providing a visual image of the fluctuations of each variable, Figure 1 also helps us predict the stationarity of data series. It can be predicted that the research variables are non-stationary.

4. Empirical results and discussion

The results of testing the stationarity of the time series using the Augmented Dickey-Fuller test, with the functional form with intercept coefficient and trend are presented in Table 3 below:

Table 3. Results of testing the stationarity of the series in the model

Initial string		
Variables	**Augmented Dickey-Fuller test value**	**Conclude**
VCB	- 2.36	string Does not stop
TCB	- 2.16	string Does not stop
ACB	- 2.64	string Does not stop
BID	- 1.43	string Does not stop
First difference series		
D(VCB)	- 18.09*	stop sequence
D(TCB)	- 15.64*	stop sequence
D(ACB)	- 16.33*	stop sequence
D(MBB)	- 16.25*	stop sequence
D(BID)	- 18.14*	stop sequence

*Note: * denotes variables that are statistically significant at the 1% level.*

Source: Author

The results in Table 3 show that the price series are non-stationary and the first-difference series are all stationary, so the ARIMA model with integration level d = 1 is appropriate. To find the parameters p, q for the ARIMA model, we use a correlation scheme. The results shown in Figure 2 represent the correlation chart of the first-order

difference series of VCB stock prices with the 12th-order lagged model.

Figure 2. Correlation plot of the first-difference series of D(VCB) to 12th-order lag

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.130	-0.130	4.3837	0.036
		2	-0.024	-0.041	4.5295	0.104
		3	-0.110	-0.120	7.6482	0.054
		4	0.121	0.092	11.499	0.021
		5	0.064	0.088	12.589	0.028
		6	-0.055	-0.040	13.379	0.037
		7	-0.082	-0.070	15.165	0.034
		8	0.041	0.022	15.605	0.048
		9	0.065	0.044	16.715	0.053
		10	-0.037	-0.032	17.075	0.073
		11	-0.070	-0.050	18.404	0.073
		12	0.021	0.017	18.524	0.101

Source: Author

The results in Figure 2 show that the ARIMA model can have q = 1, 2, 3, 4 and p = 1, 2, 3. So the possible models to choose from are ARIMA(p,1,q) as above. The result of model selection based on Akaike criteria is that the most suitable model is ARIMA (2,1,3) to forecast VCB stock price. After making the forecast, we compare the forecast results with the actual price of the stock during the forecast period, the results are shown in Figure 3.

Figure 3. Graph comparing VCB stock price forecast results using the ARIMA model (2,1,3)
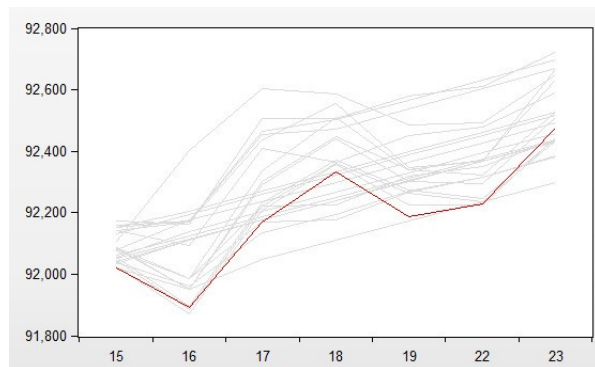
Source: Author

The results of the prediction model give a predicted value that is approximately the actual value and a 95% confidence interval, as shown in Figure 3. This proves that the model has quite high reliability when forecasting. Although the results of the ARIMA model are still for reference only, it can be affirmed that ARIMA is a good model for short-term forecasting. Estimating the ARIMA model with the remaining stocks is performed

similarly and results are obtained as shown in Table 4.

Table 4. Results of finding a suitable ARIMA model to forecast stock prices

No	Stocks	Suitable model
1	VCB	ARIMA (2,1,3)
2	TCB	ARIMA (1,1,1)
3	ACB	ARIMA (1,1,1)
4	BID	ARIMA (1,1,1)

Source: Author

However, for Vietnam's stock market, the forecast index on some trading days will be greatly different from reality, because the stock market is greatly influenced by a number of factors such as: investor psychology, the impact of other stock markets, information about policy changes... Investors should combine results from forecast models with technical analysis, regularly observe to get the right perspective and Accurate fluctuations of the stock market. On the other hand, to make appropriate investment decisions for each stock code, investors should use the CAPM model. The ARIMA model is meant to simulate past behavior, thereby serving as the basis for future forecasts. In Vietnam, the forecast model is not very meaningful, because policymakers do not clearly identify the different factors affecting the market and only use administrative measures to adjust trading amplitudes. Transaction with the purpose of stabilizing the stock market.

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FACTORS INFLUENCING GREEN CONSUMER BEHAVIOR: A CASE STUDY IN HO CHI MINH CITY

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Abstract: *The objective of the research is to identify factors affecting green consumer behavior. Research on 225 consumers in Ho Chi Minh City, at the same time, using quantitative analysis using SPSS software and OLS regression analysis method, the research results suggest that environmental attitude, awareness of consequences, and subjective norms have a positive influence on green consumer behavior. However, there is no evidence to confirm that prices have an impact on green consumer behavior. The research also discusses some implications to promote green consumption in Vietnam in the coming time.*

• Keywords: *green consumer, environment, positive.*

1. Introduction

The process of socio-economic development entails impacts on the living environment, especially increasing negative impacts on the environment, such as increased use and consumption of materials, fuel, and consumption of non-renewable products. In addition, manufacturing enterprises use fossil fuel sources that are not environmentally friendly to produce products to meet consumer needs, thereby potentially causing environmental pollution and causing serious consequences to the ecological environment such as rising sea levels, global warming, floods and storms and thereby causing impacts on humans.

Therefore, green consumption has gradually become a popular trend in today's life, especially in the context of investment and consumption today, which must be associated with sustainable development. When the economy increases green production, encouraging the community and society to consume green will help the economy develop sustainably. On the contrary, when the economy operates on non-renewable energy sources, and has little green consumption, it is likely to emit many toxic gases into the air and adversely affect the environment.

Research on green consumption has been conducted by scholars recently, and studies all suggest that an economy that encourages green consumption behaviors can bring the economy to optimal development and boost the country quickly towards prosperity. Ogiemwonyi et al. (2023) argued that green purchasing behavior is directly influenced by subjective norms, awareness of consequences, environmental attitudes, and environmental responsibility. Further, Barbu et al. (2022) also expressed that green consumption is influenced by social norms, natural environment orientation, green image and product characteristics, risk perception and inconvenience when purchasing the green product, perceived benefits of purchasing green products, institutional trust, demographics and consumer confidence. In addition, Nguyen et al. (2023) affirmed that attitudes, social norms and environmental concerns have a great impact on promoting green consumption and suggested that the government have solutions to help consumers and the community to increased interest in environmental issues.

Therefore, the goal of this study is to evaluate factors affecting green consumption behavior in Ho Chi Minh City through a sample survey of 225 consumers. Through analysis, it shows that environmental attitude, awareness of consequences, and subjective norms have a positive influence on green consumer behavior, in which the impact of environmental attitude is the largest. Research results show that the government needs to have solutions to raise consumer awareness about the environment, and orient the development of a green economy to minimize impacts on the environment.

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In addition to the introduction presented above, the rest of the study is presented as follows: In the next part, the study conducts an overview of domestic and foreign studies, then the study proceeds data collection and present research methods. Next, the study analyzes the results, discusses the results and draws general conclusions.

2. Literature review

As the economy develops and consumption levels are high, the demand for products is increasing to meet the needs of life. Therefore, encouraging green consumption is considered an effective solution to protect the environment and develop sustainably (Le Thi Thanh Loan, 2023). And, Le Thi Thanh Loan (2023) researched factors affecting green consumption in Thu Duc City on 269 customer samples and indicated that factors affecting green consumption behavior include social influence, green product availability, green consumer attitudes, prices and green marketing. Therefore, the authors emphasized that businesses need to comply well with environmental protection regulations such as proactively improving production processes and innovating technology, using green and renewable energy sources, and saving energy and use environmentally friendly materials. Businesses should mobilize and encourage consumers to use green products and create a green consumption culture while increasing awareness of increasing green consumption associated with appropriate prices. For the government, they should complete the legal framework and policies on green consumption to ensure unity, synchronization and transparency, encourage the production of green products and services, prioritize industries using high technology, and especially use renewable energy.

Research by Ho Huy Tuu et al. (2018) on 250 consumers in Nha Trang, and based on the theory of planned behavior, confirms that green consumption refers to the act of purchasing environmentally friendly products and services, and these are considerations when making purchasing decisions to minimize the impact on health and the environment. Therefore, green consumption emphasizes more efficient and better consumption and uses less resources. Green consumption aims to buy and use products that are environmentally friendly and do not affect human health. Ho Huy Tuu et al. (2018) also believed that there are six factors that influence green consumer behavior, specifically awareness, behavioral control, social influence, risk, trust and emotions. Among them, awareness has the greatest influence on green consumption behavior because awareness is a part of attitude and reflects the process by which consumers are able to recognize the positive effects of consumption behavior. In addition, green use for sustainable development, and higher awareness leads to higher behavioral practices and therefore consumers are more interested in environmentally friendly consumption behavior.

Research by Doan Thi Thu Trang et al. (2023) used the theory of reasoned action (TRA) to study 356 students in Hanoi representing Vietnamese youth and suggested that the green consumption trend has become increasingly popular in developed countries and is of interest in Vietnam, especially young intellectuals and young people today. Indeed, green consumption is the incorporation of environmental awareness into the consumption process or green consumption to encourage consumers to protect the environment. Or to put it briefly, green consumption is the purchase or use of products that are environmentally friendly and do not harm human health and the ecosystem. At the same time, green consumption is also associated with behaviors that are viewed from the perspective of sustainable development such as purchasing ecological products, recycling, using environmentally friendly transportation systems, or further, the production of consumer products that consume less energy , or green energy consumption, renewable energy and environmental protection. Further discussed on this issue, Doan Thi Thu Trang et al. (2023) also believed that Vietnamese youth have moderate green consumption behavior, and suitability for the situation of developing Vietnam, but benefits the community, the environment and their health. Specifically, consumers' attitudes and subjective norms both have a positive influence on green consumption intention, in which subjective norms about green consumption behavior are the most influential factor. Subjective norms describe an individual's perception of social pressures on performing or not performing a specific behavior, which is green consumption behavior, therefore, the government should have large-scale programs to encourage green consumption behavior in the community in order to call on the community to consume green consumption in association with the goals of environmental protection and sustainable development.

Given that environmental pollution has become a widespread problem and a major threat to human life, businesses and consumers around the world are therefore facing environmental challenges, and consumer behavior is the root cause of many environmental problems. Indeed, as consumers become more conscious of what they buy and how they consume it, they choose environmentally friendly purchases. When consumers understand environmental friendliness, it helps to dispose of products that are harmful to the environment, as confirmed by Trong Nguyen et al. (2023). Research suggests that motivating customers to consume green products comes from three factors including attitudes, social norms and environmental concerns, in which environmental concerns are the most influential factor. This suggests that the government needs to increase solutions to help consumers and communities increase the use of products that pay attention to environmental issues.

Barbu et al. (2022) also expressed concern that nearly 70% of greenhouse gas emissions depend on the products customers choose and the solutions consumers use to dispose of these emissions sustainably, this requires consumers to pay attention to the environment when choosing to buy green products. Typical factors affecting consumer behavior towards green products such as social norms, natural environment orientation, green image and product characteristics, risk perception and inconvenience when buying products green products, perceived benefits of purchasing green products, institutional trust, demographics and consumer confidence.

Ogiemwonyi et al. (2023) argued that people's concerns about the environment have increased, especially in emerging countries. Therefore, people with the desire to make every effort to maintain environmental protection and promote sustainability through green shopping and gradual changes in consumer behavior towards accepting green products. Ogiemwonyi et al. (2023) studied on 375 consumers using convenience sampling method and argued that green purchasing behavior is directly influenced by subjective norms, awareness of consequences and environmental attitudes, and at the same time indirectly influenced by environmental concern, environmental responsibility and awareness of consequences through environmental attitudes. Another possibility, Sharma et al. (2023) also confirmed that increased consumption of goods and services puts pressure on resources and is a cause of pollution. People's positive response is increasing and therefore their tendency to buy green products is increasing, thereby promoting green purchasing behavior of consumers and providing strategic insights for consumers, and to create better business opportunities for green products.

3. Data and methodology

This study uses data from the primary data collected in Ho Chi Minh City in 2023. The study collected samples convenient for consumers. An appropriately determined sample size requires 5 times the number of questions, corresponding to a sample size of at least 90 as confirmed by Hair et al. (2006). In this study, we distributed 230 ballots and received 225 valid ballots. There were 5 invalid ballots so they were removed from the study.

Based on the previous studies, the estimated equation is shown as follows:

$$GCB_t = \beta_0 + \beta_1 SN_t + \beta_2 EA_t + \beta_3 AC_t + \beta_4 PRICE_t + \varepsilon_t$$

Where:

GCB_t is the green consumption behavior; SN_t is the subjective norms; EA_t is the environmental attitude; AC_t is awareness of consequences; $PRICEt$ is the price for green consumption;

The study uses the SPSS software for analysis as well as uses OLS regression, and then uses this research results to evaluate factors affecting green consumer behavior.

4. Results

4.1. Descriptive statistics

Table 1. Frequency analysis

	Items	Number	Percentage
Gender	Male	103	45.7%
	Female	122	54.3%
Age	< 25 years old	76	33.8%
	26 -> 35 years old	67	29.8%
	36 -> 45 years old	43	19.1%
	46 -> 60 years old	24	10.7%
	> 61 years old	15	6.7%
Qualification	Graduate	162	72.0%
	Postgraduate	32	14.2%
	Vocational/ College	25	11.1%
	Schools	6	2.7%
Frequency	Frequent	188	83.6%
	Sometimes	24	10.7%
	Occasionally	10	4.4%
	Rarely	3	1.3%
Income	Under 20 million VND per month	172	76.4%
	20 -> 30 million VND per month	33	14.7%
	Over 30 million VND per month	20	8.9%

Source: Authors' analysis (2023)

Table 1 shows that the research sample has 122 and 103 female and male respondents, accounting for 54.3% and 45.7%, respectively. Regarding age, the survey sample shows that people under the age of 25 account for a large proportion, corresponding to 33.8% and 76 people. And, the ages of 26 and 35, there are 67 people and corresponding to 29.8% while the remaining ages account for a large proportion. Regarding qualifications, the survey sample showed that 72% of respondents graduated from university and 14.2% of respondents postgraduated. Regarding purchasing frequency, there are about 188 people who regularly buy products at a rate of 83.6% while 10.7% of people buy products sometimes, and 4.4% of people occasionally buy products, especially 1.3% of people rarely buy products. Regarding income, 76.4% of respondents have income under 20 million, 14.7% of respondents have income from 20 to 30 million and only 8.9% of respondents have income over 30 million.

4.2. Cronbach's alpha analysis

Table 2. Reliability of scale

Variable	Number of items	Cronbach's alpha
SN	4	0.753
EA	5	0.787
AC	4	0.792
PRICE	5	0.778
GCB	4	0.756

Source: Authors' analysis (2023)

Table 2 shows that the selected scales are appropriate because they have Cronbach's alpha coefficient greater than 0.6 and are satisfactory, therefore these scales are suitable for EFA analysis.

4.2. EFA analysis

Table 3. KMO and Barlett test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.843
Bartlett's Test of Sphericity	Approx. Chi-Square	2642.875
	df	221
	Sig.	0.000

Source: Authors' analysis (2023)

According to KMO and Barlett's test, the KMO coefficient reaches 0.843 and is greater than 0.5, and at the same time, Bartlett's Test of Sphericity shows that Sig. = 0.000, so the choice is appropriate. In addition, Table 4 also indicates the rotated component matrix as below:

Table 4. Rotated component matrix

Items	Rotated Component Matrix^a			
	1	2	3	4
SN1	0.801			
SN3	0.789			
SN2	0.775			
SN4	0.742			
EA2		0.799		
EA1		0.782		
EA5		0.756		
EA4		0.735		
EA3		0.711		
AC2			0.800	
AC1			0.776	
AC4			0.759	
AC3			0.725	
PRICE1				0.762
PRICE5				0.754
PRICE3				0.725
PRICE2				0.701
PRICE4				0.693

Source: Authors' analysis (2023)

4.3. Correlation matrix

Table 5. Correlation matrix

Variable	GCB	SN	EA	AC	PRICE
GCB	1.000				
SN	0.353	1.000			
EA	0.652	0.246	1.000		
AC	0.215	0.572	0.264	1.000	
PRICE	0.532	0.641	0.376	0.288	1.000

Source: Authors' analysis (2023)

Table 5 indicates that the highest correlation coefficient of 0.641 belongs to SN and PRICE and is still less than 0.8, so the possibility of multicollinearity is eliminated. Therefore, the selection of the variables is appropriate.

4.4. Regression results

Table 6. Regression results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10.834	3.389		5.983	0.000		
	SN	0.176	0.068	0.189	2.732	0.008	0.913	1.095
	EA	0.378	0.044	0.488	6.725	0.000	0.893	1.120
	AC	0.235	0.064	0.401	0.823	0.412	0.911	1.098
	PRICE	0.124	0.035	0.272	3.782	0.000	0.886	1.129

Source: Authors' analysis (2023)

Table 6 results show:

The estimated coefficients of SN, EA and AC are positive and statistically significant, in which the largest estimated coefficient is EA, then AC

and finally SN. However, the estimated coefficient of PRICE has a positive sign but is not statistically significant, implying that there is no impact of PRICE on green consumer behavior. As follows:

The estimation results confirm the positive impact of EA on green consumer behavior and this impact is the strongest. Specifically, increasing 1 unit of EA has the ability to improve green consumer behavior by 0.488 units. This result explains that the higher consumers' attitudes towards the environment, the more likely they are to consume green. Indeed, if consumers are knowledgeable about the environment and thereby form personal responsibility for the environment, they tend to increase green consumption to minimize negative impacts on the environment. In the current context, the living environment is being affected by human consumption that depends on non-renewable sources of raw materials and energy, thereby increasing toxic gas emissions and negative externalities on the environment. This research result is also confirmed by Ogiemwonyi et al. (2023) emphasizing that green purchasing behavior is influenced by environmental attitudes when people want to make every effort to maintain conservation. protect the environment and promote sustainability.

The estimation results confirm the positive impact of AC on green consumer behavior. Specifically, increasing 1 unit of AC has the ability to improve green consumer behavior by 0.401 units. It can be explained that when consumers are clearly aware of the consequences of consumption on the impact on the environment, they will have appropriate solutions in consumption to minimize the negative impact on the ecological environment. However, awareness is a long-term process and can be accelerated through government policies and mass media propaganda. This research result is also confirmed by Ogiemwonyi et al. (2023) in their study and at the same time the authors emphasizes increased consumer awareness of environmental consequences promoting green consumption behavior and a gradual change in consumer behavior towards acceptance of green products. The research results also confirm the positive impact of SN on green consumption, specifically increasing 1 unit of SN can potentially improve green consumer behavior by 0.189 units. Subjective norms reflect an individual's perception that they should or should not do something to achieve the highest benefit. When individual awareness of the benefits of green consumption increases, this will motivate consumers to increase their green consumption experience.

5. Conclusion and implications

Socio-economic development leads to negative impacts on the environment, increasing environmental pollution and harming quality of life. Green consumption is becoming a popular and growing trend to promote sustainable social development. Research in the case of Ho Chi Minh City through a survey of 225 consumers on green consumption behavior, using quantitative analysis through SPSS software, the research results show that environmental attitude, awareness of consequences, and subjective norms have a positive impact on green consumption behavior while price has not had any impact on behavioral change for green consumption.

From the above results, the study has a number of policy implications to promote green consumption in the future. Firstly, the government needs to have solutions to raise environmental awareness, awareness of consequences and raise awareness for individuals through training measures at schools, through the media and social networks to promote green consumption in Vietnam in the coming time, especially with the goal of bringing the country towards a high- medium income level in the context of the fourth industrial revolution taking place rapidly today. Secondly, the government needs to have solutions to reduce non-renewable energy sources or energy-consuming production activities and shift to using renewable energy sources to create the basis for forming a green and sustainable economy.

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CREDIT QUALITY AT VIETNAM STATE CAPITAL COMMERCIAL BANKS

PhD. Vu Ngoc Diep*

Abstract: *This article studies the current status of credit quality of Vietnamese state-owned commercial banks in the period 2018-2022. Based on the application of fundamental theory on credit quality of commercial banks, the article aims to analyze the current status of credit quality of commercial banks with state capital in Vietnam. From there, propose appropriate solutions to improve the credit quality of Vietnamese state-owned commercial banks.*

1. Basic issues about credit quality of commercial banks

a. Bank credit concept

Bank credit is a borrowing relationship between a bank and a customer, in which the bank transfers to the customer the right to use an amount of value (in the form of goods or currency) under certain conditions and for a certain period of time. certain period of time that the two parties have agreed upon based on the principle of refund.

b. Perspectives on credit quality of commercial banks

For commercial banks: "Credit quality is a term that reflects whether a commercial bank's credit activities are good or not. It is made up of two factors: safety level and profitability." of banks due to credit activities."

Credit quality is reflected in the goals of growth, safety and profitability of business capital in accordance with planned goals and legal regulations in each period. Attract many customers while still ensuring credit principles. Specifically:

- Level of capital safety: To ensure the safety of loan capital and the safety of capital, it is required that before granting credit to borrowers, commercial banks must carefully consider their legal capacity and capacity. Financial strength, ability to meet loan conditions, capital use plan of the borrower... At the same time, the bank must evaluate the creditworthiness of the borrower. If the borrower's creditworthiness is low, it means the risk is high, which means low credit quality.

- Level of profitability: credit activities must be effective, which means banks must collect principal and interest when lending. Therefore, minimizing bad debts while bringing profits to the bank, helping the bank expand its scale and operating network...

For customers, credit quality is reflected in the fact that the bank's services satisfy customer needs, the amount of money the bank lends must have reasonable interest rates and terms, and simple procedures. Convenient, attracts many customers but still ensures credit principles.

2. Current status of credit quality of commercial banks with Vietnamese State capital

a. Overview of commercial banks with state capital in Vietnam

Currently, the system of credit institutions in Vietnam includes 7 commercial banks with dominant State capital, including: Agribank, Vietinbank, Vietcombank, BIDV, Limited Liability Bank, a member of Global Petroleum. Ocean One Member Limited Liability Bank and Construction One Member Limited Liability Bank. Including 3 banks: Global Petroleum Bank Limited, One member Ocean Bank Limited, One Member Construction Bank Limited is undergoing merger procedures. and merge. In this article, the author surveys and evaluates the factors (macro, micro) affecting the business performance of the four largest banks in Vietnam: Agribank, Vietinbank, Vietcombank and BIDV.

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b. Current status of credit quality of commercial banks with state capital in Vietnam

* Credit balance and growth of credit balance of commercial banks with Vietnamese State capital

Total outstanding credit is an indicator that reflects the amount of money allocated by commercial banks with State capital to the economy at a time. Total outstanding debt includes short-term, medium-term and long-term loan balance. Low total outstanding debt shows that the bank's credit activities are weak, the bank's inability to expand its customers, its poor marketing ability, and low staff qualifications... However, this indicator If high, the loan quality is not necessarily good, bad debt is likely to occur. However, if total outstanding debt increases continuously over the years, it shows an increasing trend in credit quality. Specifically, outstanding credit debt of commercial banks with state capital is as shown in Figure 1 below:

From 2018 to 2022, outstanding loans of commercial banks with state capital increased every year, higher than the average increase in credit growth of the entire banking system, the highest in 2020 was an increase of 17.05 % compared to 2019. In 2021 compared to 2002, the lowest credit growth in the past 5 years is 2.23%.

Figure 1: Credit balance of commercial banks with Vietnamese State capita (Billion VND)

	2018	2019	2020	2021	2022
Vietinbank	864925,0	935270,0	1002750,0	1104872,0	1245057,0
Vietcombank	631866,0	734706,0	820545,0	934774,0	1111524,0
BIDV	988738,0	1116990,0	1195239,0	1325528,0	1484168,0
Agribank	1006440,0	1123400,0	1213950,0	1314218,0	1443263,0
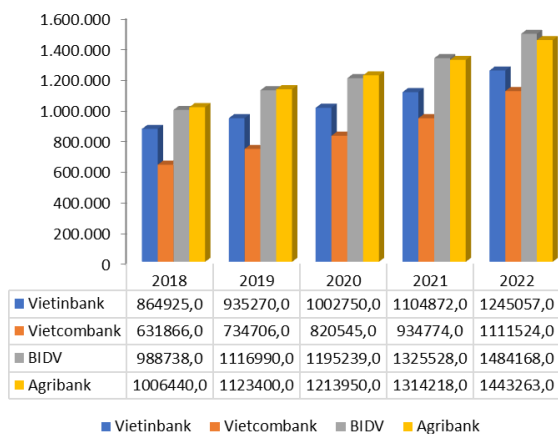
* Credit growth rate of commercial banks with Vietnamese State capital

The average credit growth rate of commercial banks with state capital from financial reports over the years is shown in Figure 2.

Regarding growth rate, from 2018 to 2022 it can be said that commercial banks with state capital in Vietnam have a steady growth rate. In 2022 compared to 2018 it is 51.31%. If considering the growth rate of

each bank, Vietcombank achieved the highest growth rate of 75.19%, BIDV 50.10%, Vietinbank 43.9%; and Agribank is 43.4%. In 2018, Vietcombank's customer loans only reached 631,866 billion VND, but by 2022 this number will reach 1,111,524 billion VND, an increase of 75.92%, of which growth in 2022 compared to 2021 will reach the highest level of 18 .9%, in 2020 compared to 2019, the lowest rate was 11.68%. Similarly, for BIDV, the average growth rate over 5 years is 11.51%, the growth rate of next year compared to the previous year from 2022 to 2018 is: 11.96%, 10.90% respectively. %, 10.21%, 12.97% Thus, growth in 2021 compared to 2020 is 10.90%, the lowest growth rate in the period 2018 to 2022. But in 2019 compared to 2018, growth is at a high level at most 12.97%. Likewise, the average growth rate over 5 years of Vietinbank and Agribank also reached about 10%.

Figure 2: Average credit growth rate of Vietnamese state-owned commercial banks from 2018-2022 (%)
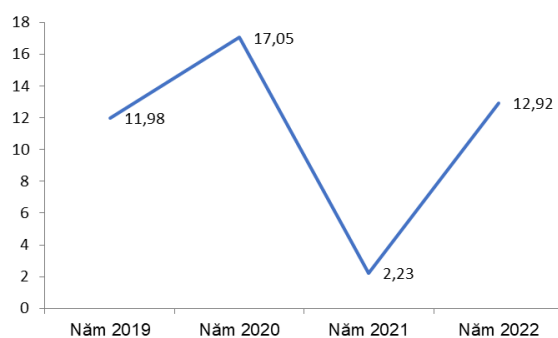
* Bad debt ratio of commercial banks with Vietnamese State capital

Figure 3: Bad debt of Vietnamese state-owned commercial banks from 2018-2022 (Billion VND)
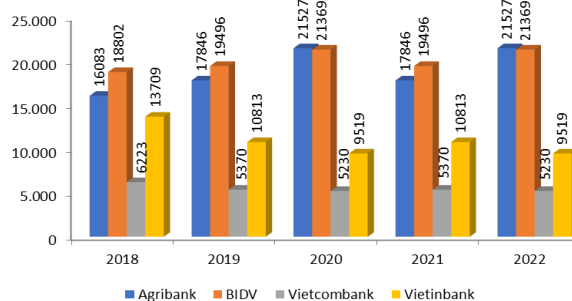
Source: Annual reports of Vietnamese state-owned commercial banks (2018-2022)

Bad debt ratio is an important financial indicator evaluating the credit quality of Vietnamese commercial banks. Once a commercial bank has a high bad debt

ratio, it proves that credit activities in general and lending in particular are of low quality and high risk, thereby requiring a review of all credit activities. However, bad debt is an unavoidable problem in credit activities, it is important for banks to maintain it at an acceptable level. According to the World Bank, this rate is acceptable at less than 5%, good at 1-3%. In the period from 2018 to 2022, the bad debt ratio of Vietnamese state-owned commercial banks averaged 1.38%, smaller than the allowed level of 3%.

Figure 4: Bad debt ratio of Vietnamese state-owned commercial banks from 2018-2022 (%)
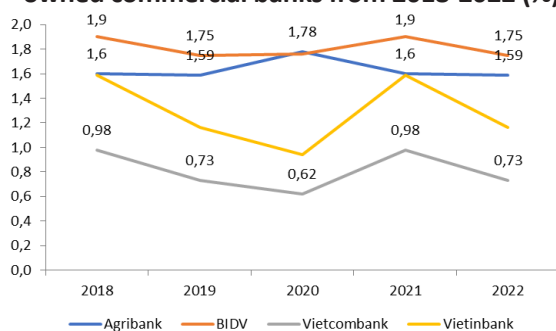
Source: Annual reports of Vietnamese state-owned commercial banks (2018-2022)

According to statistical data on the financial statements of Vietnamese state-owned commercial banks in 2022, although economic sectors are heavily affected by the epidemic and the banking and finance industry is not an exception. But in general, the bad debt ratio of most Vietnamese state-owned commercial banks has decreased, except for BIDV and Agribank.

As of December 31, 2022, commercial banks with Vietnamese state capital all controlled the bad debt ratio below 3%. However, the absolute number of bad debts of Vietnamese state-owned commercial banks increased while the bad debt ratio decreased, the reason the growth rate of outstanding loans increased higher than bad debt. In 2022, state-owned banks will well control the bad debt ratio below 3%. Specifically, Vietcombank and Vietinbank are the two with bad debt ratios below 1%. Vietcombank's bad debt ratio of 0.62% in 2020 is also a low level in this bank's history. Meanwhile, VietinBank had 0.94% remaining in 2020. In addition, in 2020, VietinBank also settled all bad debts at the Asset Management Company (VAMC), the loan bad debt coverage ratio and On-balance sheet bonds have also improved, increasing to 130% compared to 1.16% in 2019 and is the lowest bad debt ratio in the period 2015-2020. BIDV's bad debt ratio in 2020 was 1.76%, a decrease compared to 2019. The bad debt ratio of Bidv and Agribank in 2020 increased compared to 2019 but the increase was not significant because these are banks operated by BIDV. The state-dominated business has healthy business operations and a big brand nationwide. All banks have customer portfolios that have performed well over the past many years.

What is worth noting for Vietnamese state-owned commercial banks in 2020 is that although the bad debt ratio almost decreased, debt that needs attention (group 2 debt) increased, especially Vietcombank increased by 70%. This is also a matter of concern because if customers continue to be unable to repay their debts, these debts will move from group 2 to the bad debt group. In addition, group 5 debt tended to increase sharply compared to previous years during the study period. Typically in the case of BIDV, group 5 debt increased by more than 5,000 billion VND, to 16,525 billion VND, equivalent to an increase of 46% compared to the beginning of the year. In addition, although the bad debt ratio at Vietnamese state-owned commercial banks has been at a low level for many years, that bad debt figure does not fully reflect reality, because many debts are restructured. The debt repayment deadline according to Circular 01/2020/TT-NHNN is essentially bad debt.

In 2020, commercial banks with state capital in Vietnam also made a very large amount of provision for risk reserve funds to cope with the problem of bad debt and this expense was partly used for banks to The company will write off bad debts in the fourth quarter of 2020, aiming to reduce the bad debt ratio for the whole year. Another part is for banks to make provisions for bad debts that may form in the future, when restructuring regulations keep the same debt group to support customers affected by the Covid epidemic according to Circular 01/2020/TT-NHNN expires. Specifically, the debt restructured and the repayment term according to this circular in 2020 is VND 355,000 billion, accounting for about 4% of the total outstanding debt of the economy. Therefore, if only 50% of restructured debt becomes bad debt, the bad debt ratio of the whole system will increase to 4%. The general move of banks is to make early provisions for risks in 2020 as a solution to reduce pressure on potential difficulties and challenges in the future while the epidemic is still prolonged and not yet under control. However, this solution creates another problem: it will be difficult for banks to lower lending interest rates. Invisibly, part of the cost of handling bad debt falls on the borrower.

* Income from credit activities and income ratio from credit activities of commercial banks with Vietnamese state capital

Income from credit activities of Vietnamese state-owned commercial banks in the period from 2018 to 2022 is shown in Figure 5 below:

Figure 5: Ratio of income from credit activities of Vietnamese state-owned commercial banks in the period 2018-2022 (%)
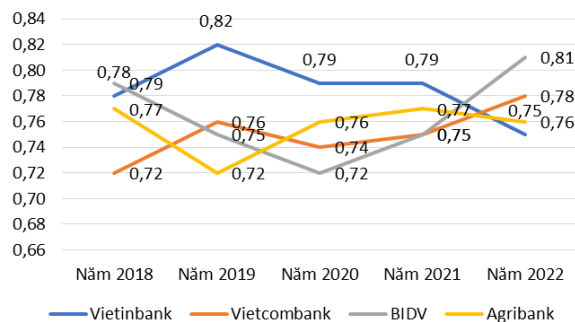
Source: Annual reports of Vietnamese state-owned commercial banks (2018-2022)

Risk provisioning is a measure to handle bad debts and control credit quality of Vietnamese state-owned commercial banks, which has had a great impact on the bank's profit results. Banks with good credit quality and low bad debt ratios will not face much pressure in making provisions, causing a big impact on profits. For every bad debt recovered, the bank will record the entire amount of provision as profit.

Banks' profits have tended to increase sharply in recent years, but at the same time, bad debts still occur. Thus, banks still have to spend money on risk provisions. BIDV is the bank with the largest risk provision expense in 2018. Although bad debt decreased compared to the beginning of the year, the bad debt volume at BIDV is still the largest in the system. There are 2 banks out of 4 banks with Vietnamese State capital whose risk provision costs during the period accounted for half of net profit from business activities such as: BIDV, VietinBank.

The nature of risk provisioning costs is to reserve an amount of money for problem loans to improve credit quality. Therefore, the cost of the provision will be taken from the bank's profits and deducted from current income before calculating corporate income tax. An increase in provision costs means that the size of banks' taxable profits will decrease, and less tax will be payable. However, when each dollar of bad debt is processed and recovered, the provision amount will be accounted directly into extraordinary income. Therefore, at many banks,

provision costs will come back and increase taxable profits in the future.

However, shareholders will be interested in whether the bank's profits are high to push up the stock market price. On the other hand, if profits increase, shareholders will receive more dividends. Therefore, making risk provisions for shareholders is a burden. Many bad debts originate from basic investments, outstanding debts from the state budget are difficult to handle, typically debts from 12 loss-making projects of the industry and trade sector. Therefore, the need for banks to set up risk provisions will be a burden not only for the bank but also affect the interests of shareholders.

c. Assessing the credit quality of Vietnamese state-owned commercial banks

* Limit

- Financial resources for bad debt handling process are limited

To successfully handle bad debt, strong financial resources are needed to speed up the process of handling bad debt. Accordingly, it is necessary to have financial plans to directly and completely buy bad debts from banks, transfer the money to buy bad debts to banks to stabilize business, and strengthen VAMC's bad debt handling activities through through restructuring, selling to investors at market price, handling collateral, liquidating collateral...

- Requirements to increase capital for commercial banks with state capital still face difficulties

In the context of state budget overspending, the Government's stance is not to use state budget money to restructure commercial banks in general as well as commercial banks with Vietnamese state capital in particular and handle debt. bad debt, while the ability of credit institutions to mobilize social resources for restructuring and handling bad debt is still limited. Therefore, increasing capital for banks, especially commercial banks with Vietnamese state capital, faces many difficulties due to the provisions of the State Budget Law and the Law on Management and Use of State Capital. investing in production and business at enterprises, Decree No. 91/2015/ND-CP does not allow State-owned commercial banks to retain profits, after setting up payable/payable funds to the State; At the same time, Resolution No. 25/2016/QH14 dated November 9, 2016 of the National Assembly on the National 5-year financial plan for the period 2016-2020 also clearly stipulates that the increase in charter capital for State-owned commercial banks is not use state budget.

- *State-owned commercial banks are having difficulty handling bad debts. Specifically:*

+ Bad debts are mainly handled with risk provisions and special bonds, while measures to thoroughly handle bad debts through handling collateral and debt repayment by borrowers are still at a low level. Therefore, the effectiveness and thoroughness in handling bad debts is limited. Bad debts still exist when the lender and the borrower have not yet terminated and settled the rights and obligations related to the debt. Promoting the handling of bad debts by risk provisions and selling debts to VAMC to receive special bonds as in the past has significantly affected the health and safety of the bank's operations, because of all the risks and Bad debt handling costs are borne by the bank. Risk provision costs and special bond provisions continue to increase in the coming years, which will limit banks' business results and ability to increase charter capital if bad debts are not thoroughly handled. according to market mechanism

+ The bank also faces difficulties in using risk provisions to handle bad debts because according to the process, the bank must apply debt recovery measures from customers first, even considering the customer's conditions. Customers apply support measures (restructuring repayment terms, loan structure...) to improve customers' financial capacity, increase customers' ability to repay debt, and then can Use risk provisions, sell collateral to recover debt to handle bad debts in group 5 or debts of customers who are dissolved, bankrupt, missing, or dead.

+ Customers' debt repayment ability is still limited due to production and business difficulties; Some customers are sluggish, have poor debt repayment awareness, and do not cooperate with banks in handling collateral to repay debt; Customers use capital for improper purposes

+ The seizure of collateral is still facing difficulties due to customers not cooperating in handing over assets; The authorities (People's Committee, police agency, etc.) have not coordinated and actively participated in supporting to solve difficulties for the bank; Communication difficulties during the process of confiscating assets in the spirit of Resolution 42.

* Cause of limitation

- Most commercial banks with Vietnamese state capital often find it difficult to increase capital because they are controlled by the State

- Some senior bank managers are not fully aware and pursue immediate benefits, affecting credit quality.

- The weak management capacity of some banks combined with competitive pressure to develop credit market share leads to the risk of reducing standards in the credit process.

3. Some solutions to improve credit quality of Vietnamese state-owned commercial banks

a. Effectively control asset scale and credit growth rate

First, commercial banks with state capital need to increase the scale and quality of assets, especially profitable assets. Interest-bearing assets are the basis of interest income, which is the most important source of income for commercial banks in Vietnam today. Therefore, commercial banks need to simplify the lending process, improve appraisal capabilities to shorten loan processing time, but must strictly manage loans to ensure loan quality. At the same time, commercial banks with state capital need to focus on priority growth industries, on good quality businesses in industry groups such as post and telecommunications, pharmaceuticals, and medical equipment.

Second, establishing an optimal asset portfolio combined with diversifying the asset portfolio structure helps banks distribute risks and ensure safety. More specifically, it is possible to restructure loan assets into less risky and potential areas such as agriculture, forestry - fishery, and industries serving essential needs, industries and fields associated with technology. information and reduce the proportion of outstanding non-productive debt; Promote foreign exchange trading activities or investment in Government bonds. For commercial banks with state capital, which are medium and small sized banks: restructure customer loan portfolios, reduce loans to state-owned enterprises with low business results and no collateral assets. , increase lending to private enterprises, small and medium enterprises. At the same time, commercial banks must periodically evaluate their customer portfolio to predict long-term risks. Thereby, there are policies to reduce outstanding loans for customer groups, reducing possible future risks for the bank..

b. Limit credit risk

The optimal solution that needs to be done immediately is that commercial banks with Vietnamese State capital need strong solutions to limit credit risks, specifically:

Firstly, strengthen supervision of loans through regulations requiring review of all debts, full objective assessment of customers' ability to repay debt, debt

collection sources to control debts. loans and limit credit risks.

Second, improve the ability to identify and detect credit risks for prevention. Potential credit risks can come from customers or from the bank itself. On the basis of credit risk signs, the departments responsible for risk management according to the scope of their duties provide assessments, comments, and suggestions to the directly responsible department for solutions. timely handling. Consider risk management by unit and centralized management by region. Currently, all banks have a Risk Management Division and each region has a risk monitoring and supervision department, and each business unit has a risk management department. However, it is necessary to closely monitor the operational situation and detect risk factors for the Regional Risk Management Department, and report to the Unit Head.

Third, effectively handle problem debts and limit the emergence of problem debts and bad debts.

For overdue debts, banks need to clarify the customer's business situation. Banks should establish a Working Group to handle bad debt, consider each customer with bad debt, and find ways to solve it through support and financial consulting for businesses with bad debt so that they can Have a plan to restore business and operate effectively again, thereby fulfilling debt repayment obligations. In case the customer has the ability to restore production, repay debt and wishes to cooperate, the bank can restructure the debt for the customer. Banks can lend them additional loans in cases where the cause affecting their ability to repay debt and operate is due to lack of capital. Lending ensures capital recovery, helping customers overcome difficulties. Based on the customer's business plan, demonstrate the ability to repay when due after restructuring their debt. This requires banks to closely monitor customers' debts and activities after restructuring. At the same time, the bank has appropriate debt restructuring solutions such as being able to convert part of the principal debt into medium-term bonds; Convert overdue debt and bad debt into shares if it is found that after restructuring, the enterprise has the ability to survive and develop.

c. Limit the rate of marginal interest income

According to the results of the above research model, increasing NIM will increase turnover. Specifically, when the loan interest rate is high, that is, the NIM is high, it can cause the borrower to not be able to fulfill the terms committed in the loan contract or part of the principal and interest cannot be paid on time, especially in terms of Economic conditions are unstable, business profitability is lower than bank lending interest rates. At the same time, marginal interest income is determined by dividing net interest income by total earning assets. Therefore, when net interest income is high, it proves that the bank lends a lot, leading to high risk, and bad debt is one of the main causes of credit risk and then the bank must make provisions. many risks. The solution for commercial banks with state capital is to offer diverse preferential interest rates applicable to each customer and each customer segment. Commercial banks need to proactively build lending programs with reasonable interest rates, diversify credit products, and develop a balanced consumer loan product package to meet the needs of legitimate life. of customers in order to limit black credit, consider extending debt, adjusting debt repayment terms when customers encounter difficulties due to legitimate reasons and cannot repay debt on time, helping customers not to borrow at high interest rates to pay off debt. bank term.

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EVALUATE THE EFFECTIVENESS OF USING CLOUD COMPUTING TO DEPLOY MACHINE LEARNING MODEL

MSc. Nguyen Huy Anh* - Pham Hoang Nhat Nguyen* - Pham Duc Cuong*
Nguyen Xuan Mai Phuong* - Le Thien Nhi*

Abstract: *This study explores the effectiveness of cloud-based retail environments, with a focus on Non-traditional security challenges considering one of the aspects of effectiveness. Employing Shopee Vietnam as a case study, the paper investigates the implications and risks associated with the storage and handling of consumer data in the cloud. As E-commerce platforms like Shopee integrate cloud computing to enhance user experience and operational efficiency, they also face increasing threats to data security. This study not only highlights the prevalent security threats in cloud retailing, like malware attacks and compliance challenges but also examines how Shopee can enhance its security measures reaching a certain effectiveness. Through rigorous statistical and thematic analysis, the paper aims to contribute to the understanding of data security in cloud retailing as an aspect of evaluating effectiveness and proposes recommendations for enhancing user data protection, specifically in the context of Non-traditional security threats. Through that, we concluded which cloud-based environment is appropriate for deploying machine learning.*

• Keywords: *machine learning, cloud computing, non-traditional security, e-commerce, shopee vietnam, quantitative, qualitative analysis, malware attacks, compliance challenges.*

1. Introduction and review

Currently, buying and selling goods on E-commerce is gradually becoming a habit of consumers, helping them easily compare prices, search for diverse products, transport goods, especially the combination of goods of cloud computing. In, 80% of shoppers used a mobile phone inside of a physical store to either look up product reviews, compare prices or find alternative store locations and this is probably increasing in the future. One of the e-commerce channels in the research team's research is Shopee.

Shopee was founded in 2015, is an intermediary channel connecting buyers and sellers and is popular in a number of countries in Southeast Asia. According to the 'business of apps' page, Shopee generated $7.46 billion revenue in 2022, a 63% increase on the previous year. "To delight customers, Shopee can enhance the seamless experience further with AI/machine learning enablement in the following areas: 1) social group engagement across Southeast Asia and Taiwan, 2) location based 1x1 proximity social power selling, 3) gamers and edutainment content." (David Lee, Nanyang Polytechnic), which is the way Shopee could enhance the seamless experience.

Cloud computing is a model of providing information technology resources (including hardware and software) via the Internet. In, the cloud service providers that offer services are categorized into service delivery models: Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS); Platform as a Service (PaaS) provides an application development and deployment environment, helping programmers focus on writing code without worrying about infrastructure management; Software as a Service (SaaS) a software is provided over the network as a service, often through a subscription model. Users do not need to install or maintain software.

In the lens of Non-traditional security, Non-traditional security (NTS) refers to types of security threats that are not directly related to

military conflict between states. With the cloud retail context gradually becoming a trend, user data security is not only necessary but also important because of the large amount of user information and transactions.

With the novelty of the topic in an era of having to keep up with new sophisticated tactics, the research team consulted and collected information from international reports with comparative and analytical methods to propose a Proposal to improve the information security quality of Shopee Vietnam within the capital Hanoi through the application of cloud computing.

2. Related work

Data security on E-commerce platforms represents a significant issue within the information technology sector. There have been numerous prior studies conducted to understand and improve data security on these platforms. The following are some exemplary studies:

2.1. "Designing Secure and Robust E-commerce Platform for Public Cloud" - Asian Bulletin of Big Data Management (2023)

This article discusses security issues in the E-commerce domain. The paper addresses the cybersecurity risks faced by E-commerce platforms, including phishing attacks, DDoS, and the sophistication of cybercriminals, particularly the tactics of Advanced Persistent Threats (APT).

Data Protection and Encryption: This involves the encoding of information so that only authorized parties can access it, providing a secure layer of protection for data both at rest and in transit.

Compliance with Industry Standards: The Payment Card Industry Data Security Standard (PCI DSS) is identified as one of the most pivotal regulations. It establishes standards for protecting cardholder data and encompasses requirements for security management, policies, procedures, network architecture, software design, and other vital protective measures.

Method	Data Protection and Encryption	Compliance with Industry Standards	Identity and Access Management (IAM)
Advantage	- Using TLS for data transmission and advanced encryption standards for storage ensures comprehensive security.	- Build customer trust through compliance with security standards.	- IAM system with multi-factor authentication (MFA) and single sign-on (SSO) enhances security.

