Journal of FINANCE & ACCOUNTING RESEARCH

EDITORIAL OFFICE
No. 58 LE VAN HIEN, BAC TU LIEM DISTRICT - HA NOI

Phone: 024.32191967
Email: tapchinctckt@hvtc.edu.vn
Website: https://tapchitckt.hvtc.edu.vn/
https://tapchitckt.hvtc.edu.vn/?language=en-US

MACROECONOMICS AND FINANCE

STUDY EXCHANGE

CORPORATE FINANCE

INTERNATIONAL ECONOMICS AND FINANCE

Printed at Statistical Publishing House - Publishing Lisence: 487/GP-BTTTT date 28/10/2016
Prints and deposits completed in June, 2025.

Tạp chí Nghiên cứu
TÀI CHÍNH KẾ TOÁN

TÒA SOẠN
SỐ 58 LÊ VĂN HIẾN, Q. BẮC TỪ LIÊM - HÀ NỘI

Điện thoại: 024.32191967
E-mail: tapchinctckt@hvtc.edu.vn
Website: https://tapchitckt.hvtc.edu.vn/
https://tapchitckt.hvtc.edu.vn/?language=en-US

KINH TẾ, TÀI CHÍNH VĨ MÔ

NGHIÊN CỨU TRAO ĐỔI

TÀI CHÍNH DOANH NGHIỆP

KINH TẾ VÀ TÀI CHÍNH QUỐC TẾ

In tại Nhà xuất bản Thống kê - Giấy phép số: 487/GP-BTTTT ngày 28/10/2016
In xong và nộp lưu chiểu tháng 6 năm 2025.

OFFICIAL DEVELOPMENT ASSISTANCE (ODA) IN VIETNAM: CHALLENGES AND PROPOSED SOLUTIONS

Assoc.Prof.PhD. Nguyen Van Dan* - MSc. Le Quynh Anh*

Abstract: ***Official Development Assistance (ODA) is a crucial financial resource that supports developing countries in fostering economic growth and improving social well-being. This paper evaluates key challenges and proposes solutions to enhance the effective utilization of ODA in the future.***

• Keywords: *ODA, socio-economic development, Vietnam.*

Date of receipt: 03rd Feb., 2025
Date of delivery revision: 27th Feb., 2025
Date of receipt revision: 12th Apr., 2025
Date of approval: 15th May., 2025

DOI: https://doi.org/10.71374/jfar.v25.i3.01

1. Introduction

Official Development Assistance (ODA) is financial support provided by international organizations and governments of developed countries to help developing nations achieve their socio-economic goals. This assistance may take the form of concessional loans, grants, or technical support, allowing recipient countries to access financial resources at lower costs compared to market rates.

Since the 1990s, following the normalization of international relations and economic liberalization, Vietnam has actively attracted ODA to finance key projects across various critical sectors. ODA-funded projects have primarily focused on developing transportation infrastructure, power systems, telecommunications, education, healthcare, and environmental protection. Notably, significant projects such as highways, seaports, airports, power plants, hospitals, and schools have been constructed using ODA funds, contributing substantially to economic growth and improving the quality of life for citizens.

Despite its substantial benefits, ODA utilization also presents several challenges for Vietnam. Firstly, public debt pressure has increased as concessional loans gradually transition to higher-interest loans, reflecting Vietnam's graduation from the low-income country category. Furthermore, inefficiencies in ODA management and disbursement remain, leading to project delays, cost overruns, and reduced investment efficiency. Additionally, excessive reliance on ODA poses economic risks when loan repayments become due, necessitating a more sustainable and effective strategy for ODA utilization in Vietnam.

2. Challenges in Utilizing ODA

2.1. Public debt and debt repayment pressure

One of the major challenges Vietnam faces in utilizing ODA is the shift in loan conditions as the economy evolves. In the early stages of international integration, Vietnam benefited from ODA loans with low interest rates, extended grace periods, and long repayment terms, allowing the government sufficient time to implement public investment projects without significant pressure on the national budget. However, as Vietnam achieved economic progress and transitioned to a middle-income country, concessional ODA loans began to decline. Instead, financing from international financial institutions and bilateral partners has increasingly taken the form of less favorable loans with stricter conditions, including higher interest rates, shorter grace periods, and faster repayment requirements.

This shift has significantly increased debt repayment pressure on the government and, if not managed properly, could contribute to rising public debt. In recent years, Vietnam has moved from accessing ODA loans with interest rates ranging from 0.5% to 2% per year to less concessional loans with rates reaching 4% to 6% per year. Meanwhile, loan terms have been reduced from 30-40 years to just 15-20 years. This presents a considerable challenge in balancing the need for new loans to finance development with ensuring the country's long-term debt repayment capacity.

As ODA loans reach their repayment period, the financial pressure on the state budget increases, especially as government revenue remains insufficient

** Academy of Finance; email: leqanh401@gmail.com*

to meet debt obligations smoothly. Without an effective debt management strategy, the government may fall into a cycle of borrowing new loans to repay old ones, leading to an escalating public debt burden and a risk of financial imbalance.

Although the debt-to-GDP ratio remains within the officially defined safety threshold, a continued rise in borrowing without corresponding improvements in capital efficiency could lead to a loss of control over public debt. When a substantial portion of the state budget is allocated for debt repayment, the fiscal space for essential development investments in education, healthcare, social welfare, and infrastructure is constrained. This not only hampers economic growth but also slows the country's progress toward sustainable development.

In addition to debt repayment pressure, another concerning issue is the risk of inefficient ODA utilization, leading to waste, corruption, and investments that fail to generate real economic value. Without strict management, ODA-funded projects may suffer from delays, cost overruns, or failure to deliver expected economic benefits, turning their associated debts into a long-term financial burden.

In reality, many large infrastructure projects in Vietnam have experienced severe cost overruns due to poor management, resulting in construction expenses far exceeding initial estimates. This not only intensifies debt repayment pressure but also erodes trust among international donors, potentially affecting Vietnam's ability to secure concessional loans in the future.

Additionally, some ODA-funded projects have not been well-aligned with the country's development needs, resulting in excess capacity or ineffective utilization upon completion. This exacerbates financial pressure and could lead to serious fiscal imbalances in the long run.

2.2. Low investment efficiency

One of the most common issues with ODA-funded projects in Vietnam is cost overruns and delays, leading to actual expenses far exceeding initial estimates. According to a report by the Ministry of Planning and Investment, many transportation, energy, and urban development projects have faced prolonged implementation, increasing costs and reducing investment efficiency.

A notable example is the Nhon - Hanoi Station urban railway project, which began construction in 2009 with an estimated investment of VND 18,000 billion. However, after more than a decade, the project remains unfinished, with costs soaring to over VND 34,500 billion, nearly double the initial estimate.

A similar situation occurred with the Cat Linh - Ha Dong railway project, a major ODA-funded initiative backed by China. Initially planned with a total investment of VND 8,769 billion, the project's cost escalated to VND 18,002 billion, an increase of over 205% after multiple adjustments. Additionally, the project was delayed by nearly 10 years, leading to significant financial waste and eroding public confidence in the management of ODA-funded initiatives.

Beyond the transportation sector, many other ODA-funded projects have also experienced cost overruns and delays due to poor management. The Ho Chi Minh City Water Environment Improvement Project (Phase 2), initially planned with a total investment of VND 11,281 billion, has now surged to nearly VND 25,000 billion due to unforeseen issues during implementation. These prolonged delays not only escalate costs but also diminish the socio-economic impact of the project, as residents are unable to access essential infrastructure services as originally planned.

Beyond management capacity, poor coordination among stakeholders is another key factor behind low ODA investment efficiency. With the involvement of government agencies, international donors, consultants, and local contractors, a lack of consensus and weak collaboration complicate project execution. For instance, many projects face land clearance obstacles due to disagreements between local authorities and residents, causing construction delays and increasing compensation costs.

A particularly serious issue that cannot be overlooked is corruption and wastefulness in ODA fund management, which undermines investment efficiency and imposes a financial burden on the state. Some projects have been criticized for misuse or misallocation of funds, resulting in investments that fail to deliver real benefits.

Additionally, several completed projects have exhibited serious quality issues, requiring frequent repairs and modifications. This not only wastes public resources but also reduces the long-term value and effectiveness of the projects, further straining the national budget.

2.3. Dependence on ODA

Over the past three decades, Vietnam has received substantial ODA funding from

international financial institutions such as the World Bank (WB), the International Monetary Fund (IMF), the Asian Development Bank (ADB), the Japan International Cooperation Agency (JICA), and various bilateral partners. Between 1993 and 2019, Vietnam secured approximately $90 billion in committed ODA, enabling the implementation of numerous key projects in transportation, energy, urbanization, education, and healthcare. As a result, major infrastructure developments, including the North-South Expressway, hydropower plants, clean water supply networks, and educational quality improvement programs, have been successfully deployed.

However, prolonged reliance on ODA has weakened Vietnam's financial independence, making the economy overly dependent on foreign loans and reducing its autonomy in development planning. As ODA loans reach their repayment period, financial pressure has significantly increased, especially as interest rates on these loans have risen due to Vietnam's transition to a middle-income country.

Before 2010, Vietnam benefited from low-interest ODA loans, with rates ranging from 0.5% to 2% per year, grace periods of 10-15 years, and repayment terms extending up to 30-40 years. This allowed the country to implement large-scale projects without short-term budgetary strain. However, after graduating from the low-income country category in 2010 and attaining lower-middle-income status, Vietnam began facing less concessional borrowing terms.

Currently, many ODA loans have shifted to preferential loan structures with interest rates between 3% and 6% per year, shorter grace periods, and faster repayment schedules. This exposes Vietnam to greater financial risks, including rising public debt, potential fiscal imbalances, and continued dependence on international donors in shaping economic policies.

Debt repayment pressure continues to intensify as ODA loans reach maturity, especially while Vietnam still requires substantial financial resources for development investment.

Beyond public debt concerns, ODA dependence also undermines Vietnam's economic policy autonomy. Excessive reliance on ODA funding may bind the country to conditions imposed by international donors. ODA loans are not merely financial assistance; they are often tied to institutional reforms, economic policies, financial management frameworks, and legal adjustments dictated by lending institutions.

Prolonged reliance on ODA can also diminish incentives to mobilize domestic financial resources, including attracting private investment, developing financial markets, and issuing government bonds. Without policies that encourage domestic investment, the economy may lack self-sufficiency, become less sustainable, and remain vulnerable when ODA inflows decline.

3. Solutions to enhance the efficiency of ODA utilization

3.1. Strengthening the management and oversight of ODA projects

ODA has played a crucial role in developing Vietnam's infrastructure, healthcare, education, and institutional reforms.

To achieve this, the legal framework for ODA management must be improved by establishing clear project evaluation criteria to monitor progress, economic and social impact, and capital efficiency.

Strict control over the bidding and contract implementation process is also essential. Ensuring open and transparent bidding processes, preventing direct contractor selection and fraud, closely monitoring contract execution to ensure timely and high-quality completion, and strictly addressing violations in ODA fund management will enhance project accountability and efficiency.

Lastly, independent auditing and supervision must be reinforced. State Audit agencies and international auditing organizations should assess ODA utilization effectiveness, while ensuring that the public and civil society organizations have access to project information to monitor progress and report inefficiencies.

By implementing these comprehensive solutions, Vietnam can enhance ODA utilization efficiency, ensuring that development funding generates lasting positive economic and social impacts for the country.

3.2. Strategic orientation for ODA utilization in priority sectors

The effective utilization of Official Development Assistance (ODA) is a crucial factor in ensuring Vietnam's sustainable development and gradually reducing its dependence on foreign loans. As concessional ODA funds become increasingly limited and borrowing conditions become stricter, Vietnam needs a focused strategy for ODA

utilization, directing funds toward sectors with widespread impact rather than spreading them across too many projects, which leads to resource waste and reduced investment efficiency. The top priority sectors currently include transportation infrastructure, digital transformation, education, and healthcare, as these are key pillars that not only drive economic growth but also improve quality of life and enhance national competitiveness.

Among them, transportation infrastructure plays a pivotal role in connecting economic regions, reducing logistics costs, promoting trade, and attracting investment.

In addition to transportation infrastructure, digital transformation is another key sector that should be prioritized for ODA utilization to enhance the economy's competitiveness in the context of the Fourth Industrial Revolution. Investing in telecommunications infrastructure, expanding the 5G network, and developing e-government will optimize state management efficiency, reduce administrative processing times, and increase transparency in public financial management. The digitalization of administrative data, the application of technology in economic sectors, and support for small and medium-sized enterprises in their digital transformation processes are also essential directions to create a modern digital economic ecosystem, enabling Vietnam to achieve long-term sustainable growth.

Furthermore, education and workforce training are among the key determinants of a country's long-term development. Vietnam should focus ODA resources on highly competitive industries, particularly in advanced technology sectors such as artificial intelligence, data science, and renewable energy, to align with global development trends.

Finally, healthcare and social welfare are critical sectors that must be prioritized to improve the quality of life for citizens, especially in the context of an aging population and the rising risks of global pandemics. Utilizing ODA to invest in healthcare systems, build hospitals, medical centers, strengthen preventive healthcare, and enhance the capacity of medical professionals will significantly improve public health services. Additionally, it is essential to develop a comprehensive health insurance and social welfare system to ensure that all citizens, particularly vulnerable groups, have access to quality healthcare services.

Strategically directing ODA toward these priority sectors will not only maximize the effectiveness of development funds but also create long-term, sustainable economic and social benefits for Vietnam's future growth.

3.3. Promoting private sector participation

As ODA funding becomes increasingly constrained by stricter conditions and Vietnam aims to reduce its dependence on foreign loans, promoting private sector participation in ODA-funded projects through Public-Private Partnership (PPP) models has emerged as a crucial strategy. This approach not only optimizes domestic resources and reduces fiscal pressure on the state budget but also enhances investment efficiency. Private sector involvement in ODA projects mobilizes additional off-budget capital, improves management quality, increases operational efficiency, and introduces innovative methods in project implementation.

However, to attract stronger private sector participation, the government must improve the legal framework and support policies for private enterprises, ensuring transparency and fairness in the bidding and project implementation process. Additionally, facilitating access to ODA funding through preferential loans and credit guarantees is essential to encourage private investment in key projects. Strengthening project management and oversight in PPP initiatives is also crucial to ensure that private partners execute projects effectively and on schedule.

Moreover, establishing a reasonable risk-sharing mechanism is a vital solution to minimize risks for private investors participating in ODA projects. With these comprehensive measures, private sector participation will be significantly enhanced, contributing to more efficient ODA utilization, sustainable development, and improved infrastructure, healthcare, education, and other essential services.

References:

Báo Đầu tư Online (2025), "Enhancing the Efficiency of ODA Loan Management in Vietnam". https://baodautu.vn/nang-cao-hieu-qua-quan-ly-hoat-dong-cho-vay-lai-von-oda-tai-viet-nam-d250922.html

Hà Nguyễn (2024), "Accelerating ODA Disbursement", Báo Đầu tư Online. https://baodautu.vn/tang-toc-giai-ngan-von-oda-d211775.html

Nguyễn Anh Dũng (2023), "Attracting and Utilizing ODA in Vietnam in the New Context", Tạp chí Tài chính.

https://tapchitaichinh.vn/thu-hut-va-su-dung-von-oda-o-viet-nam-trong-boi-canh-moi.html

Nguyễn Đoan Trang (2021), "Effective Attraction and Utilization of Development Investment Capital for Economic Growth in the 2021-2025 Period", Tạp chí Tài chính. https://tapchitaichinh.vn/thu-hut-va-su-dung-co-hieu-qua-cac-nguon-von-dau-tu-phat-trien-kinh-te-giai-doan-2021-2025.html

CORPORATE CLIMATE RISKS: MEASUREMENTS AND FINANCIAL RESPONSES

PhD. Bui Thu Hien*

Abstract: ***As climate change increasingly affects the global economy, businesses are facing not only environmental challenges but also mounting climate risks. This paper focuses on analyzing two key categories of climate-related risks, including physical risks and transition risks and their impacts on corporate financial performance. Based on this analysis, the study proposes a set of financial solutions for mitigating and responding to climate risks, including climate insurance, green financial instruments, and the integration of climate risk into corporate financial models. Finally, the paper offers several policy implications aimed at strengthening the resilience and long-term climate risk preparedness of Vietnamese firms.***

• Keywords: *climate risks, firm-level climate exposure, climate risk measurements, financial responses.*

Date of receipt: 05th Oct., 2024
Date of receipt revision: 02nd Jan., 2025
Date of delivery revision: 08th Nov., 2024
Date of approval: 10th May 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.02

1. Introduction

Recent studies have identified climate change as one of the most urgent global concerns (World Economic Forum, 2019), with an estimated financial burden of approximately USD 1 trillion on businesses due to climate-related risks (Roston, 2019). Since the 20th century, the average global surface temperature has been rising by approximately 0.2°C per decade (Kozarcanin, Liu, & Andresen, 2019). Research indicates that around 70% of global economic activities are adversely affected by weather-related phenomena (Anton, 2021). By 2050, global GDP could shrink by roughly 4%, translating into economic losses of up to USD 7.9 trillion if timely mitigation measures are not undertaken (Sun et al., 2023). The increasing frequency and intensity of extreme weather events such as droughts, floods, heatwaves, and tropical cyclones pose profound risks to financial stability and business continuity worldwide (IPCC, 2022). Beyond the direct physical consequences, the global transition toward a low-carbon economy introduces complex transition risks, encompassing regulatory shifts, technological disruption, market reconfiguration, and mounting societal pressure.

Business operations are increasingly vulnerable to the financial repercussions of climate change, which affect economic performance through both direct and indirect impacts (Addoum, Ng, & Ortiz-Bobea, 2023; LePoire, 2013; Sun et al., 2020). Specifically, climate risks encompass both physical impacts and regulatory challenges associated with the implementation of decarbonization or green transition measures. Physical risks may manifest as gradual and cumulative threats over time such as increasing variability in temperature and precipitation, rising sea levels or as immediate, severe consequences of natural disasters (Woetzel, Pinner, & Samandari, 2020). Climate-related damage to a company's tangible assets can lead to higher production costs per unit, and if selling prices remain unchanged, the firm's financial performance will deteriorate. Indirect impacts such as government policies aimed at reducing greenhouse gas emissions, shifts in decarbonization strategies, changes in consumer preferences toward environmentally friendly products, and potential class-action lawsuits against companies for harming communities may undermine a firm's financial performance through increased costs, asset devaluation, and reputational damage. Transition-related risks, driven by governmental policy implementation, have already had significant economic effects, leading to business bankruptcies and job losses (Albitar, Al-Shaer, & Liu, 2023).

Moreover, transition costs also contribute to financial risks (Wang, Wu, & Zhang, 2022). Operating in a high climate-risk environment elevates financial costs, as lenders tend to impose higher interest rates on companies involved in risk-prone activities. Additionally, demand for a firm's products may decline if a significant portion of consumers experience adverse consequences from climate change, such as job loss and income reduction (Addoum, Ng, & Ortiz-Bobea, 2023; Ambrosio et al., 2020; Karpoff, Lott, & Wehrly, 2005; Pankratz & Schiller, 2021; Sarkis, Gonzalez-Torre, & Adenso-Diaz, 2010; Sun et al., 2020). In

* *Foreign Trade University; email: hienbt@ftu.edu.vn*

addition, regulatory risks, such as additional taxes on greenhouse gas emissions or investments in advanced technologies, will impact emission-sensitive sectors. Even sectors less sensitive to emissions may experience indirect consequences of climate legislation through cost pass-through effects, thereby affecting production expenses (Eleftheriadis & Anagnostopoulou, 2015). Furthermore, the impact of global warming on business costs also depends on plant location, suggesting that firms with facilities in hotter regions will face higher production costs (Hugon & Law, 2019).

Therefore, the identification, quantification, and management of climate-related risks have become vital imperatives for businesses, particularly those operating in highly exposed sectors such as energy, finance and banking, real estate, food processing, agriculture, tourism, and logistics, etc. Climate risks have transcended environmental concerns to become measurable financial risks, exerting direct impacts on firms' profitability, market valuation, and capital access (Giglio, Kelly, & Stroebel, 2021). However, businesses especially those in developing economies such as Vietnam still face considerable constraints in terms of technical capacity and appropriate tools to assess and integrate climate risks into internal financial governance frameworks. Access to financial instruments for climate risk mitigation, including climate insurance, green bonds, and green credit, remains limited due to underdeveloped legal frameworks, technical gaps, and funding challenges.

This study aims to: (1) analyze the current landscape of the two principal categories of climate-related risks affecting businesses including physical risks and transition risks; and (2) propose appropriate financial instruments and mechanisms to mitigate and respond to such risks. Based on these analyses, the study presents targeted policy recommendations for government regulators and other relevant stakeholders.

2. Firm level Climate risks and Financial impacts

2.1. The concept of Climate risks

The Intergovernmental Panel on Climate Change (IPCC) defines risk as "the potential for adverse consequences for human or ecological systems resulting from exposure to climate-related hazards" (IPCC, 2022). From a financial and economic standpoint, the Task Force on Climate-related Financial Disclosures (TCFD, 2017) classifies climate-related risks into two broad categories: physical risks and transition risks- each reflecting distinct but significant sources of business exposure.

Physical risks refer to the direct consequences of climate change on tangible assets, workforce safety, and supply chain continuity. These risks can be further categorized into: (i) Acute physical risks, which encompass short-term, extreme weather events such as hurricanes, floods, droughts, heatwaves, or wildfires; and (ii) Chronic physical risks, representing long-term impacts of climate change, including sea-level rise, elevated average temperatures, and altered rainfall patterns. Such changes can lead to reduced labor productivity, increased maintenance costs, and gradual devaluation of physical assets. According to TCFD (2017), physical risks may disrupt entire industries and regions, particularly those situated in coastal zones or ecologically vulnerable areas.

Transition risks, on the other hand, stem from the systemic shift toward a low-carbon and environmentally sustainable economy. TCFD (2019) identifies four major sources of transition risks: (i) Policy and regulatory changes, including the imposition of stricter greenhouse gas (GHG) emission standards, carbon taxation schemes, and green financing requirements; (ii) Technological evolution, necessitating investment in clean technologies such as renewable energy, electric vehicles, precision agriculture, or sustainable waste management; (iii) Market dynamics, as consumers and investors increasingly demand green products, low-carbon supply chains, and ESG-aligned business models; and (iv) Reputational risks, where firms failing to respond adequately may suffer reputational damage and erosion of market share due to misalignment with stakeholder expectations.

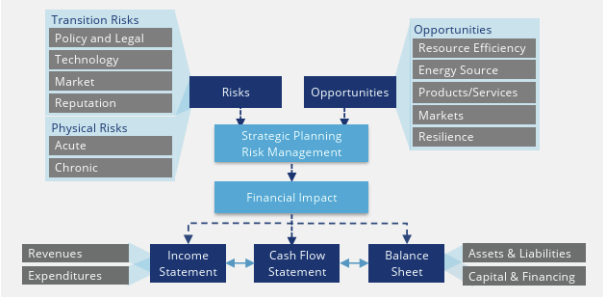
2.2. Climate risks and Financial impacts

Whether derived from physical disruptions or transition pressures, climate risks can significantly influence a firm's financial performance, both directly and indirectly. As can be shown in the Figure 1, these effects are increasingly visible through channels such as operating costs, cash flow volatility, capital structure shifts, creditworthiness, and stakeholder engagement (TCFD, 2021). Acute events can halt production, damage infrastructure, or trigger costly supply chain interruptions. Chronic risks tend to gradually erode asset value, strain operational budgets, and reduce margins. Meanwhile, transition risks may result in elevated compliance costs or necessitate capital expenditures to adopt sustainable technologies. Financial institutions may reassess credit ratings or raise lending premiums for businesses with high climate exposure. Unaddressed, such risks can ultimately lead to a decline in firm valuation and a weakening of investor confidence.

Climate change-related risks affect corporate financial operations through both direct and indirect channels (Sun et al., 2020). Direct impacts include disruptions to production and operations, such as damage to physical assets, raw materials, manufacturing

technologies, and supporting infrastructure. Indirect impacts, on the other hand, stem from changes in the operating and competitive environment such as the introduction of new regulations on greenhouse gas emissions or environmental protection that may alter investment or consumption decisions, or trigger legal disputes related to public health and environmental responsibility. When a company becomes involved in litigation, it often suffers significant reputational damage and faces a series of subsequent financial difficulties (Iftikhar, Bagh, & Khan, 2024). Both of these channels direct and indirect affect corporate financial governance and long-term business success.

Figure 1: Climate- related risks, opportunities, and financial impact



Source: TCFD, 2021

Companies operating in different countries face varying social and regulatory contexts regarding climate change policies and emissions trading systems. Although these mechanisms share common principles, their implementation diverges significantly. As a result, climate-related policies influence firms' strategic planning in distinct ways depending on national circumstances (Kolk & Pinkse, 2004), implying that the impact of climate change on corporate performance is likely to vary by geography and policy environment. Several other studies have also explored the effects of climate change risks on corporate behavior (Bagh, Fuwei, & Khan, 2024b; Berkhout, Hertin, & Gann, 2006; Gasbarro & Pinkse, 2016; Linnenluecke, Griffiths, & Winn, 2013), as well as the nonlinear influence of environmental, social, and governance (ESG) performance on a firm's sustainable growth (Bagh et al., 2024).

More recently, some studies have reported that climate change can influence firm performance, although empirical evidence remains inconclusive (Anton, 2021; He et al., 2019; Huang et al., 2018; Secinaro et al., 2020). While the potential macroeconomic consequences of climate change have been widely discussed, empirical studies examining its specific impact at the firm level remain limited (Cevik & Miryugin, 2023).

Emerging literature has demonstrated that climate change risks negatively affect firms' financial management, including reductions in corporate investment (Painter, 2020), declining stock performance (Choi, Gao, & Jiang, 2020), weaker market returns (Bansal, Ochoa, & Kiku, 2017), and lower firm valuation (Matsumura, Prakash, & Vera-Muñoz, 2014). Additionally, climate risks are associated with higher cost of capital (Balvers, Du, & Zhao, 2017; Huynh, Nguyen, & Truong, 2020; Javadi & Masum, 2021), along with adverse effects on sales, productivity, profitability (Jawid, 2020), and corporate social responsibility (Mbanyele & Muchenje, 2022). According to Chang et al. (2024), in order to manage rising financial risks and maintain flexibility, firms may reduce dividend payouts and increase the use of share repurchases to enhance liquidity buffers and mitigate the effects of potential future cash flow shortages in the face of climate-related shocks.

3. Measuring climate risks at the firm level

Measuring climate risks at the firm level remains a significant challenge due to the lack of standardized data, approaches, and tools. According to Li et al. (2024), there are three primary types of data sources commonly used to assess climate risk exposure at the firm level: (1) voluntary disclosure data, (2) regulatory financial reporting data, and (3) earnings call transcripts.

(1) Voluntary Disclosure

Reid and Toffel (2009) were among the first to use corporate disclosures submitted to the Carbon Disclosure Project (CDP) to evaluate firms' climate risk exposure. Their approach is relatively straightforward and based on a binary indicator: whether or not a company disclosed climate-related information (1 = disclosed, 0 = not disclosed). This measure reflects the firm's level of commitment and transparency, and indirectly serves as a proxy for its climate risk exposure and risk management capacity. Subsequent studies have expanded this method by performing quantitative analyses of the disclosed CDP content, such as Li et al. (2024), Cohen et al. (2023), and Matsumura et al. (2014). However, this approach has limitations, particularly the potential bias from voluntary reporting practices and the risk of "greenwashing," where firms embellish their climate efforts to gain reputational advantages.

(2) Regulatory Disclosure

Since 2010, the U.S. Securities and Exchange Commission (SEC) has required listed companies to disclose climate-related risks in their financial reports (Forms 10-K and 8-K). This approach employs natural language processing (NLP) techniques to scan and extract climate risk-relevant text from corporate filings (Berkman et al., 2024). Based on this methodology,

a climate risk keyword dictionary is constructed and iteratively refined to identify climate-related phrases within 10-K filings. Each relevant text segment is then assigned a relevance score, which is aggregated into an annual firm-level climate risk index. The advantages of this method include broad coverage and high reliability, as the disclosures are subject to external auditing. However, one major challenge lies in the inconsistency among firms in interpreting what constitutes "material climate risk," along with delays in reflecting real-time developments (Matsumura et al., 2024).

(3) Earnings Call Transcripts

A promising and increasingly adopted method involves analyzing quarterly earnings call transcripts to gauge a company's awareness and response to climate risks. According to Sautner et al. (2023), statements made by executives and investors during earnings calls offer timely, accurate, and substantive reflections of climate risk concerns. Their method employs unsupervised machine learning to identify climate-related bigrams and classify them into three categories: physical risks, transition risks, and opportunities. The frequency of these bigrams in each transcript is then calculated to construct a quarterly climate risk exposure index. More recently, Li Q. et al. (2024) developed a hybrid methodology combining dictionary-based approaches with supervised machine learning and manual validation to improve transparency and precision. The authors distinguish between physical and transition risks, building representative bigram dictionaries from thousands of earnings calls. They then compute the frequency of these bigrams to determine each firm's quarterly and annual climate risk exposure levels.

4. The curent status of climate risk in Vietnam

Figure 2. Trend of average Transition risks over the period of 2019-2023

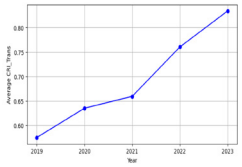
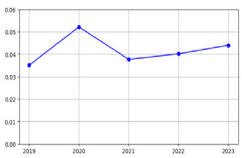


Figure 3. Trend of average Physical risk over the period of 2019-2023



Source: Bui Thu Hien et al., 2025

The Transition Risk Index (CRI_Trans) for Vietnamese companies from 2019 to 2023 indicates a significant upward trend in the frequency of transition-related terminology in corporate reports, as illustrated in Figure 2. Overall, the index has increased sharply over the years, with the exception of 2021, which showed only a modest rise reflecting the economic prioritization during the COVID-19 pandemic over sustainability initiatives. Meanwhile, fluctuations in the Physical Risk Index (CRI_Phy) among publicly listed firms in Vietnam during the same period (shown in Figure 3) reveal changes in the intensity and frequency of climate events. In 2019, natural disaster-related economic losses exceeded VND 7 trillion, prompting businesses to develop greater awareness of climate risks. In 2020, Typhoon Molave and historic flooding caused damages of nearly VND 40 trillion, resulting in a surge of climate risk references in corporate disclosures. Conversely, 2021 saw a record low economic loss of just over VND 5 trillion, leading to a decline in the CRI_Phy index. However, 2022 marked a resurgence of extreme weather events, with losses amounting to approximately VND 19.5 trillion, pushing the index upward again. This trend continued into 2023, when more than 1,145 climate-related incidents caused damages exceeding VND 8.2 trillion, reinforcing firms' awareness of physical climate risks and maintaining a high level in the CRI.

As can be seen in Figure 4 & 5, Climate-related risks in Vietnam vary considerably across industries, with notable differences between physical and transition risk exposure. Industries such as Electricity, Water & Fuel Gas, Oil & Gas, Chemicals, and Food & Beverages exhibit the highest physical risk levels due to their vulnerability to extreme weather events and environmental changes. The Electricity and Fuel sector, particularly reliant on hydropower, is severely affected by prolonged droughts and declining water levels caused by El Niño. Thermal power generation also suffers from temperature fluctuations that reduce efficiency. Rising sea levels and storm intensification further jeopardize coastal infrastructure and offshore oil platforms, raising maintenance and investment costs (Vu Sy Cuong et al., 2022). These cumulative threats make the energy sector the most exposed to physical risks. The Chemical industry is similarly impacted due to its reliance on energy and resource-intensive processes. Extreme weather disrupts input supplies like oil, gas, and electricity, increasing operational and supply chain risks. Meanwhile, the Food and Beverages sector, including aquaculture and agriculture, faces soil erosion, flooding, and heat stress that undermine yields and infrastructure. Notably, the degree of risk varies within sectors. For example, in the Food sector, agriculture and fisheries are more exposed than beverage producers. Similarly, different types of power sources (hydro, thermal, gas) face distinct risk profiles.