Defect	- System performance may decrease due to encoding and decoding processes.	- Significant costs and resources for ongoing maintenance and compliance testing.	- It is necessary to ensure that cryptographic key management and access rights are strictly implemented.

2.2. "Data-Driven Threat Analysis for Ensuring Security in Cloud-Enabled Systems" - Mohammed K. S. Al Waheidi, Shareeful Islam (2022)

This article presents a data-driven threat analysis method, referred to as d-TM, to assess threats within cloud systems. This approach classifies data into three levels-management, control, and operational-and three stages: storage, processing, and transmission. It employs data flow diagrams (DFD) to identify common vulnerabilities and threats and to establish appropriate control measures. The findings reveal that this methodology is capable of analyzing and prioritizing threats based on insights into the data and determining suitable control measures to ensure the overall security of the cloud system.

d-TM assessment method	
Advantage	Defect
Data classification: + Data is classified into 3 levels (Management - Control - Business) and 3 stages (Storage - Processing - Data transmission) + Clearly identify weaknesses and threats related to each type of data. + Focus on the most important threats and identify appropriate controls.	*Depends on data:* + If data is not provided completely or accurately, it will affect the evaluation results + Create challenges in data collection and processing

3. Method

3.1. Data collection methods

The research uses quantitative data collection methods through electronic surveys on Google Form. The survey collected opinions and experiences of about 125 Shopee application users in the inner city area of Hanoi. The survey was designed with questions related to customer experience, personal data security, and Shopee's information storage capabilities.

The questions in the survey will focus on assessing user satisfaction, awareness of security and privacy, as well as evaluating Shopee's information storage capabilities. Evaluations will be scaled from 1 to 5 to produce data that can be easily processed and analyzed.

3.2. Analytical method

After collecting data from the survey, descriptive and statistical analysis methods will be used to create statistics that accurately describe

user opinions. Classification and analysis will help the research better understand users' perceptions and opinions about data security on Shopee.

The final results will be processed and analyzed using tools such as Python, Excel, and SPSS to ensure the accuracy and reliability of the collected data, thereby providing specific suggestions and solutions for improvement. Data security quality on Shopee.

4. Result

Figure 4.2: Descriptive statistics of customer satisfaction survey responses

	N	Minimum	Maximum	Mean	Std. Deviation
1	125	0	1	,39	,490
2	125	1	4	2,38	,878
6	125	1	5	3,48	,894
7	125	1	5	3,62	,914
8	125	1	5	3,53	,768
9	125	1	5	3,29	,966
10	125	2	5	3,73	,734
11	125	1	5	3,73	,979
12	125	1	5	3,71	,940
13	125	1	5	3,66	,870
14	125	1	5	3,71	,841
15	125	1	5	3,12	1,029
16	125	1	5	3,38	,886
17	125	1	5	3,39	,924
18	125	1	5	3,57	,910
19	125	1	5	3,55	,788
20	125	1	5	3,56	,817
21	125	1	5	3,57	,826
Valid N (listwise)	125				

The mean value of the respondents is ranging from 2.38 to 3.73, which indicates that the majority of respondents have an attitude leaning more towards "Satisfaction". In addition, the lowest standard deviation (std) recorded was 0.73 for the question "Convenience of security features for storing personal information on Shopee (QR, Email, Phone number, etc.)" this indicates that the values in that data set are close to the mean, i.e. there is high homogeneity in participants' responses.

Figure 4.3: Reliability of the survey instrument measured by cronbach's alpha

Reliability Statistics

Cronbach's Alpha	N of Items
,947	16

Cronbach's Alpha is a statistical measure used to evaluate the internal reliability of a scale when it is used to evaluate concepts that are not directly observable, such as attitudes and consciousness. A Cronbach's Alpha value greater than 0.7 is generally considered acceptable, greater than 0.8 good, and greater than 0.9 excellent. Specifically, with Cronbach's Alpha recorded as 0.947, the questions in this scale are consistent and interconnected, especially since the scale has high internal reliability.

Our research team recognizes that factors related to information and customer support are closely correlated. This provides a basis for Shopee to focus on improving clarity and transparency in all information related to security, as well as strengthening the quality of customer support.

4.1. Discussion

Table 4.4: Overview of data security management process in cloud retailing
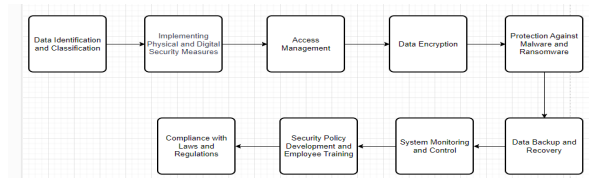
The research team presents an example of a general process for data security in cloud-based retail channels. Specifically, the first step in this process is 'Data Identification and Classification', where the retail channel categorizes user data such as personal information, transaction data, etc., and determines the sensitivity level. The next step, 'Implementing Physical and Digital Security Measures', involves the retail channels implementing tasks such as security cameras, and fire prevention devices at the main office for physical security, and initially introducing digital security measures in subsequent steps like 'Access Management', 'Data Encryption', 'Protection Against Malware and Ransomware'.

The sixth step in our identified process, Data Backup and Recovery, serves as an essential safeguard. Our research contends that the strength of any cloud-based system lies not only in its defensive measures but also in its ability to recover swiftly from data loss. This step scrutinizes the strategic implementation of backup protocols and the practicality of recovery plans, which are especially vital in E-commerce environments where data volatility is high.

Moving forward to System Monitoring and Control, proactive surveillance of network and system behavior is critical to preemptively identify

and mitigate potential security incidents. It delves into various monitoring tools and strategies that can be employed to provide comprehensive oversight of data transactions and system access.

Addressing Security Policy Development and Employee Training, the process reflects the creation of robust security policies as the backbone of organizational data security culture. It emphasizes the role of continuous education and training for employees as a necessary investment for reinforcing the human aspect of the security framework.

Lastly, the process of Compliance with Laws and Regulations underscores the significance of legal and regulatory adherence such as GDPR, and CCPA.

5. Recommendations, Conclusions

5.1. Recommendations

Based on the analysis results, the research team recognizes that questions related to the answers and information provided by Shopee about user data security issues still exist, evidenced by the high correlation in many related questions. Additionally, there are actions aimed at remedying issues with third parties

Figure 4.5: Comprehensive data security and privacy framework in e-commerce
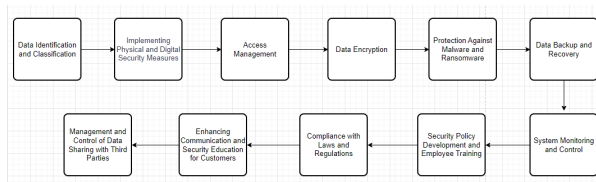
In step 10, the research team suggests that the Shopee retail channel could create education and security information programs designed to suit and appeal to their main customer group - young women. In the final process, Shopee VN can apply third-party risk assessments to ensure security and compliance with data protection when sharing information with external partners. Additionally, signing detailed Data Sharing Agreements (DSAs), outlining specific rights and obligations related to data protection. To ensure third-party compliance, they should be required to adhere to their own data protection policies and conduct regular audits. Therefore, this could be a good platform for deploying a kind of machine learning, which gains merits to Shopee and others in cloud computing fields.

5.2. Conclusion

This study on the effectiveness of cloud computing as user data security in cloud-based retail, particularly focusing on Shopee VN, underscores the dynamic interplay between technological advancements and security challenges. Our findings reveal areas for improvement, notably in response times and transparency in data-sharing policies. Moving forward, it's crucial for platforms like Shopee VN to continuously evolve their security strategies, emphasizing user awareness and robust data protection. The study highlights that cloud computing is a proper space for deploying machine learning models in the retail domain and the necessity for ongoing adaptation and a user-centric approach to effectively navigate the rapidly changing landscape of cybersecurity in E-commerce.

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THE SALE-BASED PRO FORMA METHOD IN FINANCIAL STATEMENT MODELING

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Abstract: *The sale-based pro forma method is a widely utilized approach in financial statement modeling, involving the projection of a company's future financial performance based on expected sales figures and historical financial relationships. This paper explores the theoretical underpinnings, practical applications, and benefits of using the sale-based pro forma method. It delves into the methodological steps, potential challenges, and real-world applications in various industries, providing a comprehensive overview for financial analysts and corporate managers.*

• Keywords: *sale-based, pro forma, financial statement, modeling.*

1. Introduction

Financial statement modeling is a cornerstone of modern financial analysis, crucial for various stakeholders including analysts, investors, and corporate managers. The primary objective of financial statement modeling is to forecast a company's future financial performance based on past and present financial data. Accurate financial modeling aids in strategic planning, investment decisions, risk management, and overall financial health assessment. Among the various methodologies employed in financial modeling, the sale-based pro forma method has gained prominence due to its straightforward approach and effective results.

The sale-based pro forma method focuses on projecting future financial statements by leveraging expected sales figures and historical financial data. This approach is grounded in the premise that sales are the primary driver of most financial statement items. By accurately forecasting sales, other components such as cost of goods sold (COGS), operating expenses, and net income can be estimated using historical ratios and trends. The method's simplicity lies in its reliance on historical data to maintain a consistent and logical relationship between sales and other financial metrics.

This method is particularly appealing because it simplifies the complex process of financial forecasting into manageable steps that can be executed with available historical data. The central hypothesis is that a company's financial performance is closely tied to its sales, making sales projections a critical factor in overall financial modeling. This hypothesis is supported by the consistent relationships observed between sales and other financial elements in historical data. Therefore, the sale-based pro forma method can provide a reliable framework for projecting future financial statements.

Moreover, the sale-based pro forma method is versatile and can be applied across various industries and sectors. Its flexibility allows it to accommodate industry-specific variables while maintaining its core principles. For instance, in the retail sector, sales projections might be influenced by factors such as store openings and seasonal trends, while in the manufacturing sector, production costs and inventory levels play a significant role. The method's adaptability ensures its applicability in diverse business environments, making it a valuable tool for financial analysts and corporate managers alike.

Despite its advantages, the sale-based pro forma method is not without its challenges. One of the primary limitations is its reliance on historical data. While historical financial relationships can provide a solid foundation for projections, they may not always hold true in dynamic market conditions. Economic shifts, technological advancements, and changes in consumer behavior can disrupt historical trends, leading to potential inaccuracies in projections. Additionally, the method assumes that the relationships between sales and other financial metrics remain consistent over time, which may not always be the case. Therefore, while the sale-based pro forma method offers a structured approach to financial modeling, it requires careful consideration and adjustment based on the

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specific context and evolving market conditions.

The aim of this paper is to provide an in-depth exploration of the sale-based pro forma method, highlighting its theoretical foundations, methodological steps, benefits, challenges, and practical applications. By doing so, we seek to offer a comprehensive understanding of how this method can be effectively employed in financial statement modeling. The paper begins with a detailed discussion of the theoretical framework underpinning the sale-based pro forma method, followed by a step-by-step guide to its implementation. We then examine the benefits and limitations of the method, supported by real-world applications and case studies. Finally, we conclude with insights into the future directions for research and application of the sale-based pro forma method in financial analysis. Through this exploration, we aim to equip financial analysts and corporate managers with the knowledge and tools needed to leverage the sale-based pro forma method for accurate and strategic financial forecasting.

2. Theoretical framework

The sale-based pro forma method in financial statement modeling is grounded in the assumption that sales are the primary driver of most financial statement items. This assumption is rooted in the revenue recognition principle, which posits that revenue should be recognized when it is earned and realizable. This principle establishes sales as the foundation upon which other financial elements are measured. The sale-based pro forma method leverages this foundational concept, projecting future financial figures by correlating them directly with expected sales figures.

Central to the sale-based pro forma method is the reliance on historical financial ratios and trends. Historical data is used to derive key financial ratios such as COGS/Sales, SG&A/Sales, and Net Income/Sales. These ratios, assumed to remain relatively stable over time, are then applied to projected sales figures to estimate future financial statement items. This reliance on historical stability aligns with the theory of mean reversion, which suggests that financial ratios tend to revert to their historical averages over time. Empirical studies, such as those by Penman (2013), support this theory by demonstrating that historical financial ratios are significant predictors of future financial performance. Penman's analysis of a large sample of firms showed that applying historical ratios to sales projections reliably estimated future earnings and cash flows.

Supporting the sale-based pro forma method are several key financial theories. The Financial Statement Linkage Theory posits that financial statements are interconnected, with changes in one statement affecting others. For example, an increase in sales revenue will lead to higher accounts receivable on the balance sheet and higher cash inflows on the cash flow statement. This theory underpins the sale-based pro forma method, as it emphasizes the interconnectedness of financial statement items driven by sales projections. Additionally, the Cost-Behavior Theory, which distinguishes between fixed and variable costs, is crucial for accurately projecting COGS and operating expenses based on sales forecasts. Variable costs change in direct proportion to sales, while fixed costs remain constant, a concept integral to the sale-based pro forma method.

The Sustainable Growth Rate Model also aligns with the sale-based pro forma method. This model relates a firm's growth rate to its profitability, retention ratio, and financial leverage. By projecting sales growth and applying historical profitability and leverage ratios, the sale-based pro forma method aligns with this model to forecast sustainable growth and financial performance. Studies by Brigham and Ehrhardt (2013) underscore the practicality of the sale-based pro forma method, highlighting its simplicity and effectiveness in financial forecasting, particularly for companies with stable historical performance.

Previous research has extensively validated the efficacy of the sale-based pro forma method. Brigham and Ehrhardt (2013) illustrated how companies can use historical COGS/Sales and SG&A/Sales ratios to project future expenses and net income, leading to more accurate financial planning and decision-making. Their research emphasized that the method's reliance on historical data makes it an effective tool for financial forecasting, especially for companies with consistent historical performance. Similarly, Palepu, Healy, and Peek (2013) demonstrated the utility of pro forma financial statements in business valuation. Their study showed that the sale-based pro forma method is particularly useful in valuing companies in stable industries, where historical financial relationships are likely to hold. They argued that the method's reliance on historical data allows for more precise valuation by aligning future projections with past performance trends.

Despite its robustness, the sale-based pro forma method is not without challenges. The primary challenge is its reliance on historical data, which may

not always predict future performance accurately, especially in dynamic markets. Economic shifts, technological advancements, and changes in consumer behavior can disrupt historical trends, leading to potential inaccuracies in projections. The method also assumes that historical financial relationships will remain constant, which may not hold true in the face of significant market disruptions, regulatory changes, or shifts in consumer behavior.

To address these challenges, analysts must incorporate qualitative factors into their projections. Understanding market trends, competitive dynamics, and potential regulatory impacts can help refine sales forecasts and adjust historical ratios accordingly. Sensitivity analysis can also be employed to assess the impact of different assumptions on projected financial statements, providing a range of possible outcomes and enhancing the robustness of the forecasts. Integrating the sale-based pro forma method with other forecasting techniques, such as econometric models, market analysis, and scenario analysis, can further enhance its accuracy and applicability in dynamic market conditions.

3. Methodological steps

The sale-based pro forma method involves a structured and systematic approach to projecting future financial statements based on anticipated sales figures and historical financial data. This method can be broken down into several detailed steps, each requiring rigorous analysis and careful application of financial principles. The methodological steps include historical data collection, sales forecasting, ratio analysis and application, and the construction of pro forma financial statements. Each step is critical to ensure the accuracy and reliability of the financial projections.

Step 1: Historical Data Collection

The first step in the sale-based pro forma method is the collection of historical financial data. This involves gathering comprehensive financial statements from previous years, typically focusing on the past five to ten years to capture a sufficient range of data. The collected data should include income statements, balance sheets, and cash flow statements. The primary goal is to identify historical trends and calculate key financial ratios that will be used in subsequent steps.

The process begins with a thorough review of the company's financial statements to ensure accuracy and completeness. Analysts must standardize the data to account for any changes in accounting policies or practices over the years. Adjustments may be necessary to reflect consistent accounting treatments, ensuring comparability across different periods. This step often involves the use of financial databases, accounting software, and spreadsheet tools to organize and analyze the data efficiently.

Step 2: Sales Forecasting

Sales forecasting is the cornerstone of the sale-based pro forma method. This step involves projecting future sales based on historical growth rates, market analysis, and management insights. Analysts typically use a combination of quantitative and qualitative methods to develop robust sales forecasts.

Quantitative methods include trend analysis, time-series analysis, and econometric modeling. Trend analysis involves examining historical sales data to identify growth patterns and extrapolate them into the future. Time-series analysis uses statistical techniques to model and forecast sales based on past sales data. Econometric modeling incorporates macroeconomic variables, such as GDP growth, inflation rates, and industry-specific factors, to refine the sales forecast.

Qualitative methods involve gathering insights from management, industry experts, and market research reports. These insights can provide valuable information on market trends, competitive dynamics, and potential regulatory changes that may impact future sales. Combining quantitative and qualitative methods helps create a comprehensive and realistic sales forecast.

Step 3: Ratio Analysis and Application

Once the sales forecast is established, the next step is to analyze historical financial ratios and apply them to the projected sales figures. Key ratios typically include COGS/Sales, SG&A/Sales, and Net Income/Sales. These ratios are calculated using historical financial data and represent the relationships between sales and various expense and income items.

Analysts must ensure the reliability and stability of these ratios over time. This involves conducting a statistical analysis to determine the consistency of the ratios and identifying any outliers or anomalies. Techniques such as mean reversion analysis can be employed to assess whether the ratios tend to revert to their historical averages. Additionally, regression analysis can be used to examine the strength of the relationship between sales and other financial metrics.

After verifying the reliability of the historical ratios, they are applied to the projected sales figures. For example, if the historical COGS/Sales ratio is 60%, and the projected sales for the next year are $10 million,

the estimated COGS would be 60% of $10 million, or $6 million. This process is repeated for other key financial ratios to estimate future operating expenses, net income, and other financial statement items.

Step 4: Construction of Pro Forma Financial Statements

The final step involves constructing the pro forma financial statements, including the income statement, balance sheet, and cash flow statement. These statements provide a projected view of the company's financial performance and position, based on the sales forecast and applied ratios.

Pro Forma Income Statement: The income statement is constructed by starting with the projected sales figures and applying the estimated expenses derived from historical ratios. Gross profit is calculated by subtracting COGS from sales. Operating expenses, such as selling, general, and administrative expenses (SG&A), are then subtracted to determine operating income. Finally, interest expenses, taxes, and other non-operating items are accounted for to arrive at the projected net income.

Pro Forma Balance Sheet: The balance sheet is constructed by projecting the key balance sheet items based on historical relationships with sales and other financial metrics. For example, accounts receivable can be projected using the historical average days sales outstanding (DSO) ratio. Similarly, inventory levels can be estimated using the historical inventory turnover ratio. Liabilities and equity items are projected based on their historical proportions to sales and other relevant factors.

Pro Forma Cash Flow Statement: The cash flow statement is constructed by projecting cash flows from operating, investing, and financing activities. Operating cash flows are derived from the projected net income, adjusted for changes in working capital accounts such as accounts receivable, inventory, and accounts payable. Investing cash flows are projected based on planned capital expenditures and asset disposals. Financing cash flows are estimated based on expected changes in debt and equity financing.

4. Benefits and challenges of the sale-based pro forma method

4.1. Benefits of the sale-based pro forma method

The sale-based pro forma method offers several advantages that make it a popular and effective tool for financial statement modeling. These benefits include simplicity, accessibility, data-driven approach, flexibility, and strategic relevance.

Simplicity and accessibility

One of the primary benefits of the sale-based pro forma method is its simplicity. The method is straightforward, involving basic calculations and logical relationships between sales and other financial metrics. This simplicity makes it accessible to financial analysts with varying levels of expertise. It does not require complex financial models or advanced statistical techniques, making it easier to implement and understand. The clear, step-by-step process allows analysts to create reliable projections without needing extensive training or specialized software.

Data-driven approach

The sale-based pro forma method is fundamentally data-driven. It relies on historical financial data to derive key ratios and trends, providing a concrete basis for future projections. This reliance on actual historical performance reduces the subjectivity and biases that can affect other forecasting methods. By grounding projections in historical data, the sale-based pro forma method offers a level of objectivity and reliability that is critical for accurate financial modeling. This data-driven approach ensures that projections are anchored in the company's actual performance, enhancing their credibility and usefulness.

Flexibility and versatility

Another significant advantage of the sale-based pro forma method is its flexibility. The method can be adapted to suit various industries and sectors, accommodating industry-specific variables while maintaining its core principles. For instance, in the retail sector, analysts can adjust sales projections based on store openings and seasonal trends. In manufacturing, production costs and inventory levels can be incorporated into the projections. This versatility allows the sale-based pro forma method to be applied across different business environments, making it a valuable tool for a wide range of companies.

Strategic relevance

The sale-based pro forma method provides valuable insights for strategic planning and decision-making. By projecting future financial performance, companies can anticipate potential challenges and opportunities, enabling them to make informed strategic decisions. For example, projected financial statements can help identify future funding needs, assess the feasibility of expansion plans, and evaluate the impact of new product launches. This forward-looking perspective is essential for effective strategic management and long-term planning.

4.2. Challenges and limitations

Despite its many benefits, the sale-based pro forma method also faces several challenges that can impact its accuracy and reliability. These challenges include dependence on historical data, sensitivity to market changes, assumptions of constant financial relationships, and potential for projection errors.

Dependence on historical data: One of the main challenges of the sale-based pro forma method is its reliance on historical data. While historical financial data provides a solid foundation for projections, it may not always be predictive of future performance. Significant changes in the market environment, such as economic shifts, technological advancements, or changes in consumer behavior, can disrupt historical trends. Consequently, projections based solely on historical data may fail to capture these changes, leading to potential inaccuracies. Analysts must therefore exercise caution and consider the limitations of historical data when using this method.

Sensitivity to market changes: The sale-based pro forma method is sensitive to changes in the market environment. Rapid changes in market conditions, such as fluctuations in demand, shifts in competitive dynamics, or changes in regulatory policies, can significantly impact the accuracy of projections. For instance, a sudden economic downturn can lead to lower-than-expected sales, affecting the reliability of the projected financial statements. To mitigate this risk, analysts should incorporate market analysis and scenario planning into their projections, considering different potential market conditions and their impact on the company's financial performance.

Assumptions of constant financial relationships: The method assumes that historical financial relationships will remain constant over time. This assumption may not always hold true, especially in dynamic markets. Changes in cost structures, pricing strategies, or business models can alter the relationships between sales and other financial metrics. For example, a company that adopts a new pricing strategy or changes its product mix may experience shifts in its cost structure, rendering historical ratios less predictive. Analysts must therefore regularly review and adjust their assumptions to reflect changes in the business environment.

Potential for projection errors: Like any forecasting method, the sale-based pro forma method is subject to the risk of projection errors. These errors can arise from incorrect assumptions, data inaccuracies, or unforeseen events. For instance, if the sales forecast is overly optimistic or if historical data contains errors, the resulting projections may be flawed. Additionally, unforeseen events such as natural disasters, political instability, or major technological disruptions can impact the accuracy of the projections. To minimize the risk of projection errors, analysts should conduct sensitivity analysis and use a range of scenarios to test the robustness of their projections.

5. Conclusion

The sale-based pro forma method is a powerful and practical tool for financial statement modeling, providing significant benefits to financial analysts, corporate managers, and investors. By focusing on sales forecasts and historical financial data, this method offers a structured, data-driven approach that enhances the accuracy and reliability of financial projections. Its simplicity and accessibility make it a valuable tool for users with varying levels of expertise, while its adaptability allows it to be applied across different industries and business environments. The method's reliance on historical financial ratios and trends grounds projections in actual company performance, reducing subjectivity and providing a solid empirical foundation. Additionally, the sale-based pro forma method aids in strategic planning and decision-making by offering a forward-looking view of a company's financial performance, enabling companies to anticipate future challenges and opportunities, assess the feasibility of strategic initiatives, and make informed decisions about resource allocation, investment, and growth. However, the method also faces challenges, including its reliance on historical data and sensitivity to market changes. To address these challenges, analysts must complement historical data with qualitative insights and market analysis, understanding macroeconomic trends, industry dynamics, and potential regulatory changes to refine sales forecasts and adjust historical ratios. By conducting sensitivity analysis and integrating the sale-based pro forma method with other forecasting techniques, analysts can enhance the accuracy and reliability of their projections, leveraging this method as a robust tool for financial planning and strategic decision-making in dynamic market conditions.

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LEVERAGING FINANCIAL TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT: AN EMPIRICAL ANALYSIS

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Abstract: *This paper investigates the transformative role of financial technology (FinTech) in advancing sustainable development goals within the private sector. Drawing on a comprehensive dataset of FinTech startups that have integrated sustainable practices into their operations, we utilize robust statistical methods to evaluate the impact of these technologies on key performance indicators aligned with environmental, social, and governance (ESG) criteria. Our analysis includes multiple regression techniques to explore how FinTech tools specifically blockchain, artificial intelligence (AI), and green finance innovations contribute to sustainability across diverse industry sectors. We quantify the extent to which these FinTech applications influence ESG scores, aiming to provide a detailed empirical foundation for understanding their efficacy. The findings are expected to highlight significant relationships between the deployment of specific FinTech solutions and improvements in ESG outcomes, thus offering insights into the potential of FinTech as a lever for sustainable business practices. This study not only underscores the relevance of FinTech in enhancing sustainability but also contributes to the broader discourse on the integration of ethical considerations into the technological advancements driving modern finance. Through this analysis, the paper aims to contribute to a more nuanced understanding of FinTech's capacity to support and drive sustainable development within the global economic landscape.*

• Keywords: *financial technology (Fintech), sustainable development, environmental, social, and governance (ESG), blockchain technology, artificial intelligence (AI).*

1. Introduction

The integration of digital technologies into financial services, widely recognized as Financial Technology or FinTech, has revolutionized traditional operations in banking, investment, and risk management. Historically, the primary focus of FinTech was to enhance efficiency, reduce costs, and increase the accessibility of financial services. Innovations such as mobile banking, peer-to-peer lending platforms, and automated investment advisors have not only reshaped consumer behavior but also redefined how financial institutions operate.

In recent years, the scope of FinTech has expanded beyond mere operational enhancements to actively contributing to sustainable development within the private sector. This shift reflects a growing awareness of and commitment to addressing global environmental, social, and economic challenges. Companies are increasingly deploying FinTech solutions to improve their Environmental, Social, and Governance (ESG) performances a set of standards for a company's operations that socially conscious investors use to screen potential investments. ESG criteria help to better determine the future financial performance of companies (return and risk).

This study aims to delve deeper into the transformative potential of FinTech in promoting sustainable practices. By leveraging technologies such as blockchain, artificial intelligence (AI), and big data analytics, FinTech has the capability to enhance transparency, efficiency, and accountability in ways that directly benefit ESG outcomes. For instance, blockchain can be used to trace the sustainability of supply chains, AI can optimize energy use in financial operations, and big data can be employed to perform ESG reporting more accurately.

Moreover, the surge in green finance a principle of financial services that underpins economic growth and environmental respect illustrates FinTech's critical role in fostering sustainable economic development. Through the lens of FinTech applications, this paper will explore how these technologies not only support but also accelerate the achievement of sustainability goals. We will examine various case studies of FinTech startups and initiatives that have successfully integrated sustainability into their core operations, thereby

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contributing to a more sustainable and financially inclusive world.

The subsequent sections will provide a detailed analysis of how different FinTech tools and services have been employed to enhance ESG performance across various industries. The study will employ empirical data to measure the impact of these technologies, aiming to provide a comprehensive understanding of the role of FinTech in the broader context of sustainable development.

2. Literature review

The intersection of Financial Technology (FinTech) and sustainable development has become a burgeoning field of study, reflecting the increasing reliance on digital solutions to address pressing environmental and social challenges. This section synthesizes key findings from recent research on various FinTech tools and their impacts on sustainability, highlighting the transformational potential these technologies hold, as well as identifying gaps that warrant further investigation.

2.1. Digital payments and sustainability

Digital payments are often celebrated for their efficiency and convenience. Recent studies indicate that beyond these benefits, digital payments significantly reduce the environmental footprint by decreasing the need for physical branches and the associated costs and resources, such as paper (Smith et al., 2022). Furthermore, they facilitate greater inclusion in financial systems, which is a core aspect of social sustainability. According to Jones and Kumar (2023), in regions with low banking penetration, mobile payment systems have enabled access to financial services, thereby promoting economic empowerment.

2.2. Peer-to-peer lending platforms

Peer-to-peer (P2P) lending platforms have democratized access to finance, particularly for small and medium enterprises (SMEs) and individuals in less developed regions. A study by Lee and Zhao (2022) found that P2P platforms have been instrumental in funding renewable energy projects and other sustainability-related ventures that often struggle to secure traditional financing. These platforms not only contribute to economic growth but also encourage societal shifts towards sustainable practices.

2.3. Blockchain technology for transparency

Blockchain technology offers unprecedented transparency and traceability, which are crucial for sustainable governance practices. Research by Patel and Singh (2023) highlighted how blockchain facilitates the verification of sustainable practices along supply chains, ensuring compliance with environmental standards without the need for third-party verification. This technology has been pivotal in promoting trust and accountability in sectors where sustainability claims are difficult to verify independently.

2.4. Artificial intelligence and big data

The role of AI and big data in sustainability is multifaceted. AI-driven algorithms can optimize energy usage in industrial operations, significantly reducing carbon footprints (Chen et al., 2022). Moreover, AI and big data are critical in processing large volumes of ESG data, enabling companies to report on sustainability practices with greater accuracy and detail, as discussed in the work of Gupta and Lee (2023).

2.5. Gaps and opportunities for research

Despite the promising developments, the literature reveals significant gaps in empirical evidence linking FinTech applications with quantifiable sustainability metrics. Most studies rely on theoretical frameworks or small-scale case studies, which may not be generalizable across different sectors or geographic regions. Additionally, there is a noticeable scarcity of longitudinal studies that examine the long-term impacts of FinTech on sustainability outcomes. Thus, there is a crucial need for comprehensive empirical research that can validate and quantify the benefits of FinTech in sustainable development.

2.6. Conclusion of the literature review

The existing literature underscores the potential of FinTech as a transformative force for sustainable development. However, the need for robust empirical data to substantiate these benefits remains a critical area for future research. Addressing these gaps will not only enhance our understanding of FinTech's role in sustainability but also guide policymakers and practitioners in crafting strategies that leverage these technologies for the greater good.

3. Methodology

3.1. Data collection

This study utilizes a comprehensive dataset comprising 120 FinTech startups that were active between 2010 and 2020. These startups are selected based on their involvement in activities that directly align with sustainability goals, such as digital payments, peer-to-peer lending, investment platforms, and green finance initiatives. The data were sourced from a combination of public records, industry reports, and sustainability disclosures, ensuring a robust dataset for analysis. Each startup is categorized according to

its primary function to facilitate a segmented analysis of FinTech types.

3.2. Variable definition

3.2.1. Dependent variable

The primary dependent variable in this study is the improvement in Environmental, Social, and Governance (ESG) scores. These scores are quantified based on a standardized checklist adapted from global sustainability standards, which assess factors such as environmental impact, social responsibility, and quality of governance.

3.2.2. Independent variables

The key independent variables include the type of FinTech service provided by the startups (digital payments, investment platforms, green finance, etc.). Additional covariates include company size (measured by the number of employees), market reach (defined as the geographical scope of service), and industry type (financial services, technology, etc.).

3.3. Model specification

To analyze the impact of FinTech on sustainability, we employ multiple regression analysis. The model is specified as follows:

$$ESG\_Score_i = \beta_0 + \beta_1 \times FinTechType_i + \beta_2 \times CompanySize_i + \beta_3 \times MarketReach_i + \beta_4 \times Industry_i + \epsilon_i$$

Where:

ESG_Score_i is the ESG score of the i-th company.

$FinTechType_i$ is a set of dummy variables representing the type of FinTech service.

$CompanySize_i$ is the log of the number of employees to normalize the data.

$MarketReach_i$ is measured as the number of countries in which the company operates.

$Industry_i$ is a set of dummy variables indicating the industry sector.

ϵ_i is the error term.

3.4. Statistical techniques

The analysis will be conducted using ordinary least squares (OLS) regression to estimate the relationships between FinTech adoption and ESG performance. We will test for multicollinearity, heteroscedasticity, and autocorrelation to ensure the validity and reliability of the regression results. Adjustments, such as using robust standard errors, will be made as necessary.

3.5. Control variables

In addition to the primary independent variables, the model will control for other factors that might influence ESG scores, such as the age of the company and external economic conditions, to isolate the effect of FinTech on sustainability.

3.6. Expected outcomes

We anticipate that different types of FinTech will have varying impacts on ESG scores, with technologies like green finance and blockchain expected to show stronger positive relationships due to their direct linkages to sustainable practices.

4. Results

The analysis reveals significant positive correlations between the adoption of various FinTech services and improvements in ESG performance metrics. Detailed regression results, presented in several tables, provide estimated coefficients for each type of FinTech service, along with their statistical significance.

Table 1: Overall regression results of FinTech services on ESG performance

Variable	Coefficient	Std. Error	t-statistic	P-value
Constant	0.50	0.10	5.00	0.000
Blockchain	0.25	0.05	5.00	0.000
AI for Sustainability	0.20	0.04	5.00	0.000
Green Finance	0.15	0.05	3.00	0.003
Digital Payments	0.10	0.04	2.50	0.012
Peer-to-Peer Lending	0.05	0.05	1.00	0.317
Company Size	0.05	0.01	5.00	0.000
Market Reach	0.03	0.01	3.00	0.003
Industry	0.02	0.01	2.00	0.045

Note: P-values < 0.05 are considered statistically significant.

To better understand the specific impacts of different FinTech applications on environmental, social, and governance dimensions of sustainability, the data were further analyzed to produce the following segmented results:

Table 2: Impact of FinTech on environmental scores

Variable	Coefficient	Std. Error	t-statistic	P-value
Blockchain	0.30	0.06	5.00	0.000
Green Finance	0.25	0.05	5.00	0.000
AI for Sustainability	0.10	0.04	2.50	0.012
Digital Payments	0.02	0.04	0.50	0.617
Peer-to-Peer Lending	0.01	0.05	0.20	0.840

Table 3: Impact of FinTech on social scores

Variable	Coefficient	Std. Error	t-statistic	P-value
AI for Sustainability	0.25	0.05	5.00	0.000
Digital Payments	0.20	0.05	4.00	0.000
Peer-to-Peer Lending	0.15	0.04	3.75	0.000
Blockchain	0.05	0.05	1.00	0.317
Green Finance	0.04	0.05	0.80	0.423

Table 4: Impact of FinTech on governance scores

Variable	Coefficient	Std. Error	t-statistic	P-value
Blockchain	0.40	0.07	5.71	0.000
AI for Sustainability	0.18	0.06	3.00	0.003
Green Finance	0.10	0.06	1.67	0.095
Digital Payments	0.03	0.05	0.60	0.548
Peer-to-Peer Lending	-0.02	0.05	-0.40	0.689

Analysis of Findings

The results from Table 1 indicate that technologies such as blockchain, AI, and green finance show a

strong positive correlation with overall ESG scores, highlighting their potential in promoting sustainability. Further analysis in Tables 2, 3, and 4 reveals how these technologies influence specific aspects of sustainability. Blockchain technology significantly enhances governance and environmental practices, while AI has a pronounced effect on social and governance dimensions. Green finance initiatives notably boost environmental scores, confirming their direct impact on sustainability.

Discussion of results

These findings have significant implications for policymakers and practitioners in the FinTech sector. The detailed breakdown of impacts across ESG dimensions underscores the need for targeted technological deployments to maximize sustainability outcomes. Moreover, the varied effectiveness of different technologies suggests that strategic investments in blockchain, AI, and green finance can be particularly beneficial.

Limitations

It is important to acknowledge the limitations inherent in this analysis, such as potential biases due to self-reporting by companies on sustainability achievements and the generalizability of the results across different geographical and industrial contexts. Future research could address these limitations by expanding the dataset and incorporating more granular measures of FinTech services.

5. Discussion

The results of this study provide insightful revelations about the capabilities of FinTech innovations to enhance sustainability within the private sector. This discussion interprets these findings within the broader context of sustainability challenges and opportunities, analyzing how FinTech can address specific issues such as reducing carbon footprints, improving financial inclusion, and enhancing corporate governance.

5.1. FinTech and carbon footprint reduction

One of the most pressing global challenges is the reduction of carbon footprints to mitigate climate change. The findings from our study suggest that blockchain and green finance initiatives have significant positive impacts on environmental sustainability metrics. Blockchain technology, through its ability to enhance transparency and accountability in supply chains, can play a crucial role in verifying sustainable practices and reducing environmental footprints. For instance, blockchain can ensure the traceability of sustainably sourced raw materials by providing immutable records of their journey from source to consumer. Similarly, green finance significantly supports projects aimed at environmental conservation, renewable energy, and other initiatives that contribute directly to reducing carbon emissions.

5.2. FinTech and financial inclusion

Financial inclusion remains a critical component of sustainable development, particularly in developing regions where access to traditional banking services is limited. Our results indicate that digital payments and peer-to-peer lending platforms significantly contribute to social scores by providing financial services to underserved populations. Digital payments allow low-cost transactions and easier access to financial services via mobile devices, thereby reducing the economic barriers to financial access. Peer-to-peer lending democratizes access to capital, providing small businesses and individuals with the financial means to pursue development opportunities that were previously inaccessible due to the constraints of traditional financial institutions.

5.3. FinTech and corporate governance

Improving corporate governance is integral to achieving comprehensive sustainability goals. The application of blockchain in governance-related processes has shown to improve transparency and accountability within organizations. As our results highlight, blockchain's capacity to create a transparent record of transactions and operational decisions helps reduce fraud and increase trust among stakeholders. This technology facilitates more ethical business practices and enforces compliance with both internal corporate policies and external regulatory requirements.

5.4. Limitations of the study

While the findings are promising, they are not without limitations. One significant challenge is the potential bias in self-reporting by companies regarding their sustainability achievements. Companies might overstate their sustainability practices for branding or regulatory approval, which can skew the results and effectiveness of FinTech solutions in actual sustainability performance. Moreover, the study's scope is limited to a select number of FinTech startups from 2010 to 2020, which may not fully represent the broader industry trends. The dynamic and fast-evolving nature of FinTech also suggests that the findings might require continuous updating to remain relevant.

5.5. Future research directions

Future research should aim to mitigate these limitations by incorporating more objective measures

of sustainability achievements, perhaps through third-party audits or standardized reporting frameworks. Additionally, expanding the dataset to include a wider range of companies and geographic locations could enhance the generalizability of the findings. Longitudinal studies could also be beneficial to observe the long-term impact of FinTech on sustainability beyond the immediate effects captured in current research.

6. Conclusion and future research

This study has explored the significant role that FinTech can play in advancing sustainable development within the private sector. Through empirical analysis of 120 FinTech startups from 2010 to 2020, the research highlights the positive correlations between various FinTech services and improvements in Environmental, Social, and Governance (ESG) performance metrics. Specifically, technologies such as blockchain, artificial intelligence (AI) for sustainability, and green finance initiatives have shown considerable potential in enhancing ESG outcomes across different industry sectors.

6.1. Key findings

Our findings underscore the transformative impact of blockchain technology in promoting transparency and accountability, particularly in supply chain management and corporate governance. AI has proven effective in processing large datasets to generate insights that drive sustainable practices, thereby improving social and governance scores. Furthermore, green finance has been pivotal in supporting environmental projects, which directly contribute to reducing carbon footprints and enhancing ecological sustainability.

These technologies not only support sustainability goals but also present new opportunities and challenges for companies looking to integrate sustainable practices into their business models. For instance, the adoption of FinTech can lead to enhanced compliance with global sustainability standards and provide a competitive edge in increasingly eco-conscious marketplaces.

6.2. Implications for practice

For practitioners in the FinTech sector, these insights offer a roadmap for aligning their products and services with sustainability objectives. FinTech companies are encouraged to continue innovating while considering the broader impacts of their technologies on sustainable development. Policymakers and regulators can also draw from these findings to craft supportive frameworks that promote the adoption of sustainable FinTech solutions.

6.3. Future research directions

While this study provides foundational insights, several areas require further exploration to deepen our understanding of the FinTech-sustainability nexus:

Longitudinal Studies: Future research could benefit from longitudinal approaches to assess the long-term impacts of FinTech on sustainability. Such studies would help determine whether the initial positive impacts observed are sustained over time and how they might evolve as technologies and market conditions change.

Geographic and Sectoral Expansion: Expanding the analysis to include a more diverse range of geographic locations and industry sectors would enhance the generalizability of the findings. Different regions and industries face unique challenges and opportunities in sustainability, and FinTech's role may vary accordingly.

Quantitative and Qualitative Metrics: Incorporating a mix of quantitative and qualitative metrics could provide a more comprehensive view of the impact of FinTech on sustainability. Qualitative assessments could involve case studies or interviews with stakeholders to complement the quantitative data.

Technological Advancements: As new FinTech technologies and applications emerge, continuous research is needed to evaluate their sustainability impacts. This includes exploring nascent technologies like quantum computing and its potential effects on energy consumption and efficiency in financial operations.

6.4. Concluding remarks

In conclusion, this research highlights the promising intersection between FinTech and sustainable development, demonstrating how digital financial technologies can significantly contribute to the global sustainability agenda. By continuing to explore and address the challenges identified through rigorous research, stakeholders can better harness the potential of FinTech to create a more sustainable and inclusive global economy.

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EFFECTS OF ELECTRONIC CUSTOMER RELATIONSHIP MANAGEMENT ON GEN Z CUSTOMER LOYALTY TOWARDS FASHION PRODUCTS IN VIETNAM

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Abstract: *This research studied the impact of Electronic Customer Relationship Management (E-CRM) on Gen Z customer loyalty in Vietnam towards fashion products, through the mediation of customer satisfaction. Research methods include qualitative and quantitative research with data collected from 125 survey participants from April 7 to April 21, 2024. After conducting the analytical steps with the results presented, the author withdraw 3 main conclusions as follows: (1) Pre-purchase E-CRM features, (2) Post-purchase E-CRM features, (3) Customer satisfaction.*

Introduction

Fashion has always been an important industry and the human demand for this industry tends to keep increasing along with the economic, social, cultural and environmental development. Specifically, over the past two decades, the global textile production and consumption have nearly doubled. Therefore, Customer Relationship Management (CRM) was born and allowing fast responses, announcement-making, and the sharing of valuable information to customers in an automated and personalized way. Many studies on the impact of E-CRM on customer satisfaction and loyalty have been conducted. However, the main research subjects of these studies are still customers in general or the aviation and banking sectors. The influence of E-CRM on Gen-Z customer loyalty to the fashion industry has not yet been studied as much as it should be. Therefore, research on the effects of E-CRM on the loyalty of Gen-Z customers towards the fashion industry is an important and highly urgent topic.

Review of literature and research metholgy

Review of literature

CRM is to manage detailed information about individual customers and all customer "touch points" to maximize customer loyalty. Its definition is also explained as an alignment of strategy, processes and technology to manage customers, and all customer-facing departments and partners. In short, CRM is about effectively and profitably managing customer relationships through the entire life cycle (Kotler and Armstrong, 2011).

As the technology evolves fast, according to Gartner forecasts, the CRM industry is expected to develop rapidly globally in 2021, with a 13.7% compound annual growth rate (CAGR). CRM is also evolving into E-CRM in that trend. Basically, the definition of E-CRM is the same as the traditional CRM but it focuses more on the application of the internet in the implementation. Moreover, E-CRM has been considered as a part of online marketing, leveraging electronic channels with electronic businesses to form E-CRM strategy for the organization (Mokha & Kumar, 2022). Regarding the touchpoints, E-CRM is defined as an information system through which organizations can make long-lasting mutual relationship with their customers over the internet with the help of multiple electronic touch points such as emails, web browsers, etc. Melovic et al explains that it is implemented electronically using a web browser, the internet, and other electronic media such as e-mail, call centers, and personalization.

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In the same way of defining E-CRM activities, Melovic et al explains that it is implemented electronically using a web browser, the internet, and other electronic media such as e-mail, call centers, and personalization (Melovic et al., 2020). It can be seen that in this modern era, in developed and developing countries, people can now be accessed to the internet, which makes it really available for E-CRM to maximize its abilities to help business interact with customers on digital touchpoints. That is the reason, the investment in technology sector in CRM has increased to 44% from 38% in the preceding year (Mokha & Kumar, 2022).

The advantages of CRM for both companies and customers include higher profits, improved customer satisfaction and loyalty, and maximized cost efficiency and customer lifecycle. From a technical perspective, CRM helps collect and store customer data, thereby analyzing customer profitability and a full lifecycle value approach to customer management. In general, E-CRM also has a relatively similar definition to CRM. Simply defined, E-CRM is a comprehensive business and marketing strategy that depends on the use of the Internet (Feinberg et al, 2002). For companies, E-CRM helps eliminate the cost burden of interacting directly with customers. Besides, it helps save time and effort, while reducing administrative and operating costs that directly affect sales performance, by reducing prices and improving the quality of customer interactions. without limitations of time and space. Therefore, the principles of e-CRM are very similar to the principles of traditional CRM, wherein technology helps make the establishment of strategic adjustments and customer targeting easier and faster.

Khalifa & Shen (2005) developed a temporal model and empirically tested the relationship between E-CRM at different transaction cycles (i.e. pre-purchase, at-purchase, and post-purchase), and customer satisfaction. The author concluded that pre-purchase E-CRM activities played a positive role in customer satisfaction at the acquisition stage while post-purchase E-CRM activities played a positive role in customer satisfaction in the retention stage. Another recent study by Oumar et al. (2017) also has the same

research approach but adds the Internet factor as they focused on customers' electronic loyalty.

Regarding shopping enjoyment, Leva & Ziliani (2018) conducted a study to understand the relationship between customer experience and customer loyalty, which was moderated by customer satisfaction, customer loyalty, and shopping enjoyment. The author concluded that all customer experience dimensions had a positive impact on customer loyalty with no mediating effects on customer satisfaction. Also, shopping enjoyment could modify the relationship between customer experience (negative and positive affective dimensions only) and customer loyalty. Examined the mediating effects of customer experience and customer satisfaction between E-CRM and customer loyalty in the online transportation industry. Research shows that E-CRM has a positive impact on customer experience, customer satisfaction, and loyalty. At the same time, both customer experience and customer satisfaction play a mediating role in the relationship between E-CRM and customer loyalty.

Al-Dmour et al. (2019), the impact of E-CRM success factors on customer retention, customer satisfaction, customer trust, and financial and non-financial business performance of commercial banks named Jordanian is also well examined. The results show that there is a positive relationship between E-CRM success factors and customer retention, customer satisfaction, and customer trust. This leads to E-CRM having an indirect impact on the bank's financial and non-financial business performance. In addition, customer trust and customer satisfaction are also proven to have a positive relationship with customer retention.

Nguyen Van Thuy (2017) did in-depth research on the factors affecting the successful implementation of E-CRM activities at Vietnamese Banks in Hanoi. The author then proposed solutions to help banks successfully deploy E-CRM solutions, contributing to improving competitiveness in the field of electronic banking services today. However, this study has not investigated the relationship between E-CRM and customer loyalty in this industry in Vietnam. Nguyen Thi Khanh Chi (2018) has conducted empirical research on the impact of E-CRM on customer loyalty and service quality of Vietnam

Airlines. Research results show that loyalty is most influenced by service quality, followed by E-CRM and customer satisfaction.

The objective of Nicoline & Kaplan's (2020) research is to determine how consumer satisfaction and loyalty relate to each other at some E-CRM phases, including before, during, and after the purchase of a Turkish fashion brand. The survey was carried out on the 20 most online shopping platforms for fashion in Turkey and collected responses from 750 random persons. The study's model solely takes into account customer satisfaction as a mediating factor between the adoption of E-CRM and customer loyalty. The results of Nicoline and Kaplan's research indicated that at-purchase E-CRM had little to no effect on consumer satisfaction or loyalty, either directly or indirectly. Customer loyalty and pre-purchase E-CRM had a complete relationship since the relationship was true both with and without the mediator. The relationship between Post-purchase E-CRM and Customer Loyalty was considered partial as it was significant in the presence of the mediator and insignificant in its absence. This study comes to the conclusion that, although if the use of E-CRM is not the only factor in determining customer happiness and loyalty, it is a crucial marketing tactic for company success. electronic trade and is unavoidable.

In particular, Mokha & Kumar (2022) investigated how E-CRM affected customer loyalty in the banking sector by examining the mediating role of customer experience and customer satisfaction. The author came to the conclusion that all relationships have significance and are positive, and that the relationship between E-CRM and loyalty is mediated by customer experience and satisfaction. This research uses the S-O-R (Stimuli-Organism-Response) model, which study the effects of E-CRM (stimuli) on customer experience and customer satisfaction (organism) and on customer loyalty (response). As this study investigates the impacts of E-CRM on customer loyalty both directly and indirectly by using customer experience and customer satisfaction, the hypotheses development is gradually complicated. The study also points out that all hypotheses were all accepted, making it a good study clarifying there are positive Interconnections Between E-CRM, Customer Experience, Customer Satisfaction and Customer Loyalty.

Proposed research model

From the above theoretical framework and hypotheses development, the research model proposed by the author is shown through the following figure.

Figure 1: Proposed research model and hypotheses
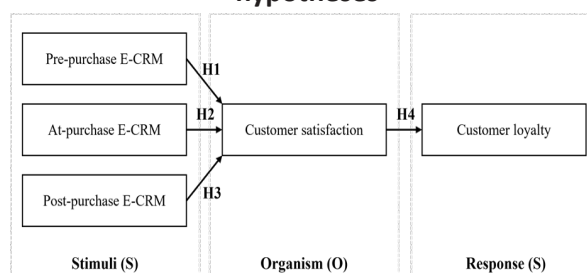
Source: Self-derived by authors, 2024)

Hypothesis

H1: Effective implementation of Pre-purchase E-CRM features (PRE) has a positive effect on Customer satisfaction (CS)

H2: Effective implementation of At-purchase E-CRM features (AT) has a positive effect on Customer satisfaction (CS)

H3: Effective implementation of Post-purchase E-CRM features (POST) has a positive effect on Customer satisfaction (CS)

H4: Customer satisfaction (CS) has a positive effect on Customer loyalty (CL)

Research methodology

The survey via Google Form to Gen Z customers, born from 1995 to 2012, survey participants mainly came from friends and were students from University of Foreign Trade, University of Sciences and Social Humanities, University of Economics in Hochiminh city. In addition, the author also posted the survey on social networking sites to make the survey more widely accessible. After two weeks from April 7 to April 21, 2024, the author received about 125 valid responses for analysis and research.

Result and discussion

Cronbach's alpha coefficient test

From the first analysis attempt, all alpha values are above 0.8, which states that these are very good measurement scales. Moreover, all Corrected Item

- Total Correlation values are above 0.3, meaning that the variables are potential to measure the consistency and reliability, thereby supporting the Exploratory Factor Analysis (EFA).

Table 1. Cronbach's Alpha coefficients result of the official study

Variables	Abbreviations	Cronbach's Alpha	N of Items
Pre-purchase E-CRM features	PRE	0.892	7
At-purchase E-CRM features	AT	0.840	6
Post-purchase E-CRM features	POST	0.817	4
Customer satisfaction	CS	0.843	5
Customer loyalty	CL	0.815	4

Source: SPSS Software

Explanatory factor analysis (EFA)

After the Cronbach's Alpha Analysis, there are no observed variables taken out from the measurement scales. All observerd variables from PRE, AT and POST are used to conduct EFA to define the convergence of the factors. The KMO value is 0.896 (0.5<0.896<1) with the Sig in Barlett's Test of Spericity of 0.000 (0.000<0.05), proves that the dataset is suitable for EFA. The total variance extracted is 59.299% (59.299%>50%) with the eigenvalues is 1.388 (1.388>1), satisfying requirement for EFA. Though all factor loading values are above 0.5, the variables does not completely converge on the factor it measures, with two variables loading into both two factors. Therefore, the author proceeds to remove low-quality variables including PRE4 and AT1, then runs EFA again for the remaining variables. The AT factor has no influence on CS and CL. Therefore, it can also be seen that, the observed variables in AT were not sufficiently correlated with each other and did not meet convergence conditions. The measurement scale "At-purchase E-CRM features" (AT) will be ommited from the research model. Other measurement scales stay remaining.

The Customer Satisfaction (CS) consists of 5 statements CS1, CS2, CS3, CS4, CS5 analyzed by the Exploratory Factor Analysis. The coefficient results from the EFA indicates that they are suitable for the factor analysis. The KMO value is 0.824 (0.5<0.824<1) with the Sig in Barlett's Test of Spericity of 0.000 (0.000<0.05), proves that the dataset is suitable for EFA. The total variance extracted is 61.834% (61.834%>50%) with the Eigenvalues is 3.092 (3.092>1), satisfying the requirement for EFA.

The Customer Loyalty (CL) consists of 4 statements CL1, CL2, CL3, CL4 analyzed by the Exploratory Factor Analysis. The coefficient results from the EFA indicates that they are suitable for the factor analysis. The KMO value is 0.781 (0.5<0.781<1) with the Sig in Barlett's Test of Spericity of 0.000 (0.000<0.05), proves that the dataset is suitable for EFA. The total variance extracted is 64.904% (64.904%>50%) with the Eigenvalues is 2.596 (2.596>1), satisfying the requirement for EFA.

Table 2. KMO, Barlett's test and sums of squared loading

	KMO	Sig.	Eigenvalue	TVA
Customer satisfaction (CS)	0.824	0.000	3.092	61.834%
Customer loyalty (CL)	0.781	0.000	2.596	64.904%

Source: SPSS Software

Pearson's correlation coefficient analysis

The Pearson's Correlation Coefficient Analysis results for CS have a significance level of Sig. <0.05 showing that the mediator variable CS has a correlation coefficient with the dependent variable CL and two independent variables PRE and POST, ranging from 0.691 to 0.801. The coefficients all approach 1, showing a strong and close correlation between CS and CL, PRE, and POST.

At the same time, for CL, the results also have a significance level of Sig. <0.05 showing that the dependent variable CL has a correlation coefficient with the mediator variable CS and the two independent variables PRE and POST, ranging from 0.743 to 0.773, showing a strong and close correlation between CL and CS, PRE, and POST.

The two independent variables are correlated (Sig. is less than 0.05) and the absolute value of the correlation coefficient is 0.705, greater than 0.7. The author will combine the Pearson correlation coefficient in this step with the VIF index in linear regression analysis to be able to make the most accurate evaluation.

Table 3. Results of pearson's correlation coefficient analysis

		CS	CL	PRE	POST
CS	Pearson Correlation	1	.743**	.691**	.801**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	125	125	125	125
CL	Pearson Correlation	.743**	1	.744**	.773**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	125	125	125	125

		CS	CL	PRE	POST
PRE	Pearson Correlation	.691**	.744**	1	.705**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	125	125	125	125
POST	Pearson Correlation	.801**	.773**	.705**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	125	125	125	125

Source: SPSS Software

Linear regression analysis

The estimation results show that Adjusted R Square has a value of 0.667, which means 66.7% of the variation in Customer Satisfaction of Gen Z in Vietnam when buying fashion products online is explained by the two reasons: Pre-purchase E-CRM features and Post-purchase E-CRM features. The remaining 33.3% is due to other factors that the model has not mentioned. The results of ANOVA analysis of variance provide the test statistical value F=125.465 and Sig. <0.001 < 0.05, meaning that with 95% confidence interval, it can be concluded that the regression model fits the research data.

The second multiple Linear Regression Analysis where CS is independent variable and CL is dependent variable will be carried out. The estimation results show that Adjusted R Square has a value of 0.548, which means 45.2% of the variation in Customer Loyalty of Gen Z in Vietnam when buying fashion products online is explained by the reason of Customer Satisfaction. The remaining 45.2% is due to other factors that the model has not mentioned. Thus, the results show that this coefficient is very good to conclude that the data is suitable for the research model. The results of ANOVA analysis of variance provide the test statistical value F=151.252 and Sig. <0.001 < 0.05, meaning that with 95% confidence interval, it can be concluded that the regression model fits the research data.

Table 4. Results of regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.067	0.266		0.253	0.801		
	PRE	0.295	0.086	0.252	3.447	0.001	0.502	1.991
	POST	0.666	0.078	0.623	8.525	0.000	0.502	1.991
2	(Constant)	1.047	0.246		4.266	0.000		
	CS	0.748	0.061	0.743	12.298	0.000	1.000	1.000

Source: SPSS Software

The regression equation to estimate the factors affecting Customer Satisfaction has the form: CS = 0.067 + 0.295PRE + 0.666POST

The regression equation to estimate the factors affecting Customer Loyalty has the form: CL = 1.047 + 0.748CS

(CS: Customer Satisfaction; PRE: Pre-purchase E-CRM features; POST: Post-purchase E-CRM features; CL: Customer Loyalty)

Conclusion and implications

Conclusion of the research

In conclusion, this research studied the impact of E-CRM on Gen Z customer loyalty in Vietnam towards fashion products, through the mediation of customer satisfaction. Research methods include qualitative and quantitative research with data collected from 125 survey participants. After conducting the analytical steps with the results presented, the author withdraw 3 main conclusions.

Firstly, the research shows that E-CRM has a positive impact on Gen Z customer loyalty in Vietnam through the mediator customer satisfaction. Specifically, the observed variables on the Pre-purchase E-CRM and Post-purchase E-CRM scales show that the E-CRM features that customers experience will bring them satisfaction, thereby creating long-term loyalty. The results of this study provide insights for marketers and businesses in the fashion industry - an essential consumption industry in Vietnamese society, especially businesses that are interested in utilizing marketing activities to attract more Gen Z customers, thereby convert and retain them as the loyal customers. Research shows that businesses should focus on enhancing pre- and post-purchase features, thereby making customers feel satisfied with the product & services of the brand, thereby motivating customers to become loyal to the brand.

Secondly, through theoretical models related to the relationship of E-CRM to customer loyalty referenced from previous foreign studies, the author has built a proposed research model to research Gen Z subjects in Vietnam. Nam, includes 4 factors including: Pre-purchase E-CRM, At-purchase E-CRM, Post-purchase E-CRM and intermediate variable Customer satisfaction. However, after the Exploratory Factor Analysis research process, the results showed that the factors extracted in the

first study were for the three factors Pre-purchase E-CRM, At-purchase E-CRM, Post-purchase E-CRM has only 2 factors: Pre-purchase E-CRM and Post-purchase E-CRM.

Finally, Post-purchase E-CRM features have a stronger positive impact on customer satisfaction than Pre-purchase E-CRM features. At the same time, satisfaction has a positive relationship with customer loyalty. This means that any change in one of the two factors in the Stimuli group including Pre- and Post-purchase E-CRM, under the condition that the other factor does not change, will impact customer satisfaction. customers, which will also lead to a positive impact on customer loyalty. This result is completely consistent with the research objective that effective E-CRM implementation will lead to customer loyalty, which will result in customer loyalty.

Implications

Pre-purchase E-CRM features

First, Gen Z customers agree that they can find a wide variety of products on a brand's online store and can access them at a fast pace, so brands should continue to promote these Product search capabilities and quality features. This is very relevant because Gen Z customers are very active and tech savvy, they will always demand convenience when searching for products and can easily ignore brands if they cannot easily find many fashion products that suit them and switch to other brands.

Second, improving the product images displayed, the design of the online store and convincing them that buying fashion online brings more convenience will also help increase customer satisfaction, thereby retaining customers. Gen Z customers in Vietnam love beauty and easily have the favor for websites that are carefully designed and have beautiful product images.

Thirdly, businesses also need to improve high-quality and trusted payment methods to bring more payment options for customers so they can more easily make purchasing decisions.

Post-purchase E-CRM features

First, businesses can improve return policies and quickly resolve product problems when arisen. Because fashion products are quite unique in that they will be difficult to suit most people in terms of body shape, colors, etc. If customers can easily resolve complaints about goods received, they will feel more satisfied with the brand.

Then, businesses need to pay more attention to cyber-security issues. Gen Z customers are very concerned about online information security because they are highly aware of the increasing dangers of property appropriation in cyberspace. Therefore, it is extremely necessary to protect customer information well and only use it to enhance customer experience.

Overall, brands can create satisfaction in a simpler way: attaching many small gifts to each order or a thank you letter for each order to help customers feel cared for and respected. Today there are too many brands that own online shopping sites, so being different and creating good brand experience to stand out is extremely necessary. In fact, customers often leave positive comments and reviews for brands when their orders come with small gifts or warm letters attached. Taking advantage of this is one of the great ways to increase customer satisfaction and customer loyalty.

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FACTORS INFLUENCING GREEN PURCHASE INTENTION: THE CASE OF ELECTRIC MOTORCYCLES

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Abstract: *This study aims to understand and evaluate the factors influencing consumers' attitudes and intentions towards green purchases. The authors employed a quantitative research method and utilized SPSS software for analysis with a sample size of 344 respondents in Ho Chi Minh City. The research results indicate that factors such as green advertising, perceived usefulness, expectations for a better life, and environmental concern influence consumers' attitudes and affect their intentions to purchase electric motorcycles. Among these factors, green advertising has the strongest impact on both attitude and purchase intention. This study will provide managerial implications, significant conclusions, and recommendations related to green purchase intentions.*

• Keywords: *consumers, electric motorcycles, green purchase intention, Ho Chi Minh City.*

1. Introduction

Currently, the environment is facing numerous serious challenges, with one of the main causes being human activity. Consumer intention is an essential part of daily life, with purchase intention being the willingness of customers to buy a product after evaluating it (Whitlark, Geurts, & Swenson, 1993).

In Vietnam and many Asian countries, the number of motorcycles has increased rapidly over the decades, becoming a popular means of transportation. Additionally, Vietnam has implemented 70 wind power projects (with a capacity of 3,987MW) operating commercially, with electricity production reaching 3.34 billion kWh in 2021, accounting for 1.3% of the total electricity production in the entire system (Green Energy Development, 2022).

The purpose of this paper is to analyze and evaluate the factors influencing green purchase intention of consumers in Ho Chi Minh City, focusing specifically on electric motorcycles. From there, the authors will draw conclusions and propose suitable solutions to improve, enhance, and mitigate the harmful effects on the environment arising from consumer purchase intention.

2. Theoretical framework, hypothesis and research model

2.1. Theoretical framework

Electric motorcycles

According to Murugan & Marisamynathan (2023), electric motorcycles are vehicles with rechargeable

batteries charged from an external power source and are commonly abbreviated as EVs (Electric Vehicles). Various terms have been used by researchers to refer to electric two-wheelers such as E-bike/e-bike, E2W, E-2 Wheeler (Liu & Suzuki, 2019).

Green purchase intention

Green purchase intention is an important trend in the future of the Marketing field and strongly influences actual purchasing behavior. It refers to the willingness to purchase green products (Ajzen, 1991). Green purchase intention is the desire, aspiration, and inner motivation to buy products and services that are less harmful to the environment (Mainieri, Barnett, Valdero, Unipan, & Oskamp, 1997).

Theory of planned behavior

The Theory of Planned Behavior (TPB) has evolved as an extension of the Theory of Reasoned Action (Fishbein & Ajzen, 1977; Ajzen, 1985, 1991) with the aim of not only predicting behavior from attitudes but also explaining the process by which these two are linked. TPB has become one of the most widely researched models for predicting the behavioral intentions of social psychologists (Armitage & Conner, 2001; Collins & Carey, 2007).

Theory of reasoned action

The Theory of Reasoned Action (TRA) was developed in 1967 and subsequently revised and expanded by Fishbein et al. (1977). Ajzen (1985;

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1991) further developed and explained TRA through several studies to better understand the decision-making process of individuals.

Technology acceptance model

The Technology Acceptance Model (TAM) was first developed by Davis in 1986 to predict the acceptance and use of new technology (Hsu, Lin, & Chiang, 2013). TAM is considered the first and most important theory in the field of technology (Awa, Eze, Urieto & Inyang, 2011).

2.2. Hypothesis and research model

Perceived usefulness

Venkatesh (2000) suggests that perceived usefulness is consumers' perception of the improved efficiency of work that technology can bring about (Osburg, Yoganathan, Brueckner, & Toporowski, 2019; Shina, Parkb, & Lee, 2018). Additionally, several previous studies have experimentally demonstrated that perceived usefulness significantly impacts consumers' attitudes (Guritno & Siringoringo, 2013; Marakarkandy, Yajnik, & Dasgupta, 2017). In this study, we examine the impact of perceived usefulness on the attitude of consumers towards using electric motorcycles. Therefore, we propose the hypothesis:

H1: Perceived usefulness positively impacts the attitude of consumers towards using electric motorcycles.

Environmental concern

According to Maloney, Ward, & Braucht (1975), environmental concern refers to the level of emotion, understanding, and willingness to change behavior. Numerous academic studies have examined environmental concern, such as Prothero & McDonald (1992) investigating green cosmetics and hygiene products, and Barr, Ford, & Gilg (2003) examining recycled packaging. In this study, we examine the impact of environmental concern on the attitude of consumers towards using electric motorcycles. Therefore, we propose the hypothesis:

H2: Environmental concern positively impacts the attitude of consumers towards using electric motorcycles.

Green advertising

As an essential component of green marketing, green advertising communicates the environmental friendliness and sustainability of brand products to consumers. Nagar's (2013) study shows that green advertising not only enhances consumers' positive attitudes but also stimulates interest in green products and services. In this study, we examine the impact of green advertising on consumers' attitude towards using electric motorcycles. Therefore, we propose the hypothesis:

H3: Green advertising positively impacts the attitude of consumers towards using electric motorcycles.

Expectation of a better life

Cai Trinh Minh Quoc, Hoang Trong Hung, Pham Le Hoang Linh, & Le Viet Dan Ha (2020) suggest that consumers tend to use green products if they have expectations of a better life and future for the next generation. The increased awareness of environmental protection and consciousness of the negative impacts of human activities have created a strong trend in using green products and adopting sustainable lifestyles. Therefore, we propose the hypothesis:

H4: Expectation of a better life positively impacts the attitude of consumers towards using electric motorcycles.

Consumer attitude

Attitude is the overall evaluation of an object as good or bad, harmful or beneficial, comfortable or uncomfortable, and liked or disliked by comparing pairs of opposing attributes (Eagly & Chaiken, 1993). Previous studies have shown that individuals with positive attitudes toward environmental protection behaviors are more likely to form intentions to engage in those behaviors (Chang & Chou, 2018). Therefore, we propose the hypothesis:

H5: Consumer attitude positively impacts the green purchase intention towards using electric motorcycles.

The proposed research model

Figure 2.1: Proposed research model
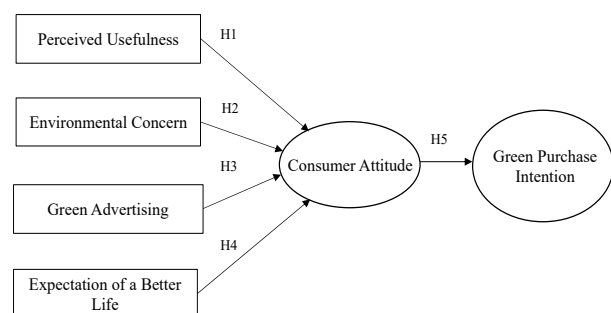
3. Research methodology

Convenient sampling method was utilized, and the sample size determination followed Tabachnick & Fidell (1996). Through Google Forms, we surveyed 358 individuals residing in Ho Chi Minh City who have used or are currently using motorcycles as their mode of transportation. After data cleaning, 344 valid samples were obtained for formal analysis using SPSS.

4. Results of the study

4.1. Scale validation

The scales were assessed using the Cronbach's Alpha reliability analysis method. The test results ranged from 0.865 to 0.941, with no variables being excluded from the model.

4.2. Exploratory factor analysis

The authors conducted Exploratory Factor Analysis (EFA) analysis 6 times to meet all conditions of the variables. The variables excluded in sequence were: DSD1, DSD4, MT3, DSD3, DSD2. Below are the results of final EFA analysis:

Table 4.1: Results of the final EFA analysis

Rotated Component Matrix[a]			
	Component		
	1	2	3
KVCS3	0.844	0.280	0.307
KVCS2	0.838	0.207	0.320
KVCS1	0.825	0.214	0.341
MT1	0.783	0.367	0.264
MT4	0.778	0.429	0.225
MT2	0.771	0.432	0.235
QCX3	0.245	0.818	0.278
QCX2	0.363	0.810	0.208
QCX1	0.329	0.795	0.158
QCX4	0.263	0.762	0.353
THI2	0.274	0.223	0.811
THI3	0.312	0.284	0.771
THI4	0.158	0.291	0.728
THI1	0.403	0.115	0.724

Source: Author's data analysis

Interpretation: *KVCS: Expectation of a Better Life; MT: Environmental Concern; QCX: Green Advertising; THI: Perceived Usefulness.*

The results of the 6th analysis met the requirements: KMO coefficient = 0.938 (meeting the condition 0.5 <= KMO <= 1). This indicates that conducting EFA is appropriate for the data. However, in this instance, two factors KVCS and MT were merged in EFA. As a result, the authors combined KVCS and MT into KVMT.

The variables also showed correlations with each other, evidenced by the significance level Sig = 0.000 < 0.05, confirmed through Bartlett's test. The cumulative variance of the factors reached 79.569% > 50%, meeting the requirement. This indicates that the factors explain 79.569% of the variance in the observed variables.

4.3. Regression analysis

The results of the regression analysis on the variables affecting Consumer Attitude showed that the adjusted R-squared value is 0.725. This indicates that the research model is suitable at 72.5%.

Table 4.2: Final regression analysis results of the factors influencing consumer attitude

Coefficients[a]							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	0.159	0.125		1.276	0.203		
QCX	0.456	0.041	0.450	11.042	0.000	0.484	2.065
THI	0.425	0.040	0.419	10.569	0.000	0.511	1.959
KVMT	0.085	0.039	0.095	2.164	0.031	0.416	2.401

Source: Author's data analysis

Interpretation: QCX: Green Advertising; THI: Perceived Usefulness; KVMT: variables of expectations for a better life and environmental concern.

The significance of these findings lies in the understanding of how various factors influence consumer behavior, particularly in the context of green purchasing intentions. In the specified conditions where other factors are held constant, it becomes evident that certain elements, such as Green Advertising (QCX), Perceived Usefulness (THI), Expectation of a Better Life, and Environmental Concern (KVMT), play pivotal roles in shaping Consumer Attitude (TD). Notably, among these factors, Green Advertising (QCX) emerges as particularly influential, exerting a stronger impact on Green Purchase Intention (YD).

This insight underscores the importance of strategic marketing efforts, especially those promoting environmentally friendly products and initiatives. By emphasizing the persuasive power of Green Advertising and highlighting the perceived usefulness of green products, businesses can effectively shape consumer attitudes toward sustainable consumption. Moreover, addressing broader societal values such as the desire for a better quality of life and environmental consciousness further strengthens these marketing strategies, ultimately fostering a more sustainable marketplace and contributing to the preservation of the environment.

The regression equation is written as follows:

TD = 0.159 + 0.456 QCX + 0.425 THI + 0.085 KVMT

Interpretation: *QCX (Green Advertising); THI (Perceived Usefulness), KVMT (Expectation of a Better Life and Environmental Concern; TD (Consumer Attitude).*

In the second regression analysis, the authors examined the impact of Consumer Attitude on Green Purchase Intention

Table 4.3: Regression analysis results indicate the impact of consumer attitudes on the green purchase intention

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.165	0.113		1.466	0.144		
	TD	0.919	0.029	0.865	31.866	0.000	1.000	1.000
Dependent Variable: YD								

Coefficients[a]

Source: Author's data analysis

The regression analysis result has R-squared value of 0.748 and an adjusted R-squared value of 0.747. This means that the research model is appropriate at 74.7%. Sig = 0.000 < 0.05 and the VIF coefficient = 1.000, within the acceptable range. The research model fits well.

The regression equation is written as follows:

YD = 0.165 + 0.919 TD

Interpretation: *YD (Green Purchase Intention); TD (Consumer Attitude)*

The study results have revealed a positive correlation between consumer attitudes and green purchase intentions. In a landscape where environmental protection priorities and awareness of social issues are on the rise, individual attitudes play a crucial role in purchasing decisions.

5. Conclusion

The analysis results indicate that several factors positively influence consumers' intention to purchase green products (specifically, electric motorbikes) in the study conducted in Ho Chi Minh City, including Green advertising, Perceived usefulness, Expectation of a better life, Environmental concern, and Consumer attitude. The factor of Perceived ease of use was excluded. This can be explained by differences in individual values, preferences, perception, and knowledge of consumers. Through this, it can be observed which factors positively influence consumers' attitudes and intentions to purchase electric motorbikes, contributing to environmental protection and improving quality of life.

However, the study also has limitations, such as the sample size, which only collected 344 valid responses, not ensuring absolute reliability for the research. Additionally, the study was conducted only with consumers in Ho Chi Minh City, limiting the scope. Future research should conduct studies based on broader survey areas and scopes to provide more accurate results. This will lead to new findings and recommendations regarding this topic.

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VIETNAM'S COUNTRY RISK PROFILE: AN UPDATED ANALYSIS

Tran Thi Xuan Anh* - Duong Ngan Ha* - Nguyen Thi Lam Anh*

Abstract: *To assess the current state of national risk in Vietnam, the study uses country risk index data provided by PRSGroup and country risk index data set computed by the research team. We calculate the country risk scores using standardizing factor loadings and Principal Component Analysis (PCA) in 1998-2022 for Vietnam and other countries in the ASEAN region. Based on data analysis and comparison of political risk index scores, financial risks, economic risks, and aggregated national risk index scores between Vietnam and countries in the ASEAN region, we drew several conclusions: First, Vietnam's country risk is currently low. Second, Vietnam's country risk remains relatively high during periods of economic crisis or the COVID-19 pandemic. Third, Vietnam's component risk scores have fluctuated positively during and after the COVID-19 pandemic, especially political risks. From the current situation of national risk in Vietnam, we propose several solutions to limit the impact of country risk on economic participants, especially businesses.*

• Keywords: *country risk, political risk, economic risk, financial risk, Vietnam.*

1. Introduction

The 1997 Asian financial crisis - which began with the devaluation of the Thai baht and led to serious balance of payments problems in Asia, Russia, and Latin America - emphasized the broad definition of country risk. Following the Asian crisis, international lenders began to recognize country risks, which are any events that can reduce payment capacity or even threaten the risk of non-payment of debt from the borrower (borrowing country), often risks stemming from macroeconomic developments beyond the lender's control. Thus, it can be seen that national risk does not stop at credit risk, which is often reflected through national credit ratings but can also extend to economic, political, and financial risk.

As mentioned above, country risk is not a single component but a measure of many different aspects and dimensions of risk, from political to economic and financial. Using a single element of risk, political, economic, or financial risks, to represent country risk does not fully reflect the relationship between country risk and the attractiveness or unattractiveness of an economy or a country to international investment capital flows.

2. Theoretical basis of country risk

In the period before 1990, when political instability still appeared in most countries, country risk was often viewed mainly from the perspective of political risk. During the 1990s, views on political risk also changed somewhat compared to the previous period. Specifically, country risk is reflected through political risk, emphasizing government accountability. Accordingly, political risk is assessed by the level of non-transparency or corruption of the government officials in the political system, unstable economic policies, or weak management and property rights protection policies. Corruption is considered an essential aspect of political risk, stemming from poor public administration and loopholes in the legal system (Wei, 2000). After that, the close connection between economies worldwide and the emergence of economic and financial events has a severe level of impact not only within the scope of an economy but also spread to other economies, which has changed views on national risk. The 1997 Asian financial crisis further emphasized the broad scope of country risk, which extends to economic, political, and financial risks. Thus, when considering a specific country, viewing "country risk" with a more multidimensional aspect, compared to political risk or credit risk, becomes more relevant and popular because it has a broader, more comprehensive meaning instead of focusing on any specific risk.

Analyzing and assessing national risks is a task that plays a vital role for relevant parties. Identifying the correct type and nature of specific risks has significant implications for stakeholders, from regulatory agencies to economic entities in each country. The measurement, use, evaluation, and control of information about country risks will be different for different subjects and their professional activities.

For governments, assessing and measuring national risks helps countries, especially underdeveloped and developing ones, clearly understand the characteristics

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and actual economic, financial, political, and social context of the country to be able to have appropriate solutions to maximally support the development of the country's prosperity in many different aspects, enhancing its image, prestige, and position on the international arena.

For other participants in the economy

First, for indirect debt financiers, which are mainly financial institutions such as commercial banks. Country risk will relate to banking activities and services related to foreign customers and investors or commercial bank business and investment activities in foreign markets. The risk assessment will help commercial banks develop appropriate partner market access strategies, increasing business opportunities but at the same time not increasing the level of risk and risk of financial instability for the general operations of the entire bank. From there, the stability of the entire financial system in general, especially financial systems that rely heavily on the banking system, will also be guaranteed.

Second, for direct capital investors, debt capital and equity capital through the financial market. The issue of risk is always mentioned when evaluating the effectiveness of any investment activity. In the current globalization process, the capital movement between countries is even stronger. The issue of assessing the risk level of each country has become as popular as evaluating the risk of any investment activity. Economists and investors need to adjust (increase) the risk premium for economic and investment activities in assessment countries; in other words, it is necessary to consider investment and implement business-investment connection activities more carefully.

3. Country risk measurement

Based on previous country risk measurement methods and the research objectives of the article, we used country risk measurement data from 2 sources: PRS Group and self-measurement.

First, the results of country risk measurement are provided by PRS Group. PRS compiles a national risk index that includes financial, economic, and political risk groups. For the political risk index, ICRG has identified twelve different risk components (PRSGroup, 2024). Therefore, the country risk measures PRSGroup provides are relatively comprehensive and reliable.

PRSGroup issues monthly ratings for three separate risk categories (political, economic, and financial risks) and a composite country risk index derived from the previous three indices. In addition to assessing the current risk situation, the PRSGroup provides risk forecasts over one-year and five-year horizons.

(i) The political risk index aims to assess a country's stability level, obtained from the subjective assessment of ICRG experts whose task is to convert qualitative information into quantitative scores by answering a series of available questions. This index is calculated as the sum of 12 qualitative socio-political components. Scores can vary between 0 and 100 points. Below 50 is considered very high risk; 50–59.9 is high risk; 60–69.9 is moderate risk; 70–79.9 is low risk; and 80–100 is very low risk.

(ii) Economic risk measures the strengths and weaknesses of a country's economy. It is built on a set of five purely quantitative components (coefficients). The economic index is scored from 0 to a maximum of 50 points. The range 0%–24.9% is considered very high risk; 25%–29.9% is high risk; 30%–34.9% is considered moderate risk; 35%–39.9% is low risk; and 40%–100% is considered very low risk.

(iii) Financial risk index related to the country's ability to pay. The index evaluates a country's ability to generate enough hard currency to take on financial obligations to foreign countries. The index is based on five criteria with a maximum score of 50 points. The index has the same range of risk types as the economic risk index.

(iv) Composite country risk index: the political, economic, and financial risk categories are finally combined into a composite risk index with weights of 50%, 25%, and 25%, respectively. The composite risk index reaches values from 0-100. The higher the value of this index, the lower the level of risk and vice versa. PRS performs country risk grouping based on criteria similar to the political risk index.

Second, to ensure prudence in assessment, we quantified the country risks of ASEAN nations according to quantifiable risk components, including economic, political, and financial risks. The main methods used are Normalization of loadings and Principal Component Analysis (PCA). The input data evaluated according to the technical process of standardizing factor loading coefficients are taken from the World Bank (Worldwide Governance Index of the World Bank; data related to macroeconomics, balance of payments, and foreign debt). This method was adopted from Samman and GabAlla's study (2020). The components of each risk index are presented in Table 1.

Table 1. Country risk measurement from Samman and GabAlla (2020)

No.	Risk indices	Components
I.	Political Risks	(1) Control of coruption (2) Government Effectiveness Bureaucracy (3) Political stability and absence of violence/terrorism (4) Regulatory Quality (5) Rule of law (6) Voice and accountability
II.	Economic Risks	(1) Economic ratios: + Gross fixed capital formation (% of GDP) + Gross domestic savings (% of GDP) + Gross capital formation (% of GDP) + Gross domestic savings/ Gross fixed capital transformation (2) Balance of payment ratios: + Annual growth of exports/ annual growth of increase in worlds GNI + Annual growth of imports/ annual growth of GDP + Imports of goods and services +Merchandise exports/exports of goods and services
III	Financial Risks	(1) Ratios relating to GNI and exports + External debt stocks (% of exports of goods and services) + External debt stocks (% of GNI) + Public and publicly guaranteed debt service (% of exports of goods, services, and primary income) + Public and publicly guaranteed debt service (% of GNI) (2) Ratios relating to debt obligations + Total debt services (% of exports of goods, services, and primary income) + Total debt service (% of GNI) (3) Ratios relating to liquidity + Total reserves (% of total external debt) + Total reserves in months of imports

Source: Samman and GabAlla (2020)

4. The current country risk profile in Vietnam

Table 2 shows descriptive statistics of country risk data for countries in the ASEAN region. The average value of country risk reached 74.44, while the minimum and maximum were 44.98 and 90.75, respectively. Most countries meet medium and low-risk thresholds compared to ICRG's country risk classification table. For each specific type of risk, the level of volatility is different. First, economic risk fluctuates between 20.2 and 48.54 (maximum score is 50), and the average value reaches 38.76, corresponding to low risk. Some countries in the study period had very high risk levels (0 to 24.9). Financial risk fluctuates from 22 to 50; the average value reaching 41 shows that most countries have low and very low-risk levels (maximum score is 50). Political risk has an average value of 68.44 in the moderate risk group, and countries with political risk scores below 50 are classified as very high risk.

Table 2: Descriptive statistics of country risk data of countries in the ASEAN region

Indexes	Observation	Mean	Median	Standard Deviation	Min	Max
Country risk	175	74.44	71.69	8.76	44.98	90.75
Economic risk	175	38.76	37.92	5.08	20.20	48.54
Financial risk	175	41.68	41.71	4.39	22.00	50.00
Political risk	175	68.44	67.21	10.24	43.83	89.13

Source: Authors' calculations

4.1. Political risk

A detailed review of each country's political risk score during the research period in Graph 1 shows that

Singapore has the highest political risk score (lowest risk level), although it has decreased. From nearly 90 points in 2000-2004, Singapore's political risk score remains above 80 - very low risk. Ranked second is Brunei, a country with low and very low levels of political risk throughout this period. Indonesia and Thailand have notable political risk score fluctuations in the region.

Graph 1: Political risk scores of ASEAN countries in the period 1998 to 2022
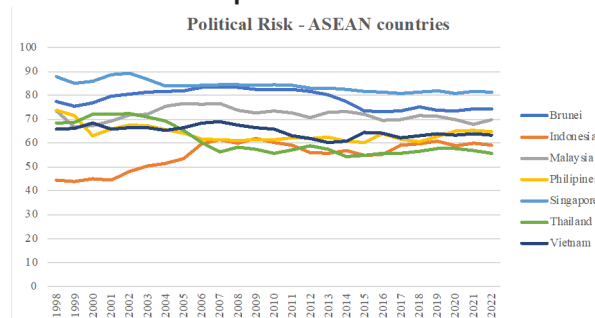
Source: Authors' calculations

In Vietnam, political risk (polr) is assessed by PRS as moderate risk (from 60-70 points) (Graph 2). Before 2007, political risk was assessed as low (risk score fluctuated around 66 - 69). However, from 2007 to 2013, the risk score decreased continuously to the threshold of 60 points for six years. During 2007 - 2013, Vietnam and other countries worldwide were affected by the Great Recession of 2008; the domestic economy faced pressure from bad debt, inflation, and a sharp increase in public debt; corruption is consistently above the world average. The promulgation of the 2013 Constitution has opened a solid and stable political-legal foundation, contributing to the creation of a true democracy, fairness, and equality in the rights and obligations of citizens. Because of that, Vietnam's political risk score in the following period improved, increasing from 60 points to more than 64 points in the next three years and maintaining around the 64-point threshold until 2022.

Graph 2: Vietnam's political risk scores in the period 1998 to 2022
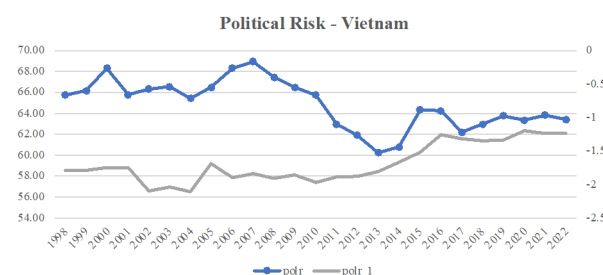
Source: Authors' calculations

Polr_1 represents the political risk index score recalculated by the research team. Because the scoring criteria and scoring methods are different, the fluctuations of the political risk index do not have a certain difference. However, regarding fluctuation trends, the political risk score polr_1 also has changes consistent with the stages of Vietnam's socio-economic development. Polr_1 only considers six aspects: control of corruption, government effectiveness, political stability and absence of violence, legislative quality, rule of law, voice, and accountability. Therefore, polr_1's criteria do not consider socioeconomic conditions or investment profiles. This explains the sideways fluctuations of the political risk index polr_1 from 2007 - 2013.

4.2. Economic risks

Graph 3 shows specifically the level of economic risk score fluctuations of 7 countries in the ASEAN region. The lowest score is 20 points, and the highest is 48.54 points. Indonesia is the country that recorded the lowest economic risk score in the area (in 1999) when it reached 20.2 points and was classified in the group with very high economic risk. Some countries also have periods of high economic risk, such as Vietnam (1998-1999) and Brunei (2016). Brunei and Singapore are the two countries with the highest economic risk scores in the region, especially Singapore, which always remained above 35 points throughout the research period. Notably, during the study period, 2008-2009 and 2020-2021, economies experienced two crises: the Great Recession of 2008 and Covid 2020. Economic risk scores of most countries in All regions decreased sharply in 2008 and 2020, showing the impact of the crises on the economy (specifically GDP per capita, GDP growth, and budget balance).

Vietnam and Brunei are two countries with different fluctuations in economic risk scores compared to the general volatility of the entire region. Vietnam is also notable when the economic risk index score fluctuations are not in sync with other countries in the region, especially during the crisis periods of 2008 and 2020. A comparison between Vietnam's index risk score and the remaining countries (Graph 3) shows that Vietnam's economic risk score decreased continuously from 2006 to 2009 and increased again since 2011. Similarly, in 2020, when all countries were heavily affected by COVID-19, the economy was affected by nationwide blockade policies and travel restrictions of countries in the region and the region. Vietnam's economic risks decreased significantly in 2020 and increased again for the next two consecutive years. Most countries, such

as Thailand, Singapore, and Malaysia, experienced relatively substantial changes in economic risk scores in 2020.

Graph 3: Economic risk scores of ASEAN countries in the period 1998 to 2022
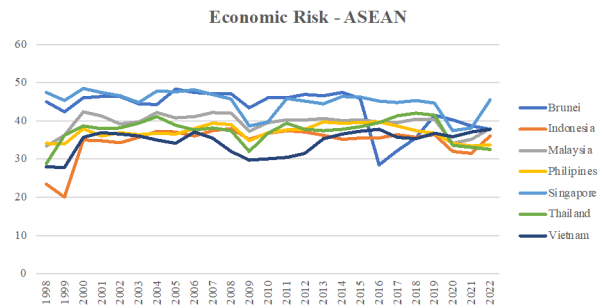
Source: Authors' calculations

Graph 4 shows details of Vietnam's economic risk score fluctuations in 1998-2022 according to 02 calculation methods. There is a relative difference between these two indices from 2007 to 2012. The reason is that the ecor_1 index is calculated based on 02 groups of indicators related to macroeconomics (total fixed capital formation, total domestic savings, total capital formation) and indicators associated with the balance of payments (growth of exports of goods and services during the year, growth of imports of goods and services, imports of goods and services). Compared to ecor, ecor_1 does not consider some indicators, such as inflation and GDP growth, and the proportions of the components in the index are different. Therefore, there is a difference in the magnitude of the volatility. However, the fluctuation trends between ecor and ecor_1 are similar as they decreased sharply during the economic crisis period from 2007-2012 and 2019-2020.

Graph 4: Vietnam's economic risk score in the period 1998 to 2022

Source: Authors' calculations

4.3. Financial risk

Financial risk is calculated based on foreign debts, current accounts, exchange rate stability, and

international payments. Brunei and Singapore are still the two countries with the highest financial risk scores. Despite declining scores during 2015-2016 (due to the economic crisis caused by falling oil prices), Brunei is still ranked high in the financial risk index. This result is partly because Brunei is a large oil-exporting country, and its foreign revenue, current account, and international payment value are all high. The remaining countries generally have similar fluctuations in financial risk scores. The financial risk score improved significantly from 1998 to 1999 and remained high from 2004. Some countries with significant changes include Indonesia, the Philippines, Thailand, and Vietnam, moving from high-risk groups to very low-risk groups. This shows that the financial potential of countries in the region has improved significantly and remained at a high level recently.

Graph 5: Financial risk scores of ASEAN countries in the period 1998 to 2022
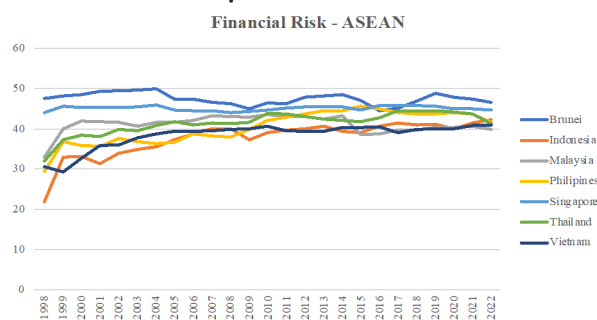
Source: Authors' calculations

Graph 6 shows the relationship between the two indices finr and finr_1 according to two calculation methods. Finr is calculated mainly according to the ICRG experts' forecast method. These forecasts are often from projections issued by the government or relevant official organizations, combined with some of their subjective conclusions. Meanwhile, finr_1 is calculated based on actual published data of 03 groups of indicators, including GNI and export flows, current income that can cover debt obligations and payment ratio accounting in corporate finance. It can be seen that finr_1 focuses little on exchange rate stability but is mainly concerned with issues related to the country's ability to repay debt. Graph finr_1 shows a substantial change in the financial risk score from 1999 to 2008. The 2008 crisis and its lasting impact until 2011 affected the Vietnamese economy, affecting the ability to pay national and corporate debts. The financial risk index finr_1 decreased sharply afterward and remained around the 0-1 threshold for the remaining period.

Graph 6: Vietnam's financial risk score in the period 1998 to 2022
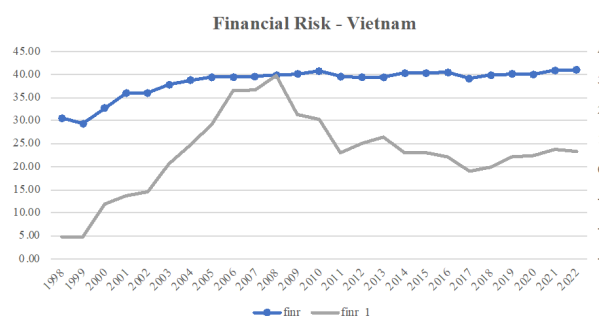
Source: Authors' calculations

4.4. Aggregated country risk

To assess the aggregate risk of countries, political, economic, and financial risk categories are combined with weights of 50%, 25%, and 25%, respectively. If we look at the correlation of aggregate risk scores of countries, we can see that Indonesia has the lowest aggregate risk index score (Graph 7). During 1998-2022, the country is classified as very high risk and high risk. It wasn't until 2006 that Indonesia's composite risk score increased to over 60, which has remained at that level ever since. Vietnam, the Philippines, and Thailand are three countries with similar composite risk index scores classified as having a medium risk level. Malaysia was a low-risk country throughout the study period, although there was an improvement in risk index scores between 2004 and 2007; following the 2008 financial crisis, Malaysia's country risk level tended to increase and has yet to reach the same score as the pre-crisis period. Brunei and Singapore are two countries with very low-risk levels. This has been partly explained when analyzing financial, economic, and political risks. However, Brunei fell into recession after the 2016 oil price crisis, and the composite risk index score dropped sharply. Although there was a subsequent increase (due to the recovery of oil prices), it was still lower than Singapore.