Figure 4. Transition risks across Industry

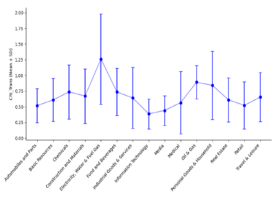
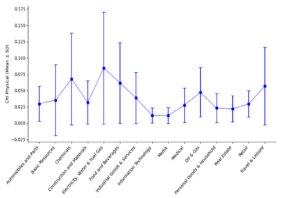


Figure 5. Physical risks across Industry



Source: Bui Thu Hien et al., 2025

Regarding transition risks, which arise from policy shifts, technological change, and market dynamics, energy-related sectors once again top the list. Vietnam's dependence on fossil fuels, particularly coal, and its commitment to phasing out coal-fired power by the 2040s raise concerns about stranded assets and long-term financial viability (World Bank, 2022a; Vu Sy Cuong et al., 2022). Manufacturing sectors, including Industrial Goods and Personal & Household products, are heavily exposed due to high emissions and growing regulatory pressure. New domestic requirements such as GHG inventory mandates under Decision No. 13/2024/QD-TTg combined with external mechanisms like the EU's Carbon Border Adjustment Mechanism (CBAM), challenge export-dependent firms to adopt cleaner technologies (World Bank, 2022b). The Chemicals and Food sectors also face high transition risks due to emissions intensity and water usage, alongside rising demands from international buyers for sustainable production. Although many Food companies highlight "sustainable agriculture" in reports, implementing such practices requires costly upgrades and technical capacity (Choudhary et al., 2023). Construction must reduce 74.3 million tonnes of CO_2 by 2030 (Ministry of Construction, 2022), but faces technological, market, and financing barriers to transition. Similarly, the Healthcare sector, contributing 4.6% of global GHGs, is increasingly targeted for improved waste and emissions management (WHO, 2023). By contrast, sectors like IT, Media, and Retail currently face lower climate transition risks due to minimal direct environmental impacts. However, as Vietnam progresses toward its net-zero target, even low-risk sectors will face rising expectations from regulators and markets alike.

In Vietnam, following the Net Zero by 2050 commitment at COP26, a series of policy measures have been introduced, including the amended Law on Environmental Protection (2020), the National Climate Change Adaptation Plan, and Circular No. 17/2022/TT-NHNN on green credit. However, the implementation of climate risk quantification and financial integration at the enterprise level remains limited. According to a survey by the International Finance Corporation (IFC, 2022), most small and medium-sized enterprises (SMEs) in Vietnam have yet to incorporate climate risks into their financial planning or investment appraisal processes. Many still confuse climate risk with basic environmental compliance, and lack the tools or capacity to quantify such risks in monetary terms.

Moreover, the current legal framework remains largely advisory in nature. Although the 2020 Law on Environmental Protection mandates GHG inventory reporting, it does not require firms to disclose climate-related financial risks. Similarly, Circular No. 17/2022/TT-NHNN from the State Bank of Vietnam only recommends that credit institutions "integrate environmental and social risks" into their lending practices, but lacks an effective supervisory mechanism.

In addition, Vietnam's green finance market remains fragmented. While the government has issued several sovereign green bonds, private enterprises still face significant barriers in accessing green finance due to the absence of standardized evaluation criteria, independent verification mechanisms, and specialized risk assessment tools (World Bank, 2023).

5. Financial responses to corporate climate risks

Climate risks are increasingly turning into real financial threats for both businesses and investors. Therefore, beyond measurement and disclosure, companies must proactively implement financial mechanisms to mitigate, respond to, and adapt to climate change. Based on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD, 2021), this study proposes several financial solutions applicable to Vietnamese firms as follows:

5.1. Climate insurance and risk transfer

One of the most direct approaches to mitigating financial risks from climate change is through insurance. At present, traditional insurance products such as property insurance, business interruption insurance, and catastrophe insurance are already being used by large corporations to hedge against physical risks. In particular**,** parametric insurance products, which trigger payouts based on predefined weather indices (e.g., rainfall, wind speed, or extreme temperatures) rather than on the assessment of physical losses, should also be explored and implemented as an innovative solution.

5.2. Green financial instruments and sustainable investment

According to TCFD (2021), one of the most effective financial solutions available to firms is to raise capital for adaptation and emission-reduction activities through green financial instruments. These instruments not only help firms align with sustainability goals but also provide access to emerging markets of environmentally conscious investors. By integrating climate objectives into financial decision-making, firms can simultaneously reduce climate-related risks and enhance long-term financial resilience.

Green bonds are among the most prominent tools in this regard. These are debt securities issued specifically to fund projects that yield positive environmental outcomes. Typical examples of eligible projects include investments in renewable energy, wastewater treatment, sustainable urban transport, and green-certified infrastructure. Green bonds offer dual benefits: they enable firms to diversify their investor base by appealing to ESG-focused institutions and also

demonstrate corporate responsibility in environmental stewardship.

In addition, green credit mechanisms also known as green loans offer another impactful avenue for financing sustainable development. These loans are typically provided at preferential interest rates, conditional upon the borrower meeting certain environmental performance criteria, such as reduced carbon emissions, lower energy consumption, or improved resource efficiency. By linking loan conditions to sustainability outcomes, green credit instruments create strong financial incentives for firms to adopt environmentally responsible business practices.

A third important mechanism is the deployment of sustainable investment funds, including exchange-traded funds (ETFs), pension funds, and actively managed ESG portfolios. These funds incorporate environmental, social, and governance (ESG) criteria into their investment selection frameworks. For firms that meet these ESG standards, inclusion in such portfolios can result in improved access to capital and enhanced market valuation. Moreover, sustainable investment funds are gaining significant traction globally, reflecting a growing investor preference for long-term value creation that accounts for climate and social considerations.

5.3. Integrating climate risks into internal financial systems

According to TCFD (2021), climate risks should not be treated as a standalone or isolated issue, but rather should be fully integrated into a firm's financial governance, enterprise risk management, and long-term strategic planning. Such integration ensures that financial decision-making reflects not only traditional market risks, but also the increasingly complex dynamics of environmental uncertainty.

One critical tool is climate scenario analysis, which enables firms to simulate climate change pathways such as a 1.5°C or 2°C temperature rise and assess the long-term implications for cash flows, fixed assets, and profitability. In addition, companies can implement climate stress tests, similar to those employed by central banks, to evaluate the vulnerability of investment portfolios or financial assets to climate shocks.

Furthermore, climate-adjusted cash flow analysis is essential to revalue long-term investments, taking into account transition costs (e.g., carbon taxes) and recovery expenses following extreme weather events. These tools not only enhance the precision of financial planning but also strengthen firms' decision-making capabilities in an increasingly climate-volatile business environment.

5.4. Implications for other stakeholders

To enhance resilience and minimize losses from climate risks in the context of global integration and the green transition, national regulators should urgently standardize the legal framework for climate risk disclosure. This includes gradually moving toward mandatory adoption of TCFD recommendations for listed enterprises and financial institutions. Such regulatory mandates will not only promote transparency but also create positive pressure for domestic firms to align with international standards.

Simultaneously, it is necessary to develop and promulgate a national set of green finance evaluation standards, including a green bond rating system, green credit criteria, and independent auditing mechanisms, in order to ensure the credibility and effectiveness of climate finance instruments.

Moreover, to ensure inclusive access, the government should implement targeted policies to support small and medium-sized enterprises (SMEs) in accessing transition finance. These may include the establishment of credit guarantee funds, concessional lending schemes, and technical assistance programs focused on climate risk measurement, disclosure, and governance.

In addition, financial institutions and investors should actively incorporate climate risk considerations into their credit assessment models and investment decisions. Companies with clear transition strategies and transparent climate risk disclosures should be prioritized in loan and investment portfolios. Financial institutions also play a pivotal role in fostering the development of the green finance market by establishing ESG investment funds, creating specialized climate finance products, and engaging in public–private partnerships for sustainable infrastructure projects with transformative impact. These measures are critical for building a climate-resilient financial system that can support an effective and inclusive national green transition.

References:

Ngân hàng Nhà nước Việt Nam. (2022). Thông tư 17/2022/TT-NHNN quy định về quản lý rủi ro môi trường và xã hội trong hoạt động cấp tín dụng.

Giglio, S., Kelly, B., & Stroebel, J. (2021). Climate finance. Annual Review of Financial Economics, 13, 15–36. https://doi.org/10.1146/annurev-financial-110119-102154

IPCC. (2022). Climate Change 2022: Impacts, Adaptation and Vulnerability. Intergovernmental Panel on Climate Change. https://www.ipcc.ch/report/ar6/wg2/

Li, Q., Shan, H., Tang, Y., & Yao, V. (2024). Corporate climate risk: Measurements and responses. SSRN. https://doi.org/10.2139/ssrn.4372107

Matsumura, E. M., Prakash, R., & Vera-Muñoz, S. C. (2014). Firm-value effects of carbon emissions and carbon disclosures. The Accounting Review, 89(2), 695–724. https://doi.org/10.2308/accr-50629

Matsumura, E. M., Kim, H., & Trinh, Q. T. (2024). Materiality of climate risk disclosure: Evidence from 10-K filings. Journal of Accounting and Economics. https://doi.org/10.2139/ssrn.4532100

World Bank (2022). Vietnam Climate Risk Country Profile. https://climateknowledgeportal.worldbank.org

Nordhaus, W. D. (2019). Climate change: The ultimate challenge for economics. American Economic Review, 109(6), 1991–2014. https://doi.org/10.1257/aer.109.6.1991

Reid, E. M., & Toffel, M. W. (2009). Responding to public and private politics: Corporate disclosure of climate change strategies. Strategic Management Journal, 30(11), 1157–1178. https://doi.org/10.1002/smj.796

Sautner, Z., van Lent, L., Vilkov, G., & Zhang, C. (2023). Firm-level climate change exposure. Journal of Finance, 78(1), 245–285. https://doi.org/10.1111/jofi.13189

TCFD. (2017). Recommendations of the Task Force on Climate-related Financial Disclosures. https://www.fsb-tcfd.org

TCFD. (2019). Technical Supplement: The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities. https://www.fsb-tcfd.org/publications

TCFD. (2021). Guidance on Metrics, Targets, and Transition Plans. https://www.fsb-tcfd.org/publications

HOW CARBON TAXES AND OIL PRICES SHAPE INFLATION?

To Cong Nguyen Bao* - Phung Duc Nam* - Nguyen Van Thien Tam*

Abstract: ***The global economy is developing at a rapid pace, but this progress is accompanied by severe environmental consequences, especially in the context of the COVID-19 pandemic's long-term impact and the economic instability caused by conflicts and political fluctuations. We believe that carbon taxes are a macro factor contributing to changes in the inflation rate. Therefore, this paper aims to analyze the impact of carbon taxes on inflation and their level of influence on the relationship between oil prices and inflation. Our findings show that carbon taxes can alleviate inflationary pressure caused by an increase in oil prices. Our research offers valuable insights for policymakers to adopt a dual approach to protecting the environment while stabilizing inflation.***

• Keywords: *carbon taxes, climate change, inflation, oil prices.*

JEL codes: G10; G18; E31; H23

Date of receipt: 03rd Oct., 2024
Date of delivery revision: 10th Oct., 2024
Date of receipt revision: 26th Mar., 2025
Date of approval: 21th May., 2025

DOI: https://doi.org/10.71374/jfar.v25.i3.03

1. Introduction

Oil and other fuels are currently a choice of vital resources for the global economy since it is appropriate in nearly all economic areas. They are used for economic and social activities such as production, transportation, ect. And these activities cause carbon emissions, which are one of the elements that cause climate change. Any changes in oil prices can impact both microeconomic choices and macroeconomic policies (Gokmenoglu et al., 2015). Moreover, oil prices also have a prime impact on the fall and rise of inflation in any country throughout the world. Bermingham (2008) investigated Ireland's meager free economy and discovered the influence of rising oil prices on inflation. Jacquinot et al. (2009) investigated a similar problem for the Eurozone and discovered that oil price fluctuations have a significant impact in short-term inflation forecasting, even supposing the impact is much more complicated as an eventual outcome. Previous studies have shown that carbon taxes accomplish their purpose of lowering emissions, such as studies by Murray and Rivers (2015) for Canada; Best et al. (2020) for Europe. Moessner (2022) investigated the impact of carbon dioxide emissions on inflation and showed that higher carbon dioxide emissions can be associated with higher inflation at the national level.

Our study examines the relationship between carbon taxes, oil prices, and the inflation rate. We analyze how carbon taxes and oil prices affect inflation in 22 countries, both developed and developing, across various continents, including Europe, Asia, America, and Africa. The analysis uses annual data from the largest currently available dataset of countries implementing carbon taxes per ton of CO2 emissions into the environment. The research relies on secondary data collected from Datastream and other reliable sources, with an unbalanced dataset displayed from 1991 through 2021. Many countries have implemented carbon taxes to combat climate change by taxing carbon emissions from energy sources like oil. While some countries, like Chile, maintain stable carbon tax rates for several years, most countries in our research sample adjust the carbon tax annually to effectively reduce emissions and support the goal of achieving net-zero emissions. Revenue from carbon taxes is often reinvested in climate-related initiatives, such as developing low-carbon technologies or transitioning to low-carbon energy sources. We are curious if increasing taxes on carbon emissions can address both rising emissions and the stabilization of inflation, particularly in the context of inflation driven by rising oil prices.

The study is organized as follows. Section 2 reviews the literature and lays out our main hypotheses. Section 3 details the data and models. We report the results in Section 4, robustness checks in Section 5, and concluding remarks in Section 6.

2. Literature review

One technique for reducing greenhouse gas emissions is carbon pricing. Governments do not use repressive measures but instead provide a market-based mechanism for regulating emissions. This leaves manufacturers with a choice between reducing emissions to avoid paying high prices or continuing to emit but paying a fee for their emissions. Two main carbon pricing mechanisms are Emission Trading Systems (ETS) and Carbon Taxes (CTs). However, in this research, we focus on carbon taxes. One key distinction between ETS and CTs is that the emission reduction outcomes of carbon taxes are not predetermined, whereas emissions credits trading in ETS

** University of Economics Ho Chi Minh City (UEH); email: baotcn@ueh.edu.vn*

Acknowledgements: *We would like to thank the editor and anonymous referees for their valuable feedback that significantly improved the paper. This paper is the product of a university-level research project with code CS-COB-2024-27 , funded by the University of Economics Ho Chi Minh City (UEH), Vietnam*

is based on predetermined allowances. Finland pioneered the creation of a worldwide carbon tax to replace service and income taxes in 1990. Norway followed suit in 1991, covering 65 percent of all CO2 emissions. Sweden also began imposing carbon taxes in 1991, resulting in a 13 percent decrease in the country's CO2 emissions between 1987 and 1994. In the United Kingdom (UK), an additional 15 percent tax was imposed in 2001 in response to climate change, affecting taxation standards in both the public and commercial sectors that are based on energy prices.

According to Kaenzig (2021), ETS carbon price surprises in Europe, carbon pricing, and related carbon policies have a positive impact on emission reductions, assisting in meeting emission reduction targets and slowing down the transition to climate change, but doing so must come at a cost, which is related to energy prices and consumption. McKibbin et al. (2021) found that a carbon price only has a temporary effect on inflation when using simulation models. Nevertheless, according to Andersson et al. (2020), the benefits of continuous innovation in renewables in response to carbon pricing, reduced power prices, and increased energy efficiency might offset these larger inflationary pressures, potentially leading to a decline in the share of energy within the CPI consumption basket. According to Konradt and Di Mauro (2023), carbon taxes did not significantly boost inflation; the dynamic impacts were estimated to be near zero in most scenarios. Instead, they found evidence of relative price increases, which raised the cost of energy while leaving other goods and services unchanged. In summary, the existing analyses of how carbon prices affect the economy remain inconclusive and contentious. Our study contributes to this topic by examining the influence of carbon prices on inflation and the variables that influence inflation, with the expectation that carbon taxes would have a positive effect on stabilizing inflation. Therefore, our first hypothesis is as follows:

H1. The carbon taxes help reduce the inflation rate

Many studies have suggested that there is a pass-through between oil prices and headline inflation, although the effect is weak, cyclical, and diminishes over time. According to research by Blanchard and Galí (2007), inflation and economic activity were significantly more affected by oil price shocks. They attribute this to the weakening of wage rigidities, the increasing credibility of monetary policy, and a decrease in the proportion of oil in consumption and output.

H2. Oil prices directly make the inflation rate increase

Moessner (2022) investigated the impact of carbon dioxide emissions on inflation and found that implementing climate change policies does not necessarily lead to higher inflation. Instead, higher carbon dioxide emissions can be associated with higher inflation at the country level. Konradt and Di Mauro (2023) demonstrated that any inflationary effects of carbon taxes are limited to headline inflation and do not extend to core inflation. While they observed modestly deflationary responses in Canadian provinces, the findings in Europe suggest moderate and imprecisely measured effects. To the best knowledge of the authors, there is currently no clear evidence regarding the association between oil prices and the inflation rate in the presence of the carbon tax factor. As a result, the authors conducted this research to examine the influence of carbon taxes on inflation, as well as the link between inflation and oil prices, providing useful reference data for policymakers in their efforts to stabilize inflation. Our last hypothesis is presented:

H3. The carbon taxes mitigate the adverse effects of the rise in oil prices on inflation

3. Data and models

3.1. Data

The research dataset comprises 327 observations and is presented in the form of a table, collected from 1991 to 2021, with a sample size of 22 countries worldwide (see Appendix A). This timeframe was chosen because it is long enough to capture market fluctuations influenced by significant global events, such as the Iraq war and the SARS pandemic (2003), the 2007-2008 World Economic Crisis, the public debt crisis in Europe (2010), Brexit (2020), and the US-China trade war (2019), along with the ongoing COVID-19 pandemic. The primary explanatory variable in the models is carbon tax data, collected from the comprehensive World Bank dataset.

3.2. Models

In this paper, we examine (1) the influence of macro factors, including oil prices and carbon taxes on inflation, and (2) the direction and impact level of the global oil price on inflation when countries levy carbon taxes. First, we use a basic dynamic model to examine the influence of macro factors, including oil prices and carbon taxes, on inflation.

$$INF_{i,t} = \beta_0 + \beta_1 INF_{i,t-1} + \beta_2 CT_{i,t-1} + \beta_3 OIL_{t-1} + \varphi V_{i,t} + \delta_t + \alpha_i + \mu_{i,t} \quad (1$$

$$INF_{i,t} = \beta_0 + \beta_1 INF_{i,t-1} + \beta_2 CT_{i,t-1} + \beta_3 OIL_{t-1} + \beta_4 OIL_{t-1} \times CT_{i,t-1} + \varphi V_{i,t} + \delta_t + \alpha_i + \mu_{i,t} \quad (2$$

Where i refers to firm and t refers to periods; δ_t is the error term in correlation to time-specific effects; α_i is the error term associated with firm-specific effects which include unobservable firm-specific characteristics, and $\mu_{i,t}$ is the random error term. The dependent variable INF is the annualized percentage change in a consumer price index extracted from the Datastream for country i at time t. The key independent variables are proxied to observe macroeconomic factors' effects such as carbon taxes, global oil prices on inflation. V denotes a vector of firm-level control variables as recommended by the prior research (Andersson et al.,2020; Kaenzig, 2021;

Moessner, 2022; Di Mauro, 2023). A detailed list of variables, definitions, and sources can be found in Table 1.

Table 1. Variable definitions

Variables	Definitions	Sources
Dependent variable		
INF	Change in consumer price index (CPI) over the previous year	Datastream
Main explanatory variables		
OIL	Change in global oil price over the previous year	Macrotrends and Authors' calculation
CT	Change in the price of carbon tax over the previous year	World Bank and Authors' calculation
Interactive variable		
OIL×CT	Interactive between change in global oil price and change in carbon tax	Authors' calculation
Control variables		
OUTPUT	The distinction between actual and prospective output (the yield gap percentage)	Datastream
M2	M2 money supply growth over the previous year	Datastream
REER	Change in the real effective exchange rate index over the previous year	World Bank and Authors' calculation
TRADE	Trade surplus and trade deficit (dummy variable)	Datastream
PPI	Change in the producer price index from the previous year	Datastream

We employ a panel data estimation approach that incorporates multi-way fixed effects (FE), including time and country fixed effects. To address potential issues of endogeneity and unobservable heterogeneity associated with fixed firm effects within the dynamic model, we also apply the System-GMM (S-GMM) approach as a robustness check for our results.

Table 2. Descriptive statistics

Variables	N	Mean	Std. Dev.	Min	Max
INF	296	0.0232	0.0229	-0.0063	0.1391
OIL	295	0.0728	0.1924	-0.2880	0.7495
CT	308	0.0264	0.2964	-0.6496	0.5412
OUTPUT	295	-0.0172	0.0278	-0.0924	0.0370
M2	296	0.0763	0.0543	-0.0368	0.2873
REER	296	-0.0003	0.0380	-0.1053	0.1014
TRADE	308	0.6169	0.4869	0.0000	1.0000
PPI	295	0.0268	0.0473	-0.0803	0.2282

Table 2 presents a summary of statistics for our sample. The average value of INF is 0.0232 with standard deviation of 0.0229. The maximum and minimum values of INF are 0.1391 and -0.0063, respectively. The OIL variable's respective figures for mean and standard deviation calculated from 295 observations are 0.0728 and 0.1924. The smallest value of OIL is -0.288 and the largest one is 0.7495. Similarly, CT has the mean value of 0.0264 and standard deviation of 0.2964. With 308 observations in total, the lowest and highest value of CT are -0.6496 and 0.5412 accrordingly. The explanation is similar for other variables. The heterogeneity in the number of observations is due to winsorizing to remove outliers.

We utilize Pearson and Spearman correlation tests to examine the relationships among the variables. The correlation coefficients show modest absolute values, all below 0.6. Furthermore, the Variance Inflation Factors (VIF) scores fall within the range of 1.06 to 1.58, with a mean of 1.24, indicating that multicollinearity concerns are absent in our study. Please note that the correlation table is not included in this report, but the authors can furnish it upon request.

4. Main results

The results from Table 3 indicate that inflation has been influenced by changes in carbon taxes and the price of oil. To be specific, higher changes in carbon taxes lead to a decrease in the inflation level. This is evident from the negative and significant regression coefficient of CT at the 1% and 10% significance levels when using the S-GMM method. In model (1), an increase of 1 percentage point in carbon taxes corresponds to a 0.0136 percentage point decrease in the inflation rate, and this direction aligns with that observed in model (2).

Table 3. Carbon taxes, oil prices, and inflation

Variables	FE		S-GMM	
Model	(1) INF_t	(2) INF_t	(1) INF_t	(2) INF_t
$INF_{i,t-1}$	0.395*** (3.94)	0.394*** (4.26)	0.4732*** (2.85)	0.7673** (2.45)
$CT_{i,t-1}$	-0.0051 (-1.18)	-0.0084* (-1.91)	-0.0136*** (-2.91)	-0.0200* (-1.66)
OIL_{t-1}	0.0077*** (3.47)	0.0075*** (2.74)	0.0181*** (6.29)	0.0235*** (4.15)
$OIL_{t-1} \times CT_{i,t-1}$	-	-0.0394** (-2.51)	-	-0.0521** (-2.55)
$OUTPUT_{i,t-1}$	-0.0595 (-1.25)	-0.0501 (-1.06)	-0.3600*** (-4.56)	-0.5206*** (-4.40)
$M2_{i,t-1}$	0.117*** (4.98)	0.112*** (4.82)	0.1087*** (7.23)	0.0952*** (3.19)
$REER_{i,t-1}$	-0.0574** (-2.26)	-0.0561** (-2.25)	-0.0593*** (-3.75)	-0.0777* (-1.87)
$TRADE_{i,t-1}$	0.0006 (0.18)	0.0003 (0.09)	-0.0029 (-0.21)	-0.0004 (-0.01)
$PPI_{i,t-1}$	-0.0078 (-0.28)	0.0017 (0.05)	-0.0061 (-0.32)	-0.0532 (-1.20)
Constant	0.0026 (0.74)	0.0038 (1.11)	0.0003 (-0.02)	0.0070 (-0.27)
Year fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Obs	226	226	226	226
N.countries	22	22	22	22
R2	0.354	0.376	-	-
F-test	8.75***	8.76***	4,977.2***	331.07***
Hansen test (p_value)	-	-	0.574	0.463
AR2 (p-value)	-	-	0.761	0.571

*Notes: *,**,and *** are statistically significant at the 10%, 5% and 1% levels, respectively. T-statistics are given in parenthesis*

After regressing model (1) and examining the effect of CT and OIL on INF, we introduced the interactive variable OIL×CT in model (2) to explore the relationship among carbon taxes, oil prices, and inflation. In model (2), the variable CT shows that a 1 percentage point increase in carbon taxes corresponds to a 0.02 percentage point decrease in inflation. In contrast, the variable OIL, representing global oil prices, produces positive results. In model (1), a 1 percentage point increase in the price of oil leads to a 0.0181 percentage point increase in inflation, which is consistent with both academic research and practical expectations. Higher oil prices tend to raise logistics costs, resulting in increased prices for goods and services. The interactive variable OIL×CT in model (2) negatively affects INFt at the 5% level of statistical significance. With a regression coefficient of -0.0521 for OIL×CT, we can conclude that short-term bullishness in oil prices drives the inflation rate upward. However, in the

context of carbon tax implementation, the positive effect of higher oil prices on the inflation rate is mitigated. Our results from S-GMM align with those of Konradt and Di Mauro (2023) in the case of Canadian provinces. However, we strongly support the idea that levying a carbon tax will reduce inflation with a 1-year lag. Additionally, we find that carbon taxes effectively mitigate the adverse impact of oil price increases on the inflation rate. As a result, our hypotheses 1, 2, and 3 are confirmed and accepted. Apart from OIL, CT, and the interactive variable OIL×CT, control variables such as OUTPUT, M2, REER are all statistically significant at the 1% level.

5. Robustness check

By substituting carbon taxes changes (CT) with the natural logarithm of carbon emissions trading credit prices (CETS), we conduct a robustness check to assess the impact of both CETS and OILxCETS on inflation. As a result, we formulate our models (3) and (4) as follows:

$$INF_{i,t} = \beta_0 + \beta_1 INF_{i,t-1} + \beta_2 CETS_{i,t-1} + \beta_3 OIL_{t-1} + \varphi V_{i,t} + \delta_t + \alpha_i + \mu_{i,t} \quad (3$$

$$INF_{i,t} = \beta_0 + \beta_1 INF_{i,t-1} + \beta_2 CETS_{i,t-1} + \beta_3 OIL_{t-1} + \beta_4 OIL_{t-1} \times CETS_{i,t-1} + \varphi V_{i,t} + \delta_t + \alpha_i + \mu_{i,t} \quad (4$$

CETS stands for Carbon Emission Trading Scheme adoption on the country-level, aimed at reducing carbon emissions. We perform this robustness check to determine whether carbon pricing, as measured by another scheme other than carbon taxes, has the same effect on inflation as carbon taxes or not. The list of countries using the Carbon Emission Trading Scheme as a form of carbon pricing will be displayed in Appendix B.

Table 4. Robustness check: alternative proxy for carbon taxes

Variables	FE		S-GMM	
Model	(3) INF_t	(4) INF_t	(3) INF_t	(4) INF_t
$INF_{i,t-1}$	0.206**	0.176**	0.6537***	1.0991***
	(2.55)	(2.31)	(3.11)	(3.60)
$CETS_{i,t-1}$	-0.0017	-0.0010	-0.0055***	-0.0039*
	(-1.72)	(-1.23)	(-5.78)	(-1.66)
OIL_{t-1}	0.0005	0.0376***	0.0189***	0.1094**
	(0.16)	(4.41)	(2.90)	(2.37)
$OIL_{t-1} \times CETS_{i,t-1}$		-0.0153***		-0.0355*
		(-4.04)		(-1.80)
$OUTPUT_{i,t-1}$	-0.0388	-0.0298	-0.1333***	-0.1309***
	(-0.92)	(-0.70)	(-3.75)	(-2.62)
$M2_{i,t-1}$	0.0625**	0.0593**	0.0830***	0.0753**
	(2.75)	(2.65)	(3.22)	(2.01)
$REER_{i,t-1}$	0.0097	0.0086	-0.0558*	-0.1093**
	(0.29)	(0.28)	(-1.74)	(2.23)
$TRADE_{i,t-1}$	-0.0016	-0.0024	-0.0066	0.0140
	(-0.44)	(-0.69)	(-0.40)	(0.43)
$PPI_{i,t-1}$	0.0903**	0.109***	-0.1259	-0.2182
	(2.45)	(2.97)	(-1.39)	(-1.58)
Constant	0.0126***	0.0126***	0.0186	-0.0029
	(3.29)	(3.60)	(1.43)	(-0.12)
Year fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Obs	231	231	231	231
N. countries	20	20	20	20
R2	0.174	0.214	-	-
F-test	5.53***	8.76***	561.09***	761.83***
Hansen test (p_value)	-	-	0.604	0.403
AR2 (p-value)	-	-	0.713	0.782

*Notes: *,**,and *** are statistically significant at the 10%, 5% and 1% levels, respectively. T-statistics are given in parenthesis.*

The results from Table 4 show that CETS in model (3) and (4) has a negative sign with INF, which has the same effect on inflation as CT in model (1) and (2). Once again, this implies that applying carbon pricing helps mitigate not only the amount of carbon emissions but also the acceleration of the inflation rate with a lag of one year. In the case of the interactive variable OIL×CETS in model (4), this also yields a similar finding as OIL×CT in model (2). In the condition of applying carbon taxes or participating in trading carbon emission credit, the impact of the volatility of oil prices on the inflation rate would be eased.

6. Concluding remarks

Our study outcomes match up with our given expectations. The results indicate that the global oil price and carbon taxes significantly impact inflation in both developing and advanced countries. The model of lag variables shows that levying carbon taxes mitigates the acceleration of inflation caused by the higher oil price. Moessner (2022) also studied that higher carbon emissions were associated with higher inflation and nations with better climate policy rankings tend to be associated with lower inflation across countries. Based on these results, we can explained that carbon taxes help reduce carbon emissions, and therefore help mitigate the adverse effect of higher inflation. This is an optimistic and meaningful result. There are some reasonable explanations for the deflation effects of implementing carbon taxes. Firstly, levying carbon taxes can depress household income and force them to cut back consumption, which leads to a downward trend in price. Secondly, levying carbon taxes intensifies investing and producing less energy-intensive goods and services and gradually does not use much energy for producing, which may cause less use of nonrenewable energy sources. Based on this outcome, the enforcement of a carbon tax to accelerate the movement to zero carbon is not constrained by considering the inflationary impact. This implication is significant since carbon pricing regimes have been demonstrated to reduce carbon emissions.

References:

Andersson, M., Morgan, J., & Baccianti, C. (2020). Climate change and the macro economy. Social Science Research Network. https://doi.org/10.2139/ssrn.3632832.

Bermingham, C. (2008). Quantifying the impact of oil prices on Inflation. Central bank and financial services authority of Ireland research technical paper.

Best, R., Burke, P. J., & Jotzo, F. (2020). Carbon Pricing efficacy: Cross-Country evidence. Environmental and Resource Economics, 77(1), 69–94. https://doi.org/10.1007/s10640-020-00436-x.

Blanchard, O., & Gali, J. (2007). The Macroeconomic Effects of Oil Price Shocks: Why are the 2000s so Different from the 1970s? Social Science Research Network. https://doi.org/10.2139/ssrn.1008395.

De Gregorio, J., Landerretche, O., Neilson, C., Broda, C., & Rigobon, R. (2007). Another Pass-through Bites the Dust? Oil Prices and Inflation [with Comments]. Economía, 7(2), 155–208. http://www.jstor.org/stable/20060494.

Gokmenoglu, K. K., Azin, V., & Taspinar, N. (2015). The Relationship between Industrial Production, GDP, Inflation and Oil Price: The Case of Turkey. Procedia. Economics and Finance, 25, 497–503. https://doi.org/10.1016/s2212-5671(15)00762-5.

Jacquinot, P., Kuismanen, M., Mestre, R., & Spitzer, M. (2009). An assessment of the inflationary impact of oil shocks in the euro area. The Energy Journal, 30(1). https://www.iaee.org/energyjournal/article/2297.

Kaenzig, D. (2021), "The unequal economic consequences of carbon pricing", London Business School, manuscript.

Konradt, M., & Di Mauro, B. W. (2023). Carbon Taxation and Greenflation: Evidence from Europe and Canada. Journal of the European Economic Association. https://doi.org/10.1093/jeea/jvad020.

McKibbin, W., Konradt, M. and B. Weder di Mauro. (2021). "Climate Policies and Monetary Policies in the Euro Area", Paper for ECB Sintra Forum 2021. https://doi.org/10.1504/IJGW.2022.126059.

Moessner, R. (2022). Evidence on climate policy, carbon dioxide emissions and inflation. International Journal of Global Warming, 28(2), 136-151.

Murray, B. C., & Rivers, N. (2015). British Columbia's revenue-neutral carbon tax: A review of the latest "grand experiment" in environmental policy. Energy Policy, 86, 674–683. https://doi.org/10.1016/j.enpol.2015.08.011.