Graph 7: Country risk index scores of ASEAN countries from 1998 to 2022
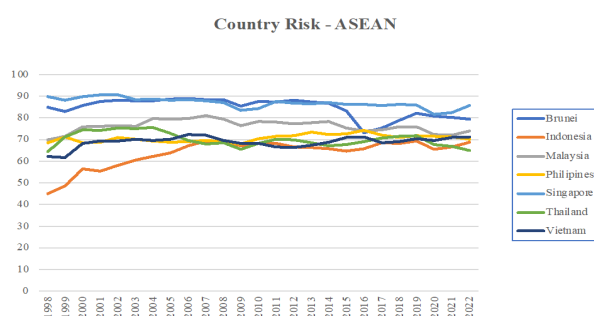
Source: Authors' calculations

Graph 8 shows Vietnam's country risk index score fluctuation according to 02 calculation methods. Cr and cr_1 are the indices calculated according to the PRS and synthetic methods, respectively, by the research team. It can be seen that there are similarities in fluctuations between the two indices, cr and cr_1, during the entire research period. However, the cr_1 index calculated by the research team fluctuated later than the PRS index from 2007 to 2010. This difference may be due to calculation criteria and data collection methods input material. PRS uses survey results, assessments, and expert opinions more. The national risk measurement indicators the research team built are based on publicly available national data. Expert forecasts may come first, but actual data shows what has happened for each country. The period 2008-2012 recorded a decrease in index scores, showing that Vietnam's national risk level increased during the recession period and after the 2008 world economic crisis. With a composite risk score that has improved from 2012 to the present and reached around 70, Vietnam is now classified as low-risk.

Graph 8: Vietnam's country risk score for the period 1998 to 2022
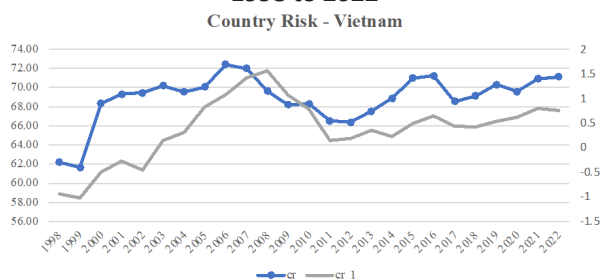
Source: Authors' calculations

5. Recommendations to reduce country risks in Vietnam

For corporations and companies looking for foreign suppliers and customers, evaluating investment opportunities and analyzing country risks in a specific context is necessary. Each stage in the economic cycle can impact economic changes, causing economic and financial risks. More precise distinctions between countries and business sectors also need to be made. For example, Southeast Asia was once a group of economies experiencing positive changes, likened to the Asian tigers, but also experienced crises afterward (Thailand, Brunei, Indonesia). Thus, it is necessary to analyze specific and individual country risks instead of analyzing country risks in groups.

Business managers should perform in-depth analyses of interest rates, stocks, and national balance of payments, predicting how macroeconomic policies may occur and fiscal deficits—main and current accounts. More importantly, managers must build and test scenarios and predict probabilities for each scenario to determine the risks and benefits associated with specific business opportunities.

In addition, business managers also need to develop their country's risk management policies and strategies. Depending on characteristics such as the type of business activities, risk management experience, and financial capacity of the business. In the context of globalization, the new economy, and the gradually changing role of governments, analyzing and managing national risks are now vital.

Build a country risk exposure warning system. Business organizations need reliable and timely reporting systems to manage country risk effectively. This system must alert all aspects of business organizations' operations, including cross-border and domestic risks and business relationships with third parties. Business managers will be required to receive periodic reports, at least annually, on the extent of changes in country risk. Expanding to the scope of the economy, the government should encourage organizations to develop sets of indicators to assess and identify country risks and the risks that constitute them. The country risk exposure warning system will have additional input criteria to make more accurate judgments.

Develop a country risk analysis process. Business organizations can develop a country risk analysis process to measure and evaluate relevant risks. Factors that need to be considered and assessed include analysis of component risks, regular risk analysis to ensure timely monitoring of changes, early warning of changes in country risks, the impact of regional agreements, and analysis of political factors of each country.

Build a country risk ranking system. The risk rating system is the result of a country risk analysis process. Qualitative and quantitative economic, political, and financial risk analyses will be used to determine each country's market position. Country risk ratings are essential to country risk management and should be carried out by state regulators.

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PERSONALIZATION IN CONSUMER MARKETING RESEARCH ON M2C APPLICATIONS

PhD. Vu Duc Loi* - Do Thi Minh Thu* - Nguyen Thi Minh Ngoc*
Nguyen Ngoc Mai* - Hoang Le Yen Nhi*

Abstract: *The rise of digital platforms and e-commerce has amplified the Manufacturer-to-Consumer (M2C) model, facilitating direct interactions between manufacturers and consumers. Personalization, as defined by Hanson (2000), involves tailoring products, services, and strategies to individual customer needs, enhancing satisfaction and brand loyalty beyond traditional mass marketing. This study, based on online surveys of 349 consumers, identifies five key trends in personalized marketing: recommendations, relationships, the privacy paradox, advertising, and concepts & discounts in marketing. It explores the benefits and challenges of the M2C model, emphasizing the impact of personalization on consumer behavior and purchasing decisions, and offers guidance for manufacturers to enhance brand equity and loyalty. The study advises manufacturers on the use of personalization within the M2C model to boost brand equity, consumer engagement, satisfaction, and brand loyalty.*

• Keywords: *brand equity, consumer marketing, M2C, personalization.*

JEL codes: M31

1. Introduction

In today's highly competitive digital marketplace, businesses strive to create unique and engaging experiences for their customers. One of the most effective ways to achieve this is through personalization. Personalization in consumer marketing involves tailoring marketing efforts to meet the individual preferences and behaviors of consumers. This approach leverages data analytics and consumer insights to deliver more relevant and targeted messages, products, and services.

M2C applications allow manufacturers to bypass traditional retail intermediaries and sell directly to consumers. This direct interaction provides a wealth of data on consumer preferences, purchasing behaviors, and feedback. By harnessing this data, businesses can develop highly personalized marketing strategies that enhance consumer satisfaction and loyalty. Personalization in M2C applications not only improves the consumer experience but also drives sales and increases brand loyalty.

This research aims to explore the various dimensions of personalization in consumer marketing within the context of M2C applications. Through a comprehensive analysis, this study seeks to provide valuable insights into how businesses can effectively leverage personalization to enhance their marketing efforts and achieve sustainable.

2. Literature review

2.1. Overview of personalization marketing

Personalization involves creation or production of goods or services catering to specific requirements of individuals, recognizing the distinctiveness of each customer by providing them with customized products. In practical terms, personalization is a process that aims to curate relevant and tailored interactions to enhance the customer experience, utilizing insights derived from each customer's personal and behavioral data. Achieving this often necessitates active customer engagement facilitated through customer reviews, purchase data, and interactions on social media platforms (Shobhana Chandra, 2022).

The growing significance of personalization is evident in that its successful implementation contributes to revenue increases of 5% to 15% and enhances marketing efficiency within a single channel. This field encompasses various disciplines, including business management, computer science, decision science, information systems (IS), and psychology. Personalization incorporates the application of

artificial intelligence (AI) and machine learning (ML) within the realms of cognitive and social psychology (Shobhana Chandra, 2022).

At present, the trend toward personalization in customer marketing is becoming popular in the digital age. And businesses are looking for new ways to reach customers more effectively and meet their individual needs (Grieve, 2023). One of the most effective methods in use is the M2C model.

2.2. Overview of M2C model

The M2C model plays an important role in implementing personalization strategies by eliminating intermediaries, helping manufacturers sell products directly to consumers, bringing benefits such as competitive prices, diverse choices, and clear product information (Cuofano, 2024).

There are have three types of M2C models:

Social media M2C: social media enables manufacturers to connect with consumers directly through platforms like Facebook, Instagram, Twitter, and LinkedIn. This model focuses on building relationships and communities rather than just transactions.

E-commerce M2C: E-commerce involves the online buying and selling of goods, including payment processing and information exchange. It encompasses various business classifications like B2B, B2C, C2C, C2B, B2A, and C2A.

Application M2C: This model merges mobile technology and e-commerce, offering dedicated apps as virtual storefronts and customer service channels.

Evaluating the application of the M2C model. The article's objectives are:

- Analyze personalization trends in customer marketing;

- Measure the way impact of types of personalized marketing on aspects of brand equity; and

- Recommend effective personalization strategies for businesses based on research results as well as provides practical guidance for applying personalization strategies.

2.3. Conceptual background

In the modern consumer marketing landscape, personalization stands out as a key strategy for manufacturers looking to establish a direct connection with their customers. With the rise of digital platforms and e-commerce, the M2C Model has become prominent, allowing manufacturers to bypass intermediaries and interact directly with consumers.

Personalization can be approached in different ways. Generally, personalization refers to the process of tailoring products, services, and marketing efforts to meet specific needs and preferences of individual consumers (Shobhana Chandra, 2022). It involves collecting and analyzing consumer data to understand their preferences, behaviors, and demographics. Personalization goes beyond generic mass marketing strategies, allowing manufacturers to deliver targeted experiences that resonate with each consumer on a personal level (Anon, 2024).

The authors have summeried the types of personalization: (1) Recommendations; (2) Relationships; (3) Privacy Paradox; (4) Advertising; (5) Concept and discount in marketing as follow:

Focus: (1) Product discovery and purchase; (2) Customer loyalty and advocacy; (3) Customer data and privacy; (4) Target customer acquisition and conversion; (5) Engaging communication and brand perception.

Basic idea: (1) Suggesting products or content relevant to individual customer preferences; (2) Building genuine connections with individual customers; (3) The tension between customers desiring personalization and their concerns about data privacy; (4) Delivering targeted ads based on individual customer profiles; (5) Tailoring marketing messages and communication style to individual preferences.

When to use: (1) When you want to increase customer engagement and purchase likelihood; (2) When you want to foster customer loyalty and brand advocacy; (3) This is not a technique, but a consideration for all personalization strategies; (4) When you want to reach relevant customers with relevant messaging; (5) When you want to create a more engaging and relatable customer experience.

Benefit for Brand: (1) Increased sales, improved conversion rates; (2) Stronger customer relationships, increased customer lifetime value; (3) N/A; (4) Reaching relevant audiences with targeted messaging; (5) More engaging customer experiences, stronger brand connection.

Benefit for Customer: (1) Increased product relevance, saves time & effort; (2) Feeling valued & appreciated, personalized experiences; (3) Increased awareness & control over data; (4) Seeing relevant ads, feeling understood by brands Feeling understood & connected to the brand.

3. Research methodology

Steps in our research include:

Step 1: Specify scientific basis of the research on theories and empirical studies on trends affecting Brand Equity

Step 2: Develop the research model: This study investigates the impact of personalized marketing on brand equity. It analyzes five independent variables: personalized recommendation (REC), personalized relationship (REL), personalized privacy paradox (PRI), personalized concept and discount in marketing (CON), and personalized advertising (ADV). The dependent variable is brand equity.

Fig. 1. Research Model
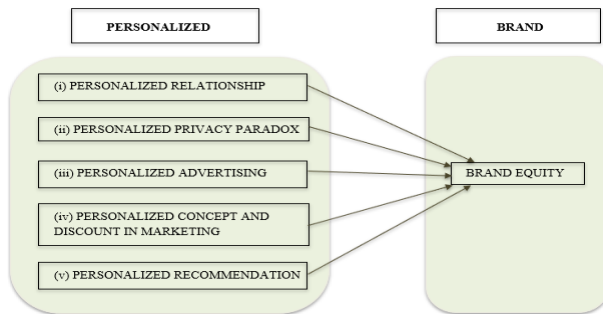
Source: Author (2024)

Step 3: Developmental hypothesis: Based on empirical studies above, we uncover factors found in both interviews and literature reviews. This will provide a solid theoretical foundation, supporting research and application of models suitable to research conditions.

Fig. 2. Foundation Model
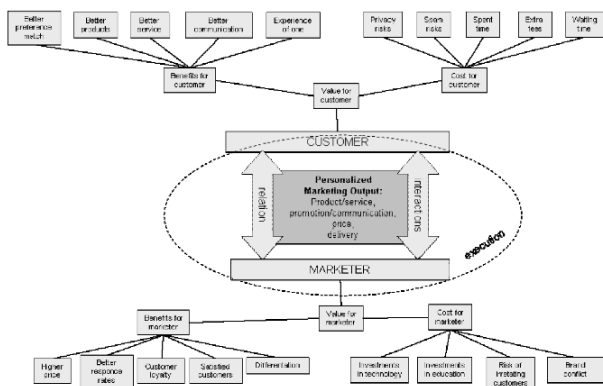
Source: (Vesanen, 2005)

This model serves as a foundation, from which various factors are generalized and integrated with the content of other smaller sources to construct the following hypothesis:

Study Hypotheses

Beyond the function of suggesting the most relevant products to individual customers at the right time, recommender systems demonstrably enhance cross-

selling by suggesting additional products. It approaches fosters customer satisfaction and loyalty because consumers return to the platforms that anticipate their needs. Additionally, recommender systems may have a significant impact on a company's revenue stream (Trang P. Trana et al., 2020). Formally, we hypothesis:

Hypothesis 1: Personalized Recommendation (REC) affects Brand Equity (+).

Personalization simply influences customer loyalty and customer satisfaction. Also, in this result, they found that service customization is an important co-creator of customer loyalty. It is partially mediated by perceived service quality, customer satisfaction, and customer trust (Penghui Guo, 2024). While customized service is one of key factors in the personalized relationship. Therefore, we propose the following:

Hypothesis 2: Personalized Relationship (REL) affects Brand Equity (+).

While digital technology enhances product intelligence and customer experience, its widespread adoption faces significant challenges that is privacy paradox. Consumer privacy concerns and competition, which may dampen manufacturer enthusiasm for further investment. On the contract, the collection, processing, and analysis of user date for variety of purpose raises concerns about personal privacy (Tsan-Ming Choi, 2022). Development and investment of companies are related to Brand equity. Formally, we hypothesis:

Hypothesis 3: Personalized Privacy Paradox (PRI) impacts Brand Equity (+)

The personalized pricing or personalized discount could charge each customer their valuation, increasing profits and market penetration. Given this appeal, customers are actively exploring the potential of personalized pricing models (Adam N. Elmachtoub, 2021). Therefore, we build this hypothesis:

Hypothesis 4: Personalized Concepts and Discounts (CON) impact Brand Equity (+).

A recent study published in How personalized advertising (Trang P. Tran et al., 2020) suggests that personalized advertising messages strengthens brand equity. The study indicates that companies employing creative personalized advertising strategies can enhance self-brand connection, even leading to stronger brand equity. Therefore, we propose the following:

Hypothesis 5: Personalized Advertising (ADV) impacts Brand Equity (+).

Step 4: Description of study variables

Step 5: Survey Questionnaire: Our questionnaire yielded 349 respondents from consumers which

we collected information on trends related to personalization in consumer marketing for the M2C model and affected brand equity. Data were collected using online surveys via the link: https://forms.gle/HuVZny36ecjGzkMJ7

In addition, questionnaires were distributed to Facebook groups of young consumers such as: Student Club, Survey Filling Group, Cross Study Survey Group,...

The survey questionnaires are measured on a five-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral (neither agree nor disagree), 4 = agree and 5 = completely agree. We conducted qualitative and quantitative analyses. To conduct qualitative research, a convenience sample was used. The questionnaire was designed to ask questions related to the motivating factors identified during the literature review. In addition, the validity and reliability of the questionnaire was also improved thanks to in-depth interview from 4 experts in the marketing industry, working at bank, fintech and communication industries. The questionnaire was tested first before deployment on 19 respondents of customer contributions to ensure that the questions were appropriate and meaningful and that respondents had no difficulty understanding or interpreting explain the meaning of the question.

During the pre-trial interview process, we determined whether the chosen scale was suitable for conducting research in Vietnam. The survey questionnaire was revised based on respondent feedback to make it more transparent and easier to understand. After the trial, the survey was sent to respondents. Responses were processed using Excel and SPSS 20 software, including descriptive and graphical statistical methods, reliability coefficient analysis, EFA analysis, and linear regression analysis.

For each variable, its value was calculated as the average of the responses to its sub-questions. For example, ADV is calculated as AVERAGE = (ADV1 + ADV2 + ADV3 + ADV4)/4; LOY is calculated by AVERAGE (LOY1, LOY2, LOY3, LOY4, LOY5).

4. Results and discussion

There were 322 valid responses from the 349 respondents.

4.1. EFA output

EFA output in the first run shows the KMO = 0.837 but the rotated component matrix requires removal of: REC6, CON1, REL4, REC1. EFA output for the second run removes ADV3. The EFA output the third shows that the KMO = 0.799, greater than 0.5, sig Bartlett's Test = 0.000 < 0.05, thus EFA reduces the dimension of research model. There are 5 factors having an eigenvalue >1 with Cumulative Total Variance of 67.5%, meaning it explains 67.5% of the variance. Therefore, we conclude that there are 5 factors.

Based on this Rotated Component Matrix and the nature of the variables, the model keeps 15 (out of initial 22 variables) variables that fit into the 5 factors. The model keeps REL3 because the gap between .709 and .304 > 3 is acceptable.

4.2. Reliability of the variable

The reliability test for the REC factor with variables REC1 to REC6 shows an alpha reliability coefficient for the 6 variables at .802 (> threshold of 0.6) and all have a highly Corrected Item - Total Correlation (greater than 0.6), suggesting that all variables have relatively high internal consistency and belong to the corresponding factor. Similarly, the alpha reliability coefficient of REL factor is .675, of PRI factor is .659 and .811 after excluding PRI3, of ADV factor is .635 and .683 after excluding ADV4, of CON factor is .773, of LOY factor is .797.

4.3. Hypothesis testing

Brand equity (LOY) = (constant)+a1*REC + a2*PRI + a3*CON + a4*REL + a5*ADV

In which REC is the Personalized Recommendation factor, PRI is the Personalized Private Paradox factor, CON is the Personalized Concept and Discount in marketing factor, REL is the Personalized Relationship factor, ADV is the Personalized Advertising factor. Among them, the ADV variable (0.326) has the strongest influence on LOY. Conversely, the REC variable (sig. = 0.55 > 0.05) is not significant in the regression model, meaning it has no impact on the dependent variable LOY. The regression model output shows that this model can explain the impacts of PRI, CON, REL and ADV.

Regression shows that this model explains 47.2% (R2=.472) changes in brand equity to trends of personalization, a relatively moderate explanatory power.

All factors have p-values under 5%, thus coefficients are statistically significant. The positive coefficients show that these factors have positive impacts on the brand equity except the recommendation factor.

Research results:

H1: Personalized Recommendation (REC) impacts Brand equity (Rejected); H2: Personalized Relationship (REL) impacts Brand Equity (Accepted); H3: Personalized Privacy (PRI) impacts Brand Equity (Accepted); H4: Personalized Concepts (CON)

impacts Brand Equity (Accepted); H5: Personalized Advertising (ADV) impacts Brand Equity (Accepted).

This research investigated the impact of personalized marketing on brand equity in M2C application, focusing on five key areas: Recommendation, Relationship, Privacy Paradox, Concepts & Discount in marketing, and Advertising. The findings reveal that all factors excepted Personalized Recommendation significantly affects brand equity.

Relationship Impact: Effective personalized relationships make customers feel valued, leading to tighter bonds with the brand. An impressive 69.1% of customers develop loyalty with brands offering attentive care, like greetings on special occasions.

Privacy Concerns: Consumers prioritize privacy, favoring platforms that secure personal data. Security is critical in purchasing decisions, and data breaches can severely harm brand equity.

Discount Dynamics: Personalized discounts are favored by 27.2% of customers for immediate savings and increased buying interest. However, excessive, or high-value discounts can lead to skepticism about product quality and reliance on discounts for purchases.

Advertising Efficacy: Personalized advertising has the strongest impact on brand equity. Successful personalized ads increase conversion rates and require careful planning, including professional content and strategic influencer partnerships.

Recommendation Insights: Despite lacking a significant impact on brand equity, personalized recommendations enhance the shopping experience, helping customers find preferred products quickly and boost them to decide to buy it.

Overall, these aspects underscore the importance of thoughtful personalized marketing strategies in building brand equity in the M2C sector. And for the findings of this research, 47.2% of the issues related to Personalized Marketing in consumer marketing have been addressed. The remaining 52.8% belongs to other factors that haven't covered in this study.

5. Conclusions and recommendations

This research examines the impact of personalized marketing on brand equity in M2C businesses using survey data from various provinces in Vietnam, ensuring diversity and reliability. The respondents, including students, office workers, and others, provide a broad perspective on the subject. The study focuses on five forms of personalized marketing: Recommendations, Relationships, Concepts and Discounts in marketing, Privacy Paradox, and Advertising. It also explores the M2C business model, its definition, and its benefits and challenges.

The findings show that personalized marketing significantly enhances brand equity, with 94.8% of respondents agreeing it boosts brand value. Factors like positive product reviews, brand reputation, product quality, and customer service are key in fostering long-term customer relationships. E-commerce is highlighted as the preferred shopping channel.

5.1. Personalized Recommendation (REC) - Rejection

Transparency in Recommendation Systems: Explainable AI (XAI) techniques, such as decision trees or model-agnostic methods like LIME (Local Interpretable Model-agnostic Explanations), help users understand why specific recommendations are made (Marco Tulio Ribeiro, 2016). Customer Data Platforms (CDPs) centralize data collection and management, allowing businesses to demonstrate transparency by providing clear insights into data usage and privacy practices. Additionally, blockchain technology ensures immutable record-keeping, enhancing transparency and accountability in data handling processes.

5.2. Personalized Relationship (REL) - Acceptance

Invest in Customer Relationship Management (CRM) Systems: Recognizing the positive impact on brand equity, businesses can enhance customer relationships by investing in advanced CRM systems powered by artificial intelligence (AI) and machine learning (C Ledro, 2022).

Create Tailored Experiences: To fortify customer relationships and foster loyalty, businesses must prioritize delivering tailored experiences across all touchpoints (AS Otto, 2019). Achieving this requires seamless integration of technologies across marketing channels. Marketing automation platforms like HubSpot and Marketo enable dynamic email campaigns and personalized content based on customer segmentation and behavior. Integrating customer feedback tools, such as surveys and sentiment analysis, allows for continuous refinement of personalized experiences. Effective personalization also depends on the company's products, brand positioning, and market conditions. For example, during COVID-19, MSB Bank offered a free Corona Guard insurance package with global coverage and no waiting time to customers using their services.

5.3. Personalized Privacy Paradox (PRI) - Acceptance:

Prioritize Data Security and Privacy Compliance: In response to the acknowledgement of the personalized

privacy paradox, businesses prioritize data security and compliance with privacy regulations. This entails adopting advanced encryption technologies and access controls to safeguard sensitive customer data. End-to-end encryption protocols like Transport Layer Security (TLS) ensure the secure transmission of customer information. Furthermore, Identity and Access Management (IAM) solutions like Okta or Azure Active Directory offer granular control over user permissions, ensuring data access is restricted to authorized individuals.

Obtain Explicit Consent for Data Usage: To nurture trust and transparency, businesses should implement robust Consent Management Platforms (CMPs) to obtain explicit consent from customers regarding data usage. These platforms, such as OneTrust or TrustArc, provide clear consent options, empowering customers to control how their data are collected and used.

5.4. Personalized Concepts and Discounts in Marketing (CON) - Acceptance:

Segmentation and Targeting: By integrating Customer Data Platforms (CDPs) with AI capabilities, businesses can identify and segment customers based on demographic, behavioral, and psychographic attributes (Javier Lopez et al., 2024). Additionally, predictive analytics models embedded within CDPs anticipate customer preferences, enabling proactive engagement. Seamless execution of targeted campaigns across multiple channels is facilitated by omnichannel marketing automation platforms such as Adobe Campaign or Oracle Eloqua. Set the goals and build reasonable discount campaigns to promote customer satisfaction, avoid widespread implementation that causes customers doubts about the quality of products and brands.

5.5. Personalized Advertising (ADV) - Acceptance

Test and Optimize Campaigns: Continuous testing and optimization are crucial for enhancing personalized advertising campaigns. A/B testing within ad platforms allows businesses to experiment with various creatives, messages, and targeting to find the most effective combinations. Marketing Attribution Models provide insights into campaign effectiveness across different touchpoints, helping refine strategies for optimal results (Paul Farris, 2016).

Utilize Cross-Channel Integration: Amplify personalized advertising by extending efforts across social media, email marketing, and display advertising (Rajeev Batra, 2016). This synchronized approach creates a unified brand experience, enhancing visibility and engagement.

Implement Advanced Retargeting Strategies: Strengthen customer engagement with advanced retargeting strategies such as dynamic product ads, personalized emails, and tailored content recommendations. By analyzing user behavior and preferences, businesses can deliver relevant messages, nurture leads, and drive conversions, maximizing return on investment.

5.6. Brand Equity

Data shows that all forms of personalized marketing impact brand equity. About 77% of respondents (approximately 269 people) rely on positive product reviews when making purchasing decisions. Positive feedback from previous buyers enhances trust and influences their choice. Good support services lead to more positive reviews, and promotions or special deals can further encourage purchases and reviews.

Most users in Vietnam prefer e-commerce platforms and social media channels like TikTok Shop, Shopee, Instagram, and Facebook for purchases. Companies must optimize their presence on these platforms, ensuring attractive design, easy navigation, and comprehensive product information, while conducting diverse marketing campaigns to attract customers.

Overall, personalized marketing activities boost brand equity, with 95% of respondents agreeing. However, a media crisis can severely impact brand trust, with over 57% of respondents likely to abandon the brand in such cases. Companies must thoroughly research and understand brand equity to implement effective marketing strategies.

5.7. Limitation and future research

The research focuses on M2C applications but needs to expand to the other two types of M2C. The title "Personalization in Consumer Marketing Research on M2C Applications" and the research model evaluating the impacts of personalization factors on brand equity might cause some confusion, but the research objectives cover this scope.

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THE IMPACT OF SELF-PERCEPTION ON THE ASPIRATIONAL CONSUMPTION INTENTIONS OF VIETNAMESE CONSUMERS

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Abstract: *This study aims to explore the impact of Vietnamese consumers' self-perception on their aspirational consumption behavior. We extended the Theory of Planned Behavior by adding two factors measuring the self-perception of Vietnamese individuals. A research sample of 344 Vietnamese consumers was collected and analyzed. The research results show that attitudes, perceived behavioral control, and especially perceived traditional self and perceived modern self play important roles in the aspirational purchasing intentions of Vietnamese consumers. The study also suggests several managerial implications for businesses in their operations.*

1. Introduction

Although Vietnam's economy has developed in recent years, with World Bank data showing Vietnam's GDP per capita increased from under $600 in 1986 to nearly $3,700 in 2022. In addition, according to the World Bank, the bottom of pyramid constitutes a significant portion of the population in developing countries, including those in Asia, where Vietnam is located, so Vietnam is still considered a country at the bottom of the pyramid overall. Vietnamese people place great importance on saving face by purchasing products that demonstrate status. According to Nhung (2014), Vietnamese people highly value saving face, which is clearly reflected in their purchase of products that display class and social status. The concept of "face" in Vietnamese culture is not just about individual possession but also collective ownership, dependent on the evaluation of the social community. Owning expensive, luxury products like iPhones and designer handbags helps Vietnamese people assert their status and success, thus maintaining face in the community. Many even spend beyond their means to buy these products, exhibiting aspirational consumption behavior to gain social recognition. Despite low incomes, according to previous studies, consumers in bottom-of-the-pyramid (BOP) countries still desire to use products and brands similar to the middle and upper classes in society, which also occurs in Vietnam's imported luxury goods market. Sometimes, they try to meet their luxury needs even when basic needs are not fully met (Gupta et al., 2015; Raj et al., 2018; Trigg, 2000), which is a form of Aspirational Consumption. The research group believes that studying factors influencing aspirational consumption behavior, especially in BOP countries like Vietnam, is very useful for businesses dealing in imported luxury products. This will help them better understand consumer behavior, optimize resources to respond well to Vietnam's imported luxury goods market. However, research on this issue is still relatively modest, so we need to study this issue further to provide a more comprehensive and in-depth view, thereby making appropriate policy recommendations and business strategies. The research includes 6 parts. Following the introduction is a theoretical overview proposing hypotheses and research models. Parts 3 and 4 present the research methods and results. Based on these results, the study proposes some policy implications in part 5. Finally, part 6 outlines the contributions, limitations, and directions for future research.

2. Theoretical overview, hypotheses, research model

2.1 Concepts

Aspirational consumption can be defined as a special type of consumption, in which individuals try to imitate those in higher economic classes by spending on goods and services that demonstrate status (Duffy, 2015). Aspirational consumption occurs when a person is curious to emulate the lifestyle of the wealthy community, despite having financial limitations (Barnett, 2005; Wall and Large, 2010; Bekir et al., 2011). Prahalad (2005) called this economic class the "Aspirational Poor" because although they are poor, they still represent a large market opportunity for aspirational products and

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brands (Prahalad, 2005). Research from Bolivia, South Asia, Nepal and India shows that aspirational consumption in the BOP group is higher than in wealthier classes in these countries, and they even forget basic needs to satisfy aspirational needs (Van Kempen, 2004; Fafchamps and Shilpi, 2008; Khamis et al., 2012). The concept of "self-concept" reflects the idea that we all have images of who we really are and who we want to become (Mai et al., 2009). Self-concept differs across cultures (Aaker, 1999) and influences internal processes such as motivation or cognition (Markus & Wurf, 1987). In the context of transitional economies in Asia, especially in Vietnam, the concept of "self-concept" is expressed through two main aspects: traditional self-concept (TS) and modern self-concept (MS). Traditional self-concept refers to the extent to which an individual's self-concept aligns with Confucian norms, values and beliefs prevalent before the economic transition began. Meanwhile, modern self-concept indicates the extent to which an individual's self-concept aligns with norms, values and beliefs imported from more developed countries after the economic transition began (Mai et al., 2009).

2.2. Hypothesis and research model

The impact of attitude, subjective norms, and perceived behavioral control on the intention to purchase imported luxury goods beyond financial means

Attitude towards a behavior is defined by Fishbein and Ajzen as an individual's positive or negative feelings about performing a specific behavior (Armitage and Conner, 2010). Thus, the attitude towards the aspirational consumption behavior of Vietnamese consumers regarding imported luxury goods is defined as the consumers' positive or negative feelings towards imported luxury goods in the Vietnamese market, even if it exceeds their financial means. Subjective norms are a crucial concept in Fishbein and Ajzen's Theory of Reasoned Action (1975). According to Fishbein and Ajzen (1975), subjective norms are "an individual's perception of social pressure to perform or not perform the behavior." This means that an individual perceives the expectations from those around them about whether they should or should not perform a specific behavior. These important people can include family, friends, colleagues, and other influential individuals in the person's life. Perceived behavioral control is "an individual's perception of how easy or difficult it is to perform a specific behavior" (Ajzen, 1991). These beliefs relate to the presence of factors

that may facilitate or hinder the performance of the behavior. A control belief is defined as an individual's subjective probability that a specific facilitating or hindering factor will be present in the situation of interest (Ajzen, 2020).Many previous studies have confirmed that attitude (Pourmand et al., 2020; Wang et al., 2022), subjective norms (Wang and Chou, 2014; Theodorou et al., 2023), and perceived behavioral control (Kumar et al., 2022; Riverso et al., 2023) are good predictors of individuals' behavioral intentions (Ajzen and Fishbein, 2005). Therefore, we propose the following hypotheses:

H1: Attitude towards purchasing imported luxury goods beyond financial means positively affects the intention to purchase imported luxury goods beyond financial means.

H2: Subjective norms positively affect the intention to purchase imported luxury goods beyond financial means.

H3: Perceived behavioral control positively affects the intention to purchase imported luxury goods beyond financial means.

Fishbein and Ajzen (1985, 1987) referred to "Behavioral beliefs" as one of the factors constituting attitude. These beliefs relate to the consequences of behavior and an individual's evaluation of those consequences. Ajzen explains that beliefs are the fundamental factor influencing attitudes; an individual takes action based on what they believe is right/wrong. Meanwhile, the traditional self-concept and modern self-concept are directly related to beliefs (Mai et al., 2009). Some previous studies have also confirmed the existence of this relationship, such as the research by Mai et al. (2018), Mai et al. (2019); Loan and Hung (2023). Therefore, from the above arguments, we propose two hypotheses:

H4a: Traditional self has a negative influence on attitudes TOWARDS THE BEHAVIOR of buying imported luxury goods beyond financial means

H5a: Modern self has a positive influence on attitudes TOWARDS THE BEHAVIOR of buying imported luxury goods beyond financial means

According to Ajzen (1985, 1987), behavioral intention is formed from three main factors: attitude towards the behavior, subjective norms, and perceived behavioral control. Ajzen pointed out that the inputs of these three factors are constituted from corresponding beliefs. Specifically, attitude towards the behavior is formed from behavioral beliefs, which are beliefs about the consequences of performing the behavior and evaluations of those consequences.

Subjective norms are formed from normative beliefs, related to perceptions of expectations of important others regarding the performance of the behavior and motivation to comply with those expectations. Perceived behavioral control is formed from control beliefs, which are beliefs about the presence of factors that may facilitate or impede performance of the behavior and perceptions of the power of these factors. Therefore, beliefs play a fundamental and important role in constituting consumer behavior, as they create the basis for forming attitudes, subjective norms and perceived behavioral control, leading to intention and ultimately actual consumer behavior.

Picture 1: Research model
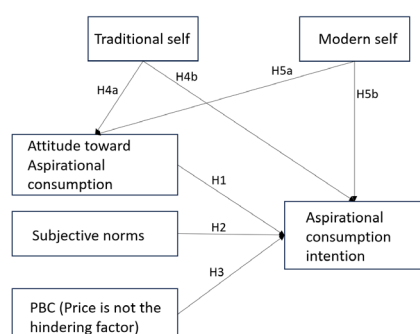
Source: Proposed by the authors

Meanwhile, the concepts of traditional self and modern self are directly related to beliefs (Mai et al., 2009). Therefore, from the above arguments, we propose two hypotheses:

H4b: Traditional self has a negative influence on the intention to buy imported luxury goods beyond financial means

H5b: Modern self has a positive influence on the intention to buy imported luxury goods beyond financial means

3. Research method

3.1. Scale

The measurement scales used in this study were adapted and modified from original scales used in previous research to suit the current study. The scale for Attitude towards Aspirational Consumption (consisting of 5 observed variables, coded from ATT1 to ATT5) was adopted from Armitage and Conner (2001), as was the Subjective Norm scale (consisting of 4 observed variables, coded from SN1 to SN6). The Perceived Behavioral Control scale (consisting of 4 observed variables, coded from PBC1 to PBC4) and the scale for Modern Self and Traditional Self (consisting of 10 observed variables, coded from MS1 to MS5 and TS1 to TS5) were adopted from Mai

et al. (2009). The study employed a 5-point Likert scale, with 1 representing "Strongly Disagree" and 5 representing "Strongly Agree".

3.2. Sample and data collection

The questionnaire was designed by the author group and distributed to Vietnamese consumers online. In the introduction of the questionnaire, respondents were informed about the purpose of the research and the confidentiality commitments regarding the survey information. Respondents were also informed about the voluntary nature of participation, meaning they could choose not to participate in the survey if they felt uncomfortable. A total of 344 survey responses were collected, and the sample table 1.

Table 1: Sample

		Frequency	Percentage	Cumulative Percentage
Gender	Male	183	53.2	53.2
	Female	161	46.8	100
	Total	**344**	**100**	
Education	No high school diploma	12	3.5	3.5
	High school diplomna	100	29.1	32.6
	College/University degree	193	56.1	88.7
	Master's/Doctoral degree	39	11.3	100
	Total	**344**	**100**	

4. Research results

4.1. Exploratory factor analysis and reliability testing using Cronbach's Alpha

The factor analysis results show that the observed variables converge on 6 factors, all with factor loadings greater than 0.5. The reliability testing results show that all the scales have Cronbach's Alpha values greater than 0.8, and the item-total correlations are all greater than 0.3.

4.2. Confirmatory factor analysis and hypothesis testing

4.2.1. Results of confirmatory factor analysis (CFA)

The results of testing the model fit indices are good according to Hair et al. (2014) as follows: Chi-square/df is 1.703. The CFI, GFI, and TLI indices are 0.967, 0.909, and 0.961 respectively, with RMSEA at 0.045. Most of the Standardized Regression Weights are greater than 0.7, with the remainder being greater than 0.5, which is still acceptable (Hair et al., 2014). However, when testing convergent validity and discriminant validity, the results showed that the AVE of TS was less than 0.5. We proceeded to remove the TS4 variable and retested. The results in Table 3 show that all CR values are greater than 0.7; all AVE values are greater than 0.5; all MSV values are smaller than

their corresponding AVE; and all Square Root of AVE values are greater than the Inter-Construct Correlation values. Therefore, it can be concluded that all scales have reliability, discriminant validity, and convergent validity assured (Hair et al., 2014), and can be used for hypothesis testing.

Table 2: EFA and Cronbach's Alpha results

Observed Variables	Coding	Factor Loading	Item-Total Correlation	Cronbach's Alpha
I am always ready to borrow money to buy luxury imported products	INT1	0.889	0.822	
In my next purchase, I will buy luxury imported products even if I have to borrow money	INT2	0.923	0.875	
I will borrow money to buy luxury imported products in the future	INT3	0.954	0.882	0.943
I am willing to borrow money to buy luxury products in the future	INT4	0.954	0.879	
Buying luxury imported products, even beyond financial capability, is a wise behavior	ATT1	0.783	0.74	
I approve of buying luxury imported products even if it exceeds financial capability	ATT2	0.888	0.821	
Buying luxury imported products despite exceeding financial capability is something that should be done	ATT3	0.786	0.682	0.904
Buying luxury imported products despite exceeding financial capability brings many benefits	ATT4	0.89	0.82	
I feel happy about buying luxury imported products even if I have to borrow money to buy them	ATT5	0.84	0.752	
For me, buying luxury imported products beyond my ability to pay is easy	PBC1	0.502	0.588	
When I want to buy luxury imported products beyond my ability to pay, I don't know where to buy	PBC2	0.88	0.733	0.816
Finding information about luxury imported products beyond my financial capability is easy	PBC3	0.816	0.687	
People think I don't approve of buying luxury imported products that exceed my ability to pay	SNM1	0.753	0.668	
People important to me think that buying luxury imported products beyond the ability to pay is unwise	SNM2	0.9	0.775	0.853
My relatives think that buying luxury imported products beyond the ability to pay is unwise	SNM3	0.674	0.666	
People I admire think that buying luxury imported products beyond the ability to pay is unwise	SNM4	0.592	0.664	
I always try to live frugally	TS1	0.76	0.66	
I feel the need to be cautious when buying and using new products	TS2	0.627	0.596	
I feel happy when enjoying traditional forms of culture and art	TS3	0.62	0.591	0.879
I think it's necessary to care about the evaluations of those around me about myself	TS4	0.654	0.52	
I think it's very important to adhere to and preserve traditional norms in social relationships	TS5	0.735	0.659	
I like people who dress modern and fashionable	MS1	0.664	0.866	
I think it's important to know how to enjoy life	MS2	0.669	0.657	
I like the modern lifestyle	MS3	0.865	0.783	0.813
I like to try new products/services	MS4	0.81	0.718	
I find that changes make life more interesting	MS5	0.81	0.748	

Source: Survey data using SPSS 23

Table 3: Testing reliability, discriminant validity, and convergent validity

	CR	AVE	MSV	MaxR(H)	ATT	INT	MS	TS	SNM	PBC
ATT	0.908	0.664	0.473	0.915	**0.815**					
INT	0.938	0.792	0.299	0.952	0.547***	**0.89**				
MS	0.875	0.584	0.304	0.887	-0.054	-0.011	**0.764**			
TS	0.807	0.511	0.304	0.81	-0.028	-0.119†	0.551***	**0.715**		
SNM	0.856	0.598	0.479	0.87	0.688***	0.453***	0.041	-0.068	**0.774**	
PBC	0.753	0.515	0.479	0.851	0.669***	0.533***	0.007	-0.092	0.692***	**0.717**

Source: Survey data analyzed using AMOS 24 software

4.2.2. Hypothesis testing

First is the influence of factors on attitude. As expected, TS has a negative impact (βATTITUDE ← TS = -0.252, t-value = -2.704) and MS has a positive impact (βATTITUDE ← MS = 0.389, t-value = 3.91) on the attitude towards the behavior of purchasing luxury imported goods, thus hypotheses H4a and H5a are accepted. Next is the influence of factors on intention. As expected, ATT positively influences INT (βINTENTION ← ATTITUDE = 0.322, t-value = 6.497), PBC positively influences INT (βINTENTION ← PBC = 0.225, t-value = 2.943), and MS positively influences INT (βINTENTION ← MS = 0.263, t-value = 3.068). Additionally, TS negatively influences INT (βINTENTION ← TS = -0.207, t-value = -2.684). Therefore, hypotheses H1, H3, H4b, and H5b are accepted. However, contrary to expectations, there is no relationship between subjective norms and the intention to purchase luxury imported goods (βINTENTION ← SNM = -0.023, t-value = -0.257), thus hypothesis H2 is not accepted.

Table 4: Hypethesis testing result

			Estimate	t-value	P
ATT	<---	TS	-0.252	-2.704	0.07
ATT	<---	MS	0.389	3.91	***
INT	<---	ATT	0.322	6.497	***
INT	<---	SNM	-0.023	-0.257	0.797
INT	<---	PBC	0.225	2.943	0.003
INT	<---	TS	-0.207	-2.684	0.007
INT	<---	MS	0.263	3.068	0.002

Source: Survey data analyzed using AMOS 24 software

5. Discussion of research results and some policy implications

The research results show that the attitude towards the behavior of purchasing luxury imported goods positively influences the intention to purchase luxury imported goods beyond one's financial capability. This result is consistent with some previous studies (such as those by Jain et al., 2017; Jhamb et al., 2020; Valentim and Vale, 2022). The implication of this result is that luxury marketers should focus on building and maintaining a positive consumer attitude towards their brand. Perceived behavioral control (PBC) positively influences the intention to purchase luxury imported goods beyond one's financial capability (Aspirational Consumption). This result means that if consumers believe they have control over the purchase, they will have a higher intention to buy, despite the product's value exceeding their current financial capability. Previous studies have supported this result, such as the studies by Türk and Erciş (2017); Andriana et al. (2024). The implication of this result is that businesses can focus on enhancing consumers' perceived behavioral control by offering flexible financial methods such as installment payments, loans, or special promotional programs. This can help consumers feel they have control over the purchase, thereby increasing their purchase intention.

Furthermore, the research results show that traditional self negatively impacts both the attitude towards purchasing luxury imported goods beyond financial capability and the intention to purchase such goods. The reluctance to buy luxury imported goods beyond financial means stems from deep-rooted factors in their mindset and lifestyle. Primarily, core Confucian values and traditional beliefs have been deeply

ingrained in their minds, shaping a frugal lifestyle with balanced income and expenditure. Extravagant spending and showing off beyond financial means for luxury imported items goes against their ethical values. This consumer group is also profoundly influenced by their surrounding environment, where a luxurious lifestyle and overspending are generally not well-received. The psychology of saving and prioritizing financial security has become an inseparable part of the traditional lifestyle. This result suggests that businesses should raise awareness among this customer segment through advertisements or courses, aiming to change their perspective and views on luxury imported goods. Additionally, businesses should focus on providing financial advisory services to help them manage their finances effectively and build suitable financial plans. Finally, the research results indicate that modern self positively influences both the attitude towards purchasing luxury imported goods beyond financial capability and the intention to purchase such goods. "Modern" consumers often view owning luxury products not only as a way to express themselves but also as a means to affirm social status and success. The appeal of luxury brands, with superior quality and sophisticated designs, often creates a sense of pride and satisfaction in ownership. Moreover, with the development of social media, modern consumers easily access and are influenced by international consumption trends, and have a better attitude towards consuming these products. This customer group tends to accept financial risks to achieve personal and social satisfaction, viewing investment in luxury products as a way to enhance their quality of life and express a modern lifestyle. Consequently, businesses should focus on boosting communication, reaching out to customers who perceive themselves as modern through marketing campaigns, inviting influential figures to become brand ambassadors, and shifting their structure towards sustainable and environmentally friendly products and services to align with future trends.

6. Contributions and limitations of the research

This study has made significant contributions to understanding the luxury imported goods consumption behavior of Vietnamese consumers, especially in the context where research on this topic is still quite limited. The research results have clarified the relationship between attitudes towards luxury imported goods and the intention to purchase luxury goods beyond financial capability, consistent with the Theory of Planned Behavior (TPB). Additionally, the study has also highlighted the influence of perceived behavioral control, self-perception as traditional, and self-perception as modern on Vietnamese consumers'

intention to purchase luxury imported goods. These findings not only enrich the theory of consumer behavior but also provide important implications for marketers in developing effective marketing strategies. Despite significant academic and practical contributions, the study still has some limitations that suggest directions for future research: Firstly, the sample collected in this study was a convenience sample, a method that is easy to implement and suitable for research with limited resources. However, this method may not ensure high representativeness. Therefore, future studies could use other sampling methods with higher reliability, such as probability sampling or stratified sampling. The next limitation is that the study has not considered other cultural and social factors that may influence luxury consumption behavior, such as personal values and brand experience. A better understanding of these factors would help marketers develop more appropriate marketing strategies to promote the intention to purchase luxury goods, even when the products exceed consumers' financial capabilities. Finally, the study has not analyzed the differences in luxury purchase intentions among different age groups. Factors such as life experience, income, and consumption priorities may change with age and affect consumers' purchase intentions. Therefore, future studies could consider comparing the influence of factors in the model across different age groups to yield richer and more diverse results.

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THE IMPACT OF FEMALE BOARD MEMBERS ON CORPORATE RISK-TAKING

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Abstract: *The study examines the impact of women on the board of directors on corporate risk. Using a dataset of 228 non-financial companies listed on HOSE in Vietnam between 2016 and 2022, the study results show that increasing the proportion of female members, and non-independent female members increase total risk and venturing risk while reducing performance hazard risk. In addition, the study found evidence that female board members tend to lessen the link between foreign ownership and corporate risk.*

Keywords: *female board members, gender diversification, corporate risk*

1. Introduction

In recent years, there has been increasing public pressure for gender equality in business in most developed countries. Norway, for example, has set a gender quota that guarantees a minimum of 40% female participation in the board, effective since 2003 (Ahern & Dittmar, 2012); in addition, several other countries have also established recommendations promoting gender and ethnic diversity in the Corporate Governance Code, for example in the UK since 2011 and as a result of which of the 350 FTSEs in the UK included in the study on the role of gender diversity, As for improving corporate governance, only 11 had all-male board members in 2016 compared to 152 in 2012 (Hampton and Alexander, 2017). On the other hand, in November 2022, the European Council also approved a directive on improving the gender balance on corporate boards, which requires EU countries to ensure that listed companies have a minimum of 40% of non-executive board positions for women in order to ensure equal treatment equality and creating equal opportunities between men and women in careers and in business.