APPROPRIATE POLICIES ARE NEEDED ENCOURAGING THE DEVELOPMENT OF GREEN BONDS

PhD. Dang Thi Ngoc Lan*

Abstract: ***Green bonds are a financial instrument issued by businesses, the Government, and financial institutions to mobilize investment capital for green projects, renewable economic projects, circular economic projects, environmental treatment projects, and climate change response projects. According to the World Bank's calculations, to develop a green economy in the period of 2022 - 2050, Vietnam needs up to 436 billion USD in capital. According to the calculations of the Ministry of Planning and Investment, to develop green and move towards the goal of zero net emissions by 20250, Vietnam needs to mobilize about 144 billion USD. According to the world's experience, an effective tool to mobilize capital is to issue green bonds. The article uses qualitative research methods to analyze the current status of the development of the Vietnamese corporate bond market in recent years, giving some assessments related to green bonds and recommending related solutions.***

• Keywords: *green bonds, corporate bonds, sustainable development.*

Date of receipt: 08th Mar., 2025
Date of delivery revision: 02th Apr., 2025
Date of receipt revision: 10th Apr., 2025
Date of approval: 12th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.04

Research Introduction

In recent years, the Vietnamese corporate bond market (TPDN) issued individually has grown strongly in terms of issuance scale. However, the scale and value of bonds on the market are still much lower than other countries in the region in terms of GDP. The value of bonds issued annually compared to other capital mobilization channels on the market is also quite low. Product quality has not met market demand, high risks, the legal system for the corporate bond market is still not complete. Green bonds account for a low proportion and tend to decline sharply. In order to sustainably develop the individual corporate bond market in general, and green bonds in particular, in the coming time, it is necessary to comprehensively implement specific solutions. The article focuses on urgent issues that are being raised in practice.

Research Methodology

Within the framework of a scientific conference paper, the practical article does not have the time and resources to conduct quantitative research, build functions, and determine impact variables. The author also does not have enough time and funds to conduct surveys, investigations, and interview experts. The author's paper uses qualitative research methods, presents key concepts, provides criteria for sustainable development, and analyzes the urgency of development for the economy in general and Vietnamese enterprises in particular.1. Current status of corporate bond market development

Research content

1. Current status of corporate bond market development

1.1. Regarding the scale of the corporate bond market

The Vietnamese corporate bond market has witnessed significant growth from 2018 to 2023. This development reflects the increased demand for financial instruments to raise capital, as well as the increasing participation of domestic and foreign investors. 2019 marked a strong growth of the corporate bond market compared to the previous period. The amount of corporate bonds issued increased by more than 30% compared to 2018, officially surpassing the amount of government bonds and bringing the outstanding debt equivalent to nearly 11% of GDP, with individual corporate bonds alone being more than 10% of GDP. 2021 is considered a boom year for corporate bonds. The total issuance volume in the year reached VND 742.7 trillion, double that of government bonds and the outstanding debt equivalent to 14.75% of GDP. In 2022, the market witnessed many incidents that caused a decline in confidence, causing consecutive consequences. The Government began to tighten corporate bond issuance activities, especially at the end of the year. As a result, the amount of corporate bonds issued in the year decreased by 64% compared to the peak year of 2021. Entering 2023, corporate bonds were generally relatively quiet in the first half of the year and improved in the second half. In 2023, the total value of corporate bonds issued reached VND 311.2 trillion,

** Cuu Long University; email:ngoclan29ufm@gmail.com; corresponding email: huyenvcbhnho@gmail.com*

an increase of more than 15% over the previous year. {VBMA (2024)}

In 2022, the total value of corporate bonds issued in the past year reached VND 258,575 billion, approximately 12.6% of GDP, still quite modest compared to countries in the region such as Malaysia (56% of GDP), Singapore (38% of GDP), Thailand (25.5% of GDP). Corporate bond outstanding debt accounted for 10% of the total outstanding debt of the whole economy at the end of 2022. In 2023, the total value of corporate bond issuance was recorded at VND 324,234 billion, with 29 public issuances worth VND 37,070 billion and 306 private issuances worth VND 287,164 billion (accounting for 88.6% of the total). {VBMA (2024)}

1.2. On the term structure and interest rates of corporate bonds

In addition to the structure of issuance forms, the issuance data also shows a clear classification of the term structure. The term structure of corporate bonds is mainly concentrated in terms of 3-5 years and over 5 years. These two terms account for a fairly large proportion; this situation shows the demand of issuing organizations for medium-term debt instruments. [HNX (2024)]

The average issuance term of corporate bonds in 2023 is 5.96 years, down about 0.4 years compared to the average in 2022. The issuance terms of credit institutions and real estate enterprises are 5.51 and 4.01 years, respectively. [HNX (2024)]

It can be seen that 67% of corporate bonds issued in the fourth quarter have a term of 5 years or less. Average issuance interest rate in Q4/2023: 7.65%/year. Average issuance term in Q4/2023: 5.56 years. The issuance interest rate continued to decrease in the fourth quarter with an average value of 7.65%/year, this is the fourth consecutive quarter of decrease in 2023. The issuance interest rate of the banking group is mostly from 5-7%/year, only a few commercial banks have an interest rate of about 8%. The real estate group has a common interest rate of 9.7%-12.5%/year. [HNX (2024)].

1.3. Regarding issuance method

Enterprises mainly issue by issuing agency through securities companies or commercial banks. In 2021, issuance by the agency method accounted for 66% of the total issuance volume; credit institutions mainly issued bonds directly to investors. 11.71% of the volume of privately issued bonds was underwritten by securities companies, accordingly, securities companies provide consulting services on documents, underwriting and distributing bonds on the secondary market. [HNX (2024)]

In terms of investors and members participating in the issuance market, the following table shows the structure of domestic and foreign investors participating in the corporate bond market in the period of 2021-2023. Commercial banks are the main investors participating in the corporate bond market. Unlike government bonds, corporate bonds are classified by commercial banks as credit groups and are often managed by the credit department. The market therefore has more of a credit market than a capital market. There are currently no comprehensive statistics on secondary trading of corporate bonds, so it is unclear how the ownership ratio of investors has changed after issuance. [MOF (2024)]

Individual investors in the market in 2023 decreased sharply compared to 2021 with the regulation that only professional individual investors are allowed to buy and sell privately issued corporate bonds. Instead, securities companies emerged with a large ownership volume in the market, accounting for 22.58% of the total issuance value in 2023. [HNX (2024)]

2. Assessment of the current status of development of Vietnam's corporate bond market

2.1. Achievements

Firstly, the market size is increasingly expanding

In the period 2017-2021, the individual corporate bond market grew strongly, due to the shift of mobilized capital from bank loans to bond issuance in the context of declining credit growth. For corporate bonds, in general, in 2023, the value of individual corporate bond issuance was VND 287,164 billion, the value of public issuance was VND 37,070 billion. The proportion of public bond issuance in 2023 skyrocketed to 11.43%, 7.3 percentage points higher than in 2022 and the highest level since 2015. [HNX (2024)]

On the banking side, BIDV is leading in green bond issuance. By the end of 2023, VND 2,500 billion worth of bonds had been issued according to the green bond standards of the International Capital Market Association (ICMA). BIDV is the first commercial bank to issue green bonds according to international standards in the domestic market. Within just 2 months of issuance, BIDV has disbursed all bond capital to finance renewable energy, wind power, solar power and sustainable transport projects. The issuance of green bonds affirms the bank's sustainable development strategy and the desire to contribute with the Vietnamese Government to fulfill its commitment to achieving net zero emissions by 2050. BIDV also aims to become a Net Zero Bank by 2050. [MOF (2024)]

Secondly, the legal framework is gradually being completed

In addition to the figures on the scale and value of corporate bond issuance, the legal framework on bonds has been and is gradually being completed. Decree No. 65/2022/ND-CP dated September 16, 2022 amending and supplementing a number of articles of Decree No. 153/2020/ND-CP dated December 31, 2020 regulating

the offering and trading of individual corporate bonds in the domestic market and the offering of corporate bonds in the international market. In 2023, the Government issued Decree 08/2023/ND-CP amending, supplementing and suspending the implementation of a number of articles in the Decrees regulating the offering and trading of individual corporate bonds in the domestic market and the offering of corporate bonds in the international market. [MOF (2024)]

Thirdly, the tenor of bonds is increasingly diverse and the interest rate on corporate bond issuance tends to decrease

In the context of the State Bank still managing credit growth limits, corporate bonds have emerged as a new capital mobilization channel, helping businesses not only mobilize capital in the medium and long term but also restructure their debt sources, limiting their dependence on the commercial banking system. Not only is it a new capital mobilization channel for businesses, but the corporate bond market is also a new choice for investors. During the difficult economic market period, the stock market has continuously decreased in points and is on the list of weak markets compared to other countries in the world.

Fifthly, the structure of investors buying corporate bonds is also increasingly diverse

Domestic investors still dominate, the proportion of foreign investors shows signs of increasing but is still insignificant compared to domestic investors. Considering the domestic investor group alone, the domestic banking group accounts for the highest proportion. Regarding the investor structure, securities companies and commercial banks are the main investors in the primary market, the proportion of individual corporate bond purchases by individual investors has decreased compared to 2020.

Sixthly, the possibility of successful maturity and the implementation of the individual corporate bond system is increasingly feasible

The pressure on corporate bond maturity is still increasing at the end of 2024, while many issuers are still facing difficulties in business operations and cash flow, being able to negotiate to extend the maturity of bonds that are about to mature is one of the best solutions that these issuers can choose at the present time to have more time to recover production and business and create enough cash flow to pay for their bond debts.

2.2. Limitations

Firstly, the scale of private issuance of corporate bonds has grown rapidly and rapidly in recent years. However, the size of the Vietnamese bond market only accounts for about 15% of GDP, much lower than other countries in the region. The uneven growth in issuance volume and quality of bonds leads to the market being easily affected by any changes in legal policies or the market.

Secondly, the structure of investors from private issuance of corporate bonds has not been diversified when the results show that they are mainly concentrated in two groups: securities companies and domestic commercial banks. Banks are the largest issuers of bonds and also the largest buyers of bonds, leading to the consequence of lack of transparency in capital flows and the risks that follow.

Thirdly, the short-term and medium-term bond maturity structure - high interest rates but the purpose of raising capital for long-term projects leads to future financial risks if cash flow is not well managed, having to pay principal when the project has not yet generated profits, resulting in low capital efficiency. Potential risks such as the form of lending capital, even a way to avoid credit limits. Fourth, the possibility of successful maturity is low due to short-term bonds, businesses may not be able to respond in time to overcome the consequences, the risk of facing bankruptcy is very high. It is difficult to ensure payment sources for maturing bonds. Fifth, the Government, the Ministry of Finance and relevant ministries and branches do not have specific policies to encourage the issuance of green bonds, so the issuance results in this field are tending to slow down. If in 2022, businesses issued 37,000 billion VND of green bonds, then in 2023, only 3,000 billion VND of this type of bond was issued and there were no results in the first 5 months of 2024. [MOF (2024)]

2.3. Causes of limitations

Causes from management agencies

The draft legal framework amends the circular many times, making it difficult for management organizations, issuing enterprises, and investors to adapt and get used to it.

A new regulation in Decree 153/2020/ND-CP is that the subjects buying corporate bonds are only for professional investors. Specifically, privately issued bonds are only issued to professional investors and do not need to be licensed. Professional securities investors when buying private corporate bonds must self-assess and take responsibility for the risks. Issuing enterprises and organizations providing corporate bond services when committing violations will be subject to administrative sanctions according to regulations. [MOF (2024)]

* The management and supervision system is not really effective

The corporate bond market still has some potential risks, and needs to be closely monitored for the market to develop healthily. Specifically, for the collateral of bonds. The collateral of bonds is mainly real estate, securities, programs and projects. Although the rate of bonds with

collateral is high, in reality, the quality of collateral is mainly projects, future assets or corporate stocks.

* Infrastructure has not yet met the transaction needs of investors in a timely manner

To increase the liquidity of privately issued corporate bonds as well as help the market have information on bond transactions after issuance, Decree 153/2020/ND-CP has regulations on the organization of a secondary trading market for privately issued corporate bonds. Before the corporate bond trading system was put into operation, the number of privately issued corporate bonds traded centrally or listed was often very limited, meaning that bond transactions mainly took place on the OTC market or through securities companies and depository organizations by transferring ownership.

* Absence of credit rating agencies

Lack of organizations to evaluate and rate corporate credit. Current investors rely entirely on the information disclosure table published by the issuing organization when investing, without an independent source of data to check the transparency of the market. Recognizing that the credit rating puzzle is still lacking for investors to have more tools to evaluate and trust corporate bonds when up to now, there are only 2 organizations allowed to operate credit rating in the market.

Causes from investors

Investors mainly rely on the psychology of the majority without a full understanding and analysis of the corporate bond market, and do not have awareness of green bonds. Individual investors do not have the ability and resources to fully assess the risks of bonds, so each investor needs to learn and have a certain amount of knowledge. Some prominent reasons from investors include:

Lack of legal knowledge: The Securities Law, the Enterprise Law and the Decrees on the issuance of corporate bonds clearly stipulate that only professional securities investors are allowed to buy and trade privately issued corporate bonds. Accordingly, investors need to learn about the regulations on conditions, supporting documents and regulations on sanctions for violations against professional securities investors.

Lack of information about the issuing enterprise and the bond: Bonds need to be evaluated and analyzed in terms of the field of operation, the issuing enterprise, financial situation, purposes of capital use, quality of collateral as well as the conditions and terms of the bond.

3. Recommendations for sustainable development of the corporate bond market

In the context of economic tensions between countries in the world due to political conflicts, the Vietnamese stock market is also greatly affected. In addition, the nature of the market still has many limitations as analyzed above. This article recommends some solutions to contribute to stabilizing and sustainably developing the corporate bond market in general and green bonds in particular in Vietnam in the coming time.

3.1. Solutions for sustainable development of the bond market in general

Firstly, it is necessary to urgently complete the legal framework and organize the implementation of the Government's policies to promote the development of the corporate bond market in general and green bonds in particular

It is necessary to have specific regulations on the responsibilities of the State Securities Commission, the State Bank of Vietnam, and the Stock Exchange as specialized management agencies in managing and supervising the issuance and provision of corporate bond services for securities companies and credit institutions; focusing on the focal point for managing the corporate bond market at the State Securities Commission in the direction of distinguishing the management and supervision methods between bonds issued to the public (licensed) and bonds issued privately.

In addition, to restore the attractiveness of the corporate bond market, the Government needs to review all taxes that investors must pay in the corporate bond investment sector, creating conditions to encourage long-term investors through exemption or reduction of all or part of taxes on bond income and taxes on bond repo transactions.

The National Assembly needs to have a plan, the Government needs to direct relevant ministries and branches to urgently complete the legal frameworks related to green cities, including: (i) Regulations on classifying and certifying national green projects to apply incentive policies need to consider the similarities between Vietnam's green criteria and international standards. This makes it easier for businesses to implement projects, attract domestic and foreign investment according to the same system of standards.

When developing or promulgating legal documents under their functions, relevant ministries and branches need to stipulate green criteria including levels corresponding to different levels of policy incentives. At that time, enterprises issuing green bonds can gradually access preferential policies as well as create goals/ motivations to achieve sustainable growth; at the same time (ii) Issue guidelines for issuance activities and post-issuance reporting of green bonds, taking into account specific regulations between the operations of credit institutions and economic organizations.

The issued mechanisms and policies need to support and encourage enterprises to green transformation and issue green bonds through continued research and expansion of policies to support enterprises to issue green bonds such as supporting issuance costs, tax

incentives, etc.; promoting training and developing human resources on the environment; promoting propaganda and encouraging enterprises to implement green transformation. It is necessary to encourage investors to participate in investing in green bonds: consider issuing preferential policies large enough to encourage investors to buy bonds (for example, incentives on credit limits, taxes on investment yields, etc.); raise awareness of investors' responsibility towards sustainable development, community and society.

Secondly, it is necessary to encourage enterprises to conduct credit ratings

Instead of suspending credit ratings, the Government needs to consider solutions to encourage enterprises to conduct credit ratings before issuing corporate bonds in general and green bonds in particular.

Thirdly, it is necessary to promote and strengthen the activities of market makers of corporate bonds in general and green bonds in particular

+ Promote the role of market makers

It is necessary to encourage investment funds to participate in the corporate bond market. This is one of the members that actively contributes, contributing to increasing liquidity for the entire bond market. Investors will gather small capital sources from non-professional investors, thereby allocating their investment portfolios to bonds or stocks. With the available advantages of expertise as well as financial potential, investment funds will buy and sell corporate bonds to make a profit.

+ Professionalize the stock brokerage team It is necessary to improve the expertise and professionalism of stock brokerage experts, and there should be sanctions and regulations on ethical standards for brokers.

Fourthly, organize a secondary trading market for privately issued corporate bonds The secondary trading market is where investors can buy and sell issued bonds without having to wait for the maturity date. This creates liquidity for bonds, making investment in bonds more flexible and attractive. Thereby, it also helps the bond market develop more strongly, increasing capital sources for businesses.

Fifthly, it is necessary to build a credit rating system for businesses According to international practice, the corporate bond market needs the participation of valuation and credit rating organizations to increase the quality of bonds traded in the corporate bond market in general, and green bonds in particular.

Sixthly, it is necessary to increase publicity, transparency, and limit risks for investors through regulations to manage separately between private issuance and public issuance for investors for issuing enterprises, it is necessary to improve the management of private issuance of corporate bonds by the enterprises themselves. Issuing enterprises must enhance autonomy and self-responsibility when mobilizing bond capital; comply with issuance conditions and investors buying bonds and fully disclose information to investors and the Information Portal on corporate bonds in general and green bonds in particular.

3.2. Solutions to promote the development of green bonds

The National Assembly needs to supplement the Resolution on law making, the Government directs relevant ministries and branches to urgently submit to the Government and the National Assembly the draft Law on Green Economic Development, or the Government's Decree on Green Economy, or the Circular of the Ministry of Finance on issuing green bonds. Accordingly, legal regulations need to ensure the following requirements:

First, regulations on classifying and certifying national green projects to apply incentive policies need to consider the similarities between Vietnam's green criteria and international standards. This makes it convenient for businesses to implement projects, attract domestic and foreign investment according to the same system of standards.

In addition, consider regulating green criteria including levels corresponding to different levels of policy incentives. At that time, businesses issuing green bonds can gradually access incentive policies as well as create goals/motivations to achieve sustainable growth; At the same time (ii) Issue guidelines for the issuance and reporting of green bonds, taking into account the specific regulations between the operations of credit institutions and economic organizations.

Second, there are specific and clear regulations on the support mechanism, encouraging enterprises to make green transformation and issue green bonds through continuing to research and expand policies to support enterprises issuing green bonds such as supporting issuance costs, tax incentives, etc.; promote training and development of human resources on the environment; Promote propaganda and encourage enterprises to make green transformation.

Third, encourage investors to participate in green bond investment: consider issuing preferential policies large enough to encourage investors to buy bonds.

References:

HSX (2024): Report on trading activities on HSX and HNX in 2018, 2019, 2020, 2021, 2022, 2023. Hard copy.

HNX (2024): Report on trading activities of Corporate Bonds on HNX in 2018, 2019, 2020, 2021, 2022, 2023. Hard copy.

MOF (2024): Law No. 62/2010/QH12 issued on November 24, 2010 - "Amending and supplementing a number of articles of the Securities Law". Decrees and Circulars on the activities of the Securities Market and Corporate Bonds; access at www.mof.gov.vn, access date: May 30, 2024.

SSC (2023): Asian Development Bank Corporate Bond Market Report 2020, 2021, 2022, 2023. Hardcopy, State Securities Commission

SSC (2024): Summary report on the activities of the Securities Market, 2020, 2021, 2022, 2023. Hardcopy, State Securities Commission

VBMA (2024): Annual bond market report, 2019-2023, Vietnam Bond Market Association (VBMA), hard copy. 7. VBPL (2024): Some legal documents: National Assembly (2014): Securities Law 2019 No. 54/2019/QH14; Government (2018): Decree 163/2018/ND-CP. Hard copy. Legal Publishing House, Hanoi 2014, 2018, 2019

EFFECTIVE MANAGEMENT OF WASTE RECYCLING AND TREATMENT FIRMS TOWARDS SUSTAINABLE DEVELOPMENT GOALS AND A CIRCULAR ECONOMY

PhD. Phung Mai Lan* - PhD. Nguyen Binh Minh**

Abstract: ***Firms in the waste recycling and treatment industry are a key sector in the development of a circular economy and contribute significantly to national environmental sustainability goals. This research aims to assess the productivity and efficiency of these firms and propose recommendations for their effective management. The study utilizes enterprise survey data from the waste recycling and treatment sector spanning 2015-2022. It employs Data Envelopment Analysis (DEA) to measure efficiency, the Generalized Method of Moments (GMM) to measure Total Factor Productivity (TFP), and subsequently evaluates the impact of various factors on business productivity and efficiency within the industry. The research findings indicate that the average efficiency of waste recycling and treatment firms is moderate, at 59.851%. Smaller firms tend to be more efficient, and efficiency tends to increase as firms grow to a certain size. Environmental impact variables, financial constraints, and capital structure are identified as the primary factors affecting the efficiency and productivity of firms in the waste recycling and treatment industry.***

• Keywords: *waste recycling and treatment firms, circular economy, efficiency, productivity, DEA, GMM.*

Date of receipt: 29th Mar., 2025
Date of receipt revision: 28th Apr., 2025
Date of delivery revision: 05th Apr., 2025
Date of approval: 27th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.05

1. Introduction

Orienting business towards sustainable development goals and the circular economy are relevant research topics in current business theory and practice. The increasingly developed global economy also entails a large amount of waste, causing significant negative impacts on the environment, threatening the sustainable development of the economy (Boons & Lüdeke-Freund, 2013). Therefore, governments of various countries are gradually transitioning to sustainable production models and a circular economy to minimize the negative and unwanted impacts of economic activities. The circular economy is a great opportunity for manufacturing enterprises to deploy environmentally friendly products, cleaner production, and the activities of waste recycling and treatment firms contribute significantly to the goals of this circular economy. Climate change and environmental issues are increasingly complex, requiring countries around the world to quickly implement many actions to prevent future environmental disasters, paving the way for many studies related to the circular economy (Ferasso et al., 2020; Geissdoerfer et al., 2020).

Waste recycling and treatment enterprises play a crucial role in the transition to a circular economy and sustainable production (based on the 3R principle: reduce, reuse, and recycle). Analyzing the operational efficiency of waste recycling and treatment firms based on efficiency and productivity indicators is therefore an important topic that directly impacts the circular economy. Research in the field of recycling and waste has analyzed issues related to environmental performance and eco-efficiency practices from a multidisciplinary perspective in various areas, including the efficiency of recycling firms (Marques et al., 2012), the efficiency of urban waste management (Díaz-Villavicencio et al., 2017; Molinos-Senante et al., 2023; Rios & Picazo-Tadeo, 2021), efficiency in industrial waste recycling and treatment (Li et al., 2020), and solid waste management and urban solid waste recycling (Amaral et al., 2022; Bui et al., 2022; Ferraro et al., 2023). Early efficiency studies focused on indicators at the national level; studies conducted at the enterprise level with waste recycling firms are still limited (Pedersen et al., 2021, Kurki & Lähdesmäki, 2023). In general, studies have shown that waste treatment and recycling firms often have low efficiency levels (Li et al., 2019; Marques et al., 2012; Parte-Esteban & Alberca-Oliver, 2015), with fluctuations at different stages (Li et al., 2020).

** Thuyloi University; email: lanpm@tlu.edu.vn*
*** National Economics University; email: minhbn@neu.edu.vn (Corresponding Author)*

The lack of incentive factors (Marques et al., 2012) as well as internal and external factors can explain poor business performance or inefficiency (Li et al., 2019; Parte-Esteban & Alberca-Oliver, 2015).

According to statistics from the Ministry of Natural Resources and Environment, Vietnam discharges 1.8 million tons of plastic waste into the environment each year. Vietnam's plastic consumption has increased by about 15% annually, leading to a steadily increasing amount of plastic waste. Efficiently operating waste recycling and treatment firms in Vietnam will make an important contribution to sustainable economic development and the circular economy. Research measuring the efficiency and productivity of this specific group of firms in Vietnam is still very limited.

Therefore, this study delves into measuring and analyzing business performance with micro-level data, using a balanced panel of waste recycling and treatment firms. The study first uses the Data Envelopment Analysis (DEA) model to measure efficiency, the Generalized Method of Moments (GMM) model to measure Total Factor Productivity (TFP) and then assesses the impact of factors such as capital structure, financial constraints, CO2 emissions, enterprise size, and other characteristic variables on the efficiency and productivity of firms in the waste recycling and treatment industry.

2. Research method

2.1. Effective measurement method

Analyzing the efficiency of firms in the recycling and waste treatment industry is developed using the non-parametric DEA boundary model, which allows determining the relative efficiency of N firms (DMUs or decision-making units) without imposing production function forms. Charnes et al. (1978) developed a non-parametric DEA boundary method that allows taking into account radial efficiency in DEA-oriented models. According to the original model established by Charnes et al. (1978), we calculate the Debreu-Farrell indices and constant returns to scale, the input-oriented index for DMUs or firms, including the objective function and constraints, can be calculated as follows:

$$\max \sum_{k=1}^{s} v_{kJ} y_{kJ}$$

$$\sum_{k=1}^{s} v_{kJ} y_{kj} - \sum_{i=1}^{m} u_{iJ} x_{ij} \le 0 \qquad \sum_{i=1}^{m} u_{iJ} x_{ij} = 1$$

$$v_{kJ}; u_{iJ} \ge \varepsilon$$

$j = 1, 2, \ldots, n;\ k = 1, 2, \ldots, s;\ i = 1, 2, \ldots, m$

After that, the Charnes, Cooper & Rhodes (CCR) model developed by Charnes et al. (1978) with constant returns to scale, along with market deviations and the differences of firms by scale, was developed into the model proposed by Banker et al. (1984) with variable returns to scale, or also called the Banker, Charnes & Cooper (BCC) model. The efficiency scores under variable returns to scale represent the efficiency index without taking into account the operating scale. The BCC model with the dual representation is as follows:

$$\min \theta_J - \varepsilon \left[\sum_{k=1}^{s} h_k^+ + \sum_{i=1}^{m} h_i^- \right]$$

$$\sum_{j=1}^{n} x_{ij} \lambda_j = \theta_J x_{iJ} - h_i^- \qquad \sum_{j=1}^{n} y_{kj} \lambda_j = y_{kJ} + h_k^+$$

$$\lambda_j; h_i^-; h_k^+ \ge 0 \qquad \sum_{j=1}^{n} \lambda_j = 1$$

The study applied Coelli's (1998) multi-stage DEA algorithm, using linear programming in six stages and allowing comparison of inefficient units with the nearest efficient reference to overcome this limitation. This nearest reference is located on the efficiency frontier and does not change according to the units of measurement (Coelli, 1998). This study used physical capital (K), labor (L), and energy (TOE) as input variables. The output variable is the added value of the firms.

2.2. Methods of measuring total factor productivity TFP

Production function model

Assume that the production function has the following Cobb-Douglas:

$$Y_{it} = A_{it} K_{it}^{\beta_k} L_{it}^{\beta_l} M_{it}^{\beta_m} \qquad (1)$$

Y_{it} is the physical output of firm i in period t. K_{it}, L_{it} and M_{it} are the inputs of capital, labor, and intermediate inputs, respectively, and A_{it} is the Hicks-neutral efficiency level of firm i in period t. We assume that econometricians observe Y_{it}, K_{it}, L_{it}, M_{it}, and A_{it} is unobservable. Taking the natural logarithm of (1) leads to

$y_{it} = \beta_0 + \beta_k k_{it} + \beta_l l_{it} + \beta_m m_{it} + u_{it,}$

trong đó $ln\ (A_{it}) = \beta_0 + u_{it}$ (2)

β_0 measures the average efficiency between firms and over time; u_{it} is the individual deviation over time - and the producer compared to that average, which can then be further decomposed into observable (at

least predictable) and unobservable components. This leads to the following equation:

$$y_{it} = \beta_0 + \beta_k k_{it} + \beta_l l_{it} + \beta_m m_{it} + v_{it} + e_{it} \quad (3)$$

Taking wit=b0+vit denotes firm-level productivity and ε_{it} is a component with independent, identical distribution, representing unpredictable deviations from the average due to measurement errors, unpredictable lags or other external circumstances. Typically, empirical researchers estimate

$$y_{it} = \beta_k k_{it} + \beta_l l_{it} + \beta_m m_{it} + \omega_{it} + \varepsilon_{it} \quad (4)$$

Estimated productivity can be determined by the following equation once ω_{it} is also solved

$$\hat{\omega}_{it} = \hat{v}_{it} + \hat{\beta}_0 = y_{it} - \hat{\beta}_k k_{it} - \hat{\beta}_l l_{it} - \hat{\beta}_m m_{it} \quad (5)$$

and the TFP yield can be obtained as an exponential function of $\hat{\omega}_{it}$ meaning

$$\hat{\Omega}_{it} = \exp(\hat{\omega}_{it})$$

Choosing a TFP measurement method

Although the foundation of total factor productivity analyses from production functions originated from Solow's (1957) research, recent years have seen studies on TFP measurement still attracting the interest of many economists. Such as the semi-parametric method initiated by Olley & Pakes (1996) and later Levinsohn & Petrin (2003), which is a combination of parametric and semi-parametric techniques, called the robust production function estimation method. Ackerberg et al. (2006) then extended OP's semi-parametric estimation to address multicollinearity and identification issues with the labor variable. Subsequently, Wooldridge (2009) pointed out that the semi-parametric estimates of OP, LP, and ACF can be performed using a one-step GMM method, while standard semi-parametric estimates use a two-step estimation procedure to obtain robust estimates of input elasticities. Wooldridge (2009) argues that the moment conditions implied by the semi-parametric estimates can be easily implemented in the GMM approach. Therefore, the approach proposed by Wooldridge (2009) has some advantages over standard semi-parametric estimation. This study uses Wooldridge's (2009) approach to measure TFP.

2.3. Model for assessing the impact of factors on the efficiency and productivity of waste recycling and treatment firms

$$E\_DEA_{it} = \beta_0 + \beta_1 \times lnKL_{it} + \beta_2 \times lnLC_{it} + \beta_3 \times VNG_{it} + \beta_4 \times DNNN_{it} + \beta_5 \times FDI_{it} + \beta_6 \times Fsize_{it} + \beta_7 \times Fsize2_{it} + \beta_8 \times LnCO2_{it} + \beta_7 \times WWD_{it} + c_i + u_{it} \quad (6)$$

$$TFP\_GMM_{it} = \beta_0 + \beta_1 \times lnKL_{it} + \beta_2 \times lnLC_{it} + \beta_3 \times VNG_{it} + \beta_4 \times DNNN_{it} + \beta_5 \times FDI_{it} + \beta_6 \times Fsize_{it} + \beta_7 \times Fsize2_{it} + \beta_8 \times LnCO2_{it} + \beta_7 \times WWD_{it} + c_i + u_{it} \quad (7)$$

In which,

E_DEA_{it} is the business efficiency of the waste recycling and treatment industry estimated by the multi-stage DEA method.

$lnKL_{it}$ is the business efficiency of the waste recycling and treatment industry estimated by Wooldridge's GMM method (2009).

$lnKL_{it}$ is the logarithm of KL (KL - capital intensity calculated as capital per labor); $lnLC_{it}$ is the logarithm of LC (LC calculated as income per labor); *VNG* is the external capital ratio calculated as total liabilities/ total assets.

$DNNN_{it}$ and FDI_{it} are dummy variables that take the value 1 if the firm is a state-owned enterprise (SOE) or a foreign direct investment (FDI) enterprise, respectively, or 0 otherwise.

$Fsize_{it}$ is the logarithm of total assets and $Fsize2_{it}$=*Fsize*Fsize.*

$LnCO_{2it}$ is the logarithm of the firm's CO2 emissions, representing the firm's environmental impact (Laura & Pilar, 2024). Due to data limitations, the study only uses CO2 emissions as the sole proxy.

WWD_{it} is a financial constraint index, based on the research by Whited & Wu (2006).

$$WW_{it} = -0.091 \times CFA_{it} - 0.062 \times DIV_{it} + 0.021 \times TLTD_{it} - 0.044 \times Fsize_{it} + 0.102 \times IRG_{kt} - 0.035 \times RG_{it}$$

Where CFA is cash flow/total assets. *DIV* is a dummy variable that takes the value of 1 if firm *i* in year *t* has a profit and 0 otherwise. *TLTD* is the debt burden measured by total debt over total assets, *Fsize* is the logarithm of total assets, *IRG* and *RG* are respectively the revenue growth of industry *k* and the firm.

A firm is financially constrained if the WW_{it} index is high. The dummy variable $WWD_{it/}$ represents financial constraints and takes the value of 1 if firm *i* in year *t* belongs to the >= 1/3 quantile of the distribution and 0 otherwise

3. Results of experimental research

3.1. Data source

The study uses annual survey data from the General Statistics Office of Vietnam (GSO) for the waste recycling and treatment industry from 2015 to 2022 (Firms with VSIIC 2007 industry codes 37,

38, and 39). The data, after collection and removal of invalid observations, is in the form of panel data with a total of 3,192 observations over 8 years from 2015-2022.

Descriptive statistics of the variables included in the model are given in table 3.1 below

Table 3.1: Descriptive analysis of model variables

Variable	Unit	Number of observations	mean	min	max
KL	million/capita	3192	205.74	2.08E-08	2.01E+04
LC	million/capita	3192	8.53	3.42E-07	731.477
VNG	%	3192	0.47	0.000775	40.167
CO2	tons/enterprise	3192	3,215.59	5.61E-06	175407
DNNN	0/1	3192	0.06	0	1
FDI	0/1	3192	0.01	0	1
Fsize	log	3192	12.15	0.693	28.922
WWD	0/1	3192	0.67	0	1
E_DEA	%	3192	59.851	0	100
TFP_GMM	Gtri	3192	67.761	0.0000226	1023.98

Source: Author's Calculations Based on GSO Data

The research results show that most firms in the waste recycling and treatment industry are private firms, with only about 1% being FDI firms and 6% being state-owned firms, with an average enterprise size of approximately 109 employees per enterprise. The efficiency estimation results using the multi-stage DEA method show that the efficiency of firms in this industry is still low at 59.851% compared to the optimal level of 100% (or in other words, 0.59851 compared to 1). In particular, the highest DEA efficiency values were in 2016, 2017, and 2018 (reaching 62%, 63%, and 67% respectively), decreasing slightly in 2019 and quite sharply in the following years. By 2022, DEA efficiency reached only 53.74%, partly due to the impact of Covid-19. TFP_GMM also shows a relatively similar trend to the DEA efficiency trend in the early stages. Although affected by Covid-19, leading to a significant decrease in TFP_GMM in 2020, TFP_GMM in 2021 and 2022 subsequently showed a stronger recovery trend, confirming that capital quality, labor quality, as well as technological progress have improved significantly during this period.

3.2. Results of the impact assessment model

The study uses the fixed effects (FE) and random effects (RE) methods for estimation. The Hausman test results indicate that the FE model is more appropriate. The diagnostic test results show that the model does not have multicollinearity, has autocorrelation, and has heteroskedasticity, so the study implemented corrections using the feasible generalized least squares (FGLS) method.

The research results in all four models (1), (2), (3), and (4) are highly consistent. Most variables are statistically significant except for the FDI variable in all four models, some other variables are not statistically significant including the *lnKL*, *lnLC*, *Fsize2*, $LnCO_2$ (model 4), and DNNN (model 2) variables.

Table 3.2. Regression results of models assessing the impact on the efficiency and productivity of waste recycling and treatment firms

	(1)	(2)	(4)	(3)
Variable	E_DEA_FE	TFP_GMM_FE	E_DEA_FGLS	TFP_GMM_FGLS
lnKL	-0.136**	-0.128***	-0.332	-0.189***
	(0.0586)	(0.00261)	(0.543)	(0.0337)
lnLC	0.317***	0.0127***	0.0355	0.127***
	(0.0769)	(0.00343)	(0.453)	(0.0394)
VNG	-0.0055	-0.000945**	-0.00255*	-0.00337*
	(0.00882)	(0.000394)	(0.00113)	(0.000214)
DNNN	1.409***	0.0114	2.563***	0.0419*
	(0.710)	(0.0763)	(0.420)	(0.0163)
FDI	0.216	0.240	0.345	0.348
	(4.924)	(0.220)	(2.145)	(0.351)
Fsize	-0.0565	-0.0163***	-1.322*	-0.542***
	(0.0725)	(0.00324)	(0.584)	(0.168)
Fsize2	0.000923	0.000191***	0.0108	0.0164***
	(0.000758)	(3.38e-05)	(0.00898)	(0.00538)
LnCO2	2.938***	1.870***	-1.256	1.721***
	(0.141)	(0.00631)	(0.444)	(0.0468)
WWD	-0,137***	-0,0612*	-0,1589***	-0,1112*
	(0,0189)	(0,0315)	(0,0217)	(0,0425)
Intercept	47.90***	-0.846***	76.88***	2.885***
	(0.984)	(0.0439)	(8.530)	(1.010)
Number of observations	3,192	3,192	3,192	3,192
R-squared	0.797	0.906		
Number of firms	399	399	399	399
Hausman test	70.11***	228.71***		
Wooldridge test	28.252***	45.205***		
Modified Wald test	2159.75***	4445.6***		
VIF	3.43	4.22		

Source: Author's Calculations Based on GSO Data

**** p<0.01, ** p<0.05, * p<0.1*

The capital structure as well as the capital utilization of firms in this industry are showing irrationality. This is reflected in the coefficients of the lnKL and VNG variables, which both have negative signs and are almost all statistically significant in the models; specifically, when lnKL and VNG increase by 1%, they reduce the TFP productivity of firms in the industry by 0.189% and 0.00337% respectively. Both internal capital and external debt are being used in a less effective manner and create a negative impact on enterprise productivity and efficiency.

Average income per capita is showing a positive impact on enterprise productivity and efficiency. Increased income will motivate and reassure employees to contribute, thereby improving work efficiency, which helps increase enterprise productivity and efficiency. Specifically, when average income per capita increases by 1%, TFP productivity increases by 0.127%.

State-owned firms operate more efficiently than other enterprise groups in this industry. In particular, the results show no impact of the presence of FDI firms on enterprise productivity and efficiency in the industry. This may be due to the limited number of FDI firms operating in the industry and may not have created a spillover effect to other firms in the industry. Smaller enterprise size brings more positive impacts to firms. In particular, the positive sign of the Fsize2 variable shows that a gradual increase in size will help increase enterprise efficiency. Smaller firms are helping to increase efficiency, but when a certain size is reached, efficiency tends to increase**.**

The $lnCO_2$ variable has a positive value and is statistically significant. This reflects the environmental impact of the enterprise. This shows that environmental impact is still bringing higher productivity to firms with an impact level of a 1% increase in environmental impact leading to a 1.721% increase in productivity, a relatively strong impact. A smaller amount of emissions and higher productivity can show that the role and technological level of firms in the industry are quite high, which is also reflected in the very high *TFP_GMM* value of the enterprise compared to the average.

The variable representing financial constraints *WWD* has a negative sign and is statistically significant in the models, showing that when financial constraints are greater, the more negative the impact on the efficiency and TFP productivity of the enterprise. When the *WWD* financial constraint index increases by 1%, it causes the efficiency and TFP productivity to decrease by 0.1589% and 0.1112% respectively.

4. Conclusion and recommendations

This study uses enterprise survey data from the waste recycling and treatment industry from 2015 to 2022, applying the multi-stage Data Envelopment Analysis (DEA) method to measure efficiency and the Generalized Method of Moments (GMM) to assess total factor productivity (TFP). From this, the study evaluates the impact of various factors on the productivity and efficiency of firms in the industry. The results show that the average efficiency of waste recycling and treatment firms is only 59.851%. Smaller firms achieve higher efficiency compared to larger ones. The main factors affecting enterprise efficiency and productivity in the industry include environmental impact, financial constraints and capital structure. Specifically, a 1% increase in lnKL and VNG leads to a decrease of 0.189% and 0.00337% in TFP productivity of firms in the industry, respectively, while a 1% increase in environmental impact increases productivity by 0.721%. Furthermore, the greater the financial constraints, the stronger the negative impact on enterprise efficiency and TFP productivity. Specifically, when the WWD financial constraint index increases by 1%, enterprise efficiency and TFP productivity decrease by 0.1589% and 0.1112%, respectively. Notably, a 1% increase in CO2 emissions increases the productivity of firms in the industry by a relatively high level of 1.721%. The presence of FDI firms has not yet shown a clear impact on the productivity of firms in the industry.

Some recommendations that can be drawn from the research results include that firms need to restructure their capital structure, control and use capital more effectively to improve capital management efficiency and help firms operate efficiently. Continuing support policies that encourage and reward employees will have a positive impact on the work efficiency of employees and firms. Firms in the industry need to increase the application of modern technologies and better manage environmental impact to minimize emissions and bring greater productivity to the industry. To enhance the role and spillover effects of FDI firms in this industry, the government needs to have policies to encourage FDI firms to invest in the industry in order to access more modern technologies and better management methods, thereby helping to improve the efficiency of the industry.

References:

Ackerberg, D.A., Caves, K. and Frazer, G. (2006), Structural Identification of Production Functions. Mimeo, UCLA Department of Economics.

Amaral, C., Pedro, M. I., Ferreira, D. C., & Marques, R. C. (2022). Performance and its determinants in the Portuguese municipal solid waste utilities. Waste Management, 139, 70–84.

Banker, R. D., Charnes, A., & Cooper, W. (1984). Some models for estimating technical and scale inefficiencies in data envelopment analysis. Management Science, 30(9), 1078–1092.

Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: State-of-ithe-art and steps towards a research agenda. Journal of Cleaner Production, 45, 9–19.

Bui, T. D., Tseng, J. W., Tseng, M. L., & Lim, M. K. (2022). Opportunities and challenges for solid waste reuse and recycling in emerging economies: A hybrid analysis. Resources, Conservation and Recycling, 177, 105968.

Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. European Journal of Operational Research, 2(6), 429–444.

Coelli, T. (1998). A multi-stage methodology for the solution of orientated DEA models. Operations Research Letters, 23(3–5), 143–149

Díaz-Villavicencio, G., Didonet, S. R., & Dodd, A. (2017). Influencing factors of eco-efficient urban waste management: Evidence from Spanish municipalities. Journal of Cleaner Production, 164, 1486–1496.

Ferasso, M., Beliaeva, T., Kraus, S., Clauss, T., & Ribeiro-Soriano, D. (2020). Circular economy business models: The state of research and avenues ahead. Business Strategy and the Environment, 29(8), 3006–3024.

Ferraro, A., Garofalo, A., & Marchesano, K. (2023). Measuring differences in efficiency in waste collection and disposal services from the EU targets in Campania municipalities. Environmental and Ecological Statistics, 30, 81–101.

Geissdoerfer, M., Pieroni, M. P., Pigosso, D. C., & Soufani, K. (2020). Circular business models: A review. Journal of Cleaner Production, 277, 123741.

Kurki, M., & Lähdesmäki, M. (2023). Cultivating sustainability thinkers: Analyzing the routes to psychological ownership in local business units of multinational enterprises (MNEs). Business & Society, 62(3), 530–564.

Laura Parte1 and Pilar Alberca (2024), Circular Economy and Business Models: Managing Efficiency in Waste Recycling Firms, Business & Society, Vol. 63(6) 1426 –1461

Levinsohn, James, and Amil Petrin. "Estimating production functions using inputs to control for unobservables." The review of economic studies 70.2 (2003): 317-341.

Li, D., Wang, M. Q., & Lee, C. (2020). The waste treatment and recycling efficiency of industrial waste processing based on two-stage data envelopment analysis with undesirable inputs. Journal of Cleaner Production, 242, 118279.

Li, Y., Zeng, B., Wu, T., & Hao, H. (2019). Effects of urban environmental policies on improving firm efficiency: Evidence from Chinese new energy vehicle firms. Journal of Cleaner Production, 215, 600–610.

Marques, R. C., da Cruz, N. F., & Carvalho, P. (2012). Assessing and exploring (in) efficiency in Portuguese recycling systems using non-parametric methods. Resources, Conservation and Recycling, 67, 34–43.

Molinos-Senante, M., Maziotis, A., Sala-Garrido, R., & Mocholi-Arce, M. (2023). The eco-efficiency of municipalities in the recycling of solid waste: A stochastic semi-parametric envelopment of data approach. Waste Management & Research, 41(5), 1036–1045.

Olley, Steven, and Ariel Pakes. "The dynamics of productivity in the telecommunications equipment industry." (1992).

Parte-Esteban, L., & Alberca-Oliver, P. (2015). New insights into dynamic efficiency: The effects of firm factors. International Journal of Contemporary Hospitality Management, 27(1), 107–129.

Pedersen, E. R. G., Lüdeke-Freund, F., Henriques, I., & Seitanidi, M. M. (2021). Toward collaborative cross-sector business models for susta

Rios, A. M., & Picazo-Tadeo, A. J. (2021). Measuring environmental performance in the treatment of municipal solid waste: The case of the European Union-28. Ecological Indicators, 123, 107328.

Whited TM, Wu G (2006) Financial constraints risk. The Review of Financial Studies 19(2):531–559

Wooldridge, J. M. (2001). Applications of generalized method of moments estimation. Journal of Economic perspectives, 15(4), 87-100. (2001).

Wooldridge, J.M. (2009) Introductory Econometrics: A Modern Approach. 4th Edition, South-Western College Publishing, Cengage Learning, Boston, 22-68

FACTORS AFFECTING THE LEVEL OF INFORMATION DISCLOSURE IN FINANCIAL STATEMENTS OF AGRICULTURAL COOPERATIVES - A LITERATURE REVIEW

Assoc.Prof.PhD. Pham Duc Cuong* - MSc. Do Thi Minh Tam**

Abstract: ***Cooperatives operate under a distinct management model, prioritizing social benefits over profit maximization. Transparent financial disclosure plays a crucial role in protecting members' rights, reducing conflicts, and improving access to funding. This study systematically reviews existing research on financial disclosure and its influencing factors, such as firm size, profitability, leverage, and regulatory environment. While previous studies have mainly focused on corporations, cooperatives require a more tailored approach. The research findings will provide a basis for developing policies that enhance accountability and improve financial management and sustainability in cooperatives.***

• Keywords: *information disclosure; cooperative; financial statement disclosure.*

Date of receipt: 08th Mar., 2025
Date of receipt revision: 06th Apr., 2025
Date of delivery revision: 22th Mar., 2025
Date of approval: 20th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.06

1. Introduction

Cooperatives function under a distinct organizational and management model that sets them apart from other business entities. Unlike corporations, which primarily focus on profit maximization, cooperatives emphasize both economic and social benefits for their members. Decision-making power, profit distribution, and member rights in cooperatives are not determined by capital contributions, as seen in joint-stock companies, but rather by members' level of participation and service usage. Cooperative members are often directly involved in business operations, and profit-sharing policies are based on service utilization rather than ownership stakes.

Transparency in financial disclosure plays a vital role in cooperative governance, enabling members to understand the financial health of the organization. This transparency helps safeguard members' rights, promotes trust, and enhances their participation in management. In contrast, a lack of financial transparency can lead to internal conflicts between members and cooperative leadership. Examining the level of information disclosure helps identify and address potential sources of conflict, fostering cooperation among stakeholders and ensuring leadership accountability. Furthermore, transparent disclosure increases cooperatives' access to funding from financial institutions, government agencies, and non-governmental organizations.

Research on the level of information disclosure can help identify and mitigate factors that cause conflicts while fostering cooperation among stakeholders and ensuring accountability of the cooperative's leadership to its members. Comprehensive and transparent information disclosure also enhances cooperatives' access to financing from financial institutions or support from the government and non-governmental organizations.

Studying the level of financial statement disclosure for cooperatives enables relevant entities to improve monitoring capabilities, ensuring cooperatives' compliance with financial and accounting regulations. This, in turn, helps the government and related agencies to establish appropriate policies to support cooperative development, such as training programs, technical assistance, and financial aid. Information disclosure in financial statements is also a legal requirement that cooperatives must comply with, as mandated by accounting laws and related regulations. Compliance assessments help cooperatives identify limitations in their accounting and financial management systems,

** National Economics University; email: cuongpd@neu.edu.vn*
*** Tay Bac University; email: tamdtm@utb.edu.vn*

improve internal controls, and train accounting staff to meet financial disclosure standards.

Therefore, studying the level of information disclosure in cooperative financial statements is crucial. This article provides an overview of research on information disclosure and factors influencing the level of financial statement disclosure in enterprises, as applied to cooperatives. It identifies research gaps and outlines directions for future research, including the development of relevant research models on this topic.

2. Theoretical basis for information disclosure

Financial information disclosure is defined as the process of publicly providing information on an organization's financial position, business performance, and cash flows through financial statements. Cooperatives must ensure that their financial statements not only accurately reflect their financial status but also deliver information comprehensively, transparently, and promptly.

Gibbins, Richardson, and Waterhouse (1990) defined financial disclosure as any intentionally provided financial (and non-financial) information, whether quantitative or qualitative, mandatory or voluntary, through formal or informal channels. Companies use various mediums for information disclosure, such as annual reports, conferences, and analyst presentations. Corporate annual reports are regarded as an essential formal disclosure channel, though not sufficient in capital markets, as other means like conference calls and interim reports may provide more timely information (Marston and Shrives, 1991).

Information disclosure plays a critical role in an entity's operations by forming the foundation upon which the entity provides essential and detailed information about its business activities, ensuring the information's completeness, accuracy, and timeliness for stakeholders. Disclosure is not only a method for an entity to communicate its status but also serves as a basis for stakeholders to assess and make decisions. The importance of corporate information disclosure arises from its role as a communication medium between management and external investors, as well as other market participants. This disclosure need stems from issues of information asymmetry and conflicts between management and external investors (Healy and Palepu, 2001).

3. Research methodology

To provide an overview of studies on the level of information disclosure in financial statements, this paper employs a systematic review approach, offering a comprehensive understanding of information disclosure and the factors influencing disclosure in financial statements. The paper also seeks to explore the research methods and theories utilized in previous publications that may address gaps for future studies.

3.1. Research process

Various methods were employed to identify and classify relevant articles for this review. The author began by manually searching and filtering studies related to the level of information disclosure and the factors influencing it in financial statements. Through a manual examination of keywords, article titles, and abstracts, the author compiled a list of commonly relevant articles. The primary databases consulted included Scopus, Elsevier Science Direct, and PubMed. Additionally, the authors extended the scope of relevant studies by scanning the reference lists of pertinent articles, a method known as backward and forward reference searching (Nguyen, et al., 2022).

3.2. Evaluation method

Following the search and selection process, relevant articles were compiled and classified into groups according to the factors influencing the level of information disclosure in financial statements. All factors were organized chronologically and grouped based on whether they had a positive, negative, or neutral impact on disclosure levels. This approach helped to identify gaps in previous research and suggested research directions, specifically tailored to the context of cooperatives in Vietnam.

4. Overview of theoretical foundations and factors influencing the level of information disclosure in financial statements

4.1. Factors influencing the level of disclosure in financial statements

Numerous domestic and international authors have systematically synthesized the theoretical basis for disclosure methods and content, as well as the factors influencing the level of information disclosure. Research in this field typically follows two main directions: voluntary disclosure and mandatory disclosure. However, despite extensive

studies on disclosure in financial statements, results vary due to differences in the scope and timing of each study. Key studies can be summarized based on the following factors:

Firm size

Large firms often face greater pressure from stakeholders such as shareholders, investors, and regulatory bodies. Ceft AR (1961) analyzed how firm size might affect investment decision-making processes and financial statement disclosure. Firm size can be understood as the organization's dimensions and scope, including the number of employees, annual revenue, assets, and organizational structure.

Bushman and Smith (2001) suggested that larger companies have more resources, infrastructure, and organizational capacity to implement effective disclosure measures. Furthermore, larger companies typically face more rigorous scrutiny from stakeholders and regulatory agencies, which motivates them to provide more comprehensive and transparent financial information. Conversely, Lang and Lundholm (1993) found that smaller companies might actually disclose more information than larger ones. Smaller companies, seeking to attract capital and build trust with investors, may actively engage in disclosure practices to reduce information asymmetry.

Profitability

Cerf (1961) analyzed the annual reports of 527 companies in Asia and found that as profitability increases, the level of information disclosure tends to decrease. This raises questions about the limitations of disclosure among highly profitable companies. In contrast, McNally et al. (1982) identified a positive relationship between profitability and voluntary disclosure levels. Profitability was measured not only by profit but also by profit margin. Healy and Palepu (2001) argued that companies with higher profit margins tend to provide more detailed and transparent financial disclosures to foster trust from investors and shareholders.

Fixed assets

Biddle and Hilary (2006) demonstrated a positive relationship between the scale of fixed assets and the level of information disclosure. Companies with larger fixed asset bases are more likely to disclose detailed and transparent information about their assets to build trust and credibility with stakeholders. Additionally, firms with substantial fixed assets may face closer scrutiny from stakeholders and regulatory bodies, prompting them to provide more comprehensive financial disclosures. However, Leuz and Verrecchia (2000) suggested that companies investing heavily in fixed assets, especially in industries with long asset life cycles, may prioritize confidentiality to protect proprietary information related to technological innovations or production processes. Consequently, such firms might engage in selective disclosure or provide less detailed information on their fixed assets.

Financial leverage

Financial leverage is often used to enhance a company's financial performance by employing debt to generate higher returns. However, high financial leverage can create pressure on companies to maintain or enhance financial performance. Myers and Majluf (1984) proposed that companies with high leverage may face pressure to minimize information disclosure to avoid decreasing share value and losing investor confidence. On the other hand, financial leverage can present opportunities for firms to expand business operations and investments. Effective use of financial leverage may help companies increase capital and debt repayment capacity, thereby improving transparency and the reliability of financial information, which in turn encourages more comprehensive disclosure in financial statements (Smith et al., 2015).

Liquidity

Singhvi (1967) asserted that improved liquidity is often associated with higher levels of information disclosure, highlighting the significance of financial health and risk management in understanding corporate disclosure practices. Conversely, Alonso et al. (2015) argued that weak liquidity may hinder a company's ability to provide complete and accurate information in financial reports, reflecting uncertainty in the financial health of the company, which may raise concerns for investors and other stakeholders. Wallace et al. (1994) also found that liquidity can influence the level of detail and transparency in disclosed information.

Company age

Botosan (1997) noted that newly established companies often disclose less information in

financial reports compared to firms with a longer operational history. Lack of experience and limited resources may lead newer companies to underemphasize comprehensive and transparent disclosure. Conversely, other researchers suggest that business longevity may have a negative impact on disclosure levels. Established companies may rely on their reputation and past performance to attract investors, reducing the incentive to report transparently. Additionally, older companies might face challenges in adapting to evolving regulatory requirements or technological advancements, which could hinder their ability to enhance disclosures (Leuz & Verrecchia, 2000).

Audit and control

An independent and professional audit process can foster stakeholder confidence in the accuracy and reliability of financial report disclosures. Rigorous and trustworthy controls ensure that disclosed information accurately reflects the company's financial condition and operations. Francis and Krishnan (1999) indicated that companies often employ external audit services to improve internal control processes and ensure the accuracy and reliability of disclosed information. Dechow, Sloan, and Sweeney (1995) suggested that an effective audit system builds investor trust and promotes transparency and credibility in financial reports.

Accounting expertise

Companies with a professional and highly skilled accounting team tend to disclose more detailed and transparent information in their financial reports. Experienced accountants are usually well-versed in accounting regulations and international standards. Bushman and Smith (2001) noted that skilled accountants are better equipped to accurately prepare and verify financial statements, thereby enhancing the transparency and reliability of disclosed information. Ball and Shivakumar (2005) suggested that highly qualified accounting personnel can identify and prevent errors and fraud in the preparation and disclosure of financial reports. However, companies with highly skilled accountants may also produce more complex financial statements that are less understandable and transparent to non-specialist stakeholders due to technical details and specialized jargon.

Legal environment

The legal environment comprises the regulations, laws, and legal standards that companies must adhere to when preparing and disclosing financial statements. The stringency and clarity of the legal environment can significantly impact a company's decisions regarding information disclosure. Research by Leuz and Verrecchia (2000) indicated that a strict and clear legal framework often encourages companies to provide detailed and transparent financial disclosures to comply with legal requirements. Leuz, Nanda, and Wysocki (2003) also noted that the legal environment influences corporate decisions about publicizing information in financial reports. Companies may face pressure from legal regulations regarding information disclosure and may seek to comply with these requirements to avoid penalties or legal liabilities.

4.2. Conclusion and research directions

Through this overview, it is evident that the topic of information disclosure has garnered considerable interest from researchers. Globally, studies on information disclosure and the factors influencing its levels have been conducted for many years across various countries. In Vietnam, researchers have only recently begun to explore this issue, primarily focusing on information disclosure in the financial statements of publicly listed companies. Thus, it is apparent that previous studies have predominantly concentrated on businesses with the primary objective of profit maximization and growth, where profits are typically distributed among a specific group (such as shareholders and company founders).

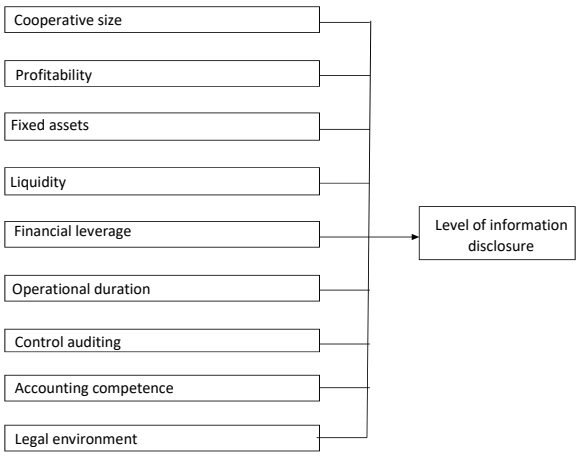
In contrast, cooperatives represent a new area of research, characterized by the principles of a collective economy aimed at serving the common interests of the farming community and ensuring the sustainable development of local agriculture. This includes meeting social objectives, such as providing support services to member farmers, enhancing negotiating power regarding prices and working conditions, as well as protecting the environment and natural resources.

Future research should explore the unique aspects of information disclosure within cooperatives, considering their distinct operational goals and stakeholder dynamics. Understanding the factors that influence financial reporting in cooperatives can provide valuable insights for

improving transparency, accountability, and ultimately, the effectiveness of these organizations in serving their communities.

Proposed research direction

First research direction: Investigating the factors affecting the level of information disclosure in the financial statements of cooperatives (HTX). In this model, the author intends to select 9 key factors, including:



Second research direction: Building on a review of previous studies combined with qualitative research methods. This approach will expand the influencing factors to include both previously published factors and new variables based on the unique characteristics of cooperatives, such as management structure, ownership rights, operational scale, and the qualifications of managers.

Furthermore, cooperatives can be classified into various types based on their operational fields, including agriculture, industry and construction, finance, banking and insurance, and commerce and services. Each type of cooperative has its own specific characteristics. This allows for a wealth of in-depth research directions that can either encompass all types or focus on specific fields of cooperatives combined with both existing and unique factors.

Conclusion

The comprehensive review of factors affecting the level of information disclosure in the financial statements of cooperatives has illuminated the core elements that determine the extent of financial transparency. This paper has identified research gaps, highlighting the need for more empirical studies focused on the level of information disclosure and the factors influencing it across different types of cooperatives in Vietnam.

The proposed research directions hold significant potential, with findings that could assist cooperatives and regulatory bodies in formulating relevant policies. These policies could promote increased transparency and accountability in financial information disclosure practices, ultimately enhancing the overall governance of cooperatives.

By exploring both established and novel factors within the context of various cooperative types, this research aims to contribute valuable insights that can drive the development of tailored strategies for improving financial transparency in the cooperative sector.

References:

Alonso-Almeida, M. D. M., Marimon, F., Casani, F., & Rodriguez-Pomeda, J. (2015). Diffusion of sustainability reporting in universities: Current situation and future perspectives. Journal of Cleaner Production, 106, 161-172. doi:10.1016/j.jclepro.2014.02.008.

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: Comparative loss recognition timeliness. Journal of Accounting and Economics, 39(1), 83-128.

Biddle, G. C., & Hilary, G. (2006). Accounting quality and firm-level capital investment. The Accounting Review, 81(5), 963-982.

Botosan, C. A. (1997). Disclosure level and the cost of equity capital. The Accounting Review, 72(3), 323-349.

Bushman, R. M., Piotroski, J. D., & Smith, A. J. (2001). What determines corporate transparency? Journal of Accounting Research, 45(2), 229-259.

Cerf, A. R. (1961). Corporate Reporting and Investment Decisions. Berkeley: The University of California Press.

Dechow, P., Sloan, R., & Sweeney, A. (1995). Detecting earnings management. The Accounting Review, 70(2), 193-225.

McNally, G. M., Lee, H. E., & Hasseldine, C. R. (1982). Corporate financial reporting in New Zealand: An analysis of user preferences, corporate characteristics and disclosure practices for discretionary information. Accounting Research Journal, 11-20.

Gibbins, A., Richardson, A., & Waterhouse, J. (1990). The management of corporate financial disclosure - opportunism, ritualism, policies, and processes. Journal of Accounting Research, 28(1), 121-143.

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital market: A review of the empirical disclosure literature. Journal of Accounting and Economics, 31, 405-440.

Lambert, R., Leuz, C., & Verrecchia, R. (2007). Accounting information, disclosure, and the cost of capital. Journal of Accounting Research, 45(2), 385-420.

Lang, M. H., & Lundholm, R. J. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. Journal of Accounting Research, 31, 246-271.

Leuz, C., & Verrecchia, R. E. (2000). The economic consequences of increased disclosure. Journal of Accounting Research, 38, 91-124.

Leuz, C., Nanda, D., & Wysocki, P. (2003). Earnings management and investor protection: An international comparison. Journal of Financial Economics, 69, 505-527.

Marston, C. L., & Shrives, P. J. (1991). The use of disclosure indices in accounting research: A review article. British Accounting Review, 23(3), 195-210.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13, 187-221.

Nguyen, X. H., Duong, T. A., Nguyen, V. A., Nguyen, K. L., Dinh, N. T., & Mai, D. H. (2022). The impact of corporate social responsibility and green supply chain management on the performance of small and medium enterprises in Vietnam: A systematic literature review and directions for future research. International Journal of Research and Review, 9(5), 116-129.

Singhvi, S. S. (1968). Characteristics and implications of inadequate disclosure: A case study of India. The International Journal of Accounting, 3, 29-44.

Wallace, R. S. O., Naser, K., & Mora, A. (1994). The relationship between the comprehensiveness of corporate annual reports and firm characteristics in Spain. Accounting and Business Research, 25(97), 41-53.

Smith, C. W., Jr., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. Journal of Financial Economics, 32(3), 263-292.

Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2004). Cost of equity and earnings attributes. The Accounting Review, 79, 967-1010.

Acknowledgements: *We are thankful for the editor and anonymous referees for their valuable feedback which improved the paper significantly. This paper is the product of a university-level research project with code CS-COB-2024-27, funded by the University of Economics Ho Chi Minh City (UEH), Vietnam.*

WHAT DRIVE YOUNG VIETNAMESE CONSUMERS TO ADOPT MEDICAL AI?

MSc. Dao Minh Hoang* - Prof.PhD. Nguyen Thi Tuyet Mai*

PhD. Nguyen Hoang Linh* - PhD. Nguyen Binh Minh*

Abstract: ***This study investigates the factors influencing young consumers' intention to adopt AI-based Medical Decision Support Systems (AIMDSS) in Vietnam, an emerging economy, using an extended Theory of Planned Behavior (TPB) framework. This research incorporates initial trust into the TPB model as a key antecedent of attitude to better capture the dynamics of adopting novel technologies. A survey of 216 Vietnamese consumers aged 18–30 reveals that attitude, perceived behavioral control, and subjective norm significantly predict intention, with attitude being the strongest predictor. Initial trust exerts a substantial influence on attitude, underscoring its importance in shaping early-stage evaluations of AI in healthcare. The study contributes to theory by extending the TPB framework with initial trust as a critical antecedent of attitude, enhancing its ability to explain behavioral intention in high-uncertainty contexts involving novel technologies such as medical AI. It also offers practical insights for developers and policymakers on fostering trust, usability, and social endorsement to encourage AIMDSS adoption in an emerging market.***

• Keywords: *artificial intelligence, initial trust, Theory of Planned Behavior, young consumers, healthcare.*

Date of receipt: 24th Jan., 2025
Date of receipt revision: 28th Apr., 2025
Date of delivery revision: 10th Feb., 2025
Date of approval: 15th May, 2025

DOI: https://doi.org/10.71374/jfar.v25.i3.07

1. Introduction

Artificial intelligence (AI) is rapidly transforming healthcare delivery, offering tools that enhance diagnostic accuracy, personalize treatment, and improve patient outcomes. Among these innovations, AI-based Medical Decision Support Systems (AIMDSS) are gaining attention for their ability to assist both professionals and end-users in making informed health decisions. Despite their technological promise, consumer adoption of such medical AI systems remains limited, particularly in transitional economies where digital readiness and trust in health technology are still developing.