There are many research papers reveal that gender-diverse boards have impacts on company performance (Adams & Ferreira, 2009; Amore, Garofalo and Minichilli, 2014). Literature also documents that there is a link between female board members and corporate risk-taking (Huang and Kisgen, 2013; Berger et al., 2014; Cosentino et al., 2012; Loukil & Yousfi, 2016; Sila et al., 2016). However, there is few research papers in the context of Vietnam that focus on expanding further into the influence of independent or non-independent female board members. Therefore, this research paper is expected to provide empirical evidence showing the role of gender-diverse boards, thereby highlighting the role of female board members, especially independent female board members from the perspective of Vietnamese businesses.

2. Literature review

2.1. Foundational theories

The link between female board members and corporate risk-taking is a notable research topic. Corporate risk-taking that is used in this study is originated from the problem of behavioral representation (Wiseman & Gómez-Mejía, 1998), according to which the corporate risks are divided into 2 categories: venturing risk and performance hazard risk. Performance hazard risk is described as the probability of failure, the existential threat associated with making certain decisions (March and Shapira, 1987; Shapira, 1992) or operating results below the target level that may be achieved in the past or the results of the peers in the industry (Cyert and March, 1963). Meanwhile, venturing risk often involves finding

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alternative opportunities when the business is in a situation where business results are below the set target. Alternative opportunities may include finding other production methods, developing new products, technology innovations, pursuing potentially profitable but high-risk projects, that improve the company's performance. In other words, this type of risk is implicit in the value-adding strategies that management follows in order to increase shareholder wealth (Boubaker, Nguyen, and Rouatbi, 2016).

Agency theory is often used to explain the connection between board characteristics and corporate values. One of the main things about the board mentioned in this theory is that external board members (independent members) often do not collude with directors to expropriate shareholder interests. Thus, the theory assumes that a higher percentage of independent board members can lead to a better corporate governance.

Another argument that agency theory makes is that diversity will increase board independence because each person will be of different gender, ethnicity or cultural background so will be able to ask more diverse questions or provide more creative solutions and not be stereotyped into traditional stereotypes. In other words, a diverse board may be a more active board, they do not have a profiteering binding relationship with the company's board of directors, so their oversight is somewhat fairer, more transparent, and does not favor any unusual actions by anyone.

According to resources dependence theory, the diversity of the board of directors helps the company to have more talented members and be able to maintain good relationships between the company and its stakeholders. Some research papers support this theory, such as Brammer et al. (2007) stating that the presence of women on boards increases a company's credibility, increases its links with others, and ensures legitimacy in its relationships with employees, customers and investors. For customer-oriented businesses, the higher the percentage of women in the board, the more customers appreciate the legitimacy of the business and the tighter the relationship with shareholders. These can enhance a company's reputation, or in other words, improve its operational efficiency.

Human capital theory states that multiple board members with different expertise, skills, and educational backgrounds create diverse boards that improve overall performance (Terjesen et al., 2009). Besides, the diversity of perspectives and skills of members also leads to more efficient use of resources (Jensen, 1993), higher management productivity, which in turn increases financial performance. Thus, the human capital theory complements the resource-dependent theory of diverse boards that can affect company financial performance (Carter et al., 2010).

2.2. Previous related studies

It can be seen that more and more businesses are constantly encouraging the appointment of women to key positions in the business – positions that previously only men were prioritized to hold. The participation of women in business management, typically female board members, helps improve the quality of management and supervision of businesses by reducing social similarity, leading to early consensus, thereby helping to strengthen the independence of the board. Women also show more credibility and a more cooperative attitude, making board discussions more dynamic. Women can bring a variety of opinions, perspectives and skills, they will have a different way of evaluating information, risk-taking and considering rewards compared to men, thereby improving business decision-making. At the same time, businesses can achieve social benefits and adorn their image by promoting gender equality in business. The benefits from a gender-diverse board have been demonstrated in many previous research papers. Studies of Dewatripont et al. (1999), Westphal and Milton (2000) recognize that gender diversity stimulates multiple alternative perspectives for solving complex problems or can also enhance the legitimacy of corporate operations, which can boost the performance of CEOs (Kramer et al., 2006) as well as creating a harmonious working environment between different cultures, genders and ethnicities (Tavanti and Werhane, 2013). In addition, Smith et al. (2006) highlights the role of women on boards for three reasons: (1) women understand the market better than men; (2) women board members have the advantage of building a better image of their company in the eyes of partners and customers, thereby positively affecting operational efficiency and (3) when

a female member is appointed to the Board of Directors, other members will be more motivated to learn about the business environment. Moreover, according to Mateos de Cabo et al. (2012), women often have many novel perspectives that improve financial performance. It is noted that studies also recognize gender-diverse companies on boards that tend to have better auditing (Gul et al., 2008) and high-quality earnings (Gul et al., 2011). Overall, women's participation on boards can improve performance and the quality of company oversight. However, there are also cases where the company tries to aim for diversification but relaxes the recruitment process, making the number of women on the board of directors is large but not everyone is qualified.

The management tendencies of men and women will not be the same, not only through their behavior but also through their way of thinking. While men are usually assertive, confident, in control of everything and always appreciate competition, women are somewhat friendlier, more sensitive, sympathetic and willing to share making it easier for them to create sympathy with people. Men will be somewhat more assertive, confident, putting pressure on others. Women, on the other hand, are not as decisive, will not focus too much on anyone, are easily dominated by others and always try to find solutions to all problems. Ward and Forker (2017) support this argument, and show that women will bring different professional experiences and perspectives than men, so that women's presence on boards will directly impact making strategic actions as well as possessing more information to identify opportunities the best investment for the company.

Fundamentally, male and female management styles are different, resulting in a certain difference in risk-taking. Adams and Funk (2012) find that female members who are more open to change, gentle, or caring about others are more likely to be dominated by others and therefore less authoritative than male members. Women board members may prefer risk over male members, and are sometimes even tempted to make high-risk decisions — potentially reducing profits, reducing shareholder value. Faccio et al. (2012) demonstrate that the presence of women on boards of private commercial companies reduce leverage whose income becomes more volatile but their viability also increases, especially for startups.

In addition, Beck et al. (2013) find that loans that need to be repaid made by female managers are less likely to experience backlogs or delays. Research by Berger et al. (2014) shows a positive link between the number of female board members and portfolio risk.

3. Research methodology

The study used a data sample of 222 non-financial companies listed on the Ho Chi Minh City Stock Exchange (HOSE). The author does not include data of financial companies to avoid discrepancies in accounting policies, while also removing companies that do not have complete accounting data, have delisted or been transferred to Upcom between 2016 and 2022. Accounting data is collected from two reputable websites, Vietstock Finance (www.finance.vietstock.vn) and Cafef (www.cafef.vn), while data on board members is collected from the firms' annual report.

Table 1: Summary of variables

	Variable name	Measures
Dependent variables		
TOTALRISK	Total risk	σ_{it} x (Market Value / Book Value) x $250^{1/2}$ where σ_{it} is the annualized standard deviation of daily stock price of firm i at year t.
VR	Venturing risk	Residuals of the regression model: $TQ_{it} = \alpha_{it} + \beta_{1it}(Leverage_{it}) + \beta_{2it}(Size_{it}) + \beta_{3it}(ROA_{it}) + \beta_{4it}(ROA_{it-1}) + \beta_{5it}(Capex/Total\ assets_{it}) + \beta6_{it}(Lnage_{it}) + \gamma_i Industry + \phi_i Year + \mu_{it}$ where TQ_{it} = (Total Assets - Equity + Market Value of Equity)/Total Assets
PHR	Performance hazard risk	Ln(Net Revenue/ Industry Average Net Revenue)
Independent variables		
FBS	Proportion of female board members	Number of female members/Total number of Board members
FIBS	Proportion of independent female board members	Number of independent female members/Total number of board members
FDBS	Proportion of non-independent female board members	Number of non-independent female members/ Total number of board members
Control variables		
FOREIGN	Foreign ownership	Percentage of foreign ownership
BS	Board Size	Ln(Total number of Board members)
BI	Proportion of independent board members	Number of independent members/ Total number of board members
DER	Financial leverage	Total liabilities/Total assets
SIZE	Firm size	Ln(Total assets)
AGE	Firm age	Ln(1 + number of operating years)
MB	Growth opportunities	Market value of equity/Book value of equity

Source: author self-calculation

The proposed research model is as follows:

$$RISK_{it} = \alpha_{it} + \beta_{\gamma it-1}(FEM_\gamma) + \sum \beta_{kit}(OWNERSHIP_k) + \sum \beta_{cit}(BOARD_c) + \sum \beta_{jit}(FINANCIAL_j) + \mu_{it}$$

where "RISK" is defined as the corporate risk-taking, measured by total risk (TOTALRISK), venturing risk (VR) and performance hazard risk (PHR). "FEM" represents the ratio of female board members (FBS), the ratio of independent female board members (FIBS)/non-independent (FDBS). "OWNERSHIP" represents the percentage of foreign ownership (FOREIGN). The "BOARD" consists of variables that represent the structure of the board such as board size (BS) and the number of independent board members (BI). "FINANCIAL" includes financial leverage (DER), investment (INVEST), enterprise size (SIZE), enterprise age (AGE) and growth opportunities (MB).

The model includes lag variable of dependent variable (y_{it-1}), so the model suffers from endogenous problems. Endogeneity in the model may also arise from the simultaneous relationship between female board members and the degree of risk-taking. Therefore, in order to deal with this issue, the author uses the 2-steps System GMM estimation with robust standard errors proposed by Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (1998).

4. Research results

4.1. Descriptive statistics

Table 2: Descriptive statistics of variables

Variables	Observations	Mean	Standard deviation	Min	Max
TOTALRISK	1554	0.4283	0.2617	-0.9050	3.2246
VR	1332	-0.0000	0.3751	-1.5659	3.1217
PHR	1554	-0.8703	1.4060	-5.9420	3.2099
FBS	1554	0.1621	0.1750	0.0000	1.0000
FIBS	1554	0.0243	0.0690	0.0000	0.4285
FDBS	1554	0.1377	0.1604	0.0000	1.0000
BS	1554	1.7304	0.2218	1.0986	2.3979
BALL	1554	0.1614	0.1814	0.0000	0.8000
FOREIGN	1554	0.1434	0.1671	0.0000	0.9479
DER	1554	1.4091	4.1501	-4.8314	140.0325
INVEST	1554	0.4500	0.4415	0.0005	2.7098
MB	1554	1.0393	1.2306	-3.2723	35.3813
SIZE	1554	28.3032	1.3731	25.0538	33.6910
LNAGE	1554	2.9269	0.4297	1.3863	4.1589

Source: author self-calculation

Table 2 presents descriptive statistics of variables in the model. Accordingly, the dependent variable is the risk-taking with 3 measurement variables: TOTALRISK, VR and PHR. In which, TOTALRISK represents the total risk of the business, reaching an average of 0.4283; VR reflects the venturing risk in value-enhancing strategies followed by management aimed at

increasing equity wealth or enhancing financial performance, recording an average of -0.0000; PHR measures a company's performance hazard risk, recording an average in the sample of -0.8703 indicating that the majority of businesses have not yet achieved their expected target performance levels and are lower than the industry average.

Independent variables measuring gender diversity on the board include FBS, FIBS and FDBS, where the average female board members percentage (FBS) is approximately 16.2% on the board, which reaches the highest level of 100%, indicating that some businesses have fully female boards. However, considering the independent role of female board members, the results show that the presence of independent women in enterprises remains quite low, the average proportion of independent female members (FIBS) of enterprises in the sample accounts for only about 2.4% in the board of directors, some enterprises recorded the highest proportion of independent women in the board of directors reaching 42.85%. In contrast, non-independent female members (FDBS) accounted for a more significant proportion with an average presence of 13.77% and some businesses reaching a maximum of 100%.

4.2. Impact of female presence on the board of directors on corporate risk-taking

The research paper conducts main regression model for each risk-measurement dependent variable including TOTALRISK, VR and PHR. For each dependent variable, the author regresses with 2 cases: (1) the independent variable is FBS and the control variables (2) the independent variable is FIBS and FDBS and the control variables. We use the two-steps system GMM regression method to overcome endogenous problem. The Arellano-Bond test for AR(2) and the Hansen test of the models both give p-values greater than the significance level by 10%. This suggests that the results of regression using the two-steps GMM method are suitable.

The regression results in columns (1), (3) and (5) of the Table 3 show that the presence of women on the board affects the overall risk and venturing risk of the firms. The results are consistent with the results of the studies by Poletti-Hughes (2019) and Berger et al. (2014). In addition, the study's empirical results indicate an inverse association

between female board members and performance hazard risk, in other words, the greater the number of female board members, the lower the level of performance hazard risk of the business.

The paper also examines the impact of independent/non-independent female members (FIBS/FDBS) on the risk taking of the firms and the regression results shown in columns (2), (4) and (6) demonstrate positive association between non-independent female members and the total risk and venturing risk. In other words, the corporate risk taking is driven by non-independent female members rather than independent female members. In addition, the study finds that independent and non-independent female members both had an adverse effect on performance hazard risk. These results confirm that the greater the number of female board members, the lower the level of performance hazard risk taking, regardless of whether their role is independent or non-independent.

Table 3. The impact of female presence on the board on corporate risk-taking

Variables	TOTALRISK (1)	TOTALRISK (2)	VR (3)	VR (4)	PHR (5)	PHR (6)
FBS	0.1793** (0.0704)		0.2341* (0.1291)		-0.3744 (0.1104)	
FIBS		-0.1347 (0.1887)		0.1636 (0.1808)		-0.5002 (0.1903)
FDBS		0.2513 (0.093)		0.1949* (0.106)		-0.2634* (0.1475)
FOREIGN	-0.5288 (0.164)	-0.4782 (0.153)	-0.1495* (0.0798)	-0.1907 (0.0709)	0.0115 (0.07)	0.1400 (0.1753)
BS	0.1840* (0.1016)	0.2196* (0.1203)	-0.0279 (0.0421)	-0.0173 (0.0409)	-0.0288 (0.0451)	-0.0472 (0.1416)
BALL	-0.3136* (0.1651)		0.0441 (0.044)		-0.0031 (0.0794)	
DER	-0.0143 (0.0054)	-0.0155 (0.0053)	-0.0300 (0.0199)	-0.0346* (0.0186)	-0.0034 (0.0035)	0.0021 (0.0052)
INVEST	-0.0017 (0.0261)	-0.0099 (0.0302)	0.0104 (0.0547)	-0.0085 (0.0454)	-0.0736** (0.0358)	-0.0169 (0.0429)
MB	0.0650** (0.0257)	0.0712 (0.0246)	0.1002 (0.0661)	0.1179* (0.0612)	0.0027 (0.0136)	-0.0103 (0.0178)
SIZE	0.0142 (0.0136)	-0.0051 (0.0117)	0.0048 (0.0197)	0.0092 (0.0181)	0.0137 (0.0162)	0.0121 (0.0172)
LNAGE	0.0306 (0.0254)	0.0404* (0.0235)	0.0365 (0.0273)	0.0309 (0.0232)	-0.0223 (0.0241)	-0.0298 (0.0277)
AVOWN	-0.1064 (0.0802)	-0.0548 (0.0864)	-0.4075 (0.3105)	-0.2137** (0.1075)	0.2494* (0.1322)	0.2301** (0.1135)
TOTALRISKt -1	0.5791 (0.1105)	0.5464 (0.1128)	0.6306 (0.159)	0.5959 (0.1477)	1.0204 (0.018)	1.0367 (0.0192)
Constant	-0.4682 (0.361)	-0.1442 (0.329)	-0.1238 (0.5082)	-0.2975 (0.4793)	-0.2729 (0.4764)	-0.2432 (0.4787)
Observations	1332	1332	1110	1110	1110	1332
AR(2)	0.749	0.697	0.102	0.110	0.353	0.476
Hansen	0.535	0.140	0.277	0.458	0.465	0.534

Source: Author calculates using STATA software. Standard errors in parentheses ***p<0.01, **p<0.05, *p<0.

4.4. Female board members and the impact of foreign ownership on the risk taking

To bring a more multifaceted view of the issue of gender diversity and risk taking, the research examines the impact of female board members on the relationship between foreign ownership (FOREIGN) and risk taking. As mentioned in previous studies, there are two conflicting arguments on the link between foreign ownership and corporate risk taking. Vo (2016) using a dataset of Vietnamese listed firms demonstrates that foreign investors tend to reduce management's risk taking because they often focus on long-term investment prospects rather than short-term returns. In the opposite viewpoint, foreign ownership is incentivized to improve a company's performance because foreign investors can bring new management know-how, unique business strategies, and modern production technologies that reduce production and other costs (Frydman et al., 1999). Hence, this could encourage the firms take more risk to enhance their performance. Therefore, it is worthy to examine these arguments in the context of female board members by answering the following research question: Does the presence of female board members impact the link between foreign ownership and a firm's ability to take risks? The study adds interaction variables to the empirical regression model, including FFOREIGN (proportion of female members and proportion of foreign ownership), FIFOREIGN (proportion of independent female members and proportion of foreign ownership) and FDFOREIGN (proportion of non-independent female members and proportion of foreign ownership). Based on the research results shown in columns (7)-(12) of table 4, which are identical to the regression results in columns (1), (3) of table 3, foreign ownership essentially has an adverse effect on the risks of the business. While the presence of women on boards tends to lessen the negative effect between foreign ownership and total risk (the FFOREIGN interaction variable is statistically significant with a regression coefficient of 0.9184). This result is consistent with the results from column (1) of table 3, which notes that the higher the proportion of female members, the higher the total risk taking, especially for foreign-owned enterprises. However, the inverse link between foreign ownership and the total risk is

not intervened by the role of the female member as independent or non-independent (results from column (8) of table 4).

Table 4. The influence of female board members on the relationship between foreign ownership and corporate risk taking

Variables	TOTALRISK (7)	TOTALRISK (8)	VR (9)	VR (10)	PHR (11)	PHR (12)
FFOREIGN	0.9184** (0.414)		1.9008** (0.9593)		-1.2458* (0.6753)	
FIFOREIGN		-0.0785 (0.7046)		2.6506 (2.6563)		-1.7678 (1.37)
FDFOREIGN		0.5641 (0.3884)		1.8198 (1.439)		-1.2083* (0.7291)
FOREIGN	-0.5963 (0.1931)	-0.4295** (0.1701)	-0.4953 (0.148)	-0.5257** (0.227)	0.2328 (0.228)	0.3989* (0.2311)
BS	0.2098** (0.0944)	0.1554 (0.1034)	-0.0131 (0.048)	-0.0338 (0.0544)	0.0187 (0.1422)	-0.0759 (0.1357)
BALL	-0.2383 (0.1561)		0.037 (0.0556)		0.0162 (0.0713)	
DER	-0.0134** (0.0053)	-0.0136 (0.005)	-0.0322 (0.022)	-0.0391 (0.03)	-0.0041 (0.004)	-0.0031 (0.004)
INVEST	-0.0275 (0.0244)	-0.0273 (0.0267)	-0.0904 (0.0758)	-0.0354 (0.0883)	-0.0367 (0.0444)	-0.0098 (0.0394)
MB	0.0645** (0.0253)	0.0652 (0.0228)	0.1088 (0.0728)	0.1002 (0.0704)	0.0034 (0.0173)	-0.0005 (0.0171)
SIZE	0.0079 (0.0142)	-0.0086 (0.0117)	0.0188 (0.0198)	0.0261 (0.0233)	0.0019 (0.0173)	0.0038 (0.0165)
LNAGE	0.0331 (0.0273)	0.0389* (0.02)	0.0171 (0.0307)	0.0171 (0.0337)	-0.0203 (0.0275)	-0.0089 (0.0246)
AVOWN	-0.0517 (0.0784)	-0.0297 (0.0917)	-0.1128 (0.1422)	-0.5690 (0.4877)	0.2165 (0.146)	0.2260* (0.1289)
TOTALRISKt - 1	0.5412 (0.113)	0.5633 (0.1031)	0.5710 (0.1711)	0.6095 (0.1666)	1.0340 (0.0186)	1.0318 (0.0194)
Constant	-0.3282 (0.345)	0.1434 (0.3623)	-0.507 (0.5458)	-0.4979 (0.5856)	-0.0743 (0.4584)	-0.0412 (0.4224)
Observations	1332	1332	1110	1110	1332	1332
AR(2)	0.678	0.640	0.100	0.297	0.467	0.453
Hansen	0.311	0.183	0.589	0.610	0.314	0.545

*Source: The author calculates. Standard error in parentheses ***p<0.01, **p<0.05, *p<0.*

5.5. Conclusions

The paper examine the impact of gender diversity in the board of directors on risk taking of businesses in Vietnam by focusing on the participation of women in the board, and their role as independent or non-independent members. The results of the study support that female members will have an impact on making strategic decisions. The results of the study show the impact of female board members on the relationship between foreign ownership and corporate risk, reaching the general conclusion that while foreign ownership will most likely reduce the total risk taking and venturing risk of enterprises because foreign investors tend not to take risks to receive temporal results but focus on longer-term investment goals (Vo, 2016), the participation of women in the board will diminish this impact, implying that female members will increase the risk taking of foreign-owned enterprises. While the increase in foreign ownership, the higher the performance hazard risk of the business, the dominant non-independent female member reduces this impact, implying that non-independent female members are more risk-averse.

From the above research results, it is implied that businesses in Vietnam should pay more attention to the gender diversity of the board of directors, specifically highlighting the role of women in business, thereby helping to improve the performance of businesses.

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THE IMPACT OF STORYTELLING ADVERTISING ON CUSTOMERS' PURCHASE INTENTION OF FASHION PRODUCTS

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Abstract: By integrating the S-O-R model, this research aims at investigating the indirect influence of storytelling advertising on consumers' purchase intentions through brand love in the fashion industry. Using a quantitative research method among fashion consumers, data from 311 valid responses were processed, and analyzed with SPSS 25.0 software. Research results show that in the fashion industry, storytelling advertising has a positive influence on brand love, thereby stimulating consumers' purchase intentions. From these results, some suggestions are proposed for fashion brands and advertising agencies.

1. Introduction

Over the past decade, storytelling advertising has become popular and is implemented across various media. Storytelling advertising is a form of conveying messages about a brand, product, or service in the form of a story (Wentzel et al., 2010). Many studies have shown that the method of conveying information through storytelling can have a deeper impact on consumer perception than traditional methods of providing information (Escalas, 2004). By telling stories that evoke emotions in consumers, storytelling advertising can increase persuasion and capture the attention of viewers. Therefore, many businesses have innovated and used stories related to their brand to attract consumer attention and increase their purchasing motivation.

Extant literature has studied the impact of storytelling advertising on consumer behavior. According to Yang & Kang (2021), storytelling advertising affects consumers' emotions and positive brand beliefs. Thus, brand attachment can be formed through emotional experiences gained when exposed to advertising messages. The higher the emotional transmission, the higher the persuasive effectiveness on consumers. However, prior studies have not consistently confirmed the impact of storytelling advertising on purchase intention (Hapsari et al., 2022). Therefore, the relationship between storytelling advertising and purchase intention still needs further research.

Many studies have shown the positive impact of storytelling advertising on consumers' emotions and experiences; the ability to increase awareness, trust and brand love (Dehghani et al., 2016). However, previous studies have mainly focused on the role of guiding consumer attitudes and emotions toward the brand of storytelling advertising and paid little attention to the influence of storytelling advertising on consumers' purchase intentions through a general mediator, specifically in the fashion industry. In fashion industry, purchase intention is generally influenced by product nature, ability to evoke strong emotions, the appropriateness of advertising to the product's nature, brand image and brand love (Carroll & Ahuvia, 2006). Therefore, this study aims to evaluate and examine the impact of storytelling advertising on fashion purchase intentions through brand love, thereby making practical recommendations for fashion brands.

2. Literature review and research model

2.1. Storytelling advertising

Storytelling advertising is a method of conveying messages about a brand, product, or service in the form of a story (Wentzel et al., 2010).

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The narrative in storytelling advertising connects the story with reality. Storytelling advertising is considered effective because it impacts emotions and touches the minds of consumers through unique stories related to the brand or product. Therefore, consumers' empathetic responses play an important role in measuring advertising effectiveness in storytelling advertising. This is evidenced by studies on consumer behavior (Woodside et al., 2008) and brand management (Escalas, 2004).

2.2. Brand love

According to Carroll & Ahuvia (2006), brand love is defined as the emotional attachment and positive attitude that consumers have towards a brand. Zhang et al. (2020) also pointed out that brand love can only be formed when consumers perceive that the brand meets their expectations in terms of quality, service, image, and values. Brand love is divided into three components: affection, connection, and passion, which contribute to consumers' emotional attachment to the brand. Therefore, brand love is regarded as a positive attitude towards the brand, an emotional connection with the brand, and a desire to maintain a long-term relationship with the brand.

2.3. Purchase intention

Researchers define purchase intention as an individual's conscious plan that can turn into a future purchase action (Akkaya, 2021). Purchase intention is formed when a person is stimulated by a product and is interested in owning it. Consumers believe that being attracted by sellers' offers or having a positive response to those offers will naturally generate purchase intention. Simamora (2013) also agrees that purchase intention arises due to a positive stimulus that increases consumer motivation toward a product.

2.4. S-O-R Model

The S-O-R model (Stimuli - Organism - Response) (Mehrabian & Russell, 1974) is often applied in consumer behavior studies to explain the process of choosing to engage in positive (approach) or negative (avoidance) behaviors in response to a specific stimulus. The S-O-R model combines three main elements: stimulus (S), cognitive and emotional organism (O), and response (R). Specifically, the stimulus (S) consists of external environmental factors that can cause conscious and emotional reactions from the consumer (O), and this reaction will lead to corresponding behavioral responses (R). Individuals react to the environment in two ways: approach behaviors (positive communication, purchase intention, purchasing behavior); and avoidance behaviors (negative information communication and lack of purchase intention).

2.5. Research hypotheses

Storytelling is a powerful communication tool because humans are inherently storytellers. Brands have used storytelling to connect brands with consumers by focusing on aligning the product with shared values. Roberts & Núñez (2005) demonstrated that storytelling in advertising evokes emotions and inspires consumers. Biesenbach (2018) also posited that storytelling advertising stimulates consumer emotions, making them less defensive and more susceptible to persuasion. Furthermore, Bergkvist & Bech-Larsen (2010) emphasized that brand love originates from symbolic meanings and strong emotions that stimulate brand recognition. Stories highlight information, attract attention, and therefore, can reinforce brand image, creating and enhancing consumer brand love. Within the context of the S-O-R theory, stories (Stimulus - S) can elicit a range of diverse reactions from consumers (Organism - O). Reactions such as understanding, empathy, and enjoyment can foster a deep connection, laying the foundation for positive interactions and long-term brand love (Response - R).

In the competitive fashion market, consumers tend to choose brands that evoke their emotions. Additionally, some studies have shown that the use of storytelling advertising can positively impact sales and brand positioning in the fashion industry, as stories enable brands to interact with customers by sharing common values, resolving conflicts, and bringing joy to customers (Yang & Kang, 2021). Based on these arguments, hypothesis 1 is posited:

H1: Storytelling advertising positively influences consumer brand love.

According to the S-O-R theory, brand love is the emotional response and positive cognitive state of consumers (O) created after the influence of environmental stimuli (S), leading to a positive behavioral response towards the brand, such as increased purchase intention (R). Brand love relates to consumers supporting the brand through positive interactions with it (Wallace et al., 2014). This includes speaking positively about the brand, being

willing to try new products, and defending against negative information or sometimes accepting potential misconduct by the brand. Therefore, brand love can generate many positive customer responses including positive word-of-mouth and willingness to pay for the brand (Rodrigues et al., 2019). Han & Choi (2019) indicated that when consumers know more about a fashion brand, they develop a stronger emotional attachment to it, forming the basis for actions that express their affection for the brand. As a result, we propose the following research hypothesis:

H2: Brand love positively influences consumers' purchase intentions.

Storytelling advertising is considered an effective communication method for bringing products closer to consumers because human memory relies on stories (Spijker, 2015). Therefore, storytelling advertising can help overcome consumer reluctance in approaching and processing information. It is also indicated that consumers' attitudes towards advertisements influence their attitudes towards the brand and their purchase intentions. Additionally, according to Greene et al. (2015), storytelling advertising inspires consumers through entertainment. Thus, storytelling in brands' advertisements play the role of stimuli (S) affecting consumers' cognition and emotions (Organism - O) through inspiration or creating a sense of connection. Consequently, consumers will pay more attention and interact more with the brand, thereby enhancing their desire to explore and eventually form purchase intentions (Response - R). The study by (Chiu et al., 2012) also showed a positive correlation between storytelling advertising and purchase intention. In the fashion industry, Domazet (2020) affirms that the appeal of advertisements, trust and consumers' willingness to pay increase when they are exposed to storytelling advertising messages. Therefore, the following hypothesis is posited:

H3: Storytelling advertising positively influences consumers' purchase intentions.

Storytelling advertising is an effective marketing strategy that creates emotional and affectionate connections between customers and brands. When customers feel this connection, they tend to support and intend to purchase the brand's products or services (Escalas, 2004). Engaging and emotional stories create a stronger connection with customers, helping them trust and accept messages conveyed,

thereby enhancing their purchase intention. Furthermore, storytelling advertising can create positive brand experiences, enabling customers to perceive the brand's value and uniqueness, thereby enhancing brand recall and building brand love, which contributes to promoting purchase intention (Woodside et al., 2008). Thus, H4 is formulated:

H4: Brand love mediates the relationship between storytelling advertising and consumers' purchase intentions.

Based on these hypotheses, it can be seen that storytelling advertising might influence consumers' purchase intentions through brand love. As a result, the following research model is developed:
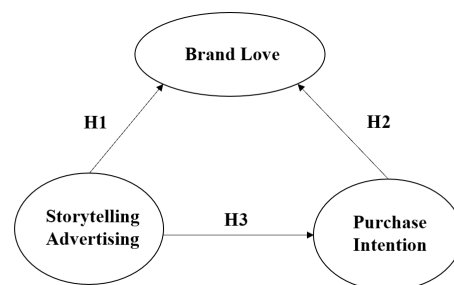
Source: The research group, 2024

3. Research methods

The research adopted measurement scales from previous research. All items are rated on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Specifically, storytelling advertising measurement is adopted from Yang & Kang (2021); purchase intention is measured based on the scale by (Chiu et al., 2012); and brand love is measured using the scale from Palusuk et al., (2019).

To collect data, the study conducted surveys both online and in-person with consumers who are members of groups interested in fashion products from December 2023 to January 2024. The online surveys were created on the Google Forms platform and distributed to consumer groups associated with fashion brands, while the in-person surveys were administered by the research team at various locations such as schools, cafes, and particularly at fashion product outlets like fashion stores, and shopping centers. 400 survey questionnaires were distributed. After two months, the research team screened out invalid responses with unanswered questions and successfully obtained 311 valid responses. Subsequently, the responses were entered into SPSS version 25.00 for data analysis.

4. Research results

Among the 311 responses, there were 104 males (33.4%) and 207 females (66.6%). The majority of participants were aged 18-25 (76.2%). 75.2% of respondents were students while office workers constituted 14.4%. This sample is representative of the customer group interested in fashion products in Vietnam, thus providing adequate representativeness for this study.

4.1. Reliability testing

According to the data analysis results, the Cronbach's Alpha of the STA (storytelling advertising), BL (brand love) and PI (purchase intention) is 0.725, 0.816, and 0.819, respectively (See Table 1).

Table 1: Reliability test results

	Cronbach's alpha	Corrected item-total correlation	Cronbach's alpha if item deleted
Storytelling advertising (STA)	.725		
STA1 The stories in advertisements give me a sense of authenticity.		.491	.700
STA2 Advertisements with real stories are appealing to me.		.538	.646
STA3 The stories in advertisements touch my emotions (make me feel moved, empathetic, joyful, angry, etc.).		.614	.549
Brand love (BL)	.816		
BL1 This is a good brand.		.595	.787
BL2 This brand makes me feel positive.		.457	.807
BL3 This brand is amazing.		.603	.784
BL4 This brand makes me feel happy.		.397	.817
BL5 I love this brand.		.641	.778
BL6 I am passionate about this brand.		.570	.790
BL7 I feel very connected to this brand.		.642	.776
Purchase intention (PI)	.819		
PI1 I might buy the product after watching a storytelling advertisement.		.660	.762
PI2 I will consider buying the product after watching a storytelling advertisement.		.678	.745
PI3 I am very likely to buy the product.		.678	.745

Source: The research group, 2024

Additionally, results show that factor loadings of the observed variables are all greater than 0.3. Thus, all the scales meet the criteria for reliability, and the data correlation is suitable for the scale. Therefore, all scales were subjected to exploratory factor analysis (EFA). KMO coefficient of STA is 0.658 and Sig Bartlett's = 0.000. Consequently, STA meets the criteria for factor exploration and is suitable for the data due to the overall correlation. Furthermore, one factor was extracted with a total variance explained of 68.791% (> 50% by standard). Hence, the independent factor group explains 68.791% of the data variance, ensuring the analysis standard.

Additionally, the factor loadings of the observed variables all meet the requirement of 0.5 or higher, demonstrating a strong correlation between the observed variables and the factor, indicating high-quality observed variables.

KMO coefficient of BL is 0.808 and Sig Bartlett's is 0.000 < 0.005, indicating the suitability of the factors presented. The total variance explained is 58.376%, explaining 58.376% of the data variance, ensuring the analysis standard. The factor loadings for BL are all greater than 0.5.

KMO coefficient of PI is 0.719 and Sig Bartlett's is 0.000, showing that the PI meets the criteria for factor exploration suitable for the data due to the overall correlation. Additionally, one factor was extracted with a total variance explained of 73.444%, so the independent factor group explains 73.444% of the data variance, ensuring the analysis standard.

4.2. Hypothesis testing results

After ensuring the model's appropriateness and statistical significance through EFA, the variables were subjected to linear regression analysis to test the proposed hypotheses.

Table 2. Linear regression models with brand love as dependent variable

Independent variables	M1	M2
Gender	0,071	0,046
Age	0,015	0.015
STA		0,458 ***
R²	0,014	0,223
Adjusted R²	0,004	0,213
STA: Storytelling advertisement; BL: Brand love Reliability: a: 90%,*: 95%, **99%, ***99.9%: N = 311		

Source: The research group, 2024

Table 3. Linear regression models with purchase intention as dependent variable

Independent variables	M1	M2
Gender	-0,001	-0,034
Age	0,089	0,086
STA		0,310***
BL		0,225***
R²	0,018	0,227
Adjusted R²	0,008	0,215
STA: Storytelling advertisement; BL: Brand love; PI: Purchase Intention Reliability: a: 90%,*: 95%, **99%, ***99.9%: N = 311		

Source: The research group, 2024

Results show that STA positively affects BL (β = 0.458, p = 0.000) (Table 2), supporting hypothesis H1 that storytelling advertisements can foster

consumers' brand love. Results also show that BL positively affects PI ($\beta = 0.225$, $p = 0.000$) (Table 3), thus supporting hypothesis H2. The more consumers love a brand, the more likely they are to decide to purchase products from that brand. Meanwhile, STA has a direct and positive impact on PI with $\beta = 0.310$, $p = 0.000$, supporting hypothesis H3. Thus, viewing storytelling advertisements related to fashion provides consumers with more basis to form their purchase intentions.

The mediating role of Brand love was tested through bootstrap analysis using the SPSS PROCESS macro. The Bootstrap analysis results indicate the impact of BL ($\beta = 0.1237$, $p = 0.000$) on PI. This result supports hypothesis H4, demonstrating that BL partially mediates the relationship between STA and PI. Furthermore, results show no significance of demographic variables such as age and gender in the research model (p-value being greater than 0.05), indicating that these variables do not control the model's results.

5. Discussion and conclusion

Storytelling advertising is concluded to have a positive influence on consumer brand love and purchasing intention in fashion brands. This result has also been discussed in previous studies by Yang & Kang (2021). This indicates that storytelling advertising touches consumers' emotions, thereby shaping fashion purchasing intentions. Research results also affirm that brand love is directly influenced by storytelling advertising and then positively affects purchasing intention. Clearly, consumers feel a more positive attitude towards the brand after viewing the brand's storytelling advertising, thereby fostering brand attachment and preference, or brand love (Escalas, 2004), which may predict a future purchase intention. This result is also supported by other studies in literature (Rizkia & Oktafani, 2020). However, different from extant literature, our research shows that besides being directly influenced by storytelling advertising, consumer purchase intention is partly influenced by brand love generated from storytelling advertising.

Practically, marketing communication departments of fashion brands need to focus on effectively conveying messages through storytelling advertising that touches consumers' emotions. To have a stronger impression on customers, brands also need to invest in sound effects, impressive visuals, and humor. Additionally, businesses need to

research their target customers to create messages that resonate with consumers' emotions. Only then can they effectively utilize storytelling advertising to enhance brand love from consumers as well as their purchase intentions.

This research, however, still has some limitations. First, this study was conducted only in Ha Noi, with the main respondents being aged 18-29. Therefore, future studies need to broaden the geographical scope and age range to achieve higher generalization. Secondly, the study only tested the influence of storytelling advertising in fashion industry. Future studies could apply the proposed model to other industries to diversify the application of the model.

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DISCUSSING THE CROSS-BORDER ECONOMIC AND TRADE ZONE MODEL AT THE LAO BAO (VIETNAM) - DENSAVANH (LAOS) INTERNATIONAL BORDER CROSSING

PhD. Thai Thi Hong Minh*

Abstract: The Cross-Border Economic Zone (CBEZ) has been successfully implemented across many countries but has yet to be implemented in Vietnam. The CBEZ model in Lao Bao (Vietnam) and Densavanh (Lao PDR) along the East-West Economic Corridor (EWEC) is one of the models expected to be deployed on the Vietnam-Lao PDR border. This choice offers numerous advantages, as the Lao Bao International Border Gate is one of Vietnam's eight international border gates adjacent to Lao PDR, with the special advantage of being the gateway on the Vietnamese side of the EWEC in Vietnamese territory, providing access to countries in the EWEC region and the Greater Mekong Subregion (GMS). The research article aims to pilot the cross-border economic zone model along the East-West Economic Corridor (EWEC) at the Lao Bao International Border Gate - Densavanh by analyzing some theoretical issues on facilitating international trade for CBEZ and evaluating the current development situation of the economic zone and bilateral trade at the Lao Bao - Densavanh border gate. From there, policy recommendations are made to effectively implement the Cross-Border Economic Zone and enhance trade at the Lao Bao - Densavanh International Border Gate. These actions aim to create momentum for the development of the EWEC.

• *Keywords: facilitating international trade, Cross-Border Economic Zone (CBEZ), Lao Bao - Densavanh border gate, East-West Economic Corridor (EWEC).*

1. Introduction

In the context of Vietnam's deep integration into the global economy, participation in the Trade Facilitation Agreement (TFA) of the World Trade Organization (WTO) and the various free trade agreements (FTAs) increasingly impacts international trade activities. Facilitating international trade across borders to enhance the efficiency of import-export activities, facilitate the transit of goods for businesses, and attract foreign investment directly and positively influences countries experiencing intensified economic integration. The CBEZ model, characterized by its unique management mechanism different from economic zones or trading areas, focuses on policy reforms, administrative reforms, and enforcement. It aims to facilitate trade and promote processes such as transportation, customs clearance, the release of imported and exported goods, and transit procedures at border gates.

The development of the Cross-Border Economic Zone (CBEZ) along the East-West Economic Corridor (EWEC) aims to promote international trade cooperation among countries within the EWEC, including Myanmar, Thailand, Lao PDR, and

Vietnam. Spanning 13 provinces and municipalities, the corridor connects ASEAN with the economic space of the Ganges River (India) and the Pacific Ocean. The pilot study to establish the Lao Bao - Densavanh CBEZ was agreed upon by the two countries' Politburos during the dialogue on January 7, 1997, between the Communist Party of Vietnam and the Lao People's Revolutionary Party. This initiative is further reinforced by Resolution No. 26-NQ/TW, dated November 3, 2022, which emphasizes the enhancement of economic cooperation through border gates in the region linked to the EWEC. While the Lao Bao - Densavanh CBEZ model piloted along the EWEC route offers significant advantages, challenges such as choosing favourable policy incentives, administrative procedure reforms, and establishing modern infrastructure need to be addressed to facilitate international trade effectively.

2. Literature review

The study applied various perspectives in exploring the content. Literature review will be deeply studied according to categories of major topics to international trade within the Lao Bao - Densavanh CBEZ model.

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Research related to Cross-Border Economic Zones

Research on CBEZ and cross-border economic cooperation zones has attracted significant attention worldwide. Studies on economic cooperation between the United States and Mexico, such as the one conducted by Lee and Wilson (2015), provide insights into the factors driving economic cooperation between the two countries. Developing and managing essential factors necessary to promote economic cooperation across the border, including infrastructure, labour resources, energy, and natural resources at border crossings were explored. Research on cross-border economic cooperation in some Latin American countries, like the study by Rhi-Sausi and Coletti (2010), has also been conducted. Experiences of cross-border economic cooperation in some European countries have been analyzed in various studies. For instance, Bradley & Best (2012) and Uiboupin (2007) have examined the experiences of economic cooperation across borders in some European countries.

Several works have analyzed the experiences of cross-border economic cooperation in some Greater Mekong Subregion (GMS) countries, including those by Krainara and Routray (2015) and MMN and AMC (2013). The economic cooperation strategy of the Ayeyawady-Chao Phraya-Mekong (ACMECS) region, based on the concept of Border Economic Zones (BEZ), initiated by Thailand in 2003, marks significant efforts by GMS countries in planning development for border areas (Krainara & Routray, 2015; MMN & AMC, 2013). Factors driving cross-border economic cooperation among GMS countries include (i) a shift from domestic industrialization to export-focused production; (ii) plans to narrow development disparities between regions (MMN & AMC, 2013); (iii) increased economic integration within the GMS through bilateral and regional trade agreements, as well as initiatives to promote regional trade (MMN & AMC, 2013; Krainara & Routray, 2015); and (iv) the development of regional and cross-border infrastructure (Krainara & Routray, 2015).

In-depth research on CBEZ in Vietnam is limited, but some studies have been conducted. For instance, Nguyen Duy Dung (2017) conducted a study titled "The Current Situation of Development of Border Economic Zones between Vietnam - Lao PDR and Vietnam - Cambodia, Cross-Border Economic Zone Model: Current Situation and Prospects." Additionally, Nguyen Anh Thu and colleagues (2019) conducted research titled "Scientific Basis for the Formation and Development of Cross-Border Economic Zones in Vietnam," which included a case study of Quang Tri province, focusing on the Lao Bao border gate among the six border gates in Vietnam.

The research team related to international trade at the Lao Bao - Densavanh border gate.

Lamijo (2016) conducted a study entitled "The Development of Border Regions in Southeast Asia: Cross-border Trade in the Vietnam - Lao PDR Border Areas." Nguyen, Binh Giang (2012) explored the "Potential Economic Corridors between Vietnam and Lao PDR: Roles Played by Vietnam."

Le Van Toi (2014) conducted a study on "Theory and Practice of Implementing the Single-Stop Inspection Procedure: A Case Study of the Lao Bao (Vietnam) - Densavanh (Lao PDR) International Border Gate Pair". Thai Thi Hong Minh (2019) researched "Customs management in the context of enhancing international integration at the Lao Bao International Border Gate", focusing on solutions for harmonizing and modernizing customs clearance procedures for goods at the Lao Bao - Densavanh International Border Gate. A provincial-level topic by the Quang Tri Department of Industry and Trade (2017) entitled "Survey and evaluation of transportation demand for goods consumption by enterprises (major commodities)" proposed solutions for developing logistics services in Quang Tri province. Tran Huu Hung (2015) studied "Development of logistics services in Quang Tri province on the East-West Economic Corridor," providing solutions for developing logistics services to facilitate international trade in Quang Tri, including research on the Lao Bao - Densavanh International Border Gate.

The research gap

Overview of research works both domestically and internationally related to basic theoretical aspects of the CBEZ model; practical research and some aspects of facilitating international trade at the Vietnam - Lao PDR border and at the Lao Bao - Densavanh international border gate; experimental research on CBEZ and cross-border economic cooperation zones worldwide; and discussions on the CBEZ model in Vietnam. However, there is still a lack of research on solutions to facilitate international trade for the CBEZ model in Lao Bao - Densavanh - a driving force for EWEC development, contributing to filling the research gap on the CBEZ model in Vietnam in general and the CBEZ model in Lao Bao - Densavanh in particular.

3. Some theoretical issues regarding facilitating international trade for cross-border economic zone models

Facilitating international trade involves issues related to the circulation of import and export goods and the efficiency of international trade. According to the World

Trade Organization (WTO) (2017), trade facilitation is the simplification and harmonization of procedures in international trade, including the activities, practices, and procedures related to the collection, presentation, communication, and processing of data, as well as other necessary information for the movement of goods in international trade.

According to the report "Some Theoretical and Practical Issues about Cross-border Economic Zones" (Chi, Manh, & Thang, 2016), CBEZ is defined as an economic zone crossing national borders and requiring consistent policies and incentives in areas such as finance, taxation, investment, trade, and customs procedures. Nguyen Anh Thu and her colleagues (2019) argue that it should be understood as a higher form of development of Border Economic Cooperation Zones. CBEZ needs to be relatively open-ended, aiming at facilitating trade and investment, and the crucial factor is cooperation and policy harmonization between the two sides. CBEZ is not necessarily a shared zone between two countries, with a governing body and common policies; it can be two separate zones planned based on the advantages of both sides and cooperation and policy harmony between the two sides.

Building upon the definitions provided above for international trade facilitation and CBEZ, the concept of international trade facilitation for the CBEZ model can be understood as simplifying and harmonizing procedures in international trade according to international standards. It requires cooperation and policy harmonization between the two parties to increase efficiency in the exchange of goods between countries with economic zones crossing national borders.

The United Nations Economic Commission for Europe (UNECE, 2014) states that there are four basic principles of trade facilitation, including transparency, simplification, harmonization, and standardization.

Applying the principles of balance and harmony between two factors - facilitating trade and controlling legal compliance for two distinct values, as described in the Modern Customs Handbook in the Trade Facilitation/Compliance Matrix below:

Figure 1. Facilitation/Control Matrix (Facilitation/control)

Source: World Bank (2003)
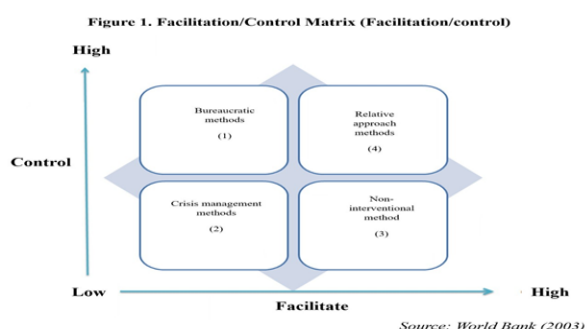
Therefore, the basic principles of trade facilitation for CBEZ include transparency, simplification, harmonization, standardization, and balancing between two factors: facilitating trade and ensuring legal compliance.

Regarding the assessment of the effectiveness of international trade facilitation according to the World Customs Organization (WCO, 2005) in the Framework of Standards to Secure and Facilitate Global Trade, the customs-business partnership is one of the two pillars of this Framework. The other pillar is customs-to-customs. The standards for the customs-business pillar encompass six aspects: partnership relations, security, licensing, technology, information exchange, and facilitation.

According to the theoretical model of six factors of CBEZ proposed by Lalkaka and colleagues (2011), which include: (i) advanced technology border checkpoints; (ii) modern infrastructure connecting CBEZ with domestic markets; (iii) trade zones; (iv) business parks; (v) preferential policies; and (vi) common management mechanisms. Additionally, combined with the content of trade facilitation under the Trade Facilitation Agreement (TFA), also known as global customs rules, which is an agreement adopted based on the consensus principle of 160 WTO member countries, it aims at four basic objectives: (i) Facilitating trade while ensuring a balance between trade facilitation and legal compliance; (ii) Promoting the movement and clearance of goods in international trade; (iii) Enhancing coordination between customs and other agencies in the process of international cargo movement; and (iv) Promoting technical assistance and capacity building for WTO member countries. Therefore, five contents of international trade facilitation for CBEZ are proposed, including: (i) developing preferential policies to ensure a balance between trade facilitation and legal compliance; (ii) establishing advanced technology border checkpoints; (iii) investing in infrastructure and connecting with modern infrastructure; (iv) organizing customs-business partnerships; and (v) establishing common management mechanisms towards international trade facilitation.

4. Current situation regarding international trade facilitation related to the Lao Bao - Densavanh Cross-Border Economic Zone Model

As the Lao Bao - Densavanh CBEZ model has not yet been implemented, the current situation is assessed by analyzing international trade activities within the Economic Zones, as well as bilateral trade at the Lao Bao and Densavanh International Border Gates. These

are the only pair of border gates with corresponding economic zones along the Vietnam - Lao PDR border: the Lao Bao Special Trade Economic Zone (established in 1998) and the Densavanh Border Trade Zone (established in 2002). The analysis of the current situation of these economic zones and bilateral trade at the Lao Bao and Densavanh International Border Gates is related to international trade facilitation, focusing on the five aspects proposed by the author in the theoretical part.

i) Establishing preferential policies to ensure a balance between facilitating international trade and complying with the law

The mechanisms and policies of the governments of Vietnam and Lao PDR applied at the two-way economic and trade zone at the border are fundamentally preferential but have not attracted investors. The Lao Bao Special Economic and Trade Zone, when established, was considered a *"non-tariff zone"* with residents for the exchange of goods and services between the area and the domestic market in terms of export-import relationships. However, due to the absence of physical barriers, it did not meet the conditions to enjoy the preferential mechanisms and policies of the "customs-free zone".

The Densavanh Border Trade Zone primarily consists of uninhabited land with entry and exit control stations situated on the border of National Highway 9, approximately 20 km from the Densavanh International Border Gate. Initially, all vehicles passing through the station were inspected, but this practice is no longer maintained. Investors in the Densavanh Border Trade Zone are exempt from profit tax for a continuous period of 6 years from the first year in which they begin to make a profit. From the 7th to the 10th year, they reduced 50% in profit tax according to the normal rates stipulated in the Lao Customs Law. Only from the 11th year onward are they required to pay customs duties according to the provisions of the Customs Law. During the tax exemption period, investors are also exempt from profit-tax dividends. However, once the tax exemption period expires, investors must pay normal taxes. Goods and products imported into or exported from the Densavanh Border Trade Zone to other countries are exempt from import and export taxes. For goods and products originating from Vietnam and imported into Lao PDR through the Densavanh Border Trade Zone, the import tax rates are reduced according to the approval of the Lao government at different times.

ii) Constructing Border Crossings with Advanced Technology

Customs electronic application at Lao Bao Border Gate: 100% of customs procedures for import and export goods, import and export vehicles have been implemented on information technology platforms, specifically: for import and export goods, import and export procedures are completely carried out on the VNACCS/VCIS automatic customs clearance system, the e-Customs customs business information system helps declarants to declare information and carry out customs clearance procedures for goods anytime, anywhere; in addition, the Customs sector has also developed some satellite software to support customs clearance activities such as the Risk Management Information System, the centralized Tax Accounting System connected to the 24/7 electronic tax payment system. Implementation of QR code cards for one-time registration for border residents' vehicles crossing the border gate.

The Lao Bao Border Gate ensures the reception of all administrative procedure results provided by the National Single Window, ASEAN Single Window system (which is assigned to the Customs sector by the government as the focal point) connecting domestic specialized agencies and countries in the ASEAN region to resolve administrative procedures related to customs clearance of import-export goods and entry-exit vehicles. The "Single Window Inspection/ Single Stop Inspection" inspection model (SWI/SSI) (implemented as a unique pilot project in the world at the Lao Bao - Densavanh international border gate pair for over 17 years) aims to simplify procedures at the border gate; however, as of April 27, 2021, both sides have agreed to temporarily suspend the implementation of the model, and to date, the pilot SWI/SSI model has not been evaluated.

iii) Investing in infrastructure and connecting modern infrastructure to facilitate international trade

The infrastructure of the Lao Bao Special Economic Zone is quite comprehensive, with a commercial center, postal and telecommunications services, upgraded National Highway 9, inter-communal transportation systems, and various social welfare facilities such as schools, clinics, medical stations, bus stations, stadiums, cultural centers, water reservoirs, resettlement areas, etc. The connectivity of infrastructure in Quang Tri province in general and the Lao Bao Special Economic Zone in particular to economic centers in the region and those on the Laotian side is evaluated quite positively. According to the results of a survey conducted by the research team led by Nguyen Anh Thu on *"Scientific basis for the formation and development of cross-border*

economic zones in Vietnam," Quang Tri is the most prepared province to establish cross-border economic zones, particularly due to its modern infrastructure connectivity, scoring 3.81/5 (the highest score among the 8 specific condition groups evaluated for Quang Tri). However, both the Lao Bao Special Economic Zone and the Densavanh Border Trade Zone are in remote border mountainous areas, far from provincial centers, airports, and seaports, which poses challenges for transporting goods. The Densavanh Border Trade Zone has not yet met the demand for infrastructure due to difficulties in state budget funding, with investment mainly focused on office buildings for customs, police, and some other agencies performing duties at border gates and checkpoints in Ban Dong.

iv) Organizing customs-business partnerships

According to the survey results conducted at Lao Bao International Border Gate in 2017, which involved a preliminary quantitative study of a sample size of 231 representative enterprises conducting transactions at the gate, positive outcomes were observed. Specifically, 76% of surveyed enterprises expressed that they felt they were cooperating with customs rather than simply being managed by them. The average score for the entire sample is 2.24 (0.711), which also confirms this. Customs officers have accompanied businesses, provided support, and guided them in resolving daily issues that arise during customs procedures for each shipment (the overall average score for the entire sample is 2.23). The most noticeable and effective support comes from the Customs-Business Advisory Team through direct counseling and hotlines (the overall average score for the entire sample is 1.87). 91% of businesses affirm the high sense of responsibility in the work of this Business Support Team. 185 out of 231 businesses rated customs procedures related to document checks, completion of tax obligations, and handling paperwork related to goods transportation as "fast"; 203 out of 231 businesses stated that three stages of customs clearance are "slow," including unloading goods, loading goods, and inspecting goods.

Implementation of the program to encourage voluntary compliance with the law by customs declarants: At the Customs Sub-Department of Lao Bao Border Gate, there are currently two enterprises participating in the program, namely Camel Vietnam Rubber Co., Ltd. and Duc Hien Quang Tri Trading and Services Company Limited.

v) Building a joint management mechanism to facilitate international trade

Currently, no joint management mechanism is in place due to the absence of the establishment of the Lao Bao - Densavanh CBEZ. However, there is a solid foundation to facilitate the construction of a joint management mechanism when establishing the Lao Bao - Densavanh CBEZ, which includes political relations and economic cooperation. This encompasses border cooperation mechanisms between Vietnam and Lao PDR in general and between Quang Tri province (where the Lao Bao border gate is located) and Savannakhet province (where the Densavanh border gate is located) in particular. These relationships are characterized by friendly cooperation and numerous cooperation policies, including those related to facilitating trade, such as the Border Trade Agreement between the governments of Vietnam and Lao PDR. Both sides regularly maintain high-level visits and contacts and effectively implement bilateral cooperation mechanisms.

Regarding the situation of import-export activities and investment, statistical data on goods import-export at the Lao Bao International Border Gate indicates a generally stable trend with a slight increase over the years from 2010 to 2023 in both the volume and value of imported and exported goods. This underscores the importance of focusing on facilitating trade to better meet the practical needs of international trade development through the Lao Bao and Densavanh International Border Gates. Comparing the years 2010 and 2023, the total weight of imported and exported goods increased by 1.37 times (2010: 567,045 tons; 2023: 774,025 tons), and the total value of imported and exported goods increased by 1.71 times (2010: USD 254,121 thousand; 2023: USD 433,267 thousand).

5. Conclusion and recommendation

The core objective of the CBEZ remains to create an economic cooperation zone aimed at facilitating trade and investment and fostering connectivity, cooperation, and policy harmony between the two bordering sides. A significant advantage lies in the fact that the Lao Bao and Densavanh international border crossings are the only pair with symmetrical economic zones along the Vietnam-Lao PDR border. However, the implementation process of the two-sided economic and trade zone between the Lao Bao (Vietnam) and Densavanh (Lao PDR) international border crossings, as analyzed concerning the five aspects of facilitating international trade proposed by the author, still faces shortcomings and difficulties, not meeting expectations. Particularly, the absence of a common management mechanism remains a critical issue, underscoring the necessity of applying the CBEZ model to facilitate international trade. Therefore, solutions are needed to facilitate the implementation of the Lao Bao -

Densavanh CBEZ, incorporating new incentive mechanisms and policies to attract investment and promote international trade facilitation.

First of all, solutions for developing incentive policies to ensure a balance between facilitating international trade and compliance with the law for the Lao Bao -Densavanh CBEZ. Ensure a commitment to policy stability. If changes are made, these changes need to be more favorable and convenient to attract investors. Implement the preferential regime of the "non-tariff zones" as prescribed in Article 1, Article 4, Law on Export Tax, and Import Tax No. 107/2016/QH13, as when the Lao Bao Special Economic Zone is established, it is considered a "non-tariff zone." However, there are no hard barriers, so currently, it does not meet the conditions to apply the preferential policy of the non-tariff zones. Implement the highest tax preferential policies according to the current regulations of Vietnam and Lao PDR for businesses in the CBEZ. For agricultural products imported into Vietnam by Vietnamese enterprises investing abroad, inspection incentives according to the Vietnam - Lao PDR Border Trade Agreement when importing agricultural products into the country should be applied. Apply preferential mechanisms for agricultural products produced by residents at the borders of the two countries for CBEZ market. Refer to and apply the provisions of China's Free Trade Zone (FTZ) to be in line with high international standards (Guofa, 2023).

Secondly, solutions for building border gates with advanced technology to facilitate international trade for the Lao Bao - Densavanh CBEZ. Modern customs management should be applied. Digital customs aiming to achieve smart customs should be developed. Administrative procedures in licensing, specialized inspections for exported and imported goods, and transit are carried out through the National Single Window mechanism and the National Single Window Portal. If Single Window Inspection/Single Stop Inspection - SWI/SSI is applied, limitations from the pilot model experience need to be solved. In addition, it needs to be synchronized for the other eight pairs of international border checkpoints between Vietnam and Lao PDR to consistently maximize facilitation for international trade.

Thirdly, solutions for investing in infrastructure and modern connectivity to facilitate international trade for the Lao Bao - Densavanh CBEZ. Efficiently invest in the infrastructure system of the two border crossings, considering the similarity in investment in the infrastructure systems of the two border crossings of the two countries, taking into account the financial capacity of Lao PDR and the potential capital support from Vietnam (based on the experience of infrastructure reality at the Densavanh Border Gate after more than 17 years since the implementation of the SWI/SSI model, existing infrastructure is utilized without much additional investment due to the lack of capital from Lao PDR).

Fourthly, solutions regarding customs-business partnerships within the CBEZ. Comprehensive partnerships between customs and businesses should be leveraged. Customs should not only fulfill a supportive role but also actively listen to, acknowledge, absorb, and address feedback from the business sector (Customers need to be receptive to input from businesses, as reflected in the survey conducted by the author in 2017 regarding the level of attentiveness and responsiveness to business opinions at the Lao Bao International Border Gate, which achieved a neutral average score of 3.08. Similarly, the survey on the resolution of business opinions yielded an average score of 2.88, also indicating neutrality.)

Fifthly, solutions for establishing a common management mechanism facilitating international trade for the CBEZ. The common management mechanism is a specialized characteristic of the CBEZ, creating differentiation from other types of economic zones or free trade zones entirely within the border of a single country. Therefore, building a common management mechanism facilitating international trade for the CBEZ based on principles of transparency, simplification, harmonization, standardization, and balance between two factors of facilitating trade and ensuring legal compliance should be in focused.

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FACTORS AFFECTING CORPORATE INCOME TAX COMPLIANCE IN HAI PHONG CITY

PhD. To Van Tuan*

Abstract: *The objective of the research is to identify factors affecting tax compliance of enterprises in Hai Phong city. Research on 220 enterprises in Hai Phong City, at the same time, using quantitative analysis using SPSS software and OLS regression analysis method, the research results suggest that the possibility of tax avoidance penalties, tax rates, tax examination and business awareness of tax have a different influence on tax compliance behavior of enterprises. The research also discusses some implications to promote corporate tax compliance in Hai Phong in specific and in Vietnam in general in the coming time.*

1. Introduction

Corporate tax compliance is a critical aspect of modern economies, reflecting how well businesses adhere to tax laws and regulations. Non-compliance, manifesting as tax evasion or avoidance, can severely undermine government revenues and economic stability. The issue of corporate tax compliance has become increasingly prominent in recent years due to globalization, complex tax systems, and the growing scrutiny of corporate behavior. Understanding the factors that influence corporate tax compliance is essential for policymakers, tax authorities, and businesses to design effective tax policies and enforcement strategies. This paper investigates the emerging issue of corporate tax compliance, the challenges it presents, its importance, and the implications of achieving high levels of compliance.

The issue of corporate tax compliance has gained significant attention due to several emerging trends. Globalization has enabled businesses to operate across borders, complicating the enforcement of national tax laws. Multinational corporations (MNCs) often exploit differences in tax systems to minimize their tax liabilities, leading to substantial revenue losses for governments (OECD, 2013). The rise of digital economies and intangible assets has further complicated the assessment and collection of taxes. As these challenges grow, so does the need for robust and adaptive tax compliance strategies.

One of the primary challenges in corporate tax compliance is the complexity of tax systems. Businesses must navigate intricate tax codes, which often contain numerous loopholes and ambiguities. This complexity not only increases compliance costs but also provides opportunities for tax avoidance. According to Slemrod (2004), simplified tax systems with clear guidelines are crucial for enhancing compliance. Additionally, the disparity in tax rates across jurisdictions creates incentives for profit shifting and base erosion, as highlighted by the OECD's Base Erosion and Profit Shifting (BEPS) project (OECD, 2015).

Corporate tax compliance is vital for several reasons. Firstly, it ensures a steady flow of revenue for governments, which is essential for funding public services and infrastructure projects. Non-compliance results in significant revenue losses, estimated at billions of dollars annually (Cobham & Jansky, 2018). Secondly, high levels of compliance promote fairness and equity in the tax system, ensuring that all businesses contribute their fair share to the economy. This, in turn, enhances public trust in the tax system and the government. Finally, compliance reduces the risk of legal penalties and reputational damage for businesses, fostering a stable and predictable business environment.

The purpose of studying corporate tax compliance is to identify the factors that influence businesses' adherence to tax laws and develop effective strategies to promote compliance. These factors include the perceived fairness of the tax system, the likelihood of detection and punishment, and the complexity of tax regulations (Kirchler, Hoelzl, & Wahl, 2008). Understanding these factors helps policymakers

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design tax systems that are not only efficient and effective but also perceived as fair by taxpayers.

The implications of improved corporate tax compliance are far-reaching. For governments, increased compliance means higher revenue collection without the need to raise tax rates, which can be politically and economically challenging. For businesses, compliance enhances corporate governance and sustainability, as it ensures that tax liabilities are managed transparently and responsibly. Moreover, better compliance reduces the risk of costly legal disputes and audits, allowing businesses to focus on growth and innovation.

Investigating the factors influencing corporate tax compliance is crucial for addressing the challenges posed by globalization, complex tax systems, and digital economies. Understanding these factors can help policymakers design fair and effective tax policies that promote compliance, ensure equitable revenue collection, and enhance public trust in the tax system. The implications of achieving high levels of corporate tax compliance are significant for both governments and businesses, leading to a more stable and prosperous economic environment.

In addition to the introduction presented above, the rest of the study is presented as follows: In the next part, the study conducts an overview of domestic and foreign studies, then the study proceeds data collection and present research methods. Next, the study analyzes the results, discusses the results and draws general conclusions.

2. Literature review

Corporate tax compliance is a critical issue in modern economies, reflecting the adherence of businesses to tax laws and regulations. Non-compliance, manifesting as tax evasion or avoidance, undermines government revenues and economic stability. Understanding the factors influencing corporate tax compliance is essential for designing effective tax policies and enforcement strategies. This paper investigates key determinants, including the possibility of tax avoidance penalties, tax rates, the complexity of tax policy, tax examination, and business awareness of tax, supported by academic publications.

Penalties for tax avoidance serve as a deterrent against non-compliance. The prospect of substantial fines and reputational damage can influence corporate behavior significantly. According to a study by Kirchler, Hoelzl, and Wahl (2008), the perceived probability of detection and severity of penalties are crucial in shaping taxpayer behavior. Companies are likely to comply more rigorously with tax obligations when the risks associated with non-compliance outweigh potential benefits. This deterrent effect is supported by empirical evidence showing that increased enforcement and higher penalties correlate with improved compliance rates (Allingham & Sandmo, 1972).

The level of tax rates is another significant factor affecting corporate tax compliance. High tax rates can incentivize businesses to engage in tax avoidance strategies to minimize their tax liabilities. However, a balanced approach is necessary, as excessively high rates may lead to increased evasion, while very low rates might not generate sufficient revenue for public expenditures. Research by Slemrod (2004) indicates that there is an optimal tax rate that maximizes compliance while ensuring adequate revenue. Businesses respond to tax rates by weighing the cost of compliance against the benefits of potential savings from avoidance.

Regular and thorough tax examinations, or audits, play a vital role in ensuring compliance. The presence of a robust audit system increases the likelihood of detecting non-compliance, thereby discouraging businesses from engaging in tax avoidance practices. A study by Alm, Jackson, and McKee (1992) found that the frequency and intensity of tax audits positively influence compliance rates. Businesses that perceive a higher risk of being audited are more likely to comply with tax regulations to avoid penalties and legal repercussions.

Awareness and understanding of tax obligations are fundamental to compliance. Businesses that are well-informed about tax laws and the importance of compliance are more likely to adhere to regulations. Educational initiatives and transparent communication from tax authorities can enhance this awareness. A study by Torgler (2003) highlights that tax morale, influenced by societal norms and perceived fairness of the tax system, plays a significant role in compliance behavior. Businesses that recognize the social and economic benefits of paying taxes are more likely to comply voluntarily.

3. Data and methodology

This study uses data from the primary data collected in Hai Phong City in 2023. The study collected samples convenient for enterprises. An appropriately determined sample size requires 5 times the number of questions, corresponding to a sample size of at least 90 as confirmed by Hair et al. (2006). In this study, we distributed 230 ballots and received 225 valid ballots. There were 5 invalid ballots so they were removed

from the study.

Based on the previous studies, the estimated equation is shown as follows:

$$TC_t = \beta_0 + \beta_1 TP_t + \beta_2 TR_t + \beta_3 BA_t + \beta_4 TE_t + \varepsilon_t$$

In which:

TC_t is the tax compliance behavior; is the the possibility of tax avoidance penalties; TR_t is the tax rates; is the business awareness of tax; TE_t is the tax examination.

The study uses the SPSS software for analysis as well as uses OLS regression, and then uses this research results to evaluate factors affecting corporate tax compliance.

4. Results

4.1. Descriptive statistics

Table 1. Firm size analysis

	Items	Number	Percentage
	Micro	99	44%
Firm size	Small	79	35.1%
	Medium	47	20.9%

Source: Authors' analysis (2023)

Table 1 shows that the research sample has 225 corporate respondents, including 99 micro enterprises, 79 small enterprises and 47 medium enterprises, accounting for 44%, 35.1% and 20.9%, respectively. In which, these kinds of enterprises are outlined in the Decree No. 39/2018/ND-CP. In concrete, one can find in Table 2.

Table 2. Vietnamese firm size classification

Firm size	Sector	Total capital	Number of employees
Micro	Agriculture, Forestry, and Fisheries; Industry and Construction	Up to VND 3 billion	Up to 10
	Trade and Services	Up to VND 3 billion	Up to 10
Small	Agriculture, Forestry, and Fisheries; Industry and Construction	Over VND 3 billion and up to VND 20 billion	Over 10 and up to 100
	Trade and Services	Over VND 3 billion and up to VND 50 billion	Over 10 and up to 50
Medium	Agriculture, Forestry, and Fisheries; Industry and Construction	Over VND 20 billion and up to VND 100 billion	Over 100 and up to 200
	Trade and Services	Over VND 50 billion and up to VND 100 billion	Over 50 and up to 100

Source: Authors' analysis (2023)

4.2. Cronbach's alpha analysis

Table 2 shows that the selected scales are appropriate because they have Cronbach's alpha coefficient greater

than 0.6 and are satisfactory, therefore these scales are suitable for EFA analysis.

Table 3. Reliability of scale

Variable	Number of items	Cronbach's alpha
TP	4	0.712
TR	5	0.732
BA	4	0.724
TE	5	0.711
TC	4	0.720

Source: Authors' analysis (2023)

4.2. EFA analysis

Table 4. KMO and Barlett test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.812
Bartlett's Test of Sphericity	Approx. Chi-Square	2542.175
	Df.	221
	Sig.	0.000

Source: Authors' analysis (2023)

According to KMO and Barlett's test, the KMO coefficient reaches 0.812 and is greater than 0.5, and at the same time, Bartlett's Test of Sphericity shows that Sig. = 0.000, so the choice is appropriate. In addition, Table 5 also indicates the rotated component matrix as below:

Table 5. Rotated component matrix

Items	Rotated Component Matrix[a]			
	1	2	3	4
TP1	0.802			
TP3	0.798			
TP2	0.765			
TP4	0.752			
TR2		0.798		
TR1		0.792		
TR5		0.753		
TR4		0.738		
TR3		0.718		
BA2			0.801	
BA1			0.778	
BA4			0.755	
BA3			0.729	
TE1				0.766
TE5				0.757
TE3				0.723
TE2				0.709
TE4				0.695

Source: Authors' analysis (2023)

4.3. Correlation matrix

Table 6. Correlation matrix

Variable	TC	TP	TR	BA	TE
TC	1.000				
TP	0.352	1.000			
TR	0.645	0.256	1.000		
BA	0.235	0.582	0.274	1.000	
TE	0.542	0.691	0.386	0.218	1.000

Source: Authors' analysis (2023)

Table 6 indicates that the highest correlation coefficient of 0.691 belongs to TE and TP and is still less than 0.8, so the possibility of multicollinearity is eliminated. Therefore, the selection of the variables is

appropriate.

4.4. Regression results

Table 7. Regression results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	9.834	3.289		2.900	0.001		
	TP	0.175	0.067	0.187	2.612	0.008	0.914	1.075
	TR	0.379	0.045	0.478	8.422	0.000	0.896	1.140
	BA	0.236	0.065	0.412	3.631	0.000	0.915	1.198
	TE	0.127	0.036	0.271	3.528	0.000	0.889	1.109

Source: Authors' analysis (2023)

Table 7 results reveal:

The estimated coefficients of TP, TR, BA and AC are all positive and statistically significant, in which the largest estimated coefficient is TR, then BA, then TP and finally TE. As follows:

The estimation results confirm the positive impact of TR on corporate tax compliance behavior and this impact is the strongest. Specifically, increasing 1 unit of TR has the ability to improve corporate tax compliance behavior by 0.379 units in average. This result explains that the higher tax rate, the more likely the corporate follow the tax compliance. Some studies find that higher tax rates, combined with effective enforcement and penalties, can improve compliance as the cost of evasion outweighs the benefits (Allingham & Sandmo, 1972; Slemrod, 2007).

The estimation results confirm the positive impact of BA on corporate tax compliance behavior. Specifically, increasing 1 unit of BA has the ability to improve corporate tax compliance behavior by 0.236 units in average. Studies indicate that increased awareness and understanding of tax laws generally lead to higher compliance rates (Saad, 2014).

The research results confirm the positive impact of TE on corporate tax compliance behavior, specifically increasing 1 unit of TE can potentially improve corporate tax compliance behavior by 0.175 units in average. Studies have shown that the threat of an audit increases compliance. For example, Slemrod, Blumenthal, and Christian (2001) found that the probability of an audit positively influences taxpayers' reporting behavior.

Finally, the research results also confirm the positive impact of TP on corporate tax compliance behavior, specifically increasing 1 unit of TP can potentially improve corporate tax compliance behavior by 0.127 units in average. Research by Allingham and Sandmo (1972) supports this theory, showing that higher penalties, in combination with audit probability, can effectively deter tax evasion, indicating higer corporate tax compliance.

5. Conclusion and implications

Effective tax compliance is influenced by a combination of factors including tax avoidance penalties, tax rates, tax examination, and business awareness of tax obligations. Each of these elements plays a crucial role in shaping corporate behavior towards tax compliance.

From the above results, the study has a number of policy implications to promote corporate tax compliance. To the perspective of corporate, firstly, concerning enhanced compliance strategies, Vietnamese corporates should invest in robust compliance strategies that incorporate thorough tax planning, accurate record-keeping, and proactive engagement with tax authorities. This approach helps mitigate the risk of penalties and fosters a positive relationship with regulators. Secondly, as far as capacity building is consider, given the diversity in business sizes and resources, SMEs in Vietnam may benefit from targeted capacity-building initiatives. These could include workshops, online resources, and advisory services to improve their understanding and compliance with tax laws.

Devoting to the government, firstly, the government should care about effective enforcement, i.e., strengthening tax examination capabilities and enforcement mechanisms is crucial. This includes investing in technology for data analytics and improving audit efficiency to detect and deter tax evasion effectively. Secondly, education and outreach should be involved, since implementing comprehensive educational programs for businesses on tax compliance requirements and changes in tax laws. This could enhance awareness and reduce inadvertent non-compliance.

By implementing these measures, Vietnam can strengthen its tax administration framework, increase revenue collection, and create a conducive environment for business development and investment.

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AGENCY COSTS AND FIRM PERFORMANCE: LITERATURE REVIEW AND PROPOSED MODEL

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Abstract: The relationship between agency costs and corporate performance constitutes a significant area of research, garnering substantial interest from scholars globally, including those in Vietnam. In the context of an increasingly competitive business environment, the effective minimization of agency costs is crucial for the success and sustainable development of enterprises. This paper conducts a comprehensive review of previous studies, elucidating the various factors influencing agency costs. Furthermore, the paper proposes a quantitative model to analyze the impact of agency costs on corporate performance. This model not only provides a robust theoretical foundation but also offers practical applications for corporate management, enhancing transparency and facilitating the design of more effective corporate governance mechanisms.

• Keywords: *agency theory, agency costs, firm performance.*

1. Introduction

Modern companies are the integration of team power with a number of living individuals, including managers, employees, shareholders, creditors, and so on. For a long time, economists chronically assume and think that these parties have a common goal and orientation, but actually there is a conflict of interests among economic individuals. And companies have been trying to reconcile these contradictions. Therefore, it has always been the focus of scholars in the field of corporate finance and capital markets.

The theory of agency costs was initially articulated by Jensen and Meckling (1976), who posited that the divergence of interests between principals and agents necessitates mechanisms to align the incentives of managers with those of shareholders. Despite the theoretical foundation laid decades ago, the real-world implications of agency costs on firm performance remain a vibrant and contentious area of research (e.g., Ang et al., 2000; Singh & Davidson, 2004; McKnight & Weir, 2009; Belghitar & Clark, 2015; and Rossi et al., 2018). Agency costs arise from the conflicts of interest between shareholders (principals) and managers (agents). These costs can significantly affect firm performance by influencing managerial behavior and decision-making processes.

The study of the relationship between agency costs and corporate performance has become a profound research area in recent times, attracting the attention of researchers and economic experts. Recent studies have indicated that managing agency costs plays a crucial role in the operation and management of corporate activities (Ang et al., 2000; Khidmat and Rehman, 2014; Chen and Jia, 2015; Rossi et al., 2019; Mazlan et al., 2019; Hoang et al.,2019; Khuyen, 2021). Researchers have indicated that optimizing agency costs not only helps improve operational efficiency and increase profitability but also enhances the trust of investors and shareholders in the enterprise.

However, managing agency costs also poses numerous challenges. These risks may include the complexity in managing and monitoring costs, as well as the potential for conflicts of interest and a lack of transparency in corporate activities (Lee, 2010; Li et al., 2021). Particularly, in an increasingly competitive business environment, effectively minimizing agency costs can play a decisive role in the success and sustainability of an enterprise (Chen and Jia,2015; Rossi et al., 2019; Mazlan et al., 2019).

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This paper provides an extensive review of prior research, clarifying the different factors that affect agency costs. Additionally, it introduces a quantitative model to examine the effects of agency costs on corporate performance. This model offers a solid theoretical base and practical applications for corporate management, improving transparency and aiding in the creation of more effective corporate governance mechanisms.

The structure of this paper is outlined as follows: Section 2 covers theoretical foundation for the research and the effects of agency costs on firm performance. Section 3 develops a research model for the impact of agency costs on firm performance and Section 4 offers concluding remarks.

2. Theoretical foundation for the research

2.1. Agency cost

Agency cost theory, a fundamental concept in corporate governance and financial economics, refers to the costs associated with resolving conflicts between managers (agents) and shareholders (principals). These conflicts arise due to different objectives, information asymmetry, and risk preferences between managers and shareholders.

Agency theory stems from the separation between ownership and control. This separation is becoming more and more popular as the scale of businesses becomes larger, the owner is not be able to participate in running the business but tends to hire people to run the business. According to Jensen and Meckling (1976), agency theory suggests that when there is a separation between ownership and management rights, conflicts will arise between owners and managers. Managers do not always make decisions in the best interests of shareholders.

Jensen (1986) argues that managers want to retain more profits, while shareholders want to pay cash dividends. When retained profits are large, the scale of the company's operations is expanded and therefore the power of the manager is greater and his position is strengthened. Therefore, the dividend decions are made for the interest of managers instead of the benefits of shareholders.

The misalignment between principals and agents can lead to various costs. Monitoring costs are one kind of agency costs incurred by principals to oversee the actions of agents. Denis and Timothy (2000) argue that most of the intelligence of the manager is devoted to the company, their income will depend on the performance of the company. Managers tend to invest in projects that suit their skills and interests, not always based on the interests of the owners, thereby increasing their position and earning. The problem of moral hazard is often more evident in large-scale companies with complex ownership structures. Therefore, monitoring costs will be considerable. Monitoring activities require additional costs and this cost is the agency cost paid by the owner, which is mentioned by Fama and Jensen (1983). Eisenhardt (1985) argues that a fixed income can be an excuse for managers to avoid work, because the amount of money the manager receives will not change regardless of the quality of work. Research by Alchian and Demsetz (1972) shows that replacing a fixed salary with an income based on the added value of corporate profits is more effective.

The owner (principal) - manager (agent) relationship is like a contract in which one party (principal) hires another party (agent) to do some work on its behalf and delegates some decision-making authority to the agent. If both parties are benefit maximizers, the managers may not always act in the best interests of the owners. Owners can limit this regime of inconsistency by providing incentives to the managers and incurring additional control costs to limit unfavorable actions of the managers. This cost is called agency cost. According to research by Bendickson et al. (2016), agency costs were first mentioned by two authors Berle and Means in 1932. Afterwards, many studies tried to understand the agency problem in corporate governance by developing frameworks theories to analyze agency costs such as Jensen and Meckling (1976), Jensen (1986), Lowe and Rohling (1993), Bernanke et al. (1994), Lang et al. (1995).

According to Jensen (1986), measuring agency costs of a business should be based on the relationship between free cash flow and growth prospects. He believes that agency costs will be high when the company has a large amount of free cash flow associated with low growth opportunities because it means arbitrariness in operating decisions. In the view of Ang et al. (2000), there are two important criteria to evaluate agency costs: asset utilization efficiency and the ratio of corporate management costs to total revenue. In fact, the asset utilization ratio evaluates the level of asset utilization efficiency

compared to revenue and thus has an inverse relationship with agency costs. Studies by Singh and Davidson (2004) and Lee (2010) show that if the ratio of revenue to total assets is high, it means low agency costs. On the contrary, if this index is low, it shows that the manager is implementing poor investment policies and ineffective asset management and use. As for the coefficient of business management costs on total revenue, it shows how effective the company's management is in controlling business operating costs. A higher index means higher agency costs. On the contrary, if this index is low, it shows that the business manages spending effectively.

In order to reduce agency costs, the law can play an important role. For example, the disclosure requirement for agents can be enhanced and also the principal can enable legal actions being taken towards dishonest or negligent agents (Rossi *et al.*, 2018). Furthermore, foreign investors, who are usually minority shareholders, are induced to drive investment of unrelated businesses in the group in order to reduce agency costs. In emerging countries, it is not unusual that many businesses have unrelated diversification due to political, cultural and economic conditions. Usually, both principals and agents are interested to reduce agency costs in any business transaction. Therefore, an effective corporate governance structure has to be established to ensure that creditors and shareholders are effectively protected and also to ensure their investment returns. In addition, it also enables to promote the conducive environment to the sustainable growth and efficiency of the corporate sector.

2.2. Firm performance

Firm performance refers to the overall effectiveness with which a business or company achieves its objectives and goals over a period of time. It is a comprehensive measure of how well a firm uses its resources to generate profits and create value for its stakeholders, including shareholders, employees, customers, and the community.

In previous studies, firm performance can be approached from the following aspects:

Financial performance: Financial performance indicators assess how well a firm manages its resources to generate revenues and profits. Research by Altman (1968) on the development and application of financial ratios like Return on Assets (ROA) and Return on Equity (ROE) to assess firm profitability. Studies by Beaver (1966) and subsequent scholars

that examine the relationship between profit margins and firm performance, demonstrating how profitability metrics reflect operational effectiveness and revenue generation capabilities.

Market-based performance: Market-based performance refers to the evaluation of a firm's financial health and success based on its stock market performance and investor perceptions. Unlike traditional financial metrics that focus on internal operational efficiencies and profitability, market-based performance measures how well a company is valued by the market and how its stock performs relative to peers and broader market indices (Ramaswami *et al.,* 2009; Zahoor *et al.,* 2023,). This focuses on the firm's market value such as Tobin's Q and M/B ratio provide indicators of market perception and valuation, reflecting firm performance relative to its assets and equity (Lindenberg & Stephen, 1981).

2.3. The relationship between agency costs and firm performance

In large businesses, separation of ownership and management is inevitable. Most public listed companies have hundreds of shareholders and it makes it impossible for all shareholders to be involved in the management of the company. Hence, the separation of ownership and management allows shareholders to appoint the management to act on behalf of them to manage the company. However, if managers' objectives are different from shareholders' objectives, it will create agency problems. These problems come with an associated cost, generally referred to as agency costs.

The agency theory offers two options to avoid agency problems. The first option is to develop a structure of governance where the contract based on the agent's behavior to generate agency costs aimed to monitor and assess the act of the agent Singh and Davison (2004), Bendickson *et al.* (2016). These studies found that stewardship structures are advantageous for family-owned companies because they increase the steward-like behavior of family employees. Notwithstanding, these structures are damaging because they increase the agent behavior of nonfamily employees. This shows that agency structures based on the agent's behavior are essential, but that stewardship structures can only be useful when a large number of family employees are employed. The second option is to develop a governance structure that can facilitate supervision

and appraisal of agent behavior, which typically comprises reporting procedure, the inclusion of the main board of directors or management personnel Bendickson *et al.* (2016).

Several ratios can indirectly gauge the agency costs of a firm, including the utilization ratio and expense ratio. The total assets turnover serves as a proxy for the utilization ratio, which measures the agency cost of a company by assessing management's efficiency in utilizing its assets. According to Singh and Davison (2004), a higher utilization ratio indicates more productive use of assets, thereby creating greater shareholder value. On the other hand, the expense ratio, another proxy for agency costs, reflects discretionary management expenses using company resources, where higher management expenses lead to increased agency costs.

Higher agency cost indicates poor management of operational cost, which leads to low operating income and is possibly due to fraudulent management of the operating costs. It can increase agency costs and adversely affects the company's profitability (Ang et al., 2000; Rossi et al., 2019; Mazlan et al., 2019).

2.4. Empirical studies on the impact of agency costs on firm performance

Regarding empirical studies related to how agency costs affect firm performance of enterprises, Jabbary *et al.* (2013) used a data set of 73 listed companies between 2006 and 2010 to evaluate the impact of agency costs on the performance of companies listed on the Tehran Stock Exchange. In this study, the authors proposed 01 main hypothesis and 06 secondary hypotheses to test with the selection of criteria affecting firm performance. In this empirical study, three criteria are used including: operating expenses to sales ratio, asset turnover ratio to sales and Tobin-Q ratio to measure agency costs. In addition, two criteria return on assets (ROA) and return on equity (ROE) were used as dependent variables to measure the firm performance. The statistical analysis results from this study have shown a significant relationship between agency costs and performance of companies listed in the Tehran Stock Exchange.

From a different perspective, Khidmat and Rahman (2014), when studying 113 companies listed on the Karachi stock exchange in Pakistan from 2003 to 2009, showed a significant negative impact of agency costs on firm performance except for total asset turnover ratio (TATO) which has a positive impact. In Pakistani context, minority shareholders are exploited by majority shareholders and management. This research results have provided suggestions for corporate governance rules in which agency costs can be controlled. Investors are also advised to be able to manage their investment portfolio effectively while considering the impact of agency costs and the company's free cash flow.

Yao and Wu (2014) conducted a pivotal study examining the impact of agency costs on firm performance within the context of Chinese listed companies. Utilizing a comprehensive dataset from the China Stock Market and Accounting Research (CSMAR) database, they employed econometric techniques to analyze the relationship between ownership structure, governance mechanisms, and firm performance. Their findings revealed a significant negative correlation between agency costs and firm performance, indicating that higher agency costs detract from corporate efficiency and profitability. Moreover, the study highlighted the role of ownership concentration and board independence in mitigating these costs. Specifically, firms with concentrated ownership and independent boards exhibited better performance, suggesting that effective governance structures are crucial in reducing agency conflicts. Yao and Wu's research contributes to the broader literature by providing empirical evidence from an emerging market, emphasizing the importance of tailored corporate governance practices to enhance firm performance in different economic contexts. The study underscores the necessity for policymakers and corporate managers to focus on reducing agency costs through improved governance frameworks to foster sustainable business growth.

Another study by Hoang *et al.* (2019) used data sets on 736 companies listed on the Vietnamese stock market in the period from 2010 to 2015. To handle defects in the research model, the authors used the model Generalized Method of moment Model (GMM). Research results have shown that agency costs have a negative impact on the performance of listed companies in Vietnam. Thus, this result is similar to the study of Yao and Wu (2014) on empirical evidence of the negative impact of agency costs on the performance of insurance companies in China. In addition, this

study also shows that debt instruments can be a useful tool to reduce the negative impact of agency costs on company performance in Vietnam.

Similar to the research of Yao and Wu (2014) when studying a specific group of industries listed on the stock market, Khuyen (2021) also used a panel data regression model with a data set of 34 food and beverage companies listed on the Vietnam stock market in the period from 2010 to 2020 to analyze the impact of agency costs on firm performance. Research results also show that agency costs have a significant impact on firm performance of food and beverage companies in Vietnam. However, the difference in the study of Khuyen (2021) compared to the study by Hoang *et al.* (2019) is that among the three variables representing agency costs, the total asset turnover criterion has a positive impact on firm performance. On the contrary, the criteria of short-term debt ratio and total administrative expenses and selling expenses on total revenue have a negative impact on firm performance.

3. Developing a research model for the impact of agency costs on firm performance

3.1. Research hypotheses

Based on previous studies, we develop two research hypotheses regarding the impact of agency costs on firm performance as follows:

Hypothesis 1: An increase in agency costs can adversely affect firm performance.

The ratio of general & administration expenses and sales expenses to total revenue has a negative impact on the operational performance of the enterprise.

Agency costs arise from conflicts of interest between managers and shareholders, often manifesting through inefficient resource allocation and unnecessary expenditures. These costs can be indirectly measured by the ratio of general and administrative expenses and sales expenses to total revenue.

Jensen and Meckling (1976) introduced the concept of agency costs, highlighting how managerial actions that do not align with shareholders' interests lead to inefficiencies. High G&A and sales expenses can indicate such misalignments, where managers might engage in excessive spending that benefits themselves rather than the firm's overall performance.

Empirical studies support this view, Ang et al. (2000) found that higher agency costs, as reflected by increased administrative expenses, correlate with lower firm performance. Similarly, Hall and Weiss (1967) demonstrated that firms with higher operational costs tend to have reduced profitability, underscoring the impact of inefficient management practices.

Hypothesis 2: The total asset turnover has a positive impact on the firm performance.

Total asset turnover, a key efficiency metric, measures how effectively a firm utilizes its assets to generate revenue. Research indicates a positive correlation between total asset turnover and operational performance, suggesting that higher turnover rates typically reflect better resource management and higher productivity.

Smith *et al.* (2003) highlight that firms with higher asset turnover ratios tend to exhibit superior performance, as they efficiently convert their asset base into revenue. This efficiency minimizes waste and maximizes output, aligning closely with agency theory, which posits that reduced agency costs - reflected in better asset utilization - lead to improved firm performance.

Further empirical studies, such as those by Penman (2010), underscore that efficient asset management, indicated by higher asset turnover, correlates with higher profitability and operational success. This relationship holds particularly true in asset-intensive industries like manufacturing and real estate, where effective asset utilization is crucial for sustaining competitive advantage.

Moreover, Ghosh and Revilla (2007) argue that high asset turnover is indicative of streamlined operations and effective management strategies, which directly contribute to enhanced operational performance. This is consistent with the findings of Anderson et al. (2003), who assert that firms achieving higher turnover rates generally manage their resources more efficiently, thus driving better financial outcomes.

3.2. Research model

Measure the dependent variable: According to Lang *et al.* (1995), Jabbary *et al.* (2013)*,* Hoang *et al.* (2019), Mazlan *et al.* (2019) and many other authors, ROA, ROE and Tobin's Q are the most frequently used financial ratios to ascertain the firm performance. ROA indicates how well a firm's management is utilizing the assets to create income. ROE is a profitability ratio that shows the amount of net income a company records as a percentage of the owner's equity. Meanwhile, Tobin's Q is

measured by comparing the total market value of a firm with the total book value of its capital and debt.

Measure independent variables in the model: We also inherited the measurement of independent variables from many previous studies. The calculation of independent variable values is performed in Table 1.

Table 1: Variable and measured scale description

No.	Variables	Scales	Source
1.	ASTR	Ratio expenses$_{i,t}$ = Total administrative expenses and selling expenses $_{i,t}$/Total revenue $_{i,t}$	Ang et al. (2000), Jabbary et al. (2013), Hoang et al. (2019), Mazlan et al. (2019), Khuyen (2021),...
2.	TATO	Total Asset Turnover $_{i,t}$ = Net sales $_{i,t}$/ Average total assets $_{i,t}$	Smith et al. (2003), Jabbary et al. (2013), Rossi et al. (2018), Hoang et al. (2019), Mazlan et al. (2019),...
3.	SIZE	Firm size$_{i,t}$ = Logarith(Total Assets$_{i,t}$)	Khidmat and Rahman (2014), Mazlan et al. (2019), Khuyen (2021),...
4.	DEBT	Debt ratio$_{i,t}$ = Total debt $_{i,t}$/ Total assets $_{i,t}$	Khidmat and Rahman (2014), Hoang et al. (2019), Mazlan et al. (2019), Khuyen (2021),...
5.	GROWTH	Firm's growth$_{i,t}$ = (Total revenue $_{i,t}$ - Total revenue $_{i,t-1}$)/ Total revenue $_{i,t-1}$	Yao and Wu (2014), Mazlan et al. (2019),

Source: Compilation by authors

The research model is shown in the diagram below:

Figure 1. Conceptual framework
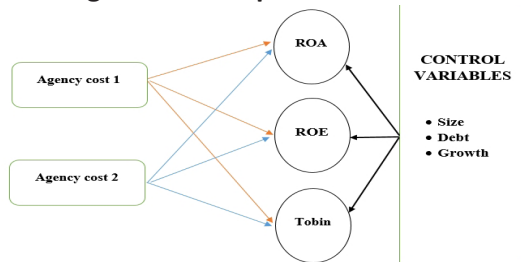
Source: Compilation by authors

4. Conclusion

Based on previous studies, the linear regression model can be accepted. Therefore, the estimated models can be written as below:

$$ROA_{it} = \beta_1 + \beta_2 ASTR_{it} + \beta_3 TATO_{it} + \beta_4 SIZE_{it}$$
$$+ \beta_5 DEBT_{it} \beta_5 + GROWTH_{it} + \varepsilon_{it} \qquad (1)$$

$$ROE_{it} = \beta_1 + \beta_2 ASTR_{it} + \beta_3 TATO_{it} + \beta_4 SIZE_{it}$$
$$+ \beta_5 DEBT_{it} + GROWTH_{it} + \varepsilon_{it} \qquad (2)$$

$$TOBINQ_{it} = \beta_1 + \beta_2 ASTR_{it} + \beta_3 TATO_{it} + \beta_4 SIZE_{it}$$
$$+ \beta_5 DEBT_{it} + GROWTH_{it} + \varepsilon_{it} \qquad (3)$$

Where the subscript i, t represent the i-th observation at time t; ε_{it} is a random error.