Understanding the behavioral factors that drive adoption is therefore critical. The Theory of Planned Behavior (TPB; Ajzen, 1991) provides a well-established framework for explaining intentional behavior through attitudes, subjective norms, and perceived behavioral control. However, TPB does not explicitly account for the role of trust, a key determinant in the adoption of unfamiliar, high-risk technologies like medical AI. Given the novel, complex, and often opaque nature of AI-based systems, users, particularly in transitional economies like Vietnam, must rely heavily on trust in the technology and its providers to form initial evaluations.

This study addresses a gap in the literature by extending TPB with the construct of initial trust and applying it to examine young consumers' intention to use AIMDSS in Vietnam, a representative transitional economy with a rapidly digitizing healthcare landscape. While prior research has focused on healthcare professionals or technology acceptance in developed contexts, limited work has explored how young consumers in emerging markets form adoption intentions toward AI-driven health tools. This research contributes to both theory and practice by offering an integrated model of behavioral intention and identifying the psychological and social mechanisms that influence early adoption of medical AI.

2. Theoretical framework and hypotheses development

Huang and Rust (2018) defined Artificial Intelligence (AI) as the capability of machines to carry out functions that typically require human intelligence, including learning, reasoning, and problem-solving. In the context of services, AI is viewed as a tool that can either support or replace human roles in decision-making and customer interactions. The growing presence of artificial intelligence (AI) in healthcare has spurred research into understanding user acceptance of AI technologies, particularly AI-based Medical Decision Support Systems (AIMDSS). Prior studies have employed a range of theoretical frameworks to examine AI adoption of consumers in

** National Economics University; email: hoangmd@neu.edu.vn - tuyetmaisdh@neu.edu.vn - linhngh@neu.edu.vn.*
Corresponding author: minhbn@neu.edu.vn

different context, including healthcare. Major theories have been applied to study this topic, including the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Health Belief Model (HBM) (Jain et al., 2024; Khanijahani et al., 2022). These models have consistently identified perceived usefulness, ease of use, and perceived risk as key drivers or barriers to adoption. However, these approaches often emphasize rational and functional factors, with limited attention to social-psychological dimensions such as trust and normative influences (Khanijahani et al., 2022).

Among those theories, the Theory of Planned Behavior (TPB; Ajzen, 1991) provides a comprehensive framework that captures cognitive, normative, and control-related determinants of behavioral intention. TPB posits that intention is shaped by three constructs: attitude (the individual's evaluation of the behavior), subjective norm (perceived social pressure), and perceived behavioral control (PBC; the perceived ease or difficulty of performing the behavior). This framework has been successfully applied in different context, including healthcare (Hassan et al., 2016; Ye et al., 2019), where it has demonstrated strong explanatory power. Yet, its application in the context of medical AI adoption, particularly among young consumers in transitional economies remains limited.

However, the healthcare context involves high uncertainty and opacity, which can hinder user confidence and engagement. In such settings, users often lack the experiential basis to form attitudes through direct interaction, making initial trust a critical antecedent in shaping early evaluations and behavioral intentions. This underscores the need to incorporate initial trust into the TPB framework to more effectively capture the determinants of user adoption in high-uncertainty healthcare environments. Initial trust, refered as the willingness to rely on a technology without prior experience (McKnight et al., 2002), has been shown to play a pivotal role in early adoption contexts. It influences attitude formation by reducing perceived risk and enabling favorable evaluations (McKnight et al., 2002). In this study, we extend TPB by incorporating initial trust as a cognitive antecedent to attitude.

Despite the growing interest in AI adoption, empirical research on consumers' adoption of medical AI remains limited, particularly in transitional economies. Most prior studies have focused on clinical users or populations in high-income countries, leaving a gap in understanding how digitally literate but healthcare inexperienced consumers, such as young adults in Vietnam, evaluate and engage with AIMDSS. Moreover, while trust has been incorporated into TPB extensions in technology use (Wu and Chen, 2005), its role as an antecedent of attitude remains underexplored in the context of medical AI adoption, particularly among young consumers in transitional economies. Given potentially high levels of perceived uncertainty and limited user experience with AIMDSS, owing to its nascent stage of adoption, initial trust is likely to play a foundational role in shaping early evaluative judgments.

Hypothesis Development

Grounded in the extended TPB framework, four hypotheses are proposed to examine the intention to adopt AIMDSS among young consumers in Vietnam. Attitude is defined as the individual's positive or negative evaluation of performing a behavior (Ajzen, 1991). In the context of medical AI, attitude reflects whether the user perceived the usage of AIMDSS positively, for instance, in terms of its potential to improve decision-making, enhance convenience, or support better health outcomes. A favorable attitude typically leads to a stronger intention to adopt technology. Empirical research has consistently shown that attitude is a key determinant of technology use, including in healthcare (Zhao et al., 2018). For example, Hussein et al. (2017) found that consumer attitude significantly and positively influences the intention to use mHealth services, highlighting attitude as a key predictor of adoption behavior.. Following that, we propose:

H1: Attitude toward using AIMDSS positively influences the intention to adopt it

Perceived behavioral control refers to the perceived ease or difficulty of performing a behavior, influenced by access to resources, time, and knowledge (Ajzen, 1991). In healthcare setting, this can be interpreted as the perception of how easy the AIMDSS is to access, and integrate into medical examination practice. When users believe that adoption is within their control, their intention to adopt increases. This relationship has been supported across multiple health IT studies (Ye et al., 2019; Zhao et al., 2018), thus we propose:

H2: Perceived behavioral control positively influences the intention to adopt AIMDSS.

Subjective norm is defined as the perceived social pressure to engage or not engage in a behavior (Ajzen, 1991). In collectivist cultures like Vietnam, social influence from family, friends, and healthcare professionals can strongly affect adoption decisions. When individuals perceive that others support or expect them to use AIMDSS, their intention to adopt is likely to increase. Prior research has shown that subjective norms significantly predict digital health adoption, particularly

in contexts where professional or peer recommendations are influential (Ye et al., 2019; Zhao et al., 2018). Therefore, the third hypothesis is as followed:

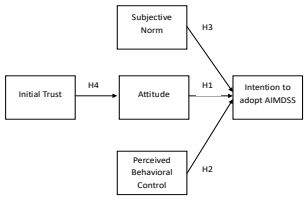
H3: Subjective norm positively influences the intention to adopt AIMDSS.

Initial trust is defined as the belief in the reliability, competence, and integrity of a system prior to any direct experience (McKnight et al., 2002). For novel technologies like AIMDSS, users must often decide whether to trust the system based on indirect cues such as brand reputation, endorsements, or perceived credibility. Trust reduces uncertainty and facilitates the formation of positive attitudes (Gefen et al., 2003). Study of Wu and Chen (2005) on technology adoption in e-commerce have shown that trust positively influences consumer attitudes, extending this logic to healthcare, we hypothesize that:

H4: Initial trust in AIMDSS positively influences attitude toward using it.

Based on the TPB model, we proposed the research work incorporating intention to use AIMDSS, attitude, perceived behavioral control, subjective norm and initial trust (see Figure 1).

Figure 1. Proposed Research Framework



3. Methodology

This study aimed to examine the factors influencing young consumers' intention to adopt the AI-based Medical Decision Support System (AIMDSS), focusing on individuals aged 18 to 30. A quantitative approach was chosen to empirically test the proposed model. Measurement items were adapted from established literature. Constructs related to attitude, perceived behavioral control, subjective norm, and intention were drawn from Ajzen's (1991), while items assessing initial trust were adapted and modified from Oliveira et al. (2014). All variables were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The final questionnaire comprised items representing the five core constructs, followed by demographic questions covering gender, age, occupation, and monthly income.

To ensure clarity and consistency in understanding, a brief description of the AIMDSS was provided at the beginning of the questionnaire. The original English items were translated into Vietnamese using a back-translation process to maintain semantic equivalence. A pilot test was conducted with a small group of young consumers, and necessary modifications were made based on their feedback to ensure clarity and appropriateness of the content.

Data collection and analysis

Participants were recruited through offline channels, targeting young individuals either studying at universities or employed in early-stage careers. A total of 216 valid responses were collected and included in the final analysis. The demographic characteristics of the sample are summarized in Table 1.

Table 1. Sample characteristics

Variable	Type	Frequency	Percentage
Gender	Male	106	49.10%
	Female	110	50.90%
Age	18 - 20	111	51.39%
	21 - 25	82	37.96%
	26 - 30	23	10.65%
Monthly income (VND)	< 5 million	109	50.46%
	5 -10 million	50	23.15%
	10-15 million	27	12.50%
	15-20 million	14	6.48%
	20-25 million	6	2.78%
	> 25 million	10	4.63%
Occupation	Student	143	66.20%
	Management	6	2.80%
	Marketing/ Sales	12	5.60%
	Administrative jobs	41	19%
	Other	14	6.50%

The proposed research framework was evaluated using PLS-SEM. Given the early stage of medical AI adoption and the lack of established distributional assumptions for the target population, PLS-SEM was deemed an appropriate analytical approach (Hair et al., 2019). The analysis followed a two-step procedure by assessing the measurement model using the PLS algorithm, and followed by evaluating the structural model through a bootstrapping procedure (Hair et al., 2019).

4. Results and discussion

4.1. Measurement model assessment

Measurement model assessment started with examining outer loadings, composite reliability (CR), and Average Variance Extracted (AVE). All outer loadings exceeded the recommended threshold of 0.70, indicating that the measurement items have strong indicator reliability and adequately reflect their respective constructs. This result confirms the convergent validity of the measurement model, as suggested by Hair et al. (2019).

Table 2. Outer loadings of measurement items

	ATT	INT	PBC	SN	IT
ATT1	0.885				
ATT2	0.842				
ATT3	0.886				
INT1		0.903			

	ATT	INT	PBC	SN	IT
INT2		0.928			
INT3		0.853			
INT4		0.893			
PBC1			0.794		
PBC2			0.821		
PBC3			0.771		
SN1				0.858	
SN2				0.865	
SN3				0.819	
SN4				0.882	
IT2					0.891
IT3					0.873
IT4					0.92

Table 3. Reliability of Measurement

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Attitude	0.842	0.904	0.759
Intention	0.916	0.941	0.8
Perceived Behavioral Control	0.71	0.838	0.633
Subjective Norm	0.878	0.917	0.733
Initial Trust	0.876	0.924	0.801

All constructs demonstrated acceptable internal consistency, with Cronbach's alpha and composite reliability values exceeding the recommended threshold of 0.70, indicating good reliability (Hair et al., 2019). One item (IT1) was excluded from the initial trust construct due to its Cronbach's alpha falling below the acceptable threshold. Furthermore, the average variance extracted (AVE) values for all constructs were above the 0.50 threshold, confirming satisfactory convergent validity of the measurement model.

Table 4. Discriminant Validity

	Attitude	Intention	Perceived Behavioral Control	Subjective Norm
Attitude				
Intention	0.816			
Perceived Behavioral Control	0.623	0.657		
Subjective Norm	0.782	0.644	0.469	
Initial Trust	0.766	0.555	0.47	0.697

Discriminant Validity - HTMT < 0.9 (for conceptually similar construct)

The discriminant validity of the constructs was assessed using the Heterotrait-Monotrait ratio (HTMT). All HTMT values ranged from 0.469 to 0.816, which are below the conservative threshold of 0.85 suggested by (Hair et al., 2019). These results provide evidence of adequate discriminant validity, indicating that each construct in the model is empirically distinct from the others (table 4).

Multicollinearity was assessed using the Variance Inflation Factor (VIF). All VIF values were below the conservative threshold of 3.3, as recommended by Hair et al. (2019) and Kock (2015), indicating that multicollinearity is not a concern in the structural model. Furthermore, based on Kock's (2015) full collinearity assessment approach, VIF values below 3.3 also suggest that common method bias is unlikely to be a significant issue. These findings support the stability and reliability of the path coefficient estimates.

Structural model assessment

Table 5. Structural model assessment

Endogenous latent constructs	R^2	Q^2	Effect size
Attitude	0.437	0.432	Moderate
Intention	0.564	0.406	Moderate

The explanatory power of the structural model was evaluated using the coefficients of determination (R^2) and predictive relevance (Q^2). The R^2 values for Attitude (0.437) and Intention (0.564) indicate moderate explanatory power, as values between 0.33 and 0.67 are considered moderate (Hair et al., 2019). Similarly, the Q^2 values of 0.432 for Attitude and 0.406 for Intention also demonstrate moderate predictive relevance, confirming that the model has satisfactory predictive accuracy. The effect sizes further support these findings, indicating that the predictors contribute meaningfully to the explained variance of the endogenous constructs.

Hypothesis Testing

Table 6. Hypothesis Test

Direct effect	Path coefficients	f^2	P values	Hypothesis	Result
Attitude -> Intention	0.501	0.281	0	H1	Supported
Perceived Behavioral Control -> Intention	0.231	0.785	0	H2	Supported
Subjective Norm -> Intention	0.154	0.095	0.03	H3	Supported
Initial Trust -> Attitude	0.663	0.03	0	H4	Supported

To examine the proposed hypotheses, a bootstrapping procedure with 5,000 resamples was employed, using a two-tailed test at a 0.05 significance level. The detailed results of the hypothesis tests are presented in Table 6

The results of the structural model analysis support all proposed hypotheses. Attitude had a significant and strong positive effect on Intention ($\beta = 0.501$, $p < 0.001$, $f^2 = 0.281$), confirming H1. Perceived Behavioral Control also significantly influenced Intention ($\beta = 0.231$, $p < 0.001$), with a large effect size ($f^2 = 0.785$), supporting H2. Subjective Norm exhibited a weaker but still significant effect on Intention ($\beta = 0.154$, $p = 0.03$, $f^2 = 0.095$), supporting H3. Additionally, Initial Trust had a strong and significant impact on Attitude ($\beta = 0.663$, $p < 0.001$, $f^2 = 0.03$), supporting H4. These findings indicate that all hypothesized relationships are statistically significant and contribute meaningfully to the model.

This study examined young consumers' intention to adopt AI-based Medical Decision Support Systems (AIMDSS) using the Theory of Planned Behavior (TPB), extended with initial trust. All four hypothesized relationships were supported. Attitude emerged as a strong predictor of intention, confirming prior findings that favorable evaluations drive behavioral intentions in technology adoption (Ajzen, 1991). Perceived behavioral control (PBC) also showed a significant influence with a large effect size, suggesting that when

young users feel capable and perceive low usage barriers, their intention to adopt would be higher, a finding consistent with Ye et al. (2019).

Subjective norm had a smaller but significant effect, indicating that while close social referents such as friends, family, and significant others do influence young consumers' intention to adopt AIMDSS, their impact is less pronounced compared to individual factors like personal attitude and perceived behavioral control. Additionally, our model found that initial trust significantly influenced attitude, supporting its role as a key antecedent in high-uncertainty contexts like AI adoption (Gefen et al., 2003; McKnight et al., 2002) since it is considered to reduce perceived risk and enhanced confidence in the system's reliability, fostering more favorable attitudes, consistent with findings in fintech and online service adoption (Kim et al., 2008; Pavlou and Fygenson, 2006).

Theoretically, this study extends the Theory of Planned Behavior (TPB) by incorporating initial trust as an antecedent to attitude. While prior research has examined the direct effect of initial trust on attitude in domain such as e-commerce (e.g., Wu and Chen, 2005), this relationship remains underexplored in the healthcare context, particularly in relation to AI-driven systems. Existing studies on trust in medical AI have primarily focused on its direct influence on intention to use (Tran et al., 2021), or its moderating role in the relationship between perceived usefulness and intention (Ye et al., 2019). By positioning initial trust as a precursor to attitude, this study provides new theoretical insight into how trust shapes early-stage evaluations of AI in healthcare, thereby strengthening the TPB's ability to explain user adoption of healthcare technologies in uncertain and unfamiliar settings.

Practically, this study suggests that developers and marketers should prioritize strategies that foster initial trust, such as enhancing system transparency, leveraging endorsements from credible experts, and incorporating interface elements that signal reliability and professionalism. To strengthen subjective norms, social marketing efforts may focus on showcasing peer adoption and trusted authority recommendations to reinforce social approval. Additionally, improving usability and ensuring digital accessibility can enhance users' perceived behavioral control, thereby increasing their intention to adopt AIMDSS.

This study is subject to some limitations, including its reliance on a single-country context and a sample composed primarily of young consumers, which may limit the generalizability of the findings to other age groups and cultural settings. Thus, future research should seek to validate the extended TPB model for AI adoption in healthcare setting across broader demographic segments and in different cultural or economic contexts to assess its generalizability. Additionally, longitudinal studies tracking actual adoption behavior, as well as deeper exploration of multi-dimensional trust constructs, would offer valuable insights into the sustained use of medical AI systems over time.

Conclusion: This study investigated the factors influencing young consumers' intention to adopt AI-based Medical Decision Support Systems (AIMDSS) in a transitional economy, using an extended Theory of Planned Behavior (TPB) framework. The results affirmed the significance of attitude, perceived behavioral control, and subjective norm in predicting intention, while also establishing initial trust as a critical antecedent of attitude. By integrating initial trust into TPB, the study offers a theoretical advancement in understanding how trust facilitates favorable evaluations of emerging technologies in high-uncertainty contexts like medical AI. Practically, the findings highlight the importance of designing trustworthy, accessible, and socially supported systems to enhance user acceptance. These insights are particularly valuable for health tech developers, marketers, and policy-makers seeking to drive consumer adoption of AI in transitional markets such as Vietnam. Future research should extend this model across populations and contexts, and explore how trust is formed, evolves, and interacts with behavioral drivers over time.

References:

Gefen, D., Karahanna, E., Straub, D.W., 2003. Trust and TAM in Online Shopping: An Integrated Model. MIS Quarterly 27, 51–90. https://doi.org/10.2307/30036519

Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M., 2019. When to use and how to report the results of PLS-SEM. European Business Review 31, 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hassan, L.M., Shiu, E., Parry, S., 2016. Addressing the cross-country applicability of the theory of planned behaviour (TPB): A structured review of multi-country TPB studies. Journal of Consumer Behaviour 15, 72–86. https://doi.org/10.1002/cb.1536

Huang, M.-H., Rust, R.T., 2018. Artificial Intelligence in Service. Journal of Service Research 21, 155–172. https://doi.org/10.1177/1094670517752459

Hussein, Z., Oon, S.W., Fikry, A., 2017. Consumer Attitude: Does It Influencing the Intention to Use mHealth? Procedia Computer Science, 2016 IEEE International Symposium on Robotics and Intelligent Sensors, IRIS 2016, 17-20 December 2016, Tokyo, Japan 105, 340–344. https://doi.org/10.1016/j.procs.2017.01.231

Jain, V., Wadhwani, K., Eastman, J.K., 2024. Artificial intelligence consumer behavior: A hybrid review and research agenda. J of Consumer Behaviour 23, 676–697. https://doi.org/10.1002/cb.2233

Khanijahani, A., Iezadi, S., Dudley, S., Goettler, M., Kroetsch, P., Wise, J., 2022. Organizational, professional, and patient characteristics associated with artificial intelligence adoption in healthcare: A systematic review. Health Policy and Technology 11, 100602. https://doi.org/10.1016/j.hlpt.2022.100602

Kim, D.J., Ferrin, D.L., Rao, H.R., 2008. A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. Decision Support Systems 44, 544–564. https://doi.org/10.1016/j.dss.2007.07.001

Kock, N., 2015. Common Method Bias in PLS-SEM: A Full Collinearity Assessment Approach. IJeC 11, 1–10. https://doi.org/10.4018/ijec.2015100101

McKnight, D., Choudhury, V., Kacmar, C., 2002. The impact of initial consumer trust on intentions to transact with a web site: a trust building model. The Journal of Strategic Information Systems 11, 297–323. https://doi.org/10.1016/S0963-8687(02)00020-3

Oliveira, T., Faria, M., Thomas, M.A., Popovič, A., 2014. Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. International Journal of Information Management 34, 689–703. https://doi.org/10.1016/j.ijinfomgt.2014.06.004

Pavlou, P.A., Fygenson, M., 2006. Understanding and Predicting Electronic Commerce Adoption: An Extension of the Theory of Planned Behavior. MIS Quarterly 30, 115–143. https://doi.org/10.2307/25148720

Tran, A.Q., Nguyen, L.H., Nguyen, H.S.A., Nguyen, C.T., Vu, L.G., Zhang, M., Vu, T.M.T., Nguyen, S.H., Tran, B.X., Latkin, C.A., Ho, R.C.M., Ho, C.S.H., 2021. Determinants of Intention to Use Artificial Intelligence-Based Diagnosis Support System Among Prospective Physicians. Frontiers in Public Health 9.

Wu, I.-L., Chen, J.-L., 2005. An extension of Trust and TAM model with TPB in the initial adoption of on-line tax: An empirical study. International Journal of Human-Computer Studies 62, 784–808. https://doi.org/10.1016/j.ijhcs.2005.03.003

Ye, T., Xue, J., He, M., Gu, J., Lin, H., Xu, B., Cheng, Y., 2019. Psychosocial Factors Affecting Artificial Intelligence Adoption in Health Care in China: Cross-Sectional Study. J Med Internet Res 21, e14316. https://doi.org/10.2196/14316

Zhao, Y., Ni, Q., Zhou, R., 2018. What factors influence the mobile health service adoption? A meta-analysis and the moderating role of age. International Journal of Information Management 43, 342–350. https://doi.org/10.1016/j.ijinfomgt.2017.08.006

LEGAL FRAMEWORKS FOR ASSURANCE ENGAGEMENT RELATED TO ENVIRONMENTAL, SOCIAL AND GOVERNANCE REPORTING (ESG) IN VIETNAM: CURRENT SITUATION AND SOLUTIONS

PhD.FCCA. Dinh Thi Thu Ha*

Abstract: ***ESG (Environmental, Social, and Governance) reports are becoming an increasingly important standard for evaluating corporate sustainability and responsibility. However, in Vietnam, the legal framework and specific standards for assurance engagement ensuring the transparency of ESG reports still have many limitations. This article will analyze the current situation in more detail and propose solutions for building a more complete and comprehensive legal system.***

• Keywords: *ESG, legal framework, standards, assurance services, Vietnam.*

Date of receipt: 03rd Nov., 2024
Date of delivery revision: 10th Nov., 2024
Date of receipt revision: 12th Dec., 2024
Date of approval: 05th Feb., 2025

DOI: https://doi.org/10.71374/jfar.v25.i3.08

1. Introduction

ESG (Environmental, Social, and Governance) reports are important tools that help businesses make their environmental, social, and corporate governance impacts transparent. Key elements of an ESG report include: Environmental (E): Issues such as greenhouse gas emissions, energy consumption, waste management, and biodiversity. Social (S): Human rights, working conditions, labor safety, and relationships with the community. Governance (G): Corporate governance structure, business ethics, risk management, and transparency of information.

An ESG report is seen as proof of a company's commitment to social responsibility, and its reliability is higher when it is assured through assurance service. The issue in Vietnam is that the implementation of assurance engagement for ESG reports is still not widespread due to several reasons, including the lack of a comprehensive legal framework and standards in this field. Therefore, studying and analyzing the current status of legal regulations regarding assurance engagement for ESG reports is crucial for the development of this type of service in Vietnam.

2. What is an assurance engagement for ESG reports?

An assurance engagement for ESG reports is an agreement between an assurance firm (usually external audit) and a business. Under this engagement, the assurance firm gather evidence on the completeness and consistency of the information presented in the business's ESG report. An ESG report assured by an independent third party will enhance the credibility of the information, thus strengthening the business's reputation with investors, customers, partners, and other stakeholders. An assured ESG report helps the business build an image as a socially and environmentally responsible organization, attracting entities interested in economic transactions with the company. Additionally, providing assurance services for these reports helps businesses reassess their processes and management systems, thus improving operational efficiency and corporate governance.

3. Current status of legal regulations regarding assurance engagement for ESG reports

In an assurance engagement for ESG reports, assurance providers should assess whether the information in the report is in accordance with ESG reporting standards. Therefore, to implement this engagement, they need to determine standards or legal regulations which are used as basis for preparation ESG reports in Vietnam. Thus, the legal regulations regarding ESG reports and assurance engagement are closely relationship. To evaluate the current legal situation regarding assurance engagement for ESG reports, it is essential to examine and assess the status of legal regulations concerning ESG reports.

3.1. Current legal regulations regarding ESG reports

In Vietnam, legal regulations on sustainable development are being developed in line with international standards, but they are still in the early stages of completion. These regulations primarily focus on environmental, social, and governance issues (ESG), aiming to promote sustainable production and

** Academy of Finance; email: hadinh88@gmail.com*

business activities. Below are some legal regulations regarding ESG reporting in Vietnam:

Circular No. 96/2020/TT-BTC issued on November 16, 2020, is a prominent regulation guiding information disclosure on the stock market. Although it does not mandate ESG reporting, it encourages listed companies to disclose information about environmental, social, and governance aspects, laying the groundwork for sustainable development and integration with international corporate governance standards.

Other Vietnamese regulations also encourage or require businesses to report information related to their environmental, social, and governance impacts, either separately or in combination. For example:

Environmental Aspect: Reporting on environmental issues is regulated under Article 114, Clause 1 of the Environmental Protection Law No. 72/2020/QH14. Information related to greenhouse gas emissions is regulated under Decree No. 06/2022/ND-CP on Greenhouse Gas Emission Reduction and Ozone Layer Protection.

Social Aspect: Reporting on labor usage is regulated under Clause 1, Article 4 of Decree No. 145/2020/ND-CP on labor conditions and labor relations. Reports on labor safety and hygiene are regulated under Circular No. 97/2016/TT-BLDTBXH.

Governance Aspect: there are regulations for state-owned enterprises, listed companies, and joint-stock companies related to corporate governance.

Recognizing the importance of creating ESG reporting guidelines, the Vietnam Securities Commission and the IFC (International Finance Corporation) jointly developed a guide for preparing sustainability reports for businesses, focusing on environmental and social information. However, this remains a voluntary guideline, not a mandatory requirement. Because there are no official regulations on the comprehensive disclosure of ESG reports in Vietnam, some companies are currently using international ESG reporting frameworks such as the Global Reporting Initiative (GRI), the IFC Sustainability Framework, the IFRS Sustainability Disclosure Standards, the United Nations Sustainable Development Goals (SDGs), the International Integrated Reporting Council (IIRC), the Account Ability Principles (AA1000AP) for Sustainable Development, ISO 26000:2010, the Global Impact Investing Rating System (GIIRs), the Corporate Sustainability Reporting Directive (CSRD), the Sustainability Accounting Standards Board (SASB), and the Task Force on Climate-related Financial Disclosures (TCFD) standards.

In Vietnam, according to the 2022 ASEAN Climate Report, the most widely used ESG reporting frameworks are the Global Reporting Initiative (GRI) and the United Nations Sustainable Development Goals (SDGs). The report studied the top 100 companies by market capitalization listed on the Ho Chi Minh Stock Exchange, of which only 40 companies published sustainability reports containing climate-related information. The table below lists the reporting frameworks used in climate-related disclosures in Vietnam:

Framework	GRI	IIRC	SASB	SDG	TCFD
Vietnam	65%	8%	2%	42%	0%

Source: ASEAN Climate Report 2022

This status indicates that Vietnamese regulatory authorities are still in the process of researching and developing mandatory ESG reporting requirements for businesses, especially as international investor demands continue to grow. Vietnam's legal regulations on sustainable development are gradually being improved and aligned with global trends in social responsibility, environmental protection, and governance (ESG). This is crucial for organizations providing assurance services for ESG reports, as it will offer clear guidelines and criteria for assessing the information disclosed in ESG reports.

3.2. Current legal regulations regarding assurance services for ESG reports

After identifying the standards used by businesses to prepare ESG reports, assurance providers should determine which assurance standards to follow. These standards define the nature, requirements, and guidelines for carrying out an assurance engagement. Without these standards, assurance providers would not be able to implement assurance engagement scientifically and effectively.

Currently, in Vietnam, legal regulations related to ESG assurance services are still under development, and there is no official legal framework requiring them. Audit regulations primarily apply to environmental information disclosure, such as the Environmental Protection Law. This law, updated in 2020, expanded environmental protection scope, requiring businesses to report on environmental issues and undergo environmental audits. However, there are no specific guidelines on how to audit or provide assurance for ESG reports.

The market for ESG assurance services in Vietnam is still relatively new, with only a few companies providing these services, primarily large audit firms (Big Four: Deloitte, PwC, EY, and KPMG). These firms often refer to international assurance standards such as:

First: The AA1000AS v3 Assurance Standard

The AA1000AS v3 (AccountAbility Assurance Standard, Version 3) is an internationally recognized standard designed to provide assurance on sustainability and Environmental, Social, and Governance (ESG) reports. Developed by AccountAbility, the AA1000AS v3 focuses on ensuring the reliability, transparency,

and accountability of the information disclosed by organizations. This standard is particularly valuable for organizations aiming to strengthen their commitment to sustainable practices and enhance stakeholder trust.

Applying the AA1000 Assurance Standard (AA1000AS) v3 offers significant benefits but also presents certain limitations. The primary advantage lies in its ability to enhance the credibility and transparency of ESG reports by ensuring that they align with the principles of inclusivity, materiality, responsiveness and impact. This fosters stakeholder trust and demonstrates an organization's commitment to accountability and continuous improvement. Additionally, the standard's focus on stakeholder engagement provides valuable insights into the expectations and concerns of key groups, aiding in better decision-making. However, its limitations include the complexity and resource-intensive nature of the assurance process, which may pose challenges for smaller organizations with limited budgets or expertise. Furthermore, the qualitative emphasis on principles can lead to subjectivity in evaluation, potentially affecting consistency in assurance outcomes across different practitioners. In regions like Vietnam, there may be a shortage of qualified assurance providers familiar with AA1000AS v3, hindering widespread adoption.

Despite these challenges, the AA1000AS v3 remains a robust framework for enhancing the quality of ESG disclosures. By adhering to its principles and processes, organizations can build stakeholder trust, focus on critical sustainability issues, and align with global best practices. Although challenges exist, the benefits of adopting AA1000AS v3 far outweigh the difficulties, making it a valuable framework for organizations committed to sustainable development.

Second: The International Standard on Assurance Engagements (ISAE3000)

The International Auditing and Assurance Standards Board (IAASB) developed a set of general auditing and assurance standards, particularly for professional audit members, when performing audits or other assurance engagements, such as reviewing historical financial information (ISAE 3000, 2008). However, audit entities can use this standard either independently or in combination with the AA1000AS. ISAE3000 primarily provides guidance on assurance standards for financial information (O'Dwyer, Owen, & Unerman, 2011). Therefore, ISAE3000 applies a verification-focused approach to data accuracy (O'Dwyer & Owen, 2005). In 2014, New Zealand published a counterpart standard (ISAE (NZ) 3000), equivalent to ISAE3000.

From the above context, it is evident that current legal regulations on ESG and assurance services for ESG are still limited. Specifically:

- Lack of a specific legal framework: Vietnam currently does not have a dedicated law or decree exclusively regulating ESG reports and related service contracts. Existing regulations are scattered across various legal documents, making consistent application challenging.

- Inconsistent ESG reporting standards: As outlined above, the regulations and guidelines for ESG reporting are not consistent or specific, allowing different enterprises to apply varying standards.

- Lack of specific assurance standards for ESG reports: Vietnamese enterprises are using diverse assurance standards for ESG reports, resulting in inconsistencies in evaluating and comparing reports. This poses challenges for investors and stakeholders in making decisions.

- Limited awareness among businesses: Some businesses do not fully understand the importance of ESG reporting and the necessity of assurance service contracts. This lack of awareness leads to incomplete and unprofessional ESG reporting practices.

4. Solutions for improving legal regulations in Vietnam regarding ESG and assurance services for ESG

To enhance the legal framework and ensure effective Environmental, Social, and Governance (ESG) reporting and assurance services in Vietnam, a comprehensive, structured approach is necessary. Addressing the challenges in this domain requires targeted solutions spanning legal frameworks, institutional mechanisms, capacity building, and technological advancements. The following measures are proposed to create a robust and reliable system that aligns with international standards while catering to Vietnam's unique socio-economic conditions.