Agency costs are a crucial aspect of corporate governance, with various perspectives and measurement methods existing. Recent studies have shown that managing agency costs plays an important role in operating and managing business operations. Accordingly, optimizing agency costs

not only helps improve firm performance and enhance profits but also increases the trust of investors and shareholders in the enterprise.

Our next research direction is to collect sufficient data on industry groups listed on the Vietnamese stock market to test this model. Hopefully, the experimental results will be consistent with the hypotheses we have proposed. This will be the basis for us to propose solutions to improve firm performance for companies listed on the Vietnamese stock market according to each specific industry group.

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FACTORS AFFECTING THE INTENTION TO CHOOSE A JOB IN THE BIG 4 CORPORATIONS OF STUDENTS MAJORING IN ACCOUNTING - AUDITING AT ECONOMICS UNIVERSITIES IN HANOI

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Abstract: *Recently, the need to find high-quality human resources from Big 4 companies and the number of CVs from students majoring in accounting and auditing applying to these companies has been increasing. So, what factors affect the intention of Accounting - Auditing students to choose a job at Big 4 corporations? To answer this question, we used both qualitative and quantitative research methods. The research results show that four factors have a positive impact on the intention of Accounting - Auditing students at economics universities in the Hanoi area to choose a job at Big 4 companies. These factors are remuneration policy, job opportunities, interpersonal influences, and working environment.*

• Keywords: *intention to choose a job, Big 4, accounting-auditing students.*

1. Introduction

In the context of the strong development of the accounting-auditing field, the need to find high-quality talent is becoming more urgent than ever. Large companies belonging to the Big 4 system not only need personnel with extensive professional knowledge but also individuals with the ability to apply flexibility and creativity in solving complex market challenges. This poses a strict requirement for recruiting personnel in the Accounting - Auditing industry in Vietnam.

An undeniable part of this is the attraction of Big 4 companies to students majoring in Accounting - Auditing at economics universities. Every year, the number of CVs sent to the Big 4 during each official recruitment period (Fresh Graduate period and Internship period) reaches 1,000 - 3,000 applications.

So, in addition to factors such as a professional working environment, income level, and career development highlights for employees in the Big 4, what factors affect the intention of Accounting - Auditing students at economics universities in the Hanoi area to choose a job at these corporations?

With increasingly fierce competition in the labor market, understanding the factors that influence students' career choice intentions might help

Big 4 corporations set up their human resources policies and provide favorable working conditions, thereby attracting and retaining talented personnel. Additionally, students majoring in Accounting - Auditing can shape their learning schedule to secure a position in the Big 4.

Around the world, studies by Ali Uyar et al. (2011), Ibrahim Umar et al. (2011), Penelope L. et al. (2012), Arie Pratama (2017), and Ethel Ndidiamaka Abe and Vitallis Chikoko (2020) have surveyed students majoring in Accounting - Auditing about their intention to choose a job. Research by Ali Uyar et al. (2011) and Ethel Ndidiamaka Abe and Vitallis Chikoko (2020) both pointed out that "Interpersonal" and "Intrapersonal" factors are the most influential when students choose their career path. The same result was found in Arie Pratama's (2017) research, which highlighted that "Interpersonal" factors have the strongest influence.

In Vietnam, up to now, there have not been many quantitative studies testing the factors that affect the job choice intentions of students majoring in Accounting and Auditing when making career decisions. The study "Factors affecting the intention to choose a job at global auditing partnerships - A review of related literature" by Nguyen Thi Thuy et al. (2023) proposed a research model related to the intention to choose a job at

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global auditing corporations. However, the authors only proposed that there are five factors that influence the intention to choose a job: (1) Working environment and development opportunities; (2) Brand and organizational reputation; (3) Income level and preferential policies; (4) Family, friends, and colleagues; (5) Elements of professional skills. The influence of these factors has not been tested. Therefore, we decided to continue developing this research to test the influence of factors affecting the intention to choose a job among Accounting - Auditing students at economics universities in Hanoi.

Thus, we conducted this study to find out why and what important factors affect the intention to choose a job at Big 4 corporations among Accounting - Auditing students. From there, we propose solutions to improve the competitiveness of Accounting - Auditing students in finding jobs at multinational auditing firms.

This study not only brings insight into students' psychology and perspectives on choosing their careers but also contributes to optimizing the Human Resources strategies of auditing firms, thereby helping them build quality workforces and sustainable development teams in today's turbulent era.

This article is structured as follows: The first part is the introduction; the second is an overview of previous related studies, on that basis, a model is proposed to research factors affecting the intention to choose a job at the Big 4. The third part is the research method; the fourth part is the research results; the final part is the conclusion and proposed future research directions.

2. Literature review

Currently, there have been several previous research projects on students' choice of workplace worldwide, typically:

- The study *"Factors affecting students' Career Choice in Accounting: The Case of a Turkish University"* by Ali Uyar and colleagues (2011) on factors affecting the choice of accounting career of Faith University students, in Turkey with a research model consisting of 6 independent variables: (1) Internal factors with 3 scales: Personal abilities, Mathematical ability, Interest Have interest in this field (Have interest in this field); (2) External factors; (3) Family influenced; (4) Job opportunities; (5) Level of earnings a career offers; (6) The social

status provided by the career. Research results show that two independent variables have a positive impact on the dependent variable: (1) Family influence; (2) Expectations of high earnings, the social status offered by the chosen career, and the influence of friends, and relatives).

- Research "*The factors that affect Accountants' decision to seek careers with Big 4 versus Non-Big4 Accounting firms*" by Penelope L. et al., (2012). The article presents research results on factors affecting the decision to choose a job at Big 4 or Non-Big 4 corporations based on 2 experiments with 413 samples (experiment 1: 151 samples, experiment 2: 262 samples) of all employees at Big 4 and Non-Big in Belgium. The research has proposed 3 independent variables that have a positive impact on the dependent variable, including (1) Attitudinal beliefs, (2) Subjective norms, and (3) Awareness Perceived behavioral control affects the decision to choose a job at Big 4 or Non Big 4.

- The study "*Factors Influencing Students' Career Choice in Accounting: The Case of Yobe State University (Ibrahim Umar 2014)* has shown that the factors affecting the choice of accounting major of Yobe State students have 2 factors: Main factors: (1) Parental influence, personal interests and other factors such as peer group and relatives; (2) Future prospects, prestige and better salary associated with the accounting profession (Future prospects, prestige and better salary associated with the accounting profession) have a direct or indirect influence on the decision to pursue the accounting profession.

- Research "*Why do Accounting Students choose a career in Accountancy? An Exploratory Study in Bandung City, West Java, Indonesia (Arie Pratama, 2017)*. The article is the answer to the reasons why students majoring in accounting choose accounting jobs, the research was conducted in the city of Bandung in West Java, Indonesia. The article proposes a model including 6 observed variables, however, the survey results have shown that only intrinsic factors have a significant influence on students' career decisions ("only intrinsic factors have" a significant effect on students' career decisions").

- The study "*Exploring the factors that influence the career decisions of STEM students at a university in South Africa*" *(Ethel Ndidiamaka Abe, Vitalis Chikoko, 2020)* researched career choice decisions

made in the area at a University in South Africa. The article has shown that 3 main factors determine a student's career: (1) Interpersonal influences; (2) Intrapersonal influences; and (3) Career outcomes expectations.

- The study *"Factor Affecting Intention in Accounting Study Program Students Choosing the Public Accountant Profession"* (Rosalina et al. 2020) was conducted to indicate factors affecting students' intention to study accounting. The results of the study showed that expectations related to finances and income have a strong impact on students' career choices.

- The study *"The Factors Affecting the Job Choice Intention of Students after Graduation in the Context of COVID-19: International Business Student at the Industrial University of Ho Chi Minh City"* (Nguyen Bich Phuong Duy et al. 2022) collected research data from a senior student majoring in international business at Ho Chi Minh City University of Industry to come up with the result that there are 6 main factors: (1) Family Support; (2) Financial expectation; (3) Self-concept; (4) Social support; (5) Internship experiences; (6) Academic achievement affects career choice after graduation in the context of Covid-19.

- The study *"Factors affecting the intention to choose a job at Global Auditing Corporation- A review of related literature (Nguyen Thi Thuy, et al., 2023)* proposed a research model including 5 observed variables (1) Working environment and development opportunities; (2) Brand and reputation of the organization; (3) Income level and preferential policies; (4) Family, friends and colleagues; (5) Elements of professional skills affect the intention of accounting students to choose a job at global auditing corporations.

In Vietnam, there have also been many research groups asking questions about students' intention to choose a workplace, typically:

- *Huynh Truong Huy and La Nguyen Thuy Dung, (2011)* researched the area of Can Tho University students to determine the degree of workplace acceptance of students. The results of the survey show that there are 5 observed variables: (1) Employment environment; (2) Family factors; (3) Personal factors; (4) Professional knowledge; and (5) Professional skills have a strong impact on the dependent variable "Factors affecting the decision to choose a place to work"

- *Nguyen Huu Anh, and Nguyen Ha Linh, (2014)* show the results that there are 3 main factors: (1) Attitude; (2) Subjective standards; (3) Behavioral awareness has a positive impact on students' intention to work at Big 4. In addition, there are 2 observed variables: (1) Gender; (2) Specialization hurts the dependent variable "Level of acceptance of working for Big 4"

- *Nguyen Thi Thu Huyen et al., (2019)* based on the action theory model For TPB purposes, the author proposes a research model including 5 observed variables: (1) Family orientation; (2) Expected income; (3) Job opportunities; (4) Living environment; (5) Love for the homeland. The results show that these 5 observed variables have an impact on the dependent variable "Intention to choose to return home to work".

- *Hoang Thu Hien (2022)* found that there are 8 influencing factors: (1) Job opportunities; (2) Expected income; (3) Working environment; (4) Living expenses; (5) Remuneration policy; (6) Career development opportunities; (7) Family influence; (8) Family support has a positive impact on the dependent variable: "Factors influencing the decision to choose a workplace".

Research overview shows similarities between studies in the world and in Vietnam on factors affecting students' intention to choose jobs. Specifically, research around the world shows that there are 6 factors including *Influence from surrounding relationships (family, friends, relatives), expectations about income level and preferential policies, internal factors (personal opinions, interests), academic achievements, internship experience, and corporate reputation influence the intention to choose a workplace.* Meanwhile, studies in Vietnam suggest that *job opportunities, family influence, expected income level, remuneration policies, working environment, and career development opportunities* are factors. directly affects students' intention to choose a job. However, there has been no official research showing the factors that affect the intention to choose a job at the Big 4 of students majoring in Accounting and Control from economics universities in the Hanoi area.

3. Research hypothesis and model

3.1. Research hypothesis

Remuneration policies of Big 4 corporations have always provided employees and candidates

with a "dream" working environment, according to the theory of Light (1979) and Alleman (1998)- a group of disadvantageous factors that create low opportunity costs that make workers tend to choose to become self-employed, including unfavorable factors in the labor market such as poverty, unemployment, discrimination, over-urbanization, high-income levels, etc. Low income in the market, while the policies offered by the Big 4 can completely minimize the risks, and create low opportunity costs for workers; More specifically, the Big 4 are large corporations that have special remuneration policies for pregnant women so that after maternity leave, they can still return to work, regain their position, and continue to contribute to the corporation (Martin Kornberger et al., 2021).

H1: Remuneration policy positively affects the intention to choose a job at Big4 corporations of students majoring in accounting - auditing at economics universities in Hanoi.

Job opportunities at Big 4 Corporations are always open to talented people with extensive professional knowledge, typically with the promotion period of Big 4 every two years, this motivates employees in the group. According to the theory of Light (1979) and Alleman (1998) - Advantageous factors create high opportunity costs when workers themselves have high levels of education and skills - this is true at Big 4 corporations. This is considered a favorable environment for students after graduation to continue to improve their educational or professional qualifications while working (Huynh Truong Huy, La Nguyen Thuy Dung, 2011). Therefore, we proposed the second hypothesis:

H2: Job opportunities positively affect the intention to choose a job at Big4 corporations of students majoring in accounting - auditing at economics universities in Hanoi

Interpersonal influences are one of the factors that influence students' decision to choose a job. According to Mark Granovetter (1992) - social relations for the career development of individuals, because the effects of external relations allow job seekers to gather better information about job availability and features. The research of Nguyen Huu Anh and Nguyen Ha Linh (2014) also confirmed that the decision to choose Big 4 or Non-Big 4 is influenced by social factors such as

professors, classmates, and family members. So, we proposed the third hypothesis:

H3: Interpersonal influences positively affect the intention to choose a job at Big4 corporations of students majoring in accounting - auditing at economics universities in Hanoi.

Working environments that have high competition such as Big 4 corporations have both positive and negative relationships with employees and candidates (Arie Pratama 2017). A highly competitive working environment will help employees create motivation for new employees and candidates to constantly improve their skills, professional knowledge, and experience, and a highly competitive environment such as Big 4 corporations also easily puts employees under pressure.

H4: Working environment positively affects the intention to choose a job at Big4 corporations of students majoring in accounting - auditing at economics universities in Hanoi

Intrapersonal Influences: according to research. Studies by Huynh Truong Huy and colleagues (2012); Ethel Ndidiamaka Abe et al., (2020) suggest that "Intrapersonal Influences" are key. These studies found that graduates who understand their strengths, desires, and personality are better equipped to choose a company that aligns with their personal development, self-confidence, and values. Therefore, the next research hypotheses are proposed as follows:

H5: Intrapersonal influences positively affect the intention to choose a job at Big4 corporations of students majoring in accounting - auditing at economics universities in Hanoi

Academic performances: Although various studies explore the factors influencing students' career choices, there is only one Vietnamese study by Nguyen Bich Phuong Duy et al., (2022) that mentioned the impact of "Academic Performance" on students' intentions to work at Big 4 firms. However, the results of this research show that "Academic Performance" has a weak impact on affecting career choice. Therefore, the last research hypothesis is proposed as follows:

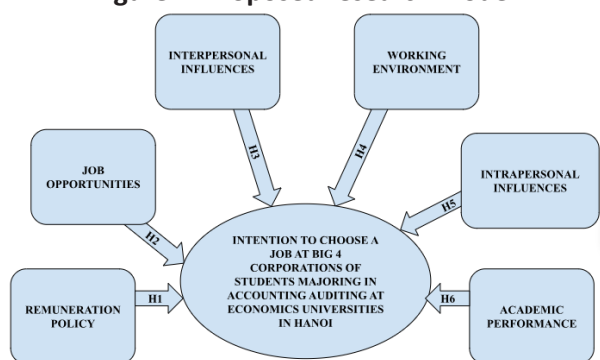*H6: Academic performance positively affects the intention to choose a job at Big4 corporations of students majoring in accounting - auditing at economics universities in Hanoi.*

3.2. Research Model

Figure 1: Proposed research model

$$INTENT = \beta 0 + \beta 1*PO + \beta 2*JOB + \beta 3*INTER + \beta 4*WORK + \beta 5*INTRA + \beta 6*ACA + \alpha$$

In there:

+ Dependent variable: INTENT - Intention to choose a job at Big 4

+ Independent variables: PO - Remuneration Policy; JOB - Job Opportunities; INTER - Interpersonal Influences; WORK - Working environment; INTRA - Intrapersonal Influences; ACA - Academic Performance

+ $\beta 0$: Constant

+ $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$, $\beta 5$, $\beta 6$: Regression coefficients

+ α: Error of the model

To find the factors that influence the intention to choose a job at the Big 4, the research team combined qualitative and quantitative research methods to find results suitable to the topic, as well as find out the desire of students majoring in Accounting and Auditing when looking for jobs.

We used quantitative methods through questionnaire surveys to collect information to test hypotheses. We referred to previous related research articles and developed questions according to the hypothesis of setting up the questionnaire. The questionnaire includes 30 questions and uses a 5-level Likert scale (except questions about the respondent's personal information). To ensure correct and consistent understanding of the questions in the questionnaire, the research team conducted a pilot survey on 10 Audit staff at Big 4 who graduated with a bachelor's degree in Accounting and Auditing. Convenience sampling and snowball sampling were used in the group's study. The selected subjects are students majoring in Accounting at universities majoring in Economics in Hanoi city. The number of ballots sent was 480

(1 ballot per student), we received 268 valid ballots (55.83%).

4. Research results

We assess the scale's reliability by calculating Cronbach's Alpha for 6 independent variables and 1 dependent variable. Then, we eliminate garbage before analyzing EFA to avoid garbage because the garbage can create artificial factors when analyzing EFA (Churchill, 1979).

4.1. Cronbach's Alpha

Cronbach's alpha coefficients reach high-reliability values (see Table 1), and Corrected Item -Total Correlation > 0.3 (after eliminating weak variables). Therefore, the variable scale in the model meets the standard and ensures reliability. This proves that all 24 scales ensure reliability, and are included in the EFA exploratory factor analysis.

Table 1: Results of cronbach's alpha

Factor	Number of initial variables	Cronbach's Alpha reliability
Interpersonal Influences (INTER)	4	0.876
Intrapersonal Influences (INTRA)	4	0.864
Remuneration Policy (PO)	5	0.941
Working Environment (WORK)	4	0.871
Jobs Opportunities (JOB)	4	0.916
Academic Performance (ACA)	5	0.935
Factors affecting the intention to choose a job at Big4 (INTENT)	4	0.883

Source: Results of data processing by the authors through SPSS

4.2. Exploratory factor analysis

* *Analysis with independent variables*

In terms of data suitability, factor analysis results show that the KMO value index = 0.871, satisfying the condition > 0.5. Besides, the result of Bartlett's test is 5120.203 with a significance level of Sig. = 0.000, < 0.05. Regarding the quality of the model, 6 factors explain 77.484% of the data variation (satisfactory), Eigenvalues of all factors are >1, factor loading coefficients are >0.5 and no variables are loading on two factors with factor loadings close to each other. From there, it was concluded that all the data included in the factor analysis were suitable, the EFA model with 6 factors was appropriate and most of the variation in the data, and the factors were identified. independent and clear.

* *Analysis with dependent variable*

KMO coefficient = 0.812 > 0.5, Barlett's test result is 582.064 with a Sig level of significance. = 0.000 < 0.05. Checking the model quality, 4 observed variables are divided into 1 group, Eigenvalues =

2,971 > 1, total variance extracted = 74,264% > 50%, factor loading coefficients of all observed variables are > 0.5, and no observed variables were eliminated. From there, it is concluded that all data are suitable for factor analysis. The EFA model with 1 factor is appropriate and explains 74.264% of the variation in the data. This factor includes 4 observed variables INTENT1, INTENT2, INTENT3, INTENT4, and the scale used for subsequent analysis. is valid.

Conclusion: As stated above, the EFA analysis results show that the 6 research factors after processing all meet the standards and still retain the old naming rules. This will be the basis for explaining the results of the new model for future research, as well as an important finding to build the conclusion of the research topic.

4.3. Correlations

The results of correlation analysis show that the INTENT variable has a positive correlation with the variables INTER, PO, WORK, and JOB (Because they all have positive values, all greater than 0.1 are 0.349; 0.617; 0.453; 0.419, respectively, and price Pearson correlation values are all less than 0.05). In other words, there exist positive and significant relationships between factors and intention to work at Big4 corporations.

Table 4: Results of correlation coefficient analysis

Independent variables	Dependent variable	Pearson Correlation
INTER	INTENT	0.349
PO	INTENT	0.617
WORK	INTENT	0.453
JOB	INTENT	0.419

Source: Results of data processing by the authors through SPSS

4.4. Regression analysis

* Test the model's suitability (R Square, Anova).

The result of the R-squared index (Table 5: Multiple regression analysis) is 0.461 = 46,1%. Thus, the independent variables included in the regression analysis (INTER, PO, WORK, and JOB) explain 46,1% of the change in the dependent variable (INTENT), leaving 53,9% due to variables outside the model and random errors.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.679a	461	453	54.413	1.649

a. Predictors: (Constant), JOB, Inter, PO, WORK

b. Dependent Variable: INTENT

Source: Results of data processing by the authors through SPSS

The results of the ANOVA analysis of variance (Table 6: ANOVA) show that the value F = 56.242 has a significance level (sig.) = 0.000 < 0.05, so the regression model is meaningful, and the results performed on the sample can be generalized to the entire population overall.

Table 6: ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66.609	4	16.652	56.242	.000b
	Residual	77.870	263	296		
	Total	144.479	267			

a. Dependent Variable: INTENT

b. Predictors: (Constant), JOB, Inter, PO, WORK

Source: Results of data processing by the authors through SPSS

* Check for multicollinearity and regression coefficients (Coefficients)

The results of testing the phenomenon of multicollinearity and regression coefficients show that: The VIF coefficients of the independent variables are all less than 10, so there is no multicollinearity occurring; And all variables have an impact on the dependent variable due to Sig. The t-test of each independent variable is less than 0.05.

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.872	.255		3.417	.001		
INTER	.128	.044	0.141	2.922	.004	.877	1.140
PO	.395	.044	0.465	8.904	.000	.752	1.330
WORK	.134	.058	0.130	2.321	.021	.657	1.523
JOB	.143	.049	0.158	2.939	.004	.713	1.403

a. Dependent Variable: INTENT

From the table above, we can derive the standardized regression equation as:

$INTENT = 0.456*PO + 0.158*JOB + 0.141*INTER + 0.130*WORK + \alpha$

Therefore, the level of influence factors to the intention to choose a job at the Big 4 of students majoring in Accounting and Auditing are arranged in order: PO, INTER, WORK, and INTRA, respectively.

5. Conclusion and recommendation

5.1. Conclusion

Based on job choice theory, social network theory, and behavioral theory, along with inheriting previous research results, the research team has proposed a research model consisting of 6 independent variables including (1) Remuneration

policy; (2) Job opportunities; (3) Interpersonal influences; (4) Working environment; (5) Intrapersonal influences;(6) Academic performance are factors that affect the intention to choose a job at Big 4 companies of students majoring in Accounting and Auditing at economics universities in Hanoi City.

Quantitative research results show that there are only 4 factors (1) Remuneration policy; (2) Job opportunities; (3) Interpersonal influences; (4) working environment has a positive impact on the intention to choose a job at Big4 of Accounting-Auditing students at economics universities in Hanoi city.

The results of the study contribute to helping employers better listen and understand the factors that affect students' intention to choose a job, thereby adjusting the recruitment process accordingly. Besides, it also helps the school advise students on the route to choosing a workplace and appropriate application methods. Most importantly, they help students understand and equip them with professional skills, majors, and soft skills, to choose the right development path that is suitable for them.

5.2. Recommendation and limitation

Based on the conclusion of the research that there are 4 main factors affecting the intention to choose a job of students majoring in Accounting at Big4, the research team proposes recommendations targeting 3 main subjects: students majoring in the Accounting and Auditing industry, employers, and school.

(1) For students: When choosing a place to work, students need to pay attention to the company's salary and benefits, salary and bonus policies, insurance, and number of days off, ...these are important information when looking for a job. In addition, students need to learn more about career development opportunities, training programs, job development orientation, working environment, professionalism, and working culture of the company. Students should consult their families, teachers, friends, and colleagues during the job selection process because these people can influence future choice decisions.

(2) For employers: Improving the quality of recruitment and ensuring a transparent, fair, and professional recruitment process is the deciding factor in the quality of that recruitment process. Big 4 needs to provide clear information about

regulations related to salary and bonus policies, promotion paths, responsibilities, and rights of employees when working at the company. Collaborating with schools or professional organizations to organize seminars and share work experiences to help students better understand the working environment, development opportunities, as well as the company's culture, will help employers get closer to a quality workforce.

(3) School: The school is not the main object in the job selection process, however, for students and employers to find each other, the school plays a very important role in connecting these two groups through talk shows. In addition, schools should support students in the process of applying to the Big 4 by organizing skills training and career counseling programs.

Besides the positive results that the study achieved, there are still some limitations that need to be overcome in upcoming studies such as a larger sample size to improve representative and objective. Not only targeting students and interns but also targeting those who are already working and have experience with the Big 4 to see the difference between those who are still in school and those who have worked.

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RESPONSIBLE LEADERSHIP IN THE RELATIONSHIP BETWEEN ACCOUNTING INFORMATION DISCLOSURE AND CORPORATE SOCIAL RESPONSIBILITY

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Abstract: *Leadership is pivotal in almost all operations and businesses' survival and prosperity. Specifically, responsible leadership will significantly influence the implementation of accounting information disclosure and corporate social responsibility (CSR), thereby fostering the reputation of the listed companies. Responsible leadership demonstrates a propensity for directing accounting disclosure in strict adherence to legal regulations and concurrently advocates for corporate responsibility in alignment with prevailing social norms. As a result, listed companies will perform well in CSR and improve their reputation when responsible leadership and accounting information disclosure are increased in the conscious age.*

• Keywords: *accounting information disclosure, corporate reputation, CSR, responsible leadership.*

JEL codes: M14, M41

1. Introduction

In the conscious age, listed companies are poised to excel in CSR practices and heighten their reputation through two interrelated factors: responsible leadership and accounting information disclosure. When leadership assumes responsibility for its actions and decisions, it fosters a culture of ethical conduct and conscientious decision-making within the organization. This moral underpinning permeates the implementation of CSR endeavors, as responsible leaders are more inclined to prioritize societal and environmental concerns (Vo et al., 2023). Moreover, when listed companies engage in increased disclosure of accounting information, they demonstrate transparency and financial stewardship, bolstering stakeholders' trust and confidence (Tu & Nguyen, 2021a). This heightened transparency of accounting practice augments the perception of the listed companies as a responsible and trustworthy entity, consequently improving their overall reputation. Hence, in an era characterized by heightened societal awareness and ethical considerations, integrating responsible leadership and accounting information disclosure becomes instrumental in driving CSR success and spreading listed companies' reputations (Tu & Nguyen, 2021b).

2. Theoretical background

2.1. Leadership theory

In orthodox leadership theory, decentralization of leadership is grounded in the pursuit of profit and maximization of shareholder value. Furthermore, it attributes significant importance to the leader as an ideal agent who influences individuals toward achieving organizational objectives and driving enhanced performance (Rost, 1991). Hence, responsible leaders endeavor to amplify their contributions to shareholders and businesses by fostering stronger business relationships. It means a leader has to act as if everything depends on you (Tu et al., 2022). More specifically, responsible leadership is not only for oneself and the organization but also for the broader context beyond the business. Embracing such broad perspectives enables leaders to capitalize on their responsibilities effectively (Bui et al., 2022). In this study, leadership theory elucidates the profound impact of responsible leadership on the relationship between accounting information disclosure and CSR, whereby heightened responsible leadership correlates with elevated performance achievement and reputation.

2.2. Institutional theory

The institutional theory considers how institutional forces govern organizational behavior and strategic choices within a given field of operation (McFarland et al., 2008). According to Carpenter and Feroz (2001), firms respond to external institutional pressures, such as legal and regulatory requirements, by conforming

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to accepted organizational structures and processes sanctioned by society. Consequently, businesses tend to adapt their behavior to align with prevailing norms in their operating environment. Compliance with institutional pressures becomes imperative for enterprises as it grants them legitimacy and access to essential resources, enabling financial and non-financial profit generation (Fernando & Lawrence, 2014).

In the context of accounting practices and CSR spreading, institutional theory (Deegan, 2009) establishes a link between these activities and the business environment's prevailing social values and norms. By acknowledging this connection, listed companies are compelled to recognize the significance of establishing and maintaining legitimacy in their operations. As a result, listed companies may intensify their engagement in CSR activities in response to legal requirements and normative pressures (Tu & Nguyen, 2021). This could entail promptly accounting information disclosure and active participation in CSR initiatives deemed integral to listed companies.

Evidently, upholding the role of accounting information disclosure in business operations can foster CSR, engendering customer goodwill and affinity toward the listed companies' high mission (Tu & Nguyen, 2021). Therefore, applying institutional theory emerges as an apt approach to comprehending the influence of accounting information disclosure on CSR in listed companies. It elucidates how listed companies' responses to institutional pressures in implementing accounting information disclosure can impact the CSR success and sustainability of businesses.

2.3. Stakeholder theory

According to Freeman (1984), stakeholder theory places the business at the epicenter of the broader nexus of relationships with stakeholders, which offers a framework to analyze the responsibility and influence of the business's operations on these stakeholders. Thus, enterprises bear an obligation to treat stakeholders fairly (Freeman, 1984). When stakeholders' interests conflict, the company has to strike an optimal balance between them (Freeman, 1984, 2010). It is crucial to recognize that stakeholders possess diverse and evolving needs, but businesses should prioritize meeting stakeholders' requirements with significant and direct interests. Stakeholders' interests are presumed to be satisfied through the enterprise's pursuit of business strategies and the disclosure of information following social norms.

In this study, stakeholder theory highlights that under the weight of internal and societal responsibilities, listed companies must establish clear strategies and objectives aligning with stakeholders' interests. By adopting progressive CSR policies, listed companies fulfill their obligations to stakeholders, thereby enhancing stakeholder satisfaction and gradually bolstering their reputation (Tu & Nguyen, 2021a). The author further contends that stakeholder theory provides a pertinent lens to elucidate the impact of CSR on reputation in listed companies. As the value of CSR initiatives increases, so does the dissemination and augmentation of the listed companies' reputation.

3. Responsible leadership in the relationship between accounting information disclosure and CSR

Figure 1: The framework developed from the author's perspective
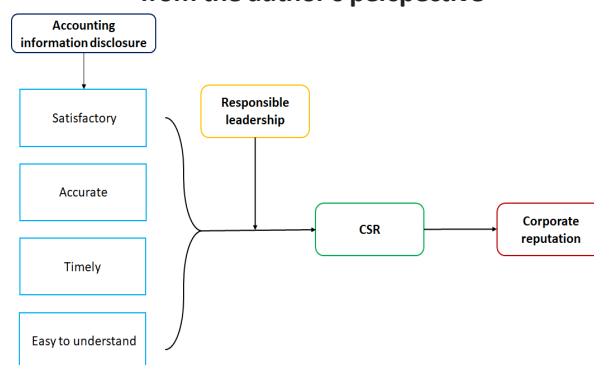
Source: Synthesized by the author

In the dynamic landscape of the digital economy, the disclosure of accounting information is anticipated to undergo significant advancements. This disclosure serves as a legal obligation to the State and a responsibility of listed companies towards the stakeholders and community (Tu & Nguyen, 2021a). Moreover, CSR has transcended its common connotation, which has become a prominent competitive advantage for businesses (Nguyen et al., 2021). Skillful implementation of CSR can yield substantial governance benefits and enhance the reputation of listed companies. In this situation, the core nature of responsible leadership is a pivotal factor in making CSR an urgent and enduring goal. Indeed, responsible leaders will adeptly employ their management acumen, innovative thinking, and visionary outlook to optimize CSR, thereby fostering financial and non-financial advantages for the organization. Acknowledging the vital and sustainable role of CSR and leadership responsibility, this study explores a framework related to accounting information disclosure, responsible leadership, CSR, and the reputation of listed companies. Specifically, it considers the interplay between accounting

information disclosure, responsible leadership, and CSR in spreading the reputation of listed companies in the globalization era. Drawing upon the insights of leadership theory, institutional theory, and stakeholder theory along with the multidimensional perspectives, this study aims to yield critical management implications for responsible leadership in enhancing accounting information disclosure and CSR, ultimately augmenting corporate reputation in listed companies. This study has corresponding implications regarding the theoretical background and previous arguments.

To begin with, this research sheds light on the extent of the gap in the existing literature concerning the interaction of accounting information disclosure and CSR in conjunction with responsible leadership within listed companies in Vietnam. Numerous studies have focused on Vietnamese-listed companies' disclosure of accounting information (e.g., Nguyen et al., 2023; Tu & Nguyen, 2021a, 2021b) and CSR practices (e.g., Nguyen et al., 2021; Nguyen et al., 2023). However, a study that systematically integrates these dimensions into a competitive model that elucidates their resonance and the moderating role of responsible leadership of listed companies is conspicuously absent. Vietnamese companies face mounting pressure to bolster corporate governance activities (Tu & Nguyen, 2022) and embrace CSR (Nguyen et al., 2021). Therefore, the potential benefits of combining accounting information disclosure and CSR practices under responsible role leadership will be fostered in light of these circumstances.

Furthermore, this study delves into the deep impact of responsible leadership concerning the link between accounting information disclosure and CSR. It underscores that responsible leadership will create an environment encouraging accurate and transparent accounting information disclosure. This transparency, in turn, reinforces the company's commitment to CSR. Notably, by embracing accounting information disclosure as a strategic imperative, listed companies demonstrate transparency and accountability to stakeholders, exhibiting their commitment to ethical and CSR practices (Tu & Nguyen, 2021a). As a result, disseminating accurate accounting information will make a substantial impact and align the business's mission with society's values under the moderating of responsible leadership.

In addition, through progressive CSR policies, listed companies effectively fulfill their obligations to a wide array of stakeholders, leading to heightened satisfaction and a subsequent improvement in their reputation

(Tu & Nguyen, 2021a). By performing CSR, listed companies actively demonstrate their commitment to addressing environmental, social, and ethical concerns, resonating positively with stakeholders and society. Consequently, this cycle reinforces the company's reputation as a responsible corporation, cultivating trust and goodwill among its stakeholders and potential investors. Moreover, as the value and scope of CSR expand, so too does the propagation and enhancement of the listed companies' reputation.

Ultimately, this study offers several theoretical contributions and has the potential to expand upon existing foundations in the realm of accounting and corporate governance. By delving into the potential interrelationships between accounting disclosure, responsible leadership, CSR, and corporate reputation, this study promises to enrich the current body of literature and open avenues for future investigations. As the digital economy presents multifaceted challenges and opportunities, and the importance of CSR continues to grow, the insights generated by this study hold particular value. In an era where transparency, social responsibility, and ethical practices are increasingly emphasized in the corporate landscape, this research's findings are expected to significantly contribute to advancing corporate governance practices and fostering the sustainable growth of listed companies. Besides, the study's outcomes may inform the development of best practices that align business objectives with societal interests, positively impacting various stakeholders and the broader community. By shedding light on the significance of responsible leadership in optimizing accounting information disclosure and fostering CSR, the research may pave the way for listed companies to establish robust operational frameworks that strengthen their reputation and competitiveness in the global market. Therefore, the study's findings can shape the future discourse on corporate governance and responsible business practices, offering valuable insights to drive transformative change toward a more sustainable and socially responsible business environment.

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IMPACT OF MERGERS AND ACQUISITIONS ON THE FINANCIAL PERFORMANCE OF VIETNAMESE FIRMS

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Abstract: This study aims to identify the impact of mergers and acquisitions (M&As) on the financial performance of Vietnamese firms. The study employs a secondary data collection method, gathering data from annual reports, and financial statements of various firms involved in M&As during the 3 years before and after the M&A event. The research sample consists of 43 M&A transactions that took place in 2019 and were listed on the Vietnam Stock Exchange. The results indicate that the ROA is likely to decrease significantly due to M&As; the ROE is also likely to experience a greater decline than the ROA post-M&A. In contrast, EPS may increase, while the impact of M&As on NPM remains inconclusive.

• *Keywords: mergers and acquisitions; financial performance; net profit margin; return on asset; return on equity; earning per share, Vietnam.*

1. Introduction

The primary objective of this study is to investigate and determine the impact of mergers and acquisitions (M&As) on the financial performance of Vietnamese firms that underwent M&A activities in 2019. Historically, the first M&A transaction in Vietnam took place in 1992 when Ha Tien Cement Joint Stock Company 1 acquired Ha Tien Cement Joint Stock Company 2. The transaction was valued at 100 billion VND, equivalent to approximately 5 million USD at current value. The purpose of this deal was to consolidate the resources of the two largest cement companies in Vietnam into a single corporation. The transaction was completed and contributed to the development of the cement industry in Vietnam. This M&A deal marked the beginning of a new trend in Vietnam's business landscape, namely mergers and acquisitions. Since then, M&A has become a popular form of business activity in Vietnam. The main rationale for acquiring a firm is to create shareholder value that exceeds the sum of the two separate entities. Hence, this premise primarily appeals to companies during times of economic hardship. Moreover, strong companies may acquire others to create a more competitive and efficient entity, hoping to capture a larger market share or achieve greater efficiency.

This study contributes to the existing body of knowledge on M&As in Vietnam. It also provides useful information for shareholders, investors, and businesses in utilizing M&A as a strategic tool to enhance operational efficiency. The study will further enrich the understanding of the impact of mergers and acquisitions on financial performance in the Vietnamese context, which will be valuable for researchers and scholars in the field.

2. Literature review

A substantial body of research has examined M&As and their impact on firm financial performance. However, the findings of these studies remain mixed, specifically:

2.1. Financial performance

Financial performance refers to the metric that measures how efficiently businesses use their assets from the core business operation to generate income. In the context of M&As, a company's financial performance is assessed by evaluating its liquidity, profitability, and solvency. Measuring a company's financial performance can involve using various variables. The primary variable employed in this study is Return on Assets (ROA), Return on Equity (ROE), Earning per Share (EPS), and Net Profit Margin (NPM).

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2.2. The effects of mergers & acquisitions on financial performance

Mergers & acquisition and return on assets

ROA is considered a key metric for measuring a firm's efficiency in utilizing its total assets under its control. It is calculated by dividing net operating income by the firm's total assets. According to Khrawish (2011), ROA is the ratio of a firm's earnings to its total assets and has a significant impact on a firm's profitability. ROA measures the efficiency with which acquired firms use their assets to generate profits. This variable is used to measure the financial performance of a particular firm; whether there is a significant improvement in the financial position of the firm after the M&As.

Mergers & acquisition and return on equity

To investors, ROE is considered the ultimate measure of financial performance. A firm with a high ROE is presumed to be capable of generating internal cash flows. According to Khrawish (2011), ROE is the ratio of net income after taxes to a firm's total equity. This variable reflects the firm's efficiency in managing shareholders' funds. Therefore, the higher the ROE, the more efficiently the management uses the shareholders' capital. The main drawback of this variable is that it is highly sensitive to changes in financial leverage. Pazarskis et al. (2006) argue that when mergers and acquisitions are undertaken, shareholder value between firms is enhanced. Therefore, the higher the ROE ratio, the more efficient the management is in using its value base, and the better the returns for shareholders. Mergers and acquisitions are a top-level factor in improving financial performance. If a particular firm has a high ROE, it indicates that the firm is capable of generating internal cash, and the higher the ROE, the better the firm is in terms of profitability.

Mergers & acquisition and earning per share

According to Black, Wright, and Davis (2011), EPS is considered the most powerful tool for measurement by investment analysts. Firms that retain EPS instead of paying dividends tend to have higher EPS over the years, helping to maintain the firm's capital structure without borrowing, leading to higher assets and EPS, and higher profits. Chatfield, Dalbor & Willie (2008) argue that a firm's shareholder value is strongly influenced by analyst estimates of the firm's future EPS. However, purely accounting treatment and the subsequent impact on EPS, whether positive or negative, after a merger or acquisition is irrelevant. Relevant examples from M&As where EPS can change without a clear impact on value are whether the transaction is accounted for as a purchase or a pooling of interests.

Mergers & acquisition and net profit margin

NPM is the profit earned after deducting interest and taxes from gross profit, in other words, the profit generated from all business activities. Therefore, according to Thomson (2011), an organization with a high and stable NPM indicates that the business has one or more competitive advantages over its rivals and also creates a 'buffer' for the business in case of a market downturn. Li and Pan (2013) imply that the value of the combined entity will increase when M&As are undertaken compared to standalone operations. They have an advantage in a competitive environment because firms with high margins can reduce prices, putting pressure on competitors. Moreover, another proposition is that mergers and acquisitions are often used as a strategy for financial preparation for low-profit startups. Besides, mergers and acquisitions will enhance the value and performance of a firm, and some scholars use NPM to assess profitability. NPM is used to determine the significant improvement in the financial position of the firm after M&As.

Based on the evidence of the impact of M&As on corporate financial performance, the authors propose a research model on the impact of M&As on the financial performance of Vietnamese enterprises (Figure 1). Financial performance is measured through four basic indicators: Return on Assets (ROA); Return on Equity (ROE); Earnings per Share (EPS); and Net Profit Margin (NPM). The proposed hypotheses are as follows:
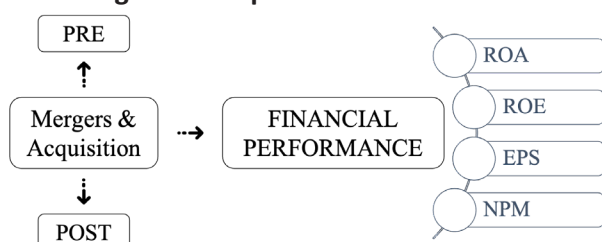
H1: The hypothesis that M&A has a significant impact on ROA is accepted.

H2: The hypothesis that M&A has a significant impact on ROE is accepted.

H3: The hypothesis that M&A has a significant impact on EPS is accepted.

H4: The hypothesis that M&A has a significant impact on NPM is rejected.

Figure 1. Proposed research model

Source: Authors own development

3. Methodology

3.1. Research design

This study employs a descriptive and explanatory research design to examine the impact of M&As on the financial performance of Vietnamese enterprises in 2019. The causal research design is appropriate for the research objectives and questions, which is to investigate the impact of M&As on firm financial performance as it pertains to ROA, ROE, EPS, and NPM. Furthermore, the data is accessed multiple times over time to address the research objective, hence the study utilizes longitudinal data. This method involves repeated measurement of the sample over time to enable tracking of progress and change. Therefore, cross-sectional methods are not necessary as they utilize data from different samples at each time point, whereas this method allows for the use of a sample for a time-series observation.

3.2. Data collection method

Secondary data collection methods were employed to gather information for this study, gathering data from annual reports of enterprises, and financial statements of different enterprises involved in M&As over 3 years before and after the M&A. While secondary data can be a helpful starting point for research question development, but upon closer inspection, may not be relevant to your research objectives. Therefore, we should be cautious in selecting secondary information sources and their legitimacy. This study's population consists of 43 M&As that took place in 2019 and are listed on the Vietnam Stock Exchange.

The sample size of the study is 43 companies, which were proportionally selected from the total number of companies listed on the stock exchange. Data was collected from the year before the merger (2016-2018) and the year after the merger (2020-

2022). The sampling method used in this study is the convenience sampling method, a type of non-probability sampling, which means that data that is readily available and can be collected is used. This method was used because the financial information of some companies after the merger is not easily available from their annual reports. Therefore, companies were selected based on the availability of their data for three years before and three years after the merger, which is necessary for the study.

3.3. Data analysis plans

In this study, data analysis was conducted using descriptive statistical methods, facilitated by the Python programming language. Descriptive statistics offer clear and accessible graphical and numerical summaries of information. To assess performance changes post-merger, a t-test was employed, comparing averages before and after mergers. Despite potential sample size limitations in merger studies, the t-test remains robust, providing reliable results and minimizing Type II errors. Utilizing Python in the Jupyter Notebook environment streamlined statistical analysis, enhancing efficiency and accessibility, particularly for researchers with basic skill sets.

4. Data analysis and findings

According to data from the Foreign Investment Agency (Ministry of Planning and Investment), the total number of M&As transactions in Vietnam in 2019 was 1,581 deals. The research dataset was compiled from the financial statements of enterprises and stock exchanges in Vietnam in 2019, with a sample of 43 representative enterprises listed on Vietnamese stock exchanges.

Figure 2. Industry of the studied enterprises
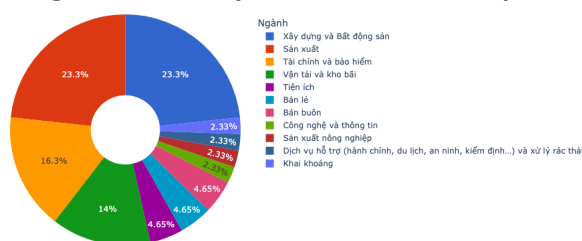
Source: Authors own development

4.1. Descriptive statistics

ROA: As shown in the table above, the first column indicates that the average pre-merger and acquisition ROA of the enterprises was 6.96 with a

standard deviation of 7.79, while the average post-merger value was 5.69 with a standard deviation of 6.48. This clearly shows a significant decrease of approximately 20% in the ROA of enterprises from before to after the merger and acquisition.

Table 1. Descriptive means

|		Mean	Std. Deviation	Std. Error Mean
Pair 1	Pre-ROA	6.96	7.79	0.69
	Post-ROA	5.69	6.48	0.57
Pair 2	Pre-ROE	16.21	15.19	1.34
	Post-ROE	13.36	17.68	1.56
Pair 3	Pre-EPS	2.49	2.36	0.21
	Post-EPS	2.68	2.87	0.25
Pair 4	Pre-NPM	12.04	19.69	1.73
	Post-NPM	13.47	21.92	1.93

Source: Authors own development

ROE: The table above shows that the average ROE of enterprises before M&A was 16.21, with a standard deviation of 15.19; while after M&A, the average value decreased to 13.36, with a standard deviation of 17.68. The ROE of enterprises decreased significantly from 16.21 to 13.36, equivalent to 21%.

EPS: As observed in the above table, the average EPS of the enterprises before the merger was 2.49, with a standard deviation of 2.36. After the M&A, the EPS increased to an average of 2.68, with a standard deviation of 2.87. This indicates that although the EPS of the enterprises was lower than before the M&A, it increased by about 7% after the M&A activities.

NPM: As shown in the table above, the average NPM of enterprises before M&A was 12.04, with a standard deviation of 19.69; after M&A, the average value increased to 13.47, with a standard deviation of 21.92. This indicates that the NPM value of enterprises changed insignificantly between pre- and post-M&A, increasing by about 10%.

4.2. Correlation analysis

Figure 3. Heatmap of financial performance criteria
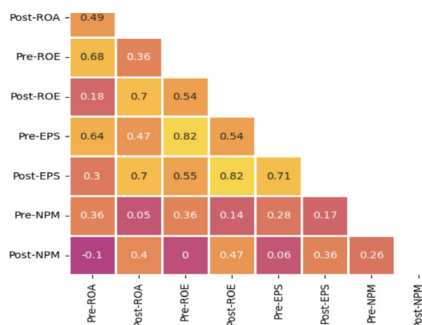
Source: Authors own development

The above chart shows that the paired correlation coefficient of the ROA variable before and after the merger is 0.49. This indicates that ROA has a fairly significant positive correlation with pre- and post-merger. This finding suggests that the assets of the enterprises may be over-utilized, not fully utilized, or the fixed costs of the enterprises are too high.