Developing a Comprehensive Legal Framework

Vietnam must enact a dedicated law or decree focusing on ESG reporting and assurance. This legal framework should clearly define principles, standards, and procedures to ensure consistency and accountability across industries. Such legislation would establish mandatory disclosures, timelines, and the scope of reporting while clarifying the obligations of businesses. Developing unified national standards tailored to Vietnam's socio-economic context and aligning with global frameworks such as the Global Reporting Initiative (GRI), AA1000 Assurance Standard (AA1000AS), and International Standard on Assurance Engagements (ISAE 3000) is critical.

Strengthen the activities of a specialized regulatory authority

Currently, Vietnam has established the National Council for Sustainable Development under Decision No. 560/QD-TTg dated June 25, 2024. This council

is tasked with strengthening its role in research, consultation, recommendations, and proposals to the Prime Minister in formulating and implementing policies, strategies, mechanisms, and frameworks for sustainable development at the national level. It is also responsible for implementing global commitments on sustainable development in Vietnam, including effectively executing the National Action Plan for the 2030 Agenda for Sustainable Development. Additionally, the council will assess and summarize the results of sustainable development efforts nationwide and organize regular National Conferences on Sustainable Development. The council should establish a specialized subcommittee to address the following issues:

Developing robust ESG standards is critical to align Vietnam's sustainability initiatives with global best practices while addressing its unique socio-economic conditions. Ensuring compliance with these standards requires regular oversight and monitoring, enabling businesses to adhere to ESG regulations effectively. Providing guidance is another key issue, where technical assistance and clear explanations of ESG requirements foster a better understanding of compliance measures among organizations. Training programs and certification courses enhances the expertise of professionals involved in ESG assurance services, ensuring the quality and reliability of their work. Additionally, fostering international collaboration by partnering with global organizations allows Vietnam to adopt proven practices and frameworks for ESG reporting and assurance, strengthening its integration into the global sustainability landscape.

Enhancing the capacity of assurance providers

The reliability and credibility of ESG reporting depend significantly on the expertise of assurance providers. Enhancing their capacity involves several dimensions, including training, certification, and access to advanced tools and technologies. Comprehensive training programs covering global ESG standards such as GRI, AA1000AS, and ISAE 3000 are essential. These programs should include methodologies for data collection, evaluation, and validation. Specialized certification programs ensure that assurance providers meet globally recognized competency standards. They should be introduced to advanced tools, including big data analytics, blockchain for traceability, and AI-driven insights, can improve the efficiency and accuracy of ESG evaluations. Another way to significantly enhance the quality of ESG assurance services in Vietnam is Partnering with experienced international firms for mentorship and knowledge exchange.

Raising awareness among businesses and assurance providers

Educational campaigns, workshops, and seminars are essential for raising awareness about ESG reporting and assurance requirements. These initiatives should target both businesses and assurance providers to foster a culture of transparency and accountability. Networking forums can enable assurance providers to share insights, challenges, and innovations, promoting collaboration and continuous improvement.

Introducing incentives and enforcement mechanisms

Introducing a balanced approach of incentives and penalties can motivate businesses to prioritize ESG compliance. Tax benefits, public recognition, or certifications can serve as positive reinforcements, while penalties for non-compliance ensure adherence to regulations. This dual approach ensures that businesses take ESG reporting seriously while reaping tangible benefits for their efforts.

Strengthening collaboration with international partners

Vietnam can benefit greatly from collaborating with international organizations and stakeholders. By adopting proven practices and frameworks, such as AA1000AS and ISAE 3000, the country can align its ESG regulations with global standards. These partnerships can also facilitate knowledge transfer and capacity building, ensuring that Vietnam's ESG initiatives are effective and credible.

Promoting digital solutions for esg management

Technology plays a vital role in streamlining ESG reporting and assurance processes. Leveraging AI and blockchain technologies can improve data accuracy, traceability, and transparency. Digital platforms for ESG data collection, submission, and tracking can significantly enhance efficiency while reducing administrative burdens. Advanced analytics tools can provide valuable insights for decision-making, ensuring that businesses remain aligned with their ESG goals.

Conclusion: To summary, improving the legal framework and standards for assurance engagements related to Environmental, Social, and Governance (ESG) reporting in Vietnam is both a pressing necessity and a strategic opportunity. By developing comprehensive legal frameworks, Vietnam can provide clear and consistent guidelines for businesses, ensuring uniformity and transparency in ESG reporting practices.

References:

AA1000AS v3 Assurance Standard by AccountAbility.
Climate Report 2022 ASEAN.
Decree No. 06/2022/ND-CP on Greenhouse Gas Emissions.
Decree No. 145/2020/ND-CP on Labor and Working Conditions.
Enterprise Law (59/2020/QH14).
Ministry of Finance. Circular No. 96/2020/TT-BTC, November 16, 2020.
National Assembly of Vietnam. Law No. 72/2020/QH14 - Environmental Protection Law.
ISAE 3000 - International Standard on Assurance Engagements.
IFC & State Securities Commission. Guidelines on Sustainable Development Reporting.
O'Dwyer, Owen, & Unerman, Seeking legitimacy for new assurance forms: The case of assurance on sustainability reporting, Accounting, Organization and Society, Volume 36, Issue 1, 2011, Page 31-52
O'Dwyer & Owen, Assurance Statement Practice in Environmental, Social and Sustainability Reporting: A Critical Evaluation. The British Accounting Review, 37, 205-229
Securities Law (54/2019/QH14).

ENVIRONMENTAL ACCOUNTING EXPERIENCE OF SOME COUNTRIES IN THE WORLD AND LESSONS FOR VIETNAM

Ly Thi Thu Hien*

Abstract: ***Environmental protection and sustainable development have become top priorities for many countries. This study provides insights into the environmental accounting methods successfully implemented in various nations, drawing valuable lessons for Vietnam. The paper analyzes several exemplary countries' experiences in environmental accounting, including developed nations such as Kazakhstan, Sri Lanka, and the Czech Republic. Each of these countries has its own unique environmental accounting methods and processes, reflecting differences in economic, social, and political conditions. This offers profound insights into environmental accounting and opens new avenues for Vietnam to adopt effective accounting methods to promote sustainable development and environmental protection.***

• Keywords: *environmental accounting, environmental accounting experiences, environmental costs.*

Date of receipt: 20th Mar., 2025
Date of delivery revision: 26th Mar., 2025
Date of receipt revision: 10th Apr., 2025
Date of approval: 20th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.09

1. Introduction

In the context of globalization and the increasing awareness of the importance of environmental protection, environmental accounting has emerged as a significant field of research, attracting the attention of numerous scientists, managers, and governments worldwide. Therefore, conducting a survey and analysing the environmental accounting methods that have been successfully implemented in several countries is crucial for drawing valuable lessons for Vietnam in developing and applying an environmental accounting system that aligns with the country's practical conditions.

This study begins by examining environmental accounting, a field related to the recording, analysing, and reporting financial information concerning activities that impact the environment in countries such as Kazakhstan, Sri Lanka, and the Czech Republic. Environmental accounting aims to assess the impact of business activities on the environment and assist organizations and enterprises in developing sustainable strategies, optimizing resource use, and minimizing costs.

In the current context, where environmental issues such as climate change, pollution, and natural resource exploitation are becoming increasingly severe, environmental accounting is more urgent than ever. This study will focus on analyzing exemplary countries' experiences in environmental accounting, such as Kazakhstan, Sri Lanka, and the Czech Republic. These countries have made significant progress in integrating environmental factors into their accounting systems, thereby providing profound insights into environmental accounting and opening new pathways for Vietnam to adopt effective accounting methods to promote sustainable development and environmental protection.

2. Experiences in Environmental Accounting from Some Countries Worldwide

2.1. Environmental Accounting Experiences of Kazakhstan

To effectively manage environmental risks, businesses in the Republic of Kazakhstan must continuously improve their environmental management approaches and allocate the necessary resources for environmental protection, particularly in terms of environmental costs, which include paying taxes on emissions as mandated and costs associated with environmental measures. According to the accounting regulations in the Republic of Kazakhstan, environmental costs refer to the total costs incurred by a business entity for: - preventing ecosystem disruption through environmental measures; - mitigating the impacts of ecosystem disruption on the population, fixed assets (funds) of the industry, infrastructure of residential areas, and public utilities, among others. Additionally, as noted, environmental costs are often understood as the costs associated with maintaining environmental quality through environmental measures. The following types of costs should be considered as environmental costs: - those related to preventing the negative impacts of technological processes of companies and organizations on environmental components; - implementing a "green policy" in the production process; - making changes to the production process related to the processing of secondary natural resources to reduce negative impacts on the overall environmental complex.

** Lac Hong University; email: hienly@lhu.edu.vn*

The types and characteristics of a company's operations can serve as criteria for classifying environmental costs. The classification criteria for environmental costs are the types and fields of environmental activities of companies and organizations. The collection of these operational indicators is typically divided into the following protective categories: - activities aimed at protecting and rationally utilizing the air basin; - activities aimed at protecting and rationally utilizing water resources; - activities related to the protection and rational utilization of land resources; - activities protecting physical areas; - activities protecting near-Earth space. Therefore, the most detailed classification of costs according to the environmental protection object tends to be divided into the protection of: 1. Water (integrated water basins) 2. Land (physical areas) 3. Atmospheric air (near-Earth space). Based on the classification above, costs can be further divided into two types: The first type will include current costs related to maintaining environmental protection facilities. The second type comprises capital costs to create environmental complexes through environmental investments.

The environmental accounting objectives for a company is identified by calculating the costs of environmental measures. Accordingly, the accounting items include:

- The protective objects themselves (integrated water reservoirs, physical areas, atmospheric air, and near-Earth space);

- Fixed assets designated for environmental protection, operational costs, and results of environmental activities, including items for the aforementioned protective objects.

The accuracy of measuring operational costs for environmental protection, which constitutes a part of the enterprise's resources used in the operation of environmental facilities, depends on the reliability of reflecting their components. Therefore, the components of operational environmental costs include:

1. Maintenance, repair, and upkeep costs of fixed assets designated for environmental protection;

2. Costs related to implementing environmental protection measures aimed at enhancing the quality characteristics of environmental components, arising from the core business activities of the company and other financial sources;

3. Additional costs related to the operation of fixed assets designated for environmental protection, predetermined by changes in production technology to reduce the level of negative impact on the environment. The capital cost group includes production operational costs in the construction sector and technology preparation, procurement of inventory and equipment, construction, installation, exploration, and research and development projects.

2.2. Environmental Accounting Experiences of Sri Lanka

In Sri Lanka, environmental accounting is divided into the following components:

Energy Accounting

Generally, regardless of size, most businesses in Sri Lanka are concerned with energy management and related accounting activities. Similar to what Wilmshurst and Frost (2001) identified in Australia, many initiatives have been developed concerning efficient energy use. Consequently, energy accounting is a primary environmental accounting tool Sri Lankan businesses utilise. They record the types of energy consumed, analyze energy consumption during different periods (e.g., peak and off-peak hours), calculate energy intensity ratios (such as energy consumption per standardized unit/minute), and assess the feasibility of new energy-saving measures. In Sri Lanka, high energy costs are a driving factor behind the increasing concern for energy conservation. Therefore, energy accounting in Sri Lankan businesses is primarily motivated by internal efficiency. This means that the primary ecological efficiency driver propels energy accounting measures in Sri Lankan enterprises.

Material Accounting

In addition to energy accounting, another essential environmental accounting measure adopted by Sri Lankan businesses is material accounting, particularly in the manufacturing sector. Depending on the specific industry, the contribution of material accounting to material management will vary.

Although organizations generate information through material accounting, this information is not utilized to apply advanced techniques such as Material Flow Cost Accounting (MFCA). As a result, most waste and waste treatment costs are considered general costs without linking them to the products that generate them. This can lead to these costs being allocated to actual products that do not generate them. Consequently, cleaner products effectively subsidize other less clean products. This is where Sri Lankan businesses could employ Activity-Based Costing (ABC) methods to track general costs for specific activities (and products) that generate them.

Water Accounting

Although water costs are relatively low in Sri Lanka, businesses have begun to pay more attention to water management and related accounting. Many Sri Lankan enterprises focus on two primary approaches to water management: a) behavioral and b) technical. Behavioral approaches primarily involve educating stakeholders

(such as employees, customers, suppliers, etc.) to bring about changes in water usage. Technical approaches involve changes in physical capital aimed at water conservation. This can range from water-saving faucets to wastewater treatment plants.

Another aspect of environmental accounting related to water is wastewater treatment and accounting. Many organizations have implemented in-house wastewater treatment plants or facilities to manage wastewater (and waste materials). In terms of water accounting, tracking total water consumption and wastewater generation, evaluating water-saving projects, and calculating water intensity ratios are common practices representing environmental accounting practices. Due to the lack of potential cost savings, wastewater treatment is primarily driven by stakeholder pressures, such as from consumers (in the hospitality sector, these are environmentally conscious guests) and regulatory agencies.

Carbon Accounting

Although less common, another emerging practice is carbon management and carbon emissions accounting, which is increasingly prevalent in the hospitality and apparel sectors. Due to the absence of any legal pressures and the inability to realize cost savings, carbon emissions management is primarily driven by pressures from international stakeholders, particularly customers. Sri Lankan businesses rely on external expert organizations to manage and calculate carbon emissions. This is due to the technical issues associated with accounting for carbon emissions. These consulting firms provide Carbon Neutrality Certificates or other certifications, such as Carbon Conscious Certificates, for clients who comply with the requirements. These companies often purchase carbon offsets from carbon markets to achieve carbon neutrality.

Life Cycle Accounting

The application of life cycle accounting considerations in energy and water consumption and material use is particularly evident in the design phase of buildings and facilities among Sri Lankan organizations. Some observed Sri Lankan businesses have attempted to optimize solar energy use, minimize electricity consumption, utilize environmentally friendly air conditioning systems such as evaporative cooling systems, reduce damage to vegetation and the environment, and install water and waste management systems from the design stage. However, these Sri Lankan businesses do not employ life cycle environmental impact assessments. Although many companies identify the environmental impacts of their organizational activities at the design or implementation stage, there is no systematic observation of identifying them throughout the entire value chain and across the organization's operations.

2.3. Environmental Accounting Experiences of Czech Republic

In recent years, various approaches to environmental accounting have gradually developed in the Czech Republic. Environmental accounting in this country exhibits the following specific characteristics:

(i) The philosophy and tools used within the environmental accounting framework can significantly contribute to societal development, designated as sustainable development. The system allows for assessing approaches to the environment and environmental performance while facilitating communication in environmental protection between managers and other stakeholders.

(ii) Environmental accounting at the corporate level typically aims to achieve the following objectives:

- Identify opportunities for improving the company's environmental performance;

- Establish priorities for each activity and environmental measure;

- Consider environmental aspects within the decision-making framework related to the company's current outputs (products and services), as well as in the research and development of new products and services;

- Ensure transparency of the company's activities related to the environment;

- Identify the information needs of key stakeholders, collect the required information, and allow users access to this information (i.e., ensure the process of environmental communication);

- Establish an environmental management system and environmental protection standards within the company (at lower organizational levels). Management requires various types of information to achieve the aforementioned objectives, for example: • Information on material and energy flows and inventory, information related to each process and output of the company, and information on environmental aspects and their impacts on the environment; • Information on the economic impacts of the company's environmental protection measures, as well as information on the economic consequences of harming the environment; • Qualitative information regarding the requirements (needs) of different stakeholders arising from the company's impact on the environment.

(iii) The significance of environmental accounting lies in connecting the economic sphere with the company's approach to the environment. Its primary concern is to enhance management's awareness of the potential impacts of environmental aspects on the company's operations, products, and services concerning the company's economic efficiency (these impacts can be either positive or negative). The

company's environmental efficiency (often expressed in physical units) can significantly affect the company's economic efficiency (reflected in financial indicators). For example, the interrelationships can be described (recorded) by measuring ecological efficiency (Rankin et al., 2012).

In enterprises, information about environmental costs is largely unrelated to information about material and energy flows (e.g., data on resource extraction and waste production in a broad sense quantities and types of pollutant emissions into the air or the quantity and composition of wastewater). Companies in the Czech Republic view the Environmental Management System (EMS) as an important tool for minimizing the environmental impact of their activities and as a means of recognizing the impacts within the business sector.

The current situation regarding the implementation of environmental accounting in the Czech Republic continues to be characterized by the fact that monitoring environmental costs in enterprises is largely not understood as part of an integrated system for monitoring and evaluating material, energy, and monetary flows. For environmental accounting to provide relevant information to support decision-making processes within enterprises, particular attention must be paid to identifying the environmental costs incurred and the benefits that the enterprise gains through its environmentally friendly approach.

3. Lessons learned for Vietnam

Vietnam enacted its first Environmental Law in 1993 and amended the Environmental Protection Law in 2005. The government issued Decree No. 67/2011/ND-CP on August 8, 2011, regarding taxable entities, tax calculation bases, tax declaration, tax assessment, tax payment, and environmental protection tax refunds; the Ministry of Finance issued Circular No. 152/2011/TT-BTC on November 11, 2011, guiding the implementation of Decree 67/2011/ND-CP; and Circular No. 159/2012/TT-BTC on September 28, 2012, amended and supplemented Circular No. 152/2011/TT-BTC. However, the country has yet to establish an accounting regime related to the application of environmental accounting in enterprises. There are no provisions in the current accounting regime guiding enterprises on classifying and monitoring production costs, nor are there any mandatory accounts for recording environmental costs. Currently, there are not many government frameworks and regulations for companies and organizations to study and implement environmental accounting. The research and application of environmental accounting in Vietnam is still in its infancy, and the number of research projects on environmental accounting is not particularly high. Most enterprises have not arranged to quantify environmental costs and benefits with a full-time accountant and continue to maintain a conventional accounting framework without integrating the details. Several lessons can be drawn from examining the environmental accounting experiences of various countries worldwide:

First, improving the system of indicators for measuring environmental performance is essential. The environmental management reporting system will generate information on environmental costs for business managers. Managers must rely on a set of indicators to measure environmental performance and evaluate environmental cost information. Therefore, corporations need to practice intermediary improvements in developing ecosystems alongside policy researchers.

Second, it is necessary to study the experiences of countries worldwide, particularly developed nations, in applying environmental accounting, thereby drawing lessons for Vietnam to achieve the highest effectiveness in implementing environmental accounting for enterprises.

Third, businesses need to enhance their awareness of the value of environmental accounting, focusing on analyzing and implementing environmental accounting, and accepting it as part of the overall accounting framework. The strengths of the Fourth Industrial Revolution must be leveraged, applying advanced scientific and technological innovations in implementing environmental accounting to achieve high efficiency and international integration.

Fourth, greater emphasis must be placed on the use of environmental accounting within the organizations of state management agencies.

Guidelines for implementing environmental accounting and legal documents should help individuals, organizations, and enterprises research environmental accounting issues and encourage businesses to implement environmental accounting. The Ministry of Natural Resources and Environment needs to research, develop, and issue guidelines on environmental accounting, emphasizing that this is an important method for effectively managing the environmental activities of enterprises.

References:

Wilmshurst, T. D., & Frost, G. R. (2001). The role of accounting and the accountant in the environmental management system. Business strategy and the environment, 10(3), 135-147.

Rankin, M., Stanton, P., McGowan, S. C., Ferlauto, K., & Tilling, M. (2012). Contemporary issues in accounting.

Environmental Protection Law No. 29-L/CTN dated December 27, 1993, of the National Assembly.

Environmental Protection Law (Amended, 2005) No. 52/2005/QH11 dated November 29, 2005.

Decree No. 67/2011/ND-CP: Issued on August 8, 2011, regulating taxable entities, tax calculation bases, tax declaration, tax assessment, tax payment, and environmental protection tax refunds.

Circular No. 152/2011/TT-BTC: Issued on November 11, 2011, guiding the implementation of Decree No. 67/2011/ND-CP.

Circular No. 159/2012/TT-BTC: Issued on September 28, 2012, amending and supplementing Circular No. 152/2011/TT-BTC.

SIMULATION OF THE EXPERIENCE TEACHING METHOD FOR FINANCE MARKET

PhD. Nguyen Nam Thang* - Assoc.Prof.PhD. Hoang Thanh Hanh*

Abstract: ***Research on experimental teaching method of David Kolb integrates the effective teaching method of Main University using Monte Carlo simulation model with the help of Oracle Crystall Ball data analysis software to simulate teaching method Experimental learning for the financial market according to output standards helps teachers, training institutions and policy makers have an analytical tool that predicts experimental teaching results, thereby adjusting the teaching method corresponding expectation to build an education and training strategy.***

• Keywords: *effective teaching, experimental teaching, financial market, teaching simulation.*

Date of receipt: 26th Feb., 2025
Date of delivery revision: 23th Mar., 2025
Date of receipt revision: 10th Apr., 2025
Date of approval: 28th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.10

1. Introduction

The world has gone a long way in the development of teaching methods, including experiential teaching methods that show the interaction between teacher and student which is one of the widely applied theories. On the basis of training programs and curriculum at the university level which have been developed according to output standards, teachers need to choose teaching methods, but what to teach is not important, but must be taught as how. Therefore, teachers need to be trained and equipped with knowledge and skills on experiential teaching methods before teaching.

2. Theoretical background/literature review

In the world, there are many opinions of authors on teaching methods for each case, subjects learn about negativity and positivity as follows:

Victor Weisskop (1930), human being cannot learn by injecting information into their brains, so we can only teach by generating the motivation of understanding.

Wilbert Mc Keachie (1957), in terms of learner concentration, shows that teaching in experiential method, the concentration rate accounts for 75% during 45 minutes of study. Conversely, teaching according to traditional theoretical teaching method, the concentration level reaches 75% within the first 25 minutes, then decreases rapidly within the last 20 minutes. Thus, with traditional teaching methods, the teacher is going against the goal of the training program because talking too much makes learners absorb too little.

John Goodland (1967), academic learning is too abstract for most learners, so to learn well, learners need to see, hear, smell and touch what they read and write.

Lewis and Woodward (1984), in large classes, teachers talk more than 88% of class time, silence accounts for more than 6% and time spent on learners is just over 5%. This shows that teachers need to quickly implement the experiential teaching method that says more or less.

Russell, Hendricson and Herbert (1984), the learner will retain better lecture information when the density of information provided is low compared to medium and high. The implication here is that the amount of new information the learner can learn over a period of time is limited and the instructor himself breaks his own purpose when exceeding that limit.

Chickering and Gamson (1987), to learn well, learners need to do more than just listen passively, namely to listen, read, see, do or participate in problem solving.

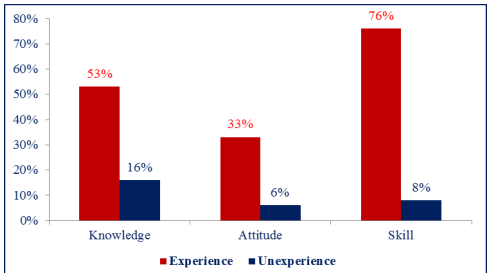
Ruhl, Hughes and Schloss (1987), have come to the unexpected conclusion that if the teacher talks less, the learners can learn more. This finding is in stark contrast to most teachers who think learners will be more receptive to talking a lot and providing more information.

Freire (1998), studying all levels of learning, found that learners and acquired knowledge more when they play a real role in the learning process and have the opportunity to speak, share, interact, feedback, etc.

** Thuyloi University; email: nguyennamthang@tlu.edu.vn - hoangthanhhanh@tlu.edu.vn*

Nacy Tobler (2009), shows that the results of surveying the effectiveness of the experimental training programs in terms of knowledge, thinking and attitude in the experience programs have drastic changes compared to the program is not experienced, especially in terms of skills (see Fig 1).

Fig 1. Effectiveness of the experimental training program



Source: Nacy Tobler (2009)

Some studies on the retention rate of knowledge from learning methods have obtained very impressive results on the effectiveness of experimental teaching methods. With the passive learning style of listening, reading, seeing and doing, it is at most 50% of knowledge. In which, if there are only theoretical lectures, the level of knowledge absorption is very low. This partly explains why the traditional teaching methods are not highly effective. At the University of Michigan, the majority of learners tend to think that having a high GPA and a degree in hand guarantees career success, but practical work proves that only experience and new styles ensure success. More and more people realize the importance of knowledge, skills and experience both to the job and to the success of each individual, especially in the new development trend of the 21st century that soft skills are gaining great attention because it has a decisive effect on success but goes unnoticed in training programs by only promoting hard skills. Meanwhile, traditional teaching methods provide only hard skills, with absolutely no regard for soft skills. On the contrary, in the experiential teaching method, thanks to activities, learners can develop very well soft skills. Apparently, experimental teaching methods bring much higher learning efficiency than traditional teaching methods. Lecturers talk less, spend more time engaging students in diverse activities in the classroom and outside the classroom. On the student side, only on the basis of participation and experience can they truly understand and build awareness for themselves.

Howard Hendricks (2013), perhaps thus asserts that maximizing learning is always the result of maximizing teaching. Harvard University, there are many teaching methods, many different approaches, basically there are two methods are active teaching method and experiential teaching method, namely: Active teaching methods include: Brainstorming (Osborn, 1963); Couples share their thoughts (Lyman, 1987); Theme (Hmelo-Silver, 2004); Group and role-play (Kritzerow, 1990). Experimental teaching methods include: Projects (Bransford and Stein, 1993); Situation (Scholz and Olaf, 2002), Community (Jacoby, 1996) and Simulation (Robert and Casella, 2004). With the experiential teaching method, which emphasizes the participation of learners in the process in many forms, attracts learners to take the initiative in learning such as essay, practice, and teaching, the results are very clearly different attainment of up to 90% knowledge acquisition. With experiential teaching methods, emphasizing the participation of learners in the process in many forms, attracting learners to take initiative in learning such as essay, practice and teaching. The results show that the very obvious difference can reach up to 90% levels of knowledge acquisition. Through the above mentioned content about the advantages and disadvantages of many different teaching methods in the world, the author chooses experiential teaching method for the financial market because of the advantages of the method for research. In this study, it is the experimental teaching method of David Kolb integrated with the method of determining teaching results of Main USA University.

3. Methodology

3.1. Method of experimental teaching of David Kolb

David Kolb (1939) and psychologists and educators have proposed the theory of Experimental Teaching Methods with the view that learning is the process of creating new knowledge on the basis of experience. The actual experiment inherits the knowledge, skills, analysis, evaluation and experience that were previously available. Experimental teaching is often thought of as the opposite of Academic learning, which is the process of gaining information through researching a problem without having direct experience. David Kolb (2013), experiential teaching theory is applied in many disciplines and fields such as professional training programs (Reese, 1998; Kolb, 1995) and higher education (Mentkowski, 2000). The main content of the study refers to the role of the teacher, the relationship between the teacher and the student in implementing the theory of experiential teaching method is a process that contains many

complex relationships gives learners the ability to analyze the profound meanings of concepts with the skills to apply them that the teacher needs to perform in 4 ways, namely:

(1) Facilitator: Teachers help learners stick to their personal experience and analyze themselves. Use assertive but friendly, warm way to appeal to learners' interest, inner motivation and self-knowledge with small group conversation, forging personal relationships with learner;

(2) Subject Expert: In this role, the instructor helps learners organize and match their analysis of knowledge based on subject matter. The teacher's way here is to be competent, reflecting that it is the teacher, teach by example, model and encourage learners to think critically when organizing and systematically analyzing subject knowledge. This knowledge is passed on through lectures and curriculum;

(3) Evaluator: As an evaluator, the instructor helps learners master the knowledge and skills to meet the learning requirements by precisely identifying the goals to be achieved, create activities for learners to evaluate learning;

(4) Coach: In the role of a trainer, the instructor helps learners apply knowledge to achieve their goals. They use incentives, cooperation, often working with individuals to help learn from real-world experiences as well as assist learners in making personal development plans and providing strategies. Received the response from the part just performed.

Experimental teaching requires instructors to follow a non-directive facilitator way to help learners gain knowledge from practical experience, at the same time suitable with the way of learners. So, the question is how to learn? The learning style is not fixed but similar to learning habits, formed from experience and selection.

David Kolb (2013), learners can adapt 8 ways of learning to the requirements of each situation, specifically:

(1) Initialization: The capacity to initiate actions to resolve situations;

(2) Experience: The ability to seek meaning when engaging in an experience;

(3) Imagination: The ability to imagine possibilities by observing;

(4) Reality: The ability to find meaning when engaging in reality;

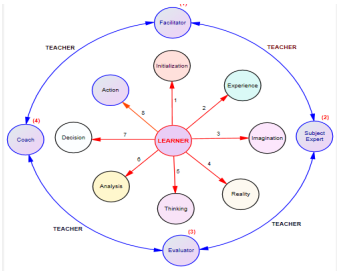
(5) Thinking: The capacity to engage in logical and abstract debate;

(6) Analysis: The capacity to integrate and systematize ideas;

(7) Decision: The ability to apply theory and model to make decisions to choose solutions and actions;

(8) Action: The ability to create strong motivations towards goal oriented actions for the integration of people and work.

Fig 2. The experiential teaching model



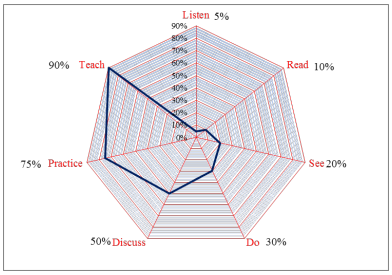
Source: David Kolb (2013)

Thus, with the author's point of view, the teacher must take the learner as the center, the subject of all creativity in teaching to meet the output standards so that the learners have the ability to adapt balance of discrete experiences, abstract concepts, positive experiments and observations nested into 4 ways of teaching and 8 ways of learning called the experimental teaching model in framework (see figure 2).

The above information shows the limitations of traditional teaching methods, so the need to convert to experiential teaching methods is inevitable. Thus, the experiential teaching method shows that in fact, many teachers mistakenly learn through experience as a free way in which learners have to discover, self-think, draw and draw by themselves. New knowledge with the role of very limited participation of teachers, on the contrary, shows that the roles, functions and duties of teachers have a great impact on the results achieved by learners.

3.2. Methods of determining teaching results of Main USA University

Fig 3. Learning Outcome Model



Source: Main USA University (2013)

From the learning results model, we calculate the forecast of future experiential teaching results into the present time of the learners and integrate with the teacher on a 10 point scale with the significance level of 5% for the teaching results. The average score is 7,45 points as follows:

Table 1. Spreadsheet of experimental teaching result

Explain		Listen	Read	See	Do	Discuss	Practice	Teach
Significance	5%	5%	10%	20%	30%	50%	75%	90%
Point	10	2	3	4,5	1,5	2,5	1,5	6,5
Result	**7,4**	**1,9**	**2,7**	**3,9**	**1,2**	**2,0**	**1,1**	**4,6**

Source: Author (2024)

Statistics of 6,4 points input results, 8,5 points study process and 6,6 points for the final exam scores of 108 students in the financial market module training program on average 7,2 points compared with the result 7,4 points is relatively suitable.

4. Results

4.1. Principles of analyzing predictive teaching experience

Unlike deterministic analysis model, predefined values or situations to answer the question "if, then" in simulation analysis also known as probabilistic analysis, everything will be completely random. course. Uncertainty analysis is also called probabilistic or simulation, the values of the risk factor will appear uncertain and at random.

And of course the estimation results in the form of value are just as random as the casino lottery game which is the simulation method of Monte Carlo which is commonly used in predictive analysis. socio-economic phenomena.

Applying this simulation method to predict the results of experimental teaching according to output standards under the simultaneous impact of factors in different situations taking into account the distribution of probabilities and possible values.

The factor variables are more advantageous than other methods, considering the combination of the factors and taking into account their relationship. Therefore, this is a rather complicated method that requires the analyst to have experience in econometric statistical probability theory and good execution skills with computer engineering help conducted in sequence, as follows:

(1) Selection of important variables into the analytical model based on sensitivity analysis to include factors that have a great influence on teaching.

(2) Determine the variation pattern of the influencing factors in their relationship with the random variable.

(3) Determine the probabilities.

(4) Using simulation model to determine the analytical results to help predict teaching results accurately.

(5) Based on the results of predictive teaching, conduct reverse determination of variables.

However, this method has a number of drawbacks: it is difficult to estimate the probability of occurrence, which results in the use of subjective probabilities that cannot be avoided and the relationship between Variables can be very complicated.

Although this is a good method, it requires a huge amount of information from teachers, learners and other related subjects. Therefore, if using this method, it takes a lot of money and time. However, choosing an effective teaching method needs to use Monte Carlo simulation model to create scenarios for the optimal method. After many attempts, the applied researchers found the laws of probability distribution.

Accordingly, what percentage of the outcome falls within the same range as in econometrics called the 1 - α confidence interval with the significance level α often chosen as 5%. In the framework of this study, the basic knowledge of math statistics implies that teachers, learners and readers already know.

Therefore, only need to identify the risk variables and the outcome variables, the rest will be done by Oracle Crystal Ball_OCB data analysis software in MS Excel to help consider the variables to make decisions on choosing a good teaching method than.

4.2. Analytical simulation model predicts experimental teaching results

Transfer Table 1 data into an Excel spreadsheet, you can use the function to determine the output standard according to the experimental teaching method, giving the result also equal to 7,4 points.

Table 2. Spreadsheet simulating the experimental teaching result

	A	B	C	D	E	F	G	H	K
1	Significance	5%	Listen	Read	See	Do	Discuss	Practice	Teach
3	Observe	0	1	2	3	4	5	6	7
4	Point	(10)	2	3	4,5	1,5	2,5	1,5	6,5
5	Result	7,4	1,9	2,7	3,9	1,2	2,0	1,1	4,6

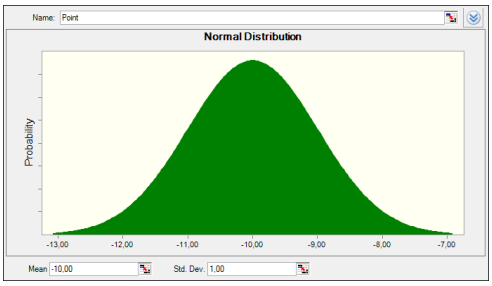
Source: Author (2024)

Analytical order for predicting experimental teaching results through Monte Carlo model

combined with OCB data analysis software in Excel is simulated as follows:

Simulation 1. Declare a risk variable 10 points by placing the mouse in the cell containing the risk variable, namely cell B4. Then select Define Assumption. The table above has many probability distributions. The most common, however, is to choose a normal distribution or a normal distribution | OK.

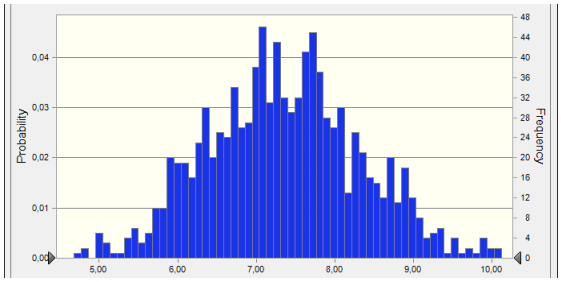
Fig 4. Normal distribution simulation



Source: Author (2024)

Simulation 2. Declare the result variable 7,4 points by placing the mouse in the cell containing the predictor variable, namely cell B5. Then select Define forecast | OK. Select Run Preferences, select the number of simulations runs of 1,000 with a confidence interval of 1- α = 95% with significance level α = 5% | OK. Press the Start button. OCB software starts to run a Monte Carlo simulation model. For each simulation, a value of the hypothesis variable will appear randomly corresponding to a teaching result. The program does 1,000 such times.

Fig 5. Simulation model predicts standardized experimental teaching results



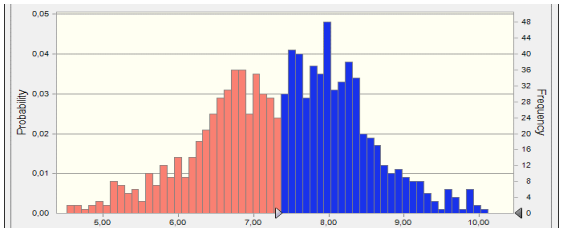
Source: Author (2024)

This is a standardized learning experience analysis model after performing 1,000 trials. In the last row, the range of variation (-∞;+∞) from infinity subtraction (-Infinity) to plus infinity (+ Infinity), namely: The lowest teaching experience result is 5 points and the highest is 10 points. Of course, the probability of teaching outcomes falling between (5;10) is definitely 100% (see cell: Certainly).

5. Discussion

(1) Want to analyze and predict experimental teaching results of 7,4 points or more on average. Just moving the left triangle to the right until the right edge is 7,4 gives a corresponding probability of 52,86%.

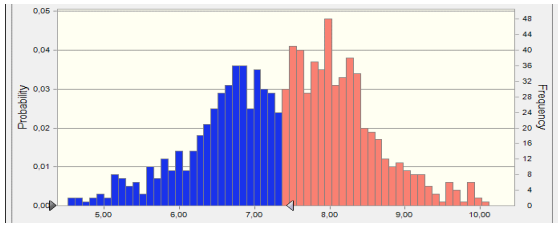
Fig 6. Simulation model predicts standardized experimental teaching result 1



Source: Author (2024)

(2) Want to analyze and predict experimental teaching results of 7,4 points or less on average. Just moving the right triangle to the left until the left edge is 7,4 gives a corresponding probability of 47,14%.

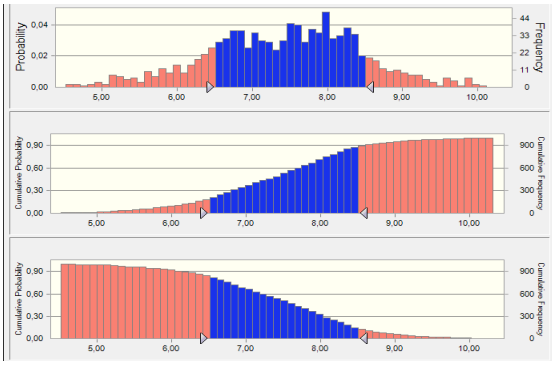
Fig 7. Simulation model predicts standardized experimental teaching result 2



Source: Author (2024)

(3) To analyze and predict the results of experimental teaching in the average range from 6,5 points to 8,5 points. Just move the left triangle to the right until the left edge is 6,5 and the right triangle to the left until the right side is 8,5 gives a corresponding probability of 69,77%.

Fig 8. Simulation model predicts standardized experimental teaching result 3

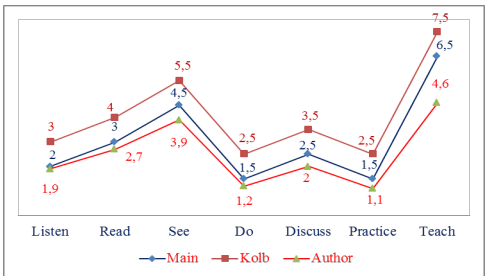


Source: Author (2024)

(4) Compared with the research results of Main University and David Kolb with the research results of the author, it is quite similar. However, there are still a few poor and weak teaching and learning approaches that have not achieved the desired results of the teachers and learners as well as the expectations of the training institutions set according to the output standards built on Bloom scale basis expands.

Thus, in order to achieve the expectation of experiential teaching, the teacher must choose appropriate teaching methods for each specific training program and for different learning subjects. In fact, after all, all teaching methods can hide its positive activities as well as its negative. To overcome these disadvantages, it is necessary to have some useful solutions with feasibility, specifically:

Fig 9. Comparison of analytical simulation and prediction of experimental teaching results



Source: Author (2024)

(1) It is necessary to dynamically create a high interaction between teacher and student, and between learners.

(2) It is necessary to actively encourage independent and creative thinking, and eliminate the dogmatic style of imposing knowledge.

(3) It is necessary to regularly focus on developing skills and building positive working attitudes for learners.

(4) It is necessary to focus on the development of high-level awareness for learners, that is, the ability to analyze, synthesize, evaluate and create.

6. Conclusion

(1) Research shows that teaching is not doing work to learners through implementing a variety of techniques, but it is work that teachers do with learners in the context. The port has a meaningful relationship and a sharing of experiences.

(2) Research shows that from a teacher's perspective, planning and experiencing the learners' experiences are an extremely important factor in the learning process. In fact, to a certain extent, if learners do not believe in themselves that they can learn, self-study, or self-study, they will never learn.

(3) Research shows that from a learner perspective, it takes efforts to learn to pay close attention to listening to lectures, self-improvement, whereas teachers need to invest time in teaching methods, using only 10% of the time of theory. The remaining 90% of the time to guide learners and finally diversify teaching methods combined with modern technology of the 21st century.

(4) The author's research hopes to apply a Monte Carlo simulation model of David Kolb's experiential teaching method integrated with Main University's experiential learning results has been conducted predictive analysis with the help of OCB data analysis software can contribute to supporting education and training non-business units to have a more scientific method for teaching to create high quality human resources for Vietnam.

References:

Abrandt Dahlgren, M., and Dahlgren, L. O. (2002). Portraits of PBL: Students' experiences of the characteristics of problem-based learning in physiotherapy, computer engineering and psychology. Instr. Sci. 30: 111-127.

Albanese, M. A., and Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. Acad. Med. 68: 52-81.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. J. Educ. Psychol.84: 261.

Bradford J. and Stein B. (1993). The IDEAL problem solver, 2nd ed. New Yord, NY: Freeman.

Chickering, A.,and Z. Gamson(1987). Seven principles of good practice in under graduate education. AAHE Bulletin 39:3–7.

Hmelo-Silver C. E. (2004). Problem-based learning: What and how do students learn? Educational Psychology Review, 16: 235–266.

Kritzerow P (1990). Active learning in the classroom: The use of group role plays. Teaching sociology,18(2), 223-225.

Kolb, D. A. (1939). The Learning Style Inventory: Technical Manual. McBer & Co, Boston, MA.

Kolb, D. A. (2013). Learning styles and disciplinary differences. The modern American college.

Kolb, D. A., & Fry, R. E. (1995). Toward an applied theory of experiential learning. MIT Alfred P. Sloan School of Management.

Lyman, F. (1987). Think-Pair-Share: An Ending Teaching Technique. MAA-CIE Coop- erative News, 1,1-2

Mentkowski (2000). Organizational psychology: readings on human behavior in organizations. Prentice Hall.

Isaksen, S. G. (1998). A Review of Brainstorming Research: Six Critical Issues for Research. Buffalo: Creative Problem Solving Group. Monograph 302. Retrieved March 5, 2010

Osborn, A.F. (1963) Applied imagination: Principles and procedures of creative problem solving (3rd ed.). New York: Charles Scribner's Sons.

Robert, C.P and Casella, G (2004). Monte Carlo Statistical Methods. New York: Springer-Verlag.

Reese (1998). Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall.

Scholz R.W and Tietje Olaf (2002). Embedded Case Study Methods, Intergrating Quantitative and qualitative Knowledge. Sage Pubications. California: Thousand Oaks.

Jacoby B. (1996). Service learning in Today's Higher Education. In: Barbara Jacoby and Associates (Eds). Service learning in Higher Education: Concepts & Practives, San Francisco CA: Jossey-Bass.

Victor Weisskop (1930). Berechnung der natürlichen Linienbreite auf Grund der Diracschen Lichttheorie. Springer-Verlag.

ENHANCING UNIVERSITY CYBERSECURITY SUSTAINABILITY AND EFFECTIVENESS BY APPLYING ACCOUNTANTS' FORENSIC ACCOUNTING, DIGITAL INTELLIGENCE AND MORAL INTELLIGENCE

Assoc.Prof.PhD. Pham Quang Huy* - MSc. Vu Kien Phuc*

Abstract: ***The current study sets its sight to delve into the impact of digital intelligence (DI) and moral intelligence (MI) on cybersecurity performance (CYP) in higher educational institutions (HEIs). This study also aims to investigate the mediating effect of digital forensic accounting (DFA) in the relationship between DI, MI, and CYP. The structural equation modeling was employed with the support of AMOS 28 to analyze the statistical data collected from the sample of accountants in public sector organizations. The results revealed that both DI and MI significantly and positively impact CYP. Additionally, DFA was corroborated to partially mediate the relationships between DI, MI and CYP. Based on these analysis results, some policy implications have been proposed to help improve and enhance CYP in HEIs.***

• Keywords: *cybersecurity, digital intelligence, forensic accounting, moral intelligence.*

Date of receipt: 26th Feb., 2025
Date of delivery revision: 23th Mar., 2025
Date of receipt revision: 15th Apr., 2025
Date of approval: 28th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.11

1. Introduction

Cybersecurity is becoming vital as the utilization of digital technology expands. Cybersecurity can be understood as the collection of methods, techniques, frameworks, and resources employed to safeguard systems within cyberspace. Higher education institutions (HEIs) are susceptible to cyberattacks due to their storage of substantial quantities of personal data pertaining to students, faculty, and staff, as well as data associated with academic and funding activities, and financial information.

Recently, the frequency of cyberattacks targeting higher education institutions has escalated, resulting in the theft and exploitation of data belonging to students, faculty, and staff for illicit reasons. Consequently, information security in higher education institutions is garnering heightened scrutiny, as they must safeguard sensitive data and critical digital assets from both external and internal attacks. In this context, digital forensics has emerged as a viable option in the digital era, garnering significant interest from numerous scholars and organizations.

Research indicates that personnel frequently represent the most vulnerable element in cybersecurity, leading to numerous security breaches within organizations. Moreover, inadequate employee understanding and adherence are recognized as issues that adversely affect organizational cybersecurity. Threats frequently emerge from employees inadvertently or deliberately revealing critical information. Recently, researchers have concentrated on examining the interplay between human-related elements, including cognition, emotion, and behavior, and cybersecurity. Nazaripour and Zakizadeh (2025) assert that employees possessing innovative abilities will foster competitive advantages within firms in the present day. Intelligence encompasses the conduct and efficacy of individuals, as well as their capacity to acquire knowledge in many contexts. Consequently, intelligence is crucial for comprehending, analyzing, processing, and recreating information. This study concentrates on two specific forms of intelligence: digital intelligence and moral intelligence. The aim of this study is to examine the possible influence of digital intelligence (DI) and moral intelligence (MI) on the implementation of digital forensic accounting (DFA) to augment cybersecurity performance (CP) in HEIs. The primary objectives of the research are to analyze the stated reasons through the systematic development of research questions.

RQ1. To what extent does DI impact CSP?

RQ2. To what extent does MI impact CSP?

RQ3. Does DFA mediate the relationships between DI and CSP as well as MI and CSP?

** University of Economics Ho Chi Minh City; corresponding author: pquanghuy@ueh.edu.vn*

2. Literature review

2.1. A contingent resource-based view

The resource-based view posits that businesses can achieve competitive advantage by cultivating resource bundles. These resources comprise assets and capabilities, which may be either tangible or intangible. The literature presents numerous instances of analytical resources, encompassing analytical systems and the integration of personnel, data-analysis methodologies, and technologies that facilitate evidence-based decision-making for company executives. The resource-based view paradigm, while prevalent in existing literature, is seen as fundamentally static in nature (Ling-yee, 2007). This indicates that the resource-based paradigm is insufficient in recognizing and elucidating the circumstances under which capabilities hold the greatest value. Contingency theory addresses the concept of contingent conditions, positing that both external and internal factors influence organizational management and may subsequently affect the competencies necessary for competitiveness in dynamic environments (Naseer et al., 2016).

2.2. Conceptual respect

Digital intelligence. According to Na-Nan et al. (2019), DI comprises a comprehensive set of technical, cognitive, and socio-emotional skills that enable an individual to face challenges and adapt to the digital era.

Moral intelligence. According to Al-Adamat et al. (2020), MI refers to a person's moral capacity to integrate intellectual and emotional components into actions according to social norms. In addition, MI is also understood as the ability to process moral information and manage self-regulation.

Digital forensic accounting. According to Kaur et al. (2023), forensic accounting integrates accounting expertise, knowledge, and investigative skills to detect financial crimes to provide evidence to support litigation. Therefore, digital forensic accounting is defined as the application of advances in digital technology to perform forensic accounting activities, including fraud analysis, risk assessment, identification of financial reporting discrepancies, identification of cybercrime, and illegal money transfers.

Cybersecurity performance. Cybersecurity performance management involves the ongoing evaluation of security posture using measures like financial exposure, hence aiding decision-makers in making more informed governance choices. Organizations proficient in cybersecurity management implement processes that regulate the confidentiality, integrity, and availability of information inside their cybersecurity framework. These can assist organizations in attaining cybersecurity performance by enhancing their organizational robustness and resilience against breaches and attacks.

3. Hypothesis development

DI refers to an individual's ability to use digital technology to collect and analyze in-depth data to make recommendations to managers. Accountants possessing advanced digital intelligence can promote and facilitate the implementation of artificial intelligence-based cybersecurity solutions. These technologies can automate threat detection, uncover vulnerabilities, and respond to occurrences in real-time, therefore greatly improving the university's security posture. Accountants can aid in formulating comprehensive cybersecurity strategies and ensuring adherence to pertinent rules. This encompasses routine audits and revisions of security protocols to correspond with emerging threats. Accountants can employ their analytical talents to assess and prioritize risks efficiently. Accountants can use real-time monitoring systems to follow user activity and spot irregularities, facilitating the early discovery and prevention of insider risks. In view of this, the hypotheses guiding this investigation are considered as follows.

Hypothesis 1 (H1). DI significantly and positively affects DFA

Hypothesis 2 (H2). DI significantly and positively affects CYP

A high MI enables individuals to attain a more thorough comprehension and make informed decisions based on their experiences. Consequently, individuals will exhibit greater adaptability to the work environment and possess the capacity to execute assigned duties innovatively while adhering to professional ethical norms. Accountants can promote explicit accountability frameworks for cybersecurity roles and responsibilities, guaranteeing that all individuals comprehend their duties to safeguard sensitive information. By demonstrating ethical conduct, accountants can encourage others within the university community to emphasize ethical issues in their cybersecurity operations. Accountants may promote transparent communication on cybersecurity policies and practices, ensuring that all stakeholders are aware and involved in the process. In view of this, the hypotheses guiding this investigation are considered as follows.

Hypothesis 3 (H3). MI significantly and positively affects DFA

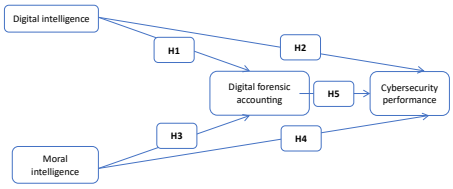
Hypothesis 4 (H4). MI significantly and positively affects CYP

Digital forensics play a pivotal role in navigating the intersection of technology and law. Digital forensics is crucial in investigating and gathering evidence against individuals or organizations that commit crimes in the online environment. With the support of digital technology, forensic accountants can examine financial data in detail to detect discrepancies, irregularities, and fraudulent or erroneous activities. In addition, with the

support of digital technology, forensic accountants will contribute to helping organizations build, maintain, and improve the effectiveness and efficiency of cybersecurity within organization. In view of this, the hypothesis guiding this investigation is considered as follows.

Hypothesis 5 (H5). DFA significantly and positively affects CYP

Figure 1. Conceptual model



4. Research methodology

4.1. Operationalization of the measured variables

This research employed a closed-ended questionnaire. To fulfill the study's objectives, a comprehensive literature analysis was performed to define the research constructs, and many items from each construct were identified to create the preliminary questionnaire. The questionnaire was composed in English and subsequently translated into Vietnamese to facilitate dataset creation and data analysis by multilingual experts, who then performed a reverse translation. The two English questionnaires were subsequently compared to verify the consistency of the survey items. The questionnaire for the study was first evaluated for content and face validity.

Digital intelligence. This investigation determined the DI construct as an elevated amalgamation of four fundamental constructs Data collection and processing capability; Customer service personalization capability; Digital intelligence decision support capability; Sustainable development capability which were inherited from the recommendations of Dong and Wang (2025).

Moral intelligence. This investigation determined the DI construct as an elevated amalgamation of three fundamental constructs Moral sensitivity; Moral commitment; Moral courage which were inherited from the recommendations of Mohammadi et al. (2024).

Digital forensic accounting. This investigation utilized several items that were derived from those proposed by Awodiran et al. (2023) in order to evaluate DFA.

Cybersecurity performance. This investigation determined the DI construct as an elevated amalgamation of five fundamental constructs Cybersecurity capability; Focus on cybersecurity elements; Cyber risk; Cyber resilience; Preparation effort which were inherited from the recommendations of Garcia-Perez et al. (2023).

4.2. Target population and data collection

The accountants affiliated with Vietnamese public universities and public sector organizations were surveyed to ensure the accuracy of the research findings and to reflect a factual scenario. Participants were guaranteed that their involvement and replies would remain entirely anonymous, confidential, and voluntary. The research included non-probability convenience and snowball sampling methods. The recommended sample size ranged from 5:1 to 20:1, with 5 and 20 being the sample size per item. The surveys were disseminated to the respondents from late January 2025 until early April 2025. Following the exclusion of questionnaires plagued by significant flaws, anomalous responses, or inconsistencies, 428 valid questionnaires were ultimately acquired, achieving an effective response rate of 71.33 percent. All informants have a minimum of an undergraduate degree and nine years of experience. The statistical data was analyzed using structural equation modeling with the support of AMOS 28.

5. Results analysis

5.1. Measurement model assessment

Table 1. Results summary of reliability and convergent validity

Constructs and operationalization Factor Loadings		Convergent validity		Construct reliability		Result
		Factor Loadings	AVE	Cronbach's Alpha	Composite Reliability	
Digital intelligence	**DI**					
Data collection and processing capability	DCPC	0.788 - 0.880	0.683	0.864	0.865	Retained
Customer service personalization capability	CSPC	0.801 - 0.870	0.704	0.876	0.877	Retained
Digital intelligence decision support capability	DIDSC	0.716 - 0.909	0.648	0.840	0.846	Retained
Sustainable development capability	SDC	0.731 - 0.852	0.608	0.820	0.822	Retained
Moral intelligence	**MI**					
Moral sensitivity	MS	0.750 - 0.818	0.611	0.822	0.824	Retained
Moral commitment	MOM	0.768 - 0.800	0.602	0.816	0.819	Retained
Moral courage	MOU	0.754 - 0.848	0.630	0.834	0.836	Retained
Digital forensic accounting	**DFA**	0.762 - 0.820	0.623	0.907	0.908	Retained
Cybersecurity performance	**CYP**					
Cybersecurity capability	CAP	0.764 - 0.802	0.621	0.830	0.831	Retained
Focus on cybersecurity elements	FOC	0.773 - 0.902	0.683	0.861	0.866	Retained
Cyber risk	RISK	0.832 - 0.896	0.747	0.845	0.854	Retained
Cyber resilience	RES	0.741 - 0.854	0.623	0.830	0.832	Retained
Preparation effort	PREP	0.717 - 0.865	0.587	0.805	0.810	Retained

The CFA was conducted using the maximum likelihood technique and the support of AMOS 28.0. The Chi-square/df was 1.239 (criteria: ≤ 3), RMSEA was 0.024 (criteria: < 0.08), GFI was 0.911 (criteria: > 0.9), CFI was 0.979 (criteria: > 0.9), TLI was 0.976 (criteria: > 0.9). The reliability of the construct was initially validated using Cronbach's alpha coefficients (Refer Table 1), which ranged from 0.805 to 0.907 across the various constructs. The elevated Cronbach 's alpha values signified a superior degree of internal consistency within each construct, exceeding the commonly recognized threshold of 0.7, hence indicating adequate reliability. Moreover, composite reliability in Table 1, ranging from 0.810 to 0.908, demonstrated comparable assurances of internal consistency, with values far over the threshold of 0.7, so reinforcing the instruments' reliability in evaluating the intended constructs. The factor loadings in Table 1 ranged from 0.716 to 0.909. The average variance extracted (AVE)

values exceeding 0.5 were essential for demonstrating convergent validity. The AVE values varied between 0.587 and 0.747, so demonstrating the convergent validity of the measurement model (Refer Table 1).

The Heterotrait-Monotrait ratio of correlations (HTMT) has been considered as an alternative criterion for identifying issues related to discriminant validity. The optimal cut-off value was supposed to be less than 0.85. The statistical findings clearly show that all values fall below the suggested threshold of 0.85. Therefore, this research attained discriminant validity.

5.2. Structural model assessment

Direct effect. The statistical data revealed that chi-square/df was 1.237 (criteria: ≤ 3), RMSEA was 0.024 (criteria: < 0.08), GFI was 0.904 (criteria: > 0.9), CFI was 0.978 (criteria: > 0.9), TLI was 0.976 (criteria: > 0.9). Table 2 displayed the results of hypothesis testing, confirming all hypotheses. Hypothesis 1 was validated as the DI demonstrated a positive connection with DFA (H1: β=0.344; p=0.000). Hypothesis 2 was validated as the DI demonstrated a positive connection with CYP (H2: β=0.371; p=0.001). Hypothesis 3 was validated as the MI demonstrated a positive connection with DFA (H3: β=0.287; p=0.000). Hypothesis 4 was validated as the MI demonstrated a positive connection with CYP (H4: β=0.448; p=0.000). Hypothesis 5 was validated as the DFA demonstrated a positive connection with CYP (H5: β=0.203; p=0.021). Consequently, H1-H5 received empirical support.

Table 2. Structural coefficients (β) of the hypothesized model

Hypothesis No	Relationship			Standardized	S.E.	C.R.	P	Inference
H1	DI	→	DFA	0.344	0.144	4.027	0.000	Supported
H2	DI	→	CYP	0.371	0.126	3.209	0.001	Supported
H3	MI	→	DFA	0.287	0.121	3.341	0.000	Supported
H4	MI	→	CYP	0.448	0.118	3.428	0.000	Supported
H5	DFA	→	CYP	0.203	0.056	2.308	0.021	Supported

Indirect effect. The mediation investigated was conducted, revealing a substantially and positively indirect effect of DI on CYP via DFA (β= 0.070; p=0.029). The results demonstrated that both direct and indirect paths from DI to CYP were significant and positive through the underlying mechanism of DFA. Additionally, the statistical result also highlighted the substantially and positively indirect effect of MI on CYP via DFA (β= 0.058; p=0.001). The results demonstrated that both direct and indirect paths from MI to CYP were significant and positive through the underlying mechanism of DFA. Thus, DFA was concluded to act as the mediators in the relationship between DI and CYP as well as the relationship between MI and CYP.

6. Concluding remark

Concerns regarding information security in higher education institutions are increasingly emphasized due to their role as repositories of substantial amounts of data, including personal information of students, faculty, staff, as well as data pertaining to academic and financial activities. Consequently, management agencies and institutions must concentrate on several topics to proactively tackle various concerns associated with cybersecurity, including:

Initially, refining the legal framework pertaining to cybersecurity to ensure alignment with the nation's developmental trajectory, current circumstances, and international standards and guidelines.

Secondly, increasing awareness among learners and staff on the detrimental effects of the network environment. Simultaneously, enhance the dissemination of legal regulations pertaining to network security to ensure that learners and employees of the organization promptly comprehend the regulations governing the management, provision, and utilization of information on electronic platforms and social networks, as well as prohibited conduct within the online environment.

Third, collaborating with professional associations to facilitate training courses on professional skills pertinent to DFA, thereby enhancing accountants' knowledge and competencies in executing DFA within the unit. Furthermore, training programs aimed at enhancing DI and MI for accountants must be prioritized to empower them to effectively utilize digital technologies while adhering to professional ethical norms.

Fourth, enhancing the digital infrastructure within the unit to augment its capability to identify cyber threats and emerging phenomena in cyberspace. These technologies enhance network connection systems and facilitate the detection and prevention of increasingly complex and sophisticated threats inside the network environment.

Acknowledgement: *This work was funded by University of Economics Ho Chi Minh City with the Research Topic in University-level at the Grant Number CS-COB-2024-35.*

References:

Al-Adamat, A., Al-Gasawneh, J., & Al-Adamat, O. (2020). The impact of moral intelligence on green purchase intention. Management Science Letters, 10(9), 2063-2070. https://doi.org/10.5267/j.msl.2020.2.005.

Alshurafat, H., Al Shbail, M. O., & Almuiet, M. (2024). Factors affecting the intention to adopt IT forensic accounting tools to detect financial cybercrimes. International Journal of Business Excellence, 33(2), 169-190. https://doi.org/10.1504/IJBEX.2024.139917.

Awodiran, M. A., Ogundele, A. T., Idem, U. J., & Emem O. A. (2023). Digital Forensic Accounting and Cyber Fraud in Nigeria. 2023 International Conference On Cyber Management And Engineering (CyMaEn), 26-27 January 2023, Bangkok, Thailand.

Dong, Y., & Wang, M. (2025). Hotel digital intelligence capability: dimension exploration and scale development. Journal of Hospitality and Tourism Technology, 1-20. https://doi.org/10.1108/JHTT-07-2024-0419.

Garcia-Perez, A., Sallos, M.P., & Tiwasing, P. (2023). Dimensions of cybersecurity performance and crisis response in critical infrastructure organisations: an intellectual capital perspective. Journal of Intellectual Capital, 24(2), 465-486. https://doi.org/10.1108/JIC-06-2021-0166.

Kaur, B., Sood, K., & Grima, S. (2023). A systematic review on forensic accounting and its contribution towards fraud detection and prevention. Journal of Financial Regulation and Compliance, 31(1), 60-95. https://doi.org/10.1108/JFRC-02-2022-0015.

Ling-yee, L. (2007). Marketing resources and performance of exhibitor firms in trade shows: A contingent resource perspective. Industrial Marketing Management, 36(3), 360-370. https://doi.org/10.1016/j.indmarman.2005.11.001.

Mohammadi, F., Borzou, S.R., Khazaei, S., Bijani, M., Masoumi, S. Z., & Hosseini, S. K. (2024). Designing and psychometric assessment of the moral intelligence scale for healthcare professionals. Scientific reports, 14, 1-10. https://doi.org/10.1038/s41598-024-55052-2.

Na-Nan, K., Roopleam, T., & Wongsuwan, N. (2019). Validation of a digital intelligence quotient questionnaire for employee of small and medium-sized Thai enterprises using exploratory and confirmatory factor analysis. Kybernetes, 49(5), 1465-1483. https://doi.org/10.1108/k-01-2019-0053.

Naseer, H., Shanks, G., Ahmad, A., & Maynard, S. (2016). Enhancing information security risk management with security analytics: A dynamic capabilities perspective. Australasian conference on information systems, 1-11.

Nazaripour, M., & Zakizadeh, B. (2025). Moral intelligence, emotional intelligence, organizational commitment and job performance of accountants. Accounting Research Journal, 38(1), 19-34. https://doi.org/10.1108/ARJ-01-2024-0034.

IMPACTS OF LEARNING ENVIRONMENT, STUDENT ATTITUDE ON CHOOSING ACCOUNTING CAREER THROUGH INTENTION TO ENHANCE CURRENT KNOWLEDGE OF VIETNAMESE STUDENTS

MSc. Truong Thi Hanh Dung* - MSc. Tran Thanh Thuy Ngoc* - PhD. Le Huu Tuan Anh**

Abstract: ***This study examines the influence of learning environment and student attitude on choosing accounting career through the mediating role of intention to enhance knowledge of Vietnamese students. Questionnaires were distributed to students of schools specializing in Accounting, Audit, and Finance across Vietnam, from April 2022 to August 2022. Our sample includes 328 suitable responses for further analysis. Collected data is analyzed by the partial least squares structural equation model (PLS-SEM). The results show that learning environment and student attitude have positive impacts on the intention to enhance current knowledge, as well as accounting career choice. However, the intention to enhance current knowledge does not play a mediating role in the relationship between student attitude as well as the learning environment and the intention to choose accounting career. Our findings emphasize the importance of attitude and learning environment in the intention to choose accounting career, suggesting that educators and policymakers should focus on learning environment factors to encourage the accounting career choice.***

• Keywords: *theory of planned behavior, career choice, learning environment, student attitude, knowledge enhancement.*

Date of receipt: 21th Feb., 2025
Date of delivery revision: 26th Mar., 2025
Date of receipt revision: 15th Apr., 2025
Date of approval: 12th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.12

1. Introduction

Technological changes, globalization, new business relationships, and the complex economic environment have changed the accounting profession (Germanou et al., 2009, Greenman et al., 2019). The emergence of integral software is a typical example, it not only changes the traditional accounting system of enterprises but also poses challenges for accounting professionals to deal with these changes (Germanou et al., 2009, Sugahara et al., 2009). Many jobs are predicted to disappear or be replaced by others better suited for digital transformation (Friedman, 2016, Gardner, 2017). However, Yusoff et al. (2011) indicate that the accounting profession continues to play a significant role in the present trend of globalization. Even so, repetitive tasks such as bookkeeping, data collection, and financial statement preparation are gradually being replaced by support tools and software, which results in a higher demand in the accounting profession for data analysis, forecasting, and consultant services. Within this context, the quality of accounting education plays an important role in the development of the accounting profession (Tahat et al., 2018). To stay relevant in the evolving landscape of the accounting industry and remain competitive in the job market, accounting students are required to cultivate professional competencies and attain the interpersonal skills necessary to fulfill the expectations of both businesses and employers (Levant et al., 2016).

In this study, we propose the following research questions:

RQ1: Do student attitudes affect the career choice of Vietnamese accounting students?