The pairwise correlation coefficient of the ROE before and after M&A is 0.54. This result indicates that ROE is positively correlated with before and after M&A, however, the magnitude of this relationship is not significant. This suggests that companies that have undergone M&A activities mainly rely on equity capital and have good business performance.

Furthermore, the paired correlation value of the average EPS before and after the merger was 0.71, indicating a very strong relationship. This result shows that EPS is positively correlated with the M&A variable and has a very significant relationship before and after the M&A. This finding is similar to the study by Khuram (2014), who found that EPS increased significantly after M&As due to the increase in Revenue and Net Profit of the companies.

The NPM was positively correlated with M&A activity, but the correlation was relatively weak with a value of 0.26. This could be because firms have invested a large amount of cash in their business operations or have reduced overall fixed costs. This finding is similar to the study by Akinbuli and Kelilume (2013), who found a positive and significant correlation for the NPM of firms.

4.3. Paired sample (T-Test)

Table 2. Paired samples T-Test

	Mean	SD	SE	95% Confidence Interval of the Difference		T	Sig. (2-tailed)
				Lower	Upper		
Pre-ROA - Post-ROA	6.323	7.183	0.447	-0.48	3.03	1.428	0.018
Pre-ROE - Post-ROE	14.788	16.515	1.028	-1.19	6.89	1.387	0.007
Pre-EPS - Post-EPS	2.581	2.625	0.163	-0.83	0.45	-0.580	0.056
Pre-NPM - Post-NPM	12.754	20.807	1.295	-6.55	3.67	-0.553	0.580

Source: Authors own development

M&A and ROA

Based on the above table, it can be seen that the mean value of the ROA ratio before and after M&A is 6.323, the t-value is 1.428, and the Sig. (2-tailed) value is 0.018, which is smaller than

the significance level of 0.05. This study provides evidence that M&A activities significantly influence the ROA of enterprises. This finding is similar to the studies of Ismail et al. (2009) who found that the ROA of merging firms in the Philippines significantly decreased after M&A.

M&A and ROE

Additionally, the mean value of the ROE ratio of enterprises before and after M&A is 14.788, the t-value is 1.387, and the Sig. (2-tailed) value is 0.007, which is significantly lower than the statistical significance level of 0.05. This result indicates that ROE has a very significant relationship with M&A activity. Some studies, such as Knapp et al. (2005), have found that the ROE of firms increases after M&A because they consider the cost of operations and effective management of other related costs.

M&A and EPS

Based on the above table, the standardized mean of the EPS variable is recorded at 2.581 with a T-value of -0.580 and a p-value of 0.056, slightly higher than the statistical significance level of 0.05. This result suggests that EPS has a relationship with M&A activity, although it is not significant. Studies by Ahmed and Ahmed (2014) show similar results regarding the increase in EPS after M&A.

M&A and NPM

Additionally, the NPM before and after M&A has a mean value of 12.754, a t-value of -0.553, and a relatively large Sig. (2-tailed) value of 0.580, which is much larger than the statistical significance level of 0.05. This conclusion shows that the NPM of enterprises has almost no relationship with M&A activities. In a similar study, Nangja and Agrawal (2013) concluded that the NPM of firms significantly increased after M&A. However, in contrast, Liargovas and Repousis (2011) came to the opposite conclusion, suggesting that the net profit margin could decrease.

5. Conclusion and recommendation

5.1. Conclusion

H1: The hypothesis that M&A has a significant impact on ROA is accepted

The ROA is significantly likely to decrease due to the merger, with a probability of 0.018. This is considered statistically significant as it is lower than the conventional significance level of 0.05. The descriptive statistics table shows that ROA significantly decreased after the merger, from an average of 6.96 to 5.69. There are several reasons for this. The first is operating cost control: Merged companies often maintain cost control after the merger to leverage existing resources, leading to stagnant revenue growth. Second, discretionary income adjustments: The widespread use of pre-merger income adjustments can artificially increase pre-merger ROA, causing a sharper decline in post-merger ROA. Third, market and economic effects: External factors such as market volatility and Vietnam's economic growth can also affect corporate profits, contributing to the decline in ROA.

H2: The hypothesis that M&A has a significant impact on ROE is accepted

The probability value of the ROE of the enterprises is 0.007, indicating a high significance for the merger. However, the descriptive table shows that the ROE of the enterprises significantly decreased after the merger, from 16.21 to 13.36, representing a decrease of 21%. Nevertheless, Vietnamese enterprises still consolidate profits and expand operating costs after mergers. The high ROE value could be due to enterprises accumulating larger reserves, protecting shareholder value, and improving fund management. Khrawish (2011) concluded that the ROE of firms decreases after acquiring other firms. This decrease is even greater than the decrease in ROA. This can be explained by several factors, including an increase in equity: M&A often leads to an increase in the company's equity, such as through the issuance of new shares to finance the M&A transaction, increased equity will reduce ROE; A Decrease in profits: The decrease in ROA can also lead to a decrease in ROE.

H3: The hypothesis that M&A has a significant impact on EPS is accepted

The probability value of EPS is 0.056, indicating a relatively weak relationship with mergers and acquisitions, but the descriptive table shows that EPS increased by 7% after the merger. This increase could be due to several factors, such as: share buyback programs: Founders sell shares, reducing the number of shares outstanding, leading

to an increase in earnings per share; Increased revenue after the merger: Higher revenue leads to increased operating profit and hence increased EPS; Investment in new projects: After the merger, companies can invest in new projects, which bring new revenue streams and increase EPS. Ahmed and Ahmed's (2014) study of US companies found that shareholder EPS increased significantly after mergers, which is consistent with the results observed here.

H4: The hypothesis that M&A has a significant impact on NPM is rejected

The probability value of the NPM of the enterprises is 0.58, which is higher than the conventional significance level of 0.05. This is similar to the findings of Dang Thi Thu Hien's study (2018), which showed that M&A had no significant impact on the NPM of listed companies on the Ho Chi Minh City Stock Exchange from 2010 to 2017. Similarly, Le Thi Tuyet Minh's study (2020) found that M&A positively impacted the NPM of listed companies on the Hanoi Stock Exchange from 2011 to 2019, but this impact was not significant.

5.2. Recommendations

This study presents a comprehensive analysis of the impact of M&A on the financial performance of Vietnamese enterprises in 2019. By meticulously examining key financial indicators such as ROA, ROE, EPS, and NPM, it provides valuable insights into the dynamics of M&A transactions in the Vietnamese business landscape.

The findings underscore the significance of clear strategic objectives in driving successful M&A initiatives. Enterprises are urged to articulate precise goals, whether it be to expand market share, enhance operational efficiency, or access new technologies. Such clarity in objectives facilitates informed decision-making and ensures alignment between M&A activities and broader corporate strategies.

Moreover, the study emphasizes the criticality of partner selection in the M&A process. Enterprises must meticulously evaluate potential partners to ascertain compatibility in terms of strategic goals, organizational culture, and resource synergies. Strategic alignment between merging entities lays the groundwork for successful integration and value creation post-merger.

Additionally, the study underscores the importance of diligent preparation to address the financial and human resource challenges inherent in M&A transactions. Enterprises must engage in thorough financial planning to secure adequate resources for the transaction while simultaneously preparing the workforce for the demands of integration. Seamless integration of systems, processes, and corporate cultures is imperative to realize the full potential of M&A transactions and drive sustainable growth.

In conclusion, while M&A activities offer significant opportunities for Vietnamese enterprises seeking growth and competitiveness, their success hinges upon meticulous planning, strategic partner selection, and effective integration strategies. By adhering to the recommendations outlined in this study, enterprises can navigate the complexities of M&A transactions with confidence and unlock the full value-creation potential of strategic mergers and acquisitions.

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TECHNOLOGY INNOVATION OF ENTERPRISES FOR GREEN ECONOMIC GROWTH IN VIETNAM

PhD. Nguyen Xuan Dien*

Abstract: *Green economic growth is the essential condition for a sustainable development. In order to play their role in the green economic growth, Vietnamese enterprises have to implement a complex package of solutions and measurements, including the technological innovation, because almost tasks enabling the transformation from traditional economy to green one could be solved by technical and technological solutions. Currently, the technological capacity of Vietnamese enterprises is generally weak, their technological innovation should be urgently strengthened. For that purpose, Vietnamese enterprises need a reasonable strategies, appropriate resources, especially human and financial ones, rational organisational arrangement and good, efficient interactions with their domestic and international partners. Implementing this task is extremely complicated and difficult, because the technological innovation should be practiced while their production should be run at the same time and the quality should be maintained in accordance with customers' requirements. Under those conditions, Vietnamese enterprises need supports from the Government as well as the whole business community of the country in the right scope, appropriate forms at right time.*

• Keywords: *green growth, technology innovation, enterprise, green economy*

Introduction

In the economic literature and practice, there are different terminologies related to the topic of green economic growth, especially 3 categories: the green growth, green development, green economy and sustainable development. Some other terminologies are usually used in this context, such as the circular economy, environment friendly economy, environment friendly economical development, etc. These terminologies deal with a same content: they describe and analyse the relationships between the economic development as well economic activities/ processes with the environment and try to keep a balance between these two- the economic development and protection as well as maintenance of the healthy environment for the current and future generations. A development model with pillars was constructed for this strategy: The green production (with the aim to reduce the wastes from the production, to reduce the consumption of inputs per unit of goods and service and to replace the traditional inputs by environment friendly, renewable inputs), the green consumption (to rationally, effectively and efficiently use/ consume of goods and services, to reduce wastes from consumption of goods and services) and the maximal processing wastes from production processes as well as from consumption as well as correct environment damages from natural disasters.

For constructing and improving the steadivity of these pillars, technological innovation as a crosscutting factor plays an important role, influencing the green economic development/ growth in its whole cycle, from its establishment, its ongoing enrollment and its stabilisation. This paper tries to clarify the context mentioned above in Vietnam and possible solutions to strengthen the technological innovation and application in order to meet the target, a sustainable socio- economic development of Vietnam in the future.

Method

The contribution is completed on the basis of an integration of commonly used methods and approaches:

- Secondary literature review. Literatures reviewed are monographs, publications on journals, magazines, reports of research groups or individual researchers, reports of government agencies, papers on newspapers on the topics of urbanisation and green economic growth, green economy and related issues, especially the transformation from the traditional economy to a green one.

- Direct individual interview with 1) enterprises managers, who a responsible for technological management and technology innovation; 2) officials of the MPI, MONRE, MOIT, MOF, VCCI; 3) scientists and researchers, who has solid understanding on issues of green economic growth, green economy

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and transformation process form traditional to green economic model.

- Expert group discussion. Selected enterprises managers and officials, who were interviewed before, were invited to a round table discussion, on which findings were presented in order to get feedback and recommendation for the paper finalisation.

Results

Reviewing the literature to date, Kasztelan definite the green growth as a economic development, which ensure "that natural assets continue to provide the resources and environmental services which contribute to the country's prosperity" and "underpin sustainable development". Ways to achieve the objective mentioned above consist of:

- Efficient use of natural resources ("use less, get more"), which led to reducing negative impact on the environment through reducing the mining industry, which may destroy the natural environment or led to deformating the earth surface;

- Improvement of the product design and technologies so that the production could cut down the production wastes;

- Change the consumption so that environment friendly goods and services could be consumed and less consumption wastes would be put into the environment;

- Processing production and consumption wastes, so that they could not harm the natural environment.

The logics of these relations could be explained by the production function model, which described the national output (P) generally as a function of a "total productivity factor" (b) and national labourforce (L) as well as the nationally used amount of capital (C), in which the total productivity factor depend on the way of combining L and C and the efficiency of using L (quantitative L's impact on P) is identified by a coefficient α and the efficiency of using C by 1- α. It means then:

$P = b * L^{\alpha} * C^{1-\alpha}$, which is later continuously modified to $P = b * L^{\alpha} * C^{\beta}$

in which α + β is not equal 1 any more.

The economic growth could be described as:

$$\partial P = \partial b + \alpha * \partial L + \beta * \partial C$$

If resource use efficiency is improved, the sum α + β will be > 1, meaning the economic growth (∂P) in the new development model will be higher than that one in the traditional model. The improvement of the product design and the improvement of technology

affects the scope of b and the increase of ∂b means also an adequate increase of ∂P.

The impact of the consumption on the economic growth could be explained according to other side of the GDP (P), which could be descried as a sum of private consumption (C), total national investment (I), Government spending/ expenditures (G) and net export (NE)

$$P = C + I + G + NE$$

The GDP growth is:

$$\partial P = \partial(C + I + G + NE)$$

The maximisation of the consumption benefits in the new economic model (green economy) equals an increase of C in the traditional economic model.

The role of wastes processing could be explained by the relation of a nominal and real wealth fare (W^N and W^R) growth in a period, which are different by the wealth fare loss caused by the environment damages (W^L) in that period:

$$W^R = W^N - W^L$$

Similarly, the real GDP (P) is, in fact, the difference between the nominal GDP (P^N) and the costs for the recovery of environment damages caused by cumulative wastes from the production and consumption in the actual and previous period (K^R):

$$P = P^N - K^R$$

In that relation, K^R depends on the amount of wastes occurred and the amount of wastes processed in each period as well as the time difference between the time of wastes occurring and the time of wastes being processed. Theoretical studies and practical researches clarified that the longer a waste amount being unprocessed, the higher the costs for processing it and for recovering damages caused by that waste amount.

Among solutions and tools for solving problems mentioned at the begin of this session, technology applied and technological innovation plays a very important role. Observing and analysing the development in developed and highly developing countries, Hultman et al mentioned that "clean technology innovation has remained concentrated in higher- income countries, though the direction of device transfer is shifting away slowly from its historic North- South directional flow".

Technology and its innovation doesn't only play important role in reducing wastes, the source for actual environment pollution as well as environment damages in the future, but also for recovering damages

and negative impacts of previous hazards wastes and environment pollution. In addition, technological progress and technology innovation could help to recognise and identify potential pollutions and their sources, their consequences for living substances and the nature, to quantify the threats and scope of their impacts. On the other hand, technologies and their innovation/ application could contribute the decisive role in replacing traditional scare, expensive and hazardous natural resources by cheaper, hazardless and easily accessed available resources, etc. This is also a question of the development sustainability. Sun et al considered technology as the tool to ensures the balance between environment sustainability and economic growth. Traditional technologies will be replaced increasing ly in next decades.

A technology is understood as a combination between hardwares (machines, equipments, tools, etc.), factor inputs (materials and etc.) software and "organisational ware", or in other words as a combination of "manufactured objects like tools (axes, arrowheads, and their modern equivalents) and containers (pots, water reservoirs, buildings)" either to enhance human capabilities (e.g., with a hammer you can apply a stronger force to an object) or to enable humans to perform tasks they could not perform otherwise".

Impacts of technologies and technological innovation on the green growth could be reflected and measured by concrete indicators, such as the reduced amount of hazards wastes achieved by the use this technology, the amount of resources, especially scare resources, used really to produce a certain amount of products/ services (usually per goods/ service unit). The sum of the same indicator of a line of technologies or technologies of a sector, a branch or on a region reflects the impact of this technology line or that technologies of the sector/ branch on the aspect, which is characterised by the indicator. Clarifying impacts of a technology or a technology group demonstrates its/ their quantitative analysis/ assessment. In the qualitative way of technology and its impact analysis/ assessment, indicators like percentage of technologies innovated/ updated, percentage of modern technologies on total technology used by a sector/ branch or on a region will be addressed and compared.

Actually, developed countries, such as the US, Germany, Japan, France, Korea and other OECD countries are major suppliers on the green technology markets. Their market share was around 90% in 2020, estimately. Emerging economies, s such as China, India, Austria and Brazil, are playing an increasing role in developing, innovating, transferring and applying green technologies in the previous years.

Discussion

In Vietnam, the Government issued the National Strategy on Green Growth since 2021, aiming to strengthen the restructure of the national economy in the direction of sustainable development, to innovate the development model in order to ensure an economic wealth fare and environment sustainability and social equality. Among solutions and measurements for achieving the target, the Government of Vietnam clarified prioritised areas and sectors, including:

- Energy (improving the efficiency of energy consumption, ensuring the national energy balance by ultilising all energy sources and replacing mineral by renewable energy);

- Agriculture (developing the green, clean, organic, modern, sustainable agriculture and applying efficient technologies on the area of processing agricultural products);

- Environment friendly sectoral development (encouraging the development of sectors/ subsectors, which consumes less resources, produced less environment harming wastes, process more wastes and reuse, recycle more consumed products);

- Strengthening the smart, sustainable urbanisation, which enable to adapt with the climate change;

- Development of modern, sustainable rural area, which enable living styles could be harmonised with thee nature and modern living standards;

- Improving the capability of the wastes management and air quality management as well as managing water and land resources and biodiversification;

- Strengthening the green consumption and green procurement;

- Strengthening the green transformation.

The result of the development and application of green technologies differed among economic sectors. Reviewing plans for realising the National Strategy for green growth, Ho Thuy Ngoc/ Nguyen Tu Anh indicated "Green technologies are primarily used in only six areas: construction, transportation, agriculture, industry, energy and waste treatment. 41% of the green technologies used in waste treatment are for filtration, clean water supply, and waste collection from production, medical facilities and residential use. Most of the green patents in energy

are devoted to the production of electricity using solar and wind energy. R&D activities in construction, transportation and agriculture are not fully invested despite their important role in the process of greening the economy".

To date, the energy is the main source of CO_2 emission in Vietnam. In 2010, the energy sector provided 63% total amount of green house gas of Vietnam. In 2020, the figure increased to 67.7% and expected to be 73.1% in 2030. Therefore, Vietnam's energy sector was restructured strongly in the last years. The share of renewable energy on total electricity output increased from 1.9% in 2010 to 7% in 2022. The share of coal on energy output increased, too, but their technologies are improved in many aspects. The percentage of hydro electricity went down continuously, from 37.1% in 2010 to 20% in 2022 (table 1). Up to the 8/ 2020, 102 solar energy projects with a capacity of 6,314 MWp completed their construction works and started to operate commercially. In 5/ 2021, operators of 130 wind energy projects signed commercial contract with EVN to put their electricity on the grid.

Table 1: Share of Vietnam's electricity output by source between 2010 and 2022 (%)

	Hydro	Coal	Oil	Gas	Renewable	Solar	Wind	Import
2010	37.1	20.6	35.8		1.9			4.7
2015	33.2	28.2	30.6					
2020	28.5	30.2	26.7					5.8
2022	20	45	22	6		5	2	

Source: R. Ramsawak, R. Baulch and Dai Viet Securities Company

Parallelly to restructuring of the energy sector, Vietnam urged energy consumers to use this resource more efficiently and save it as much as possible. In the period 2011- 2015, activities in this direction helped to save 5.65% of total energy consumption (equivalent with 11.25 million tones of oil). "Big energy consumers" are top energy savers: steel production saved 8.09%; textile industry saved 7.32%, cement industry 6.33%.

Another focus sector, of which technologies should be improved with the support of the green technologies, is the transportation, which produced a large amount of glass house gas by an increasing amount of private transport means. The transport sector is the source of around 70% of air pollution in cities of Vietnam. The technological innovation in the sector focuses on 1) replacing transportation means operating on mineral energy basis by environment friendly, especially electric, ones; 2) application of new, more capable IT and digital technologies

in transport management and regulation and 3) rationalising the territorial structure in order to reduce city internal transportation needs of citizen. At the end of 2023, 13.6% of public transport means (public bus, in particular) were electric; the City plans to continue this transformation process with annual rate of around 6% in the period 2025- 2030 and 8% between 2031- 2035. In Ho Chi Minh City, at the begin of 2024, around 30% of total bus of Saigon Bus, the city internal public transport company of the City, use the CNG (compressed natural gas). Between 2022 and 2023, The City replaced 15 bus and around 600 taxi cars by electric ones.

The implication of green urbanisation policies is focusing currently on following issues:

- Designing and developing new green city projects as well as restructuring existing cities into the model of green city. In 4/ 2020, 150 urban housing projects were recognised as "green urban housing complex", but no city is recognised as a green city as a whole. On the other hand, these green urban complex usually fulfil 2 criteria of a green city: the green space and green construction/ building. Technology innovation on this field included technologies supporting the urban design, construction technologies, construction materials research and production, technologies for processing construction wastes, etc.

- Reducing the urban wastes emission (including waste water, solid wastes and dust in the air) from all sources (industrial and agricultural production, wastes of urban living) and strengthening the wastes processing.

- Reorganisation and improving the internal urban transportation to reduce CO_2 emission. Vietnam's cities, especially big cities like Hanoi and Ho Chi Minh City, spent lots of efforts to set up and expand their public transportation, including replacing the traditional bus by electric bus and other environment friendly transportation means.

Agricultural technologies and their application are the next topic of technological innovation for the green growth in Vietnam. The green technology in the agriculture is not only important for a green economy, but also for the social development and sustainability, either for rural, but also for urban regions. Concretely, the application of green technologies in the agriculture aims currently on 1) providing organic agricultural products for the market (including for consumers as well as for further industrial processing); 2) improving the efficiency of the agricultural production; 3) replacing manual

agricultural works by machines; 4) maximising benefits from usage of natural resources, especially the land and natural water) and finally, 5) contributing to implement the commitment of the Government of Vietnam on the sustainable development (i.e. reducing the CO2 emission, ensuring an environment friendly economic development, etc.). For achieving these objectives, a series of complex solutions are launched, such as: 1) launching the circular economy and expanding the production chain in the agriculture (processing by- products from rice, cassava, corn, vegetables production to animals' foods or basic prices can for growing beneficial insects, worms, etc., processing by- products of agricultural products to organic fertilizers, processing animal manures and straws/ fresh grass to biogas, etc.); 2) replacing chemical fertilizers by organic ones; 3) mechanising and automatising the agricultural production and agricultural product processing process; 4) rationalising cultivation regimes in order to ensure the biodiversification in each agriculturally cultivated land; 5) researching and developing new kinds of plants and animal varieties and 6) applicating information technologies in monitoring and managing agricultural production and business.

Results of such solutions are: The area of organically cultivated land area increased from 77,000 ha in 2016 to 240,000 ha in 2022. In that year (2022), nearly 20,000 farmers in 46 (out of 63) provinces/ cities of Vietnam cultivated in green agricultural model; 34 high tech agriculture zones were clarified and approved by authorised agencies; export of Vietnam's green agricultural products (in nearly 180 countries and territorial regions) achieved a value of USD 335 million. At the end of 2023, there were 2,204 collectives (in comparison with 1,700 in 2020), 517 collective groups, 1,091 enterprises and 186,829 farmers practising the green agriculture. Technological progress contributed more than 30% of value added of the agriculture, 38% of value added in the plant and animal varieties. Moreover, 2146 green agricultural projects with an investment amount of VND 11,440 billion were for the next period approved.

Conclusions and recommendations

The technological innovation and applying new, advanced technologies are surly one of main success factors for ensuring the green growth in Vietnam in coming decades. In the last years, Vietnam spent lots of efforts for the modernisation and innovation of technologies in key sectors/ areas of the green economy. Either the Government of Vietnam or Vietnam's enterprises invested lots of money as well as other resources for developing new technologies, receiving and adapting transferred technologies. Green technologies are preferred objects in economic development projects. Such green technologies in the country need to be developed, received, adapted and applied in following focus directions:

- Producing and consuming green products.

- Producing and consuming renewable energy.

- Developing and using new environment friendly materials.

- Recycling and reuse of products.

The technological innovation is a major solution and a major direction of Government's interaction to put the transformation of the traditional to green economy and to ensure the green growth of Vietnam's economy ahead. However, the interruption of the Government of Vietnam could not replace efforts of business community as well as country's citizen. Therefore, technological capacity of business entities should be key the target object with highest priority for all supporting activities and investments of the Government of Vietnam as well as international organisations/ agencies.

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SOLUTIONS TO RESTRICTING LABOR IN THE INFORMAL EMPLOYMENT IN SOME COUNTRIES AND LESSONS FOR VIETNAM

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Abstract: *In Vietnam, the number of informal workers accounts for nearly 69% of the total number of employed workers. The rate of informal workers in Vietnam is lower than that of some countries in the region such as Cambodia, Indonesia, and Myanmar; However, it is still higher than many countries in the world. Although the informal labor exists objectively in the economy, it is sometimes the platform of the labor market when the economy is in crisis. Nevertheless, a developed and sustainable economy cannot rely on a labor market with a high percentage of informal workers. Therefore, Vietnam as well as other countries have been seeking to minimize the proportion of informal workers participating in the labor market. The article in the research framework of the state-level scientific topic with the topic: "The impact of the Covid-19 pandemic on Vietnam's socio-economic development: current situation, issues raised and policy recommendations", has examined the experiences of some countries such as China, India, Australia, Brazil, Colombia and the European Union that have been quite successful in reducing the proportion of informal workers and drawn three lessons for Vietnam: Improving the system of legal documents related to social security and welfare policies for disadvantaged workers in the market; Ensuring macroeconomic stability, minimizing the impact of crises on informal workers; Having policies to support small, medium and micro enterprises.*

• Keywords: *informal workers, minimizing the proportion of informal workers, workers with informal jobs.*

1. Informal workers

Workers with informal jobs (also known as informal workers) are: *"people who work in jobs that are not stipulated by law or in fact are not protected by labor law, do not pay income tax or are not entitled to social protection regimes and other employment regimes (such as not being notified in advance of dismissal, not being entitled to severance pay, not being paid annual salary or not being entitled to leave when sick, etc."* (General Statistics Office, 2022). In order to determine which workers are classified as informal workers, it is, in Vietnam, based on some of the following criteria: (1) the characteristics of the establishment, where the workers work in the formal sector or the informal sector or the household sector; (2) the employment position of the workers; (3) the type of labor contract that the workers sign or agree with the employers, the status of whether or not the workers are covered by the employer's social insurance.

2. Experience of some countries in the world

2.1. China's experience

* Overview of the economy and labor

The growth model that based on export and investment incentive policies implemented since the late 1970s of the twentieth century has made China the second largest economy in the world. With a 40-year period from 1979 to 2017, the average gross domestic product (GDP) growth rate was about 10% (The World & Vietnam Report, 2020). Urbanization was considered the foundation and driver of economic growth and policy, which has created jobs for 60 million workers in urban areas and 55.75 million people out of poverty. By 2020, 1.3 billion people in the country were entitled to basic health insurance and nearly 1 billion people received basic retirement benefits (The World & Vietnam Report, 2020).

In recent years, China has been facing difficulties in the country such as natural disasters, floods, piling up epidemics...; With international relations, China has also been coping with many challenges such as: The epidemics are complicated around the world; US-China trade war with unpredictable consequences and unstable regional security due to military activities of

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China and some countries in the East Sea and some other territorial areas (Truong Luu, 2020). Despite the impact of the epidemic, in 2020, China's GDP still increased at 2.3%, confirming that China was the only major economy in the world with a positive growth rate in the year (Kieu Oanh, 2021).

* Workers with informal jobs

To date, there are no official statistics on China's informal employment or informal economy, nor did the Chinese Government acknowledge the existence of informality (Liang et al., 2016; Nair, 2020). However, some studies, based on employment survey numbers, have pointed out the characteristics of workers in informal employment. Most of them believe that workers who work in the informal economy are workers with informal jobs. In China, it is required that businesses with seven or more employees have to register with the Government; businesses with fewer than seven employees are identified as part of the informal sector. In addition, the concept of informal employment in China is also for those who work in state agencies but are not allowed to sign labor contracts, not entitled to insurance, not entitled to free health services and no pension (Liang et al., 2016).

According to the 2008 Labor Contract Law of China; workers in urban areas are classified into three categories: (1) salaried workers with labor contracts or formal employees, (2) salaried workers without labor contracts, or self-employed workers, (3) business, service and self-employed workers with business owners or business owners. Formality and informality are classified based on the statutory contracting status, which specifies: the employer is responsible for signing the contract and paying social insurance for employees with a contract of two years or more.

According to Liang et al. (2016), in 2007, up to 35% of urban workers were informal employed workers (24% were freelance workers and 11% were business owners). In 2013, informal employment increased to 57% (42% are freelancers and 15% are business owners). The social insurance participation rate of workers with informal employment has little access to social insurance, pensions, unemployment insurance, occupational disability insurance and housing funds.

* Experience of restricting laborers to have informal jobs

First, expand social protection for workers with informal employment. In Beijing, the Hong Yan social work service center (GFCD, 2019) supported training for informal workers. Due to the strong impact of the Covid-19 pandemic, China has announced a welfare package for the poor affected by the epidemic for migrant workers; However, this program only meets the majority of affected workers (Phuc Long, 2020).

Secondly, perfecting the system of social policies for short-term seasonal workers in industrial parks and free workers. Some policies are concerned such as tax and salary policies. Promulgating policies to improve the capacity to develop documents and plans; policies at all levels from the central to local levels related to workers with informal jobs, marginalized workers and at risk of becoming workers with informal jobs so that there is a policy of support and contingency, in order to prevent the occurrence of social problems, economic problems or political problems caused by this type of labor.

Thirdly, it is required that enterprises strictly implement the Labor Contract Law. **The Labor Contract Law was passed by the 10th** National Congress of the People's Democratic Republic of China on June 29, 2007 and came into effect on January 1, 2008. This law overcomes the limitations of labor law enforcement in China (Freeman & Li, 2013): it requires businesses to enter into a written contract with workers so that workers can establish their legal rights in the workplace. The absence of a written labor contract makes it difficult for employees to access support from the management agency on statutory benefits such as health insurance, disability insurance, unemployment insurance, and old age insurance.

The main content of the labor contract (Akee et al., 2018) includes

(1) Enterprises must sign a written labor contract with each new employee within one month of recruitment, for example whether or not they have a local household registration.

(2) Enterprises that do not meet the requirements of the labor contract are obliged to compensate each employee with a maximum amount equal to twice their salary in the previous 12 months.

(3) Employees who do not have a written contract for more than one year will be automatically converted to an indefinite term labor contract.

(4) The labor contract must clearly state whether the labor term is temporary or indefinite; the content and place of work; working time, holidays, salary regime, allowances, social security contributions, workplace conditions and conditions related to occupational risks in the labor process.

(5) The labor contract must detail the rights of the employee and ensure a clear legal level for the employee.

(6) The law prohibits enterprises from dismissing employees arbitrarily and only allowed to terminate the labor contract in accordance with the provisions of the law in certain specific cases specified in the law.

(7) Employees who have worked with the enterprise for at least one year are entitled to 5 days of paid leave and if working with the enterprise for at least 10 years or more are entitled to 10 days of paid leave.

(8) If the enterprise fires the employee, the employee with an indefinite or long-term contract will be the last person to be fired. Enterprises that do not sign an indefinite labor contract with people working for 10 years or more will be prosecuted according to the law.

(9) If there is a dispute over wages or working conditions, the employer and the employee may negotiate with each other. If the negotiation fails, the relevant provisions in the collective contract shall prevail; In case there is no collective contract or no provisions in the collective contract on this issue, the principle of equal pay for equal work shall apply or the relevant State regulations shall apply. However, due to the invalidity or partial invalidity of the contract in the contract dispute, the decision shall be resolved according to the decision of the labor dispute arbitration organization or the People's Court.

The results show that the Law has helped the rate of employees and insurance participation rate increase (Freeman & Li, 2013). The law has given workers with labor contracts access to increase health insurance, unemployment insurance, disability insurance and old age insurance; increased formal employment and reduced informal employment in China's labor market.

2.2. India's experience

* Overview of the economy and labor

India is a country in the top G20 countries with developed economies. This is a country with an open market. In 2022, GDP reached 3.5 trillion USD, after the US (25 trillion USD), China (18.3 trillion USD), Japan (4.3 trillion USD and Germany (4 trillion USD). However, with a large population, India's GDP per capita is only 2,683 USD (IMF, 2022). During the pandemic, the first quarter of the fiscal year (2020-2021) from April to June (note the Indian fiscal year regulated from April 1 to March 31 of the following

year) decreased by 23.9% compared to the same period last year, and this is the lowest decrease since 1996. The economic downturn pushed workers to lose their jobs, without social insurance, increasing the country's informal workers.

The informal economy in India accounts for 70% of all employment. In 2005, the proportion of informal workers accounted for 86%, in 2018 this number decreased to 50%. Thus, it can be affirmed that workers with informal jobs play an important role in creating jobs and ensuring social security for workers.

* Experience of restricting laborers to have informal jobs

First, the use of enhanced monetary and financial policies to promote economic development. Reform of economic structure, labor structure, income support for rural farmers. Reduce input prices for production, especially oil prices; raise the price of the rupee in order to reduce inflationary pressure and reduce the current balance deficit.

Second, improve the legal system to protect the rights and interests of employees. Since workers in informal employment are not entitled to any benefits in employment and social security benefits from the employer; Therefore, it is necessary to establish an integrated strategy to deal with these injustices in order to protect the legitimate rights and interests of workers.

Third, strengthen the management of informal workers and help them find jobs. The subregional office in New Delhi and the Social Dialogue, Labour Law and Administrative Labour Office (DIALOGUE) established in 2004-2005; helped to show how to manage informal workers and help them to find suitable jobs, can intervene in some contents while workers have their rights violated at work (ILO, 2005). India's inequality relationship has been exposed, as the pandemic has passed. The ILO estimates that about 400 million workers could be plunged into poverty in countries earning less than $2 a day. Thus, the increasing informal economy leads to an increase in the number of workers working in this sector (Bach, H. 2020).

2.3. Australian experience

* Overview of economy and labor

Australia is a country with a developed economy in the East Asia and Pacific region, in 2020, GDP per person reached 58,020 USD (Calculated at 2015 prices) is the 11th country in the world according to this

criterion and it has been a member of the OECD since 1971. Australia was also a major immigrant country with an estimated nearly 7 million immigrants in 2015, accounting for over 28% of the total population. Labor mainly operates in the service industry, this rate always reaches over 70% in the period 1991-2019, industrial workers decreased from 24% (1991) to less than 19% (2019). The unemployment rate is quite high: 5.2% (2019) and 6.5% in 2020 (WB, 2021).

* Informal employment

There are no reported figures for informal employment in Australia. However, the data can be found through a number of studies in the construction sector (Shik & partner 2009) and workers in the garment sector are mainly immigrants from Vietnam and Cambodia (Bertulfo et al., 2019); home workers account for about 40% of total workers in the textile, clothing and footwear sector (Rawing et al., 2014).

* Experience of restricting laborers to have informal jobs

Firstly, perfecting the law on employee protection. Australia has introduced the *Supply Chain Management Law,* in 1987, Australia has extended the regulation to work from home for both textile, clothing and footwear. This provision allows workers working from home to enjoy the same labor rights as workers in the textile sector in terms of: minimum wage, overtime, paid leave, maternity leave and other benefits.

Secondly, Regulations on standards of practice for retail businesses. As some production and business organizations try to circumvent supply chain management laws by allowing registered workers to do so on their own, they are not entitled to workers' rights. Therefore, some states have issued a set of standards of practice for retail businesses. For example, the state of New South Wales promulgates a program to strengthen ethical responsibility in the field of apparel; The regulation is mandatory and applies to both contractors, suppliers and contractors in the supply chain; This regulation applies to clothing retail businesses in the state but subcontracts production in any location in Australia, including foreign companies.

Some of the main contents of the regulations that retail businesses must implement are:

Before entering into a supplier contract, the retail business must ascertain whether the supplier or its subcontractors are contracted to work with workers who work from home.

Retail businesses are required to provide the name and address of each contractor and of each worker who works from home when using them.

The retailer must provide the Government and the Branch Office of the New South Wales Australia Textile, Clothing and Footwear Association with information on: the names and addresses of all suppliers and whether or not home-based workers are involved in the supply chain.

If a home-based worker is found to be involved in a supply chain on terms lower than required by law, the retailer has a responsibility to report it to the government or the state union.

2.4. Brazil's experience

* Overview of the economy and labor

A Latin American country with a population of about 213 million (2020) and high average income (in the period 1980-2021, GDP per person increased by 27.8% while the overall world average was 78%) with USD 7,507 in 2021. Brazil's total GDP in 2022 was over 1,787 billion USD, mainly due to the contribution of the service industry accounting for over 70%, followed by the industry accounting for over 20% (in 1980 the service industry accounted for 70% and the industry accounted for 26%, in 2019 the proportion of industries were 73% and 21%, respectively).

Regarding to labor: in the period from 1991-2019, the proportion of service workers increased from 57% to 71%, the industry decreased from 23% to 20%; the agricultural sector decreased from 19% to 9%. The national unemployment rate of about 10% increases to 15% in 2020 due to the impact of the covid-19 pandemic (ILO, 2021).

* Informal employment

According to ILO estimates, in 2020, the proportion of informal workers in Brazil is about 46% (39.6 million workers); according to gender, this rate in women is 46.9% and in men is 45.8%; according to the age network, over 65 years old is 66.8%, from 55-64 years old is 55.6%, from 25-54 years old is 43.5% and from 15 to 24 is 49.1%; by job position: self-employed workers account for 76.1% and manufacturers are 17.2%, while for wage earners, it is only about 35%; By labor sector: the proportion of informal workers working in the agricultural sector is 75.1%, construction is 66.5% and public administration, community, social and other services and activities is about 59%. Considered in absolute numbers: Brazil's informal employment in 2020 is

estimated at about 20 million wage workers, 17 million self-employed workers and 0.7 million workers who are business owners and 1.8 million family workers. By industry: public administration, community, social and other services and activities 14.6 million workers, trade, transportation, accommodation, catering and business administration services 11.9 million workers and agriculture 6.1 workers (ILO, 2021).

* Experience of restricting laborers to have informal jobs

The Brazil Government has implemented a number of programs to support micro, small and medium enterprises through bidding policies to improve bidding access in public procurement in order to support MSMEs (Micro, Small and Medium Entrepreneurs) to benefit from public funding in public procurement and encourage enterprises to participate in ComprasNet online information, thereby increasing formal employment contracts of this type of enterprise, reducing informal employment.

MSMEs must be formalized to participate in public procurement, Enterprises register through the portal (Portal do Empreendedor), thereby updating data, submitting declarations, paying taxes and issuing certificates. After registration, MSME entrepreneurs will receive official certification and temporary license to operate (valid for 6 months), based on the enterprise's application for evaluation and licensing of operations (Commandeur, 2021).

According to Dawar (2021), the number of MSMEs has slightly increased in federal public contracts after the additional Federal Law came into effect. However, there is no clear relationship between the decline in informal employment and this program, although it brings many benefits to businesses of all types. In terms of labor size, in the period 2006-2011, enterprises with 10 or fewer employees had an average increase of 3.1% of the official wage earners while enterprises with more than 10 employees only increased by 0.8%. Federal Law 123/2006 (CFL 123/2006) and Supplemental Law 147/2014 (CFL 147/2014) have strengthened the role of women in MSMEs run by them (Commandeur, D 2021).

2.5. Colombia's Experience

* Overview of the economy and labor

Colombia is a middle-income country in Latin America, with an economy of $343.94 billion in 2022 with a GDP per capita of $6,630. From 1980 to 2020, GDP per person increased by 88%, 78% higher than the global average over the same period (according to 2015 prices). Services are an important economic sector, accounting for 64% of GDP (2019), industry accounts for 29%. This ratio has changed significantly compared to 1990: services 53% and industry 38%.

Labor is concentrated in the service sector. In the period 1991 to 2019, this rate changed from 57% to 64%. The proportion of employees in the agricultural industry in 2019 was also quite high at 16%. The national unemployment rate of about 10% in 2019 and 2020 due to the impact of the covid-19 pandemic has increased to 15% (ILO).

* Informal employment:

According to ILO estimates, Colombia's informal employment rate in 2020 was 62.1% (13.8 million workers). Women have a higher rate of informal workers/total female workers than 73%, while men are only about 64%. According to age criteria: workers aged 15-24, this rate is 86.1%, over 65, 82.5%, aged 25-54, 62.3% and aged 55-64, 64.7%. By job position: self-employed workers account for 89.3% (8.4 million workers), manufacturers 46.4% (0.4 million workers), wage workers 39.1% (4.2 million workers). According to the criteria of the cemployment sector: agriculture was 87.8% (3.1 million workers), construction was 68%, the remaining sector was 63.1% (6.2 million workers) ... (2021).

* Experience of restricting laborers to have informal jobs

In order to limit informal employment, in 2019 the Colombian Government implemented a plan of "*business formalization policy - CONPES 3956)* with a period extending to 2029.

With Objectives

Firstly, improve the benefit-cost ratio of official employees through specific contents such as: Designing and adjusting business registration fees; gradually implementing the one-stop-shop mechanism for enterprises nationwide; ensuring interaction and linking information of employers with social security, health and occupational risks policies; design and establish an online portal for employee-related transactions and social protection system; design and implement a national action plan for the national labor formalization network to strengthen training and technical support for MSMEs and informal enterprises to formalize labor and access social protection; encourage MSME enterprises to participate in the public procurement program.

Second, enhance the availability of information to support public policy decision making related to

business formalization. Perform regular and periodic statistics to collect information systematically; design business formalization measurement indicators that reflect the comprehensive and official aspects of the business; standardize data related to business formalization; evaluate the impact of the general policy as well as the parts of the policy.

Some strategies to pursue:

First, reduce costs for businesses that use formal workers.

Secondly, provide more effective support to enterprises in the process of implementing business formalization policies;

Third, strengthen inspection, supervision and control in the informal sector.

Results of strategy implementation

Because only half the time of the policy has been implemented, there have not been specific results on the impact of the policy on informal employment. However, it is also an innovative approach to addressing the country's informal employment problem. In general, in order for the policy to be highly effective, it is necessary to have the consensus of relevant ministries and agencies on the basis of specific targets and time frames under the drastic direction of the Government.

2.6. Experience of the European Union

* Overview of the economy and labor

The European Union (EU) currently has 28 member countries. The organizational structure of the EU is a specific economic and political entity with a deep level of association. The EU has 2/5 UN Security Council members, 4/7 of the world's leading industrialized countries (in the G7), 4/20 countries in the G20. The EU is the world's largest economy after the US and China. Public debt is expected to be at 89% of GDP in 2023, and about 87% in 2024, down to 85% in 2025.

In the labor market, labor shortages continue to be a major challenge for EU businesses. According to a survey by Deloitte, the shortage of highly skilled labor is one of the leading risks for businesses in Germany, Austria and the Netherlands. The unemployment rate is high at around 6.6% in 2022, expected to rise to 7.2% in 2023 and at 7% in 2024 (Communist Review, https://en, m.wikipedia.org 'wiki, accessed August 25, 2023).

Regarding labor with informal employment:

Since 2000, the size of the informal economy has tended to decrease; new EU members are quite stable, even somewhat changing from low-middle income to high-middle income. Workers with concentrated informal jobs are mainly: men, young workers, low - basic education, low-skilled workers, they are often discriminated against... The EU's informal workers are counted according to the following three criteria: (1) workers in ≤ 5-person companies; (2) without social insurance; and (3) people without labor contracts. According to Nguyen The Thang (2022), in countries such as Belgium, Denmark, Finland, the UK, the Czech Republic... one in four workers does not have a labor contract in establishments with 100 or more employees.

According to Nguyen The Thang (Vietnam Economic Forum 2022), informal workers are concentrated in some of the following criteria: First, if classified by job, informal workers focus mainly on self-employed jobs; Second, if by age, they focus mainly on paid workers under 24 and domestic workers aged 65 and over; Third, if by sector, agriculture accounts for the highest proportion, then construction and professional services with high skills; the lowest is education, health care and the public sector.

* Experience of restricting laborers to have informal jobs

In general, countries in the EU community have come up with many solutions to reduce informal employment, including some of the following experiences:

Firstly, protect the marginalized labors in the labor market. Many countries maintain a low minimum wage for workers with low informal employment in line with the equilibrium wages of the market for low-skilled, simple labor. Promulgating regulations on the labor market that prevent and protect the marginalized in the labor market; having a flexible mechanism to find jobs, change jobs, improve competitiveness in the labor market to ensure a minimum income for informal workers. Through unemployment insurance policies, unemployment allowances are aimed at helping the marginalized to an appropriate level of well-being.

Secondly, implement tax policies to support labor-intensive enterprises, promote growth. The tax exemption policy for MSMEs aims to support them to be able to withstand the adverse effects of the market, thereby supporting social security for informal workers to perform informal jobs. Reform the tax structure through tax frameworks and tax rates to encourage employees to voluntarily perform their

tax policy obligations to minimize transaction costs. Review and possibly eliminate consumption taxes that have a negative impact on informal workers and the informal economy. Implement social assistance policies to offset the tax burden of informal workers.

Thirdly, improve the capacity of state governance, mobilize maximum resources for socio-economic development. The system of policy documents and implementation should clearly show accountability, effective governance and a transparent legal framework. Strengthen the fight against corruption through effective accountability mechanisms in administrative management. Through the system of mechanisms and policies to mobilize households and MSMEs to effectively use resources, promote growth, and formalize informal jobs, which is the basis for increasing income for workers with informal jobs, thereby helping MSMEs to increase the number of workers who are paid social insurance and sign labor contracts according to law.

3. Lessons for Vietnam

Each country has a different proportion of workers in informal employment in the total employment structure, and they also have different solutions in specific policies to increase their formal sector and formal employment. However, in our opinion, they all focus on some of the following contents:

Firstly, *perfect the system of legal documents relating to social security and welfare policies for disadvantaged workers in the market.* These policies are intended to support seasonal and short-termed workers in the free and disadvantaged sectors. Adjust the tax structure and remuneration for informal workers, businesses and employers to reduce the risk of becoming an informal employed worker. At the same time, there are specific plans and policies to limit the impact of informal employment on social issues, economic issues and political issues.

Secondly, *stabilize the macroeconomy, minimize the impact of crises on informal employment.* Stabilize the macroeconomy, improve competitiveness and promote international trade to meet the requirements of international economic integration. Focus on areas related to the products of seasonal and short-term workers in order to create jobs for workers to be responsible for being transferred from workers with formal jobs to workers with informal jobs. Currently, in addition to the impact of economic shocks, other shocks also have a significant impact on employment and informal labor; most countries have programs and policies to minimize the impact of crises through

the expansion of social security networks, measures to protect workers with informal jobs, especially freelance, short-term, seasonal workers without compulsory social insurance and labor contracts as prescribed.

Thirdly, *the policy supports small, medium and micro enterprises.* MSMEs are enterprises with a majority of informal workers. All countries have policies relating to tax exemption and reduction, tax restructuring, minimum wage policies for this group of workers, thereby supporting enterprises to survive and develop stable jobs for workers with informal jobs. Support businesses in public spending in order to increase formal employment.

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