RQ2: Does the learning environment influence the career choice of Vietnamese accounting students?

RQ3: Does knowledge enhancement intention mediate the relationship between student attitudes, learning environment, and the accounting career choice of Vietnamese students?

Based on theory of planned behavior and social cognitive career theory, we design an empirical research that focuses on surveying students, who are studying Accounting, Auditing, and Finance and have attended intensive accounting courses in 5 major cities of Vietnam with famous accounting training schools: Hanoi, Ho Chi Minh City, Da Nang, Hue and Can Tho city. The survey was conducted from April 2022 to August 2022 with 370 responses. Only 328 complete and suitable responses are employed for further analysis. The PLS-SEM analysis model is used to test the hypotheses proposed. The study's findings are intriguing and informative. First, this work confirms that the learning environment and

** University of Economics and Law; Vietnam National University, Ho Chi Minh City (VNU-HCMC)*
*** School of Accounting, Information Systems and Supply Chain, RMIT University, Melbourne, Australia*

Vietnamese students' attitudes have a positive impact on choosing accounting career, as well as the intention to enhance current knowledge. Second, in mediation analysis, the empirical evidence does not support the mediating role of the intention to enhance current knowledge in the relationship between student attitude as well as the learning environment and the intention to choose accounting career.

The remaining of this paper is structured as follows: Section 2 reviews the literature and develops research hypotheses. Section 3 describes the research methodology. Section 4 reports the results and discussions. In closing, Section 5 draws the main conclusions of the study, and discusses future research possibilities.

2. Hypotheses development

The relationship between attitudes and intentions shows that a person's perception and interest in a particular issue will significantly influence one's ability to commit to knowledge improvement and the decision whether to work in accounting or not. Previous works studied the relationship between attitudes and intentions (Jackling et al., 2012, Foong and Khoo, 2015, Hatane et al., 2021) found that attitudes positively affect someone's intentions about key choices: knowledge sharing, career choices, and knowledge enhancement. This leads to the following hypotheses:

H1. There is a positive influence of attitude and intention to enhance current knowledge.

H2. There is a positive influence of attitude and intention to pursue a career in accounting field.

H3. The intention to enhance current knowledge mediates the relation between attitude and intention to pursue a career in accounting.

Hall et al. (2004), Hatane et al. (2021) have identified that the learning environment and educators are the driving force behind students, making students study more intensively, thereby enhancing knowledge. Educators can stimulate deep learning by administering active learning techniques such as group discussions and problem-based learning (Yew et al., 2016). An excellent learning environment can inspire and strengthen a student's intention to learn independently. According to TPB by Ajzen (2011), a person's perception of engaging in a particular behavior is influenced by the surroundings, where they receive the support and hope of people around.

In addition, based on the social cognitive career theory, environmental factors are considered a major influencing factor in the decision to choose a career. The characteristics of the learning environment contribute much to the choice of career through the types of competencies students have learned, professional dialogue with both educators and professionals (Meijers and Kuijpers, 2014, Hatane et al., 2021). Hopland and Nyhus (2016) state that satisfaction with the learning environment can motivate students to study harder, whether in the classroom or outside the classroom. Consequently, the following hypotheses are posited:

H4. There is a positive influence of the learning environment and intention to enhance current knowledge.

H5. There is a positive influence of the learning environment and intention to choose accounting career.

H6. Intention to enhance current knowledge mediates the relation between learning environment and career intention in accounting.

In the process of learning, the knowledge gained will bring significant benefits to someone as long as that knowledge can be mastered, preserved and improved (Bhusry and Ranjan, 2012). Thing and Jalaludin (2018) found that accounting students have a higher chance of choosing a career in accounting if they possess the essential skills and necessary knowledge. The final hypothesis is established as follows:

H7. There is a positive influence of current knowledge enhancement intentions over intention to choose accounting career.

3. Methodology & sample

We use the PLS-SEM analysis model to test the hypotheses that have been designed on the impact of the learning environment, student attitudes on accounting career choice through the intention to improve knowledge.

We use survey method to collect primary data for this study. The questionnaire is developed to survey students majoring in Accounting, Audit and Finance at universities from North to South Vietnam. Questionnaires were distributed in both paper and online forms, sent randomly to students of schools specializing in Accounting, Audit, and Finance across Vietnam, from April 2022 to August 2022. After the implementation process, we received 370 responses and filtered out a final sample of 328 suitable responses for further analysis. Unfinished responses are excluded from the sample. In agreement with Hair et al. (2021), the sample size in PLS-SEM is determined by the often-cited ten times rule, which indicates that the sample size should be equal to or larger than ten times the most significant number of formative indicators used to measure a single construct; or higher than ten times the most significant number of structural paths directed at a particular construct in the structural model. Therefore, our research sample with 328 appropriate responses meets the requirements for research sample size when using the PLS-SEM (Hair et al., 2021).

4. Results and Discussions

4.1 Descriptive statistics

The final sample consists of 328 students, 57 are male (17.2%) and 271 female (82.8%). Most students majored in accounting (45.9%) and auditing (47.9%), while the corresponding figure is only 6.2% for other majors.

The survey questionnaire used in official research is in the form of a closed-ended question, measuring items using the interval scale, specifically a 5-level Likert scale. The sample size used for the main study was 328.

Reflective Measurement Model Assessment

The evaluation of the measurement model will be based on: (1) Indicator reliability; (2) Internal consistency reliability; (3) Convergent validity; (4) Discriminant validity (Hair et al., 2019). This contributes to fully representing the concepts and increasing the accuracy of the scale and the result.

Internal consistency reliability

The results show that all scales have rho_A coefficient: 0.7 < rho_A < 0.95; Cronbach's Alpha 0.7 < α < 0.95. The Composite reliability of all variables: 0.8 < Composite reliability < 0.95. Thus, The reliability of the scales has been proven (Nunnally, 1978, Hair et al., 2019).

Table 1. Results of evaluating the internal consistency reliability of each factor

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
ATD	0.817	0.825	0.867	0.521
CKS	0.798	0.839	0.857	0.553
ICAC	0.860	0.860	0.905	0.704
LE	0.845	0.852	0.883	0.520

Source: Authors' data processing results

Variables explanation:

Independent variable LE (Learning Environment) - measures student's learning environment

Independent variable ATD (Attitude) - measures student attitudes

Mediator variable CKS (Current Knowledge Seeking) - measures students' intention to enhance knowledge.

Dependent variable ICAC (Intention to Choose Accounting Career) - measures students' choice of accounting profession.

Convergent validity

All outer loadings are higher than 0.7 leading to AVE are all higher than 0.5 (Table 1), so convergent validity is guaranteed (Sarstedt et al., 2021).

Discriminant validity

Table 2. Results of testing HTMT ratio for measurement model

	ATD	CKS	ICAC	LE
ATD				
CKS	0.584			
ICAC	0.688	0.422		
LE	0.701	0.545	0.626	

Source: Authors' data processing results

The study also confirmed that the instrument meets the discriminant validity using the HTMT test criteria. Table 2 shows that the AVE of each variable is always on the diagonal and greater than most of the square of correlations among latent variables in the model, showing that discriminant validity is guaranteed (Ab Hamid et al., 2017).

In summary, the results of the analysis in the measurement model indicated that the questionnaire meets the standards of reliability and construct validity.

4.2. Structural model checks

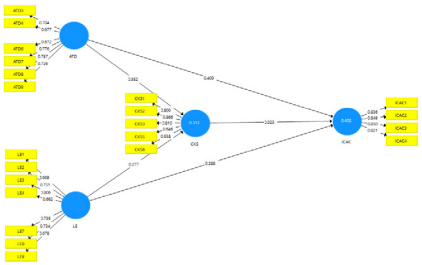
Evaluating multicollinearity

All independent variables have variance inflation factors (VIF) less than 3. It can be concluded that there is no multicollinearity in the model (non-tabulated).

Assess the appropriateness of relationships

Figure 1 below shows the results of model testing on Smart PLS software.

Figure 1. Results of model testing



Source: Authors' data processing results

Evaluation of coefficient of determination R2 > 50%

Table 3 shows adjusted R-square value of CKS is 0.309, and of ICAC is 0.397. Thus, independent variables explain 30.9% and 39.7% of the variation of the dependent variables, respectively. The rest 69.1% and 61.3% are explained by out-of-model variables and random error.

Table 3. Result of coefficient of determination R Square

	R Square	R Square Adjusted
CKS	0.313	0.309
ICAC	0.402	0.397

Source: Authors' data processing results

Testing correlation coefficient between variables

From the results in Table 4, attitude (= 0.120) has a medium impact, learning environment (= 0.074) has a small impact on intention to enhance current knowledge. Besides, attitude (= 0.167) has a medium impact and learning environment (=0.001) has very little or no impact on choosing accounting career.

Table 4. Results of testing correlation coefficient between variables

	ATD	CKS	ICAC	LE
ATD		0.120	0.167	
CKS			0.001	
ICAC				
LE		0.074	0.086	

Source: Authors' data processing results

Model estimation using bootstrap method

To confirm the value and the fit of theoretical model, we test the model estimation using bootstrap method, with repeated sample of 3,000.

Table 5 presents p-value results. The results below show that all the p-values of the path coefficients are < 0.05 (except the relationship between CKS - ICAC), so these effects are statistically significant.

Table 5. Results of p-values, t statistics, standard deviation of each factor

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
ATD -> CKS	0.352	0.354	0.068	5.199	0.000
ATD -> ICAC	0.409	0.413	0.077	5.336	0.000
CKS -> ICAC	0.023	0.022	0.063	0.359	0.719
LE -> CKS	0.277	0.281	0.068	4.081	0.000
LE -> ICAC	0.288	0.287	0.082	3.527	0.000

Source: Authors' data processing results

There are two variables affecting CKS: ATD and LE. The standardized impact coefficients of these three variables are 0.352 and 0.277, respectively. Thus, the level of impact of these two variables on CKS in descending order of ATD and then LE. Similarly, both ATD and LE variables also have a positive effect on ICAC. The standardized impact coefficients of these two variables are 0.409 and 0.288, respectively. Consequently, the level of impact of these two variables on ICAC in descending order, ATD and LE respectively.

However, the relationship between the variable CKS and ICAC is not found (positive correlation coefficient = 0.023 and not statistically significant). Based on the results of Table 6, two separate indirect relationships are presented: ATD → CKS → ICAC; LE → CKS → ICAC. Specifically, in the above table, the separate indirect effects all have p-value greater than 0.05, thus, the authors conclude that CKS does not play the mediating role between the relationship of ATD and ICAC or LE and ICAC. According to (Zhao et al., 2010, Khuong et al., 2022), in this case, the effect of ATD and LE on ICAC is considered to have only a direct effect (Direct-only non-mediation). This result is inconsistent with previous studies of (Foong and Khoo, 2015) as well as that of (Hatane et al., 2021) about the mediating role of CKS, where CKS both play mediating roles between relationships of ATD - ICAC and LE - ICAC (Foong and Khoo, 2015, Hatane et al., 2021).

Table 6. Results of indirect effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
ATD -> CKS -> ICAC	0.008	0.007	0.023	0.35	0.726
LE -> CKS -> ICAC	0.006	0.007	0.019	0.34	0.734

Source: Authors' data processing results

5. Conclusions

Based on the results of this study, we confirm the significant role of learning environment and student attitude to the accounting career profession. Learning environment needs to be continuously improved and updated to meet students' demands for a suitable learning system. First, universities can consider designing appropriate training programs to meet the demands of lifelong learning and promote students' intention to choose a career in accounting. Developing an accounting program's curriculum with in-depth and up-to-date discussions on current issues of the accounting profession as the core value of each university is also advisable to reinforce the strengths of the learning environment. Second, a good learning environment must also facilitate and support the learning process of students. Surrounding factors like updated textbooks used in the curriculum, modern and well-equipped classrooms, laboratories, and libraries are encouraged to create positive accounting career choices. Third, instructors are the most crucial influencers that can affect students' choice of the accounting profession. Training for instructors so they can improve teaching methods and make more efficient communication with students is another way to enhance the learning environment. Fourth, universities are also advised to enhance the learning environment through diversifying forms of extra-curricular activities such as seminars, workshops, talkshow, short-term training, and student academic contests to create a proactive learning environment, and then boost the accounting career choice. Besides, educators are also recommended to change student attitudes toward the accounting profession by providing motivation and encouragement through communicating the benefits and advantages when pursuing the career.

Some limitations and future directions should be mentioned. We sent surveys to university students majoring in accounting, audit, and finance as respondents only. They are not a representative group of future accountants. Besides, the coverage sample of this research is also a limitation. We received only 370 responses, after data processing, filtering out a total of 328 suitable answers from students of 17 universities in 5 cities in Vietnam: Hanoi, Ho Chi Minh City, Da Nang, Hue, and Can Tho. Future studies may use bigger samples with wider coverage, for instance, the whole area of Vietnam, or conduct the study in other countries. The variables used in the research are dynamic variables consequently when they are applied in different fields at different times, and with different objects, the respondents' perceptions and decisions are likely dissimilar as well. Also, different student generations may create various perceptions or diverse orientations in choosing accounting career. Therefore, future studies may consider broader coverage with alternative survey objects. Furthermore, as every career has its unique signature, future studies may apply our conceptual framework to other types of careers.

References:

Bhusry, M. & Ranjan, J. 2012. Enhancing the teaching-learning process: a knowledge management approach. International Journal of Educational Management, 26, 313-329.

Foong, S.-Y. & Khoo, C.-H. 2015. Attitude, learning environment and current knowledge enhancement of accounting students in Malaysia. Journal of Accounting in Emerging Economies, 5, 202-221.

Germanou, E., Hassall, T. & Tournas, Y. 2009. Students' perceptions of accounting profession: work value approach. Asian Review of Accounting, 17, 136-148.

Greenman, C., Mendez, D. & Steiner, A. 2019. The accounting profession is transforming with major changes: Educators need to adapt and embrace the future. International Journal of education research, 14.

Hatane, S. E., Setiono, F. J., Setiawan, F. F., Semuel, H. & Mangoting, Y. 2021. Learning environment, students' attitude and intention to enhance current knowledge in the context of choosing accounting career. Journal of Applied Research in Higher Education, 13, 79-97.

Hopland, A. O. & Nyhus, O. H. 2016. Learning environment and student effort. International Journal of Educational Management, 30, 271-286.

Jackling, B., De Lange, P., Phillips, J. & Sewell, J. 2012. Attitudes towards accounting: differences between Australian and international students. Accounting Research Journal, 25, 113-130.

INVESTIGATING CUSTOMERS' CASH-ON-DELIVERY PAYMENT ADOPTION FOR ONLINE PURCHASES IN VIETNAM: THE MEDIATING ROLE OF PERCEIVED SECURITY

PhD. Dinh Pham Hien[1] - PhD. Doan Anh Tuan[2] - PhD. Nguyen Xuan Quyet[3]
PhD. Le Thi Minh Chau[4] - Assoc.Prof.PhD. Hoang Thi Thanh Nhan[5]

Abstract: ***This study investigates the factors influencing the adoption of the Cash on Delivery (COD) payment method among Vietnamese online shoppers. Utilizing the Technology Acceptance Model (TAM) as the theoretical framework, the research incorporates perceived trust, privacy issues avoidance, financial risk avoidance, and perceived security to understand their impact on COD adoption. Data was collected from 395 online purchasers in Vietnam through a self-administered questionnaire. The findings reveal that perceived security significantly mediates the relationship between perceived trust, privacy issues avoidance, financial risk avoidance, and the adoption of COD. These insights provide valuable implications for e-commerce businesses, policymakers, and researchers aiming to enhance consumer trust and security in online transactions.***

• Keywords: *perceived trust, privacy issues avoidance, financial risk avoidance, perceived security, cash-on-delivery.*

Date of receipt: 04th Mar., 2025
Date of delivery revision: 26th Mar., 2025
Date of receipt revision: 28th Apr., 2025
Date of approval: 15th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.13

1. Introduction

The e-commerce sector in Vietnam has experienced remarkable growth in recent years, particularly during the COVID-19 pandemic, driven by expanding internet infrastructure and the influx of domestic and foreign e-commerce companies. E-commerce, encompassing activities like product discovery, ordering, payment processing, and relationship building through digital technologies, has flourished due to internet commercialization (Michie, 2020; Le & Lam, 2021). The cash on delivery (COD) payment method has emerged as a key driver of this growth in Vietnam, aligning with cultural preferences for tangible transactions and addressing concerns about online payment fraud, privacy issues, and financial risks (Nguyen et al., 2020). Despite efforts by the Vietnamese government and e-commerce enterprises to promote electronic payment systems through apps and portals, many consumers still prefer COD due to its perceived security and simplicity (Le & Lam, 2021).

This study investigates the factors influencing Vietnamese online shoppers' adoption of COD, utilizing the Technology Acceptance Model (TAM) as its theoretical framework, extended to include perceived trust, privacy issues avoidance, financial risk avoidance, and perceived security (Davis, 1986; Hien, 2023). Prior research highlights trust, perceived risk, security, privacy, and ease of use as critical determinants of payment method adoption in e-commerce (Jana, 2017; Anjum & Chai, 2020; Ilieva et al., 2022). Given Vietnam's unique socioeconomic, cultural, and governmental context, models developed in Western countries require validation in this setting. By examining how perceived security mediates the relationship between trust, privacy, and financial risk concerns and COD adoption, this study aims to provide actionable insights for e-commerce businesses, policymakers, and researchers to enhance consumer trust and security in online transactions.

2. Literature review

2.1. Theoretical framework

The theoretical framework for this study is grounded in the Technology Acceptance Model (TAM), which was developed by Davis (1986) to explain and predict user acceptance of new technologies. TAM posits that perceived ease of use and perceived usefulness are primary determinants of technology adoption (Davis, 1986). This model has been extensively utilized in various contexts, including e-commerce, to understand consumer behavior and

[1] *Ministry of Agriculture and Rural Development, email: hiendp.htqt@mard.gov.vn*
[2] *University of Transport Technology, email: tuanda@utt.edu.vn*
[3] *HCMC University of Industry and Trade, email: quyetnx@huit.edu.vn*
[4] *Vietnam National University of Agriculture, email: ltmchau@vnua.edu.vn*
[5] *Dong Do University, email: nhanth_iwep@yahoo.com (Contact author)*

adoption intentions (Hien, 2024). Additionally, this study incorporates elements of perceived security, trust, privacy issues avoidance, and financial risk avoidance into the TAM framework to better capture the factors influencing the adoption of the Cash on Delivery (COD) payment method in the context of online shopping in Vietnam. The integration of these variables is based on prior research indicating their significant impact on consumer behavior in e-commerce settings (Michie, 2020; Le & Lam, 2021; Hien 2024). This extended TAM framework provides a comprehensive model for analyzing how these factors collectively influence Vietnamese consumers' intentions to adopt COD as a payment method.

2.2. Hypotheses development

Perceived trust, privacy issues avoidance, financial risks avoidance, and perceived security are critical determinants shaping Vietnamese online shoppers' adoption of the Cash on Delivery (COD) payment method. Perceived trust reflects customers' belief that an e-commerce platform will fulfill its promises and protect their personal and financial information, thereby enhancing their sense of security and reducing concerns about fraud and privacy breaches (Ilieva et al., 2022). This trust encourages the adoption of COD, as it provides tangible assurance of product receipt before payment, aligning with consumer preferences for secure transactions (Anjum & Chai, 2020). Therefore, we propose:

H1: Perceived Trust has a positive impact on Perceived Security among customers toward online shopping behavior.

H2: Perceived Trust has a positive impact on the adoption of COD among customers toward online shopping behavior.

Privacy issues avoidance significantly influences perceived security and COD adoption. As customers become increasingly aware of risks associated with sharing personal and financial information online, their efforts to avoid privacy-compromising situations enhance their sense of stalking behavior (Ilieva et al., 2022). COD addresses these concerns by eliminating the need to share sensitive data online, allowing payment upon delivery and making it an attractive option for privacy-conscious consumers (Le & Lam, 2021). Thus, we hypothesize:

H3: Privacy Issues Avoidance has a positive impact on Perceived Security among customers toward online shopping behavior.

H4: Privacy Issues Avoidance has a positive impact on the adoption of COD among customers toward online shopping behavior.

Financial risks avoidance is another key factor, as customers seek to mitigate potential losses from fraudulent activities, receiving substandard goods, or hacking incidents (Ilieva et al., 2022). By avoiding these risks, consumers enhance their perceived security, and COD further supports this by allowing product verification before payment, reducing financial uncertainties (Nguyen et al., 2020). Accordingly, we propose:

H5: Financial Risks Avoidance has a positive impact on Perceived Security among customers toward online shopping behavior.

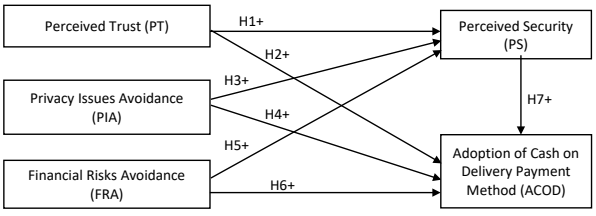
H6: Financial Risks Avoidance has a positive impact on the adoption of COD among customers toward online shopping behavior.

Perceived security, encompassing confidence in the protection of personal and financial information and the reliability of transaction processes, is pivotal in driving COD adoption, particularly in Vietnam, where concerns about online payment fraud and data breaches are prevalent (Nguyen et al., 2020). COD's structure, which allows inspection of goods before payment, minimizes financial risks and boosts trust in the transaction process (Le & Lam, 2021; Hien, 2023). Perceived security thus mediates the effects of trust, privacy concerns, and financial risks on COD adoption. We hypothesize:

H7: Perceived Security has a positive impact on the adoption of COD among customers toward online shopping behavior.

These hypotheses collectively form the research model, as depicted in Figure 1, to examine the direct and mediated effects of these factors on COD adoption among Vietnamese online shoppers.

Figure 1. Research model



3. Data and research method

3.1. Data collection and sampling

This study used a self-administered questionnaire to collect data on Cash on Delivery (COD) uptake. The questionnaire was sent to Vietnamese online buyers via Zalo, Viber, Facebook, and email to ensure broad reach and ease. Due to its efficiency and usefulness in getting data from a diverse sample quickly, convenience sampling was used (Hien, 2024; Hair et al., 2020). The demographic poll includes measures

for perceived trust, privacy issues avoidance, financial risk avoidance, perceived security, and adoption of COD. Ten online buyers pre-tested the questionnaire to guarantee clarity and relevancy, resulting in small changes for better comprehension. Between May and June, 395 surveys were completed. Based on structural equation modeling recommendations of 10 units per latent variable, this sample size was sufficient (Hair et al., 2020). SmartPLS 4 structural equation modeling (SEM) provided robust insights into Vietnam's COD adoption factors.

3.2. Data analysis

Table 1. Demographic information of the respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	202	51.1
	Female	193	48.9
Age	18-25	66	16.7
	26-35	122	30.9
	36-45	104	26.3
	46-55	90	22.8
	Over 55	13	3.3
Education Level	High school/Intermediate	50	12.7
	Undergraduation	237	60.0
	Higher Education	108	27.3
	Other	0	0.0
Monthly Income	Less than 10 milVND	68	17.2
	From 10 to less than 15 milVND	87	22.0
	From 15 to less than 20 milVND	118	29.9
	From 20 to less than 30 milVND	101	25.6
	30 milVND or above	21	5.3
TOTAL		**395**	**100**

Source: From the authors' data analysis results

This study's 395 respondents were 51.1% male and 48.9% female. The majority of responses are 26-35 years old (30.9%), followed by 36-45 (26.3%), 46-55 (22.8%), 18-25 (16.7%), and a minor percentage over 55 (3.3%). Educationally, 60.0% of respondents have an undergraduate degree, 27.3% have higher education, and 12.7% have high school or intermediate education. Monthly income, the largest group of respondents earns 15 to less than 20 million VND (29.9%), followed by 20 to less than 30 million (25.6%), 10 to less than 15 million (22.0%), less than 10 million (17.2%), and 30 million or more (5.3%). This study's Vietnamese internet shoppers' socioeconomic variety provides a complete picture.

Table 2. Reliability and discriminant validity tests

	α	CR (rho_a)	CR (rho_c)	AVE	ACOD	FRA	PIA	PS	PT
ACOD	0.925	0.927	0.944	0.771					
FRA	0.923	0.923	0.942	0.764	0.814				
PIA	0.937	0.943	0.952	0.799	0.604	0.425			
PS	0.918	0.922	0.939	0.753	0.693	0.523	0.459		
PT	0.940	0.941	0.954	0.806	0.684	0.582	0.446	0.495	

Source: From the authors' data analysis results

Table 2 shows study concept reliability and discriminant validity results. All constructs ACOD, FRA, PIA, PS, and PT had Cronbach's alpha values between 0.918 and 0.940, showing strong internal consistency and dependability. These constructions' composite reliability values (rho_a and rho_c) exceeded the necessary 0.70, proving their reliability. All constructs' Average Variance Extracted (AVE) values were over 0.50, meeting convergent validity standards, ranging from 0.753 to 0.806. Discriminant validity was also indicated by each construct's square root of AVE being larger than correlations with other components. These findings show that the study's measuring scales are trustworthy and valid for analyzing Vietnamese online shoppers' Cash on Delivery payment method adoption.

3.3. Structural equation modelling

Table 3. Path coefficients

Hypothesis	Relationship	Original sample	Mean	STDEV	T statistics	P values	Result
H1	PT -> PS	0.214	0.214	0.05	4.273	0	Acepted
H2	PT -> ACOD	0.2	0.2	0.036	5.613	0	Acepted
H3	PIA -> PS	0.231	0.231	0.04	5.721	0	Acepted
H4	PIA -> ACOD	0.197	0.195	0.033	5.95	0	Acepted
H5	FRA -> PS	0.276	0.278	0.046	5.952	0	Acepted
H6	FRA -> ACOD	0.445	0.446	0.034	13.158	0	Acepted
H7	PS -> ACOD	0.247	0.247	0.036	6.851	0	Acepted

Source: From the authors' data analysis results

Table 3 presents the coefficients of the routes, which indicate the intensity and importance of the relationships between the constructs postulated in the study. Every hypothesis has a statistically significant correlation with p-values that are less than 0.05. The relationship between Perceived Trust (PT) and Perceived Security (PS) is positive, with a path coefficient of 0.214 and a t-value of 4.273. The adoption of ACOD is favorably influenced by Perceived Trust (PT), as indicated by a path coefficient of 0.200 and a t-value of 5.613. Privacy Issues Avoidance (PIA) favorably influences Adoption of COD (ACOD) and significantly effects Perceived Security (PS) with a path coefficient of 0.231 and a t-value of 5.721. Financial Risks Avoidance (FRA) positively affects Perceived Security (PS) with a path coefficient of 0.276 and a t-value of 5.952, and it significantly affects Adoption of COD (ACOD) with 0.445 and 13.158. Perceived Security (PS) has a favorable impact on the adoption of ACOD, as indicated by a path coefficient of 0.247 and a t-value of 6.851. These findings validate all predictions, showing strong and favorable connections between Vietnamese online buyers' COD payment adoption and perceived trust, privacy concerns avoidance, financial risks avoidance, and security.

Table 4. Specific indirect effects

Relationship	Original sample	Sample mean	STDEV	T statistics	P values
PIA -> PS -> ACOD	0.057	0.057	0.014	3.956	0.000
FRA -> PS -> ACOD	0.068	0.068	0.014	4.810	0.000
PT -> PS -> ACOD	0.053	0.053	0.016	3.333	0.001

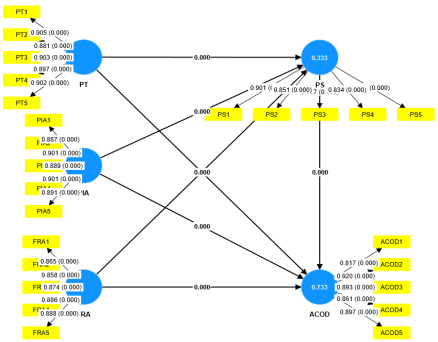
Source: From the authors' data analysis results

Table 4 provides a detailed overview of the indirect effects, emphasizing the mediation roles within the model. The correlation between PIA and ACOD through PS) is statistically significant, with

an indirect impact coefficient of 0.057 and a t-value of 3.956 ($p < 0.001$). FRA has an indirect effect on ACOD through PS, with a coefficient of 0.068 and a t-value of 4.810 ($p < 0.001$). Furthermore, the impact of PT on ACOD is mediated by PS, with an indirect effect coefficient of 0.053 and a t-value of 3.333 ($p < 0.001$).

Figure 2 depicts the route coefficients of the structural model, which were derived using Partial Least Squares Structural Equation Modeling (PLS-SEM). The diagram clearly illustrates the direct and indirect connections between the elements, verifying that all proposed pathways are both significant and positive. The diagram illustrates that Perceived Security (PS) plays a vital role as a mediating factor, amplifying the impact of Perceived Trust (PT), Privacy Issues Avoidance (PIA), and Financial Risks Avoidance (FRA) on the Adoption of COD (ACOD). These findings highlight the significance of perceived security in influencing the impact of trust, privacy, and financial risk factors on the choice for cash on delivery (COD) among Vietnamese online customers. This contributes to a thorough comprehension of the elements that drive the adoption of COD.

Figure 2. Result of PLS-SEM structural model path coefficient



Source: From the authors' data analysis results

4. Findings discussion

This study confirms that perceived security significantly mediates the adoption of the Cash on Delivery (COD) payment method among Vietnamese online shoppers. Perceived trust positively influences perceived security (path coefficient = 0.214) and COD adoption (0.200), indicating that trust in e-commerce platforms enhances security perceptions, encouraging COD use (Halaweh, 2017; Anjum & Chai, 2020). Privacy issues avoidance (PIA) and financial risks avoidance (FRA) also positively impact perceived security (path coefficients = 0.231 and 0.276, respectively) and directly affect COD adoption (0.197 and 0.445), as COD allows product inspection before payment, alleviating privacy and financial concerns (Le & Lam, 2021; Nguyen et al., 2020). Perceived security directly drives COD adoption (0.247), underscoring its pivotal role in Vietnam's context, where online fraud concerns are prevalent. Mediation analysis reveals significant indirect effects of PIA (0.057), FRA (0.068), and perceived trust (0.053) on COD adoption through perceived security, emphasizing its mediating role. These findings provide actionable insights for e-commerce platforms to enhance trust and security, promoting COD adoption in Vietnam.

5. Implications

This study's findings highlight the critical role of perceived security in driving Cash on Delivery (COD) adoption, offering key implications for e-commerce platforms, policymakers, and researchers. E-commerce businesses should enhance consumer trust by implementing robust data protection, transparent transaction processes, and reliable customer service, alongside features like product inspection before payment and clear return policies to boost COD adoption in Vietnam's developing digital payment landscape. Policymakers should establish stringent e-commerce regulations to mitigate privacy and financial risks, mandating clear data use disclosures and fraud protections, while promoting digital literacy to empower consumers. Researchers can extend the Technology Acceptance Model (TAM) to explore additional factors like cultural influences or technological advancements affecting payment preferences, using longitudinal or comparative studies to deepen insights into secure e-commerce practices globally.

References:

Anjum, S., & Chai, J. (2020). Drivers of cash-on-delivery method of payment in e-commerce shopping: Evidence from Pakistan. SAGE Open, 10(3). https://doi.org/10.1177/2158244020917392

Davis, F. D. (1986). A technology acceptance model for empirically testing new end-user information systems: Theory and results (Unpublished doctoral dissertation). MIT.

Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. Journal of Business Research, 109, 101-110. https://doi.org/10.1016/j.jbusres.2019.11.069

Halaweh, M. (2017). Intention to adopt the cash on delivery (COD) payment model for e-commerce transactions: An empirical study. In 16th IFIP International Conference on Computer Information Systems and Industrial Management (CISIM) (pp. 628-637). Bialystok, Poland.

Hien, P. H. (2024). Unveiling the influence of empowerment leadership on employee loyalty: The mediating role of employee trust and job satisfaction. Journal of Applied Research in Engineering and Technology & Engineering, 5(1), 1-12. https://doi.org/10.4995/jarte.2024.195465

Hien, P. H. (2023). The mediating effects of employee trust and job satisfaction in the relationship between empowerment leadership and employee loyalty. International Journal of Environment, Workplace and Employment, 7(2), 130-147. https://doi.org/10.1504/IJEWE.2023.134527

Ilieva, G., Yankova, T., Klisarova, S., & Dzhabarova, Y. (2022). Customer satisfaction in e-commerce during the COVID-19 pandemic. Systems, 10(6), 213. https://doi.org/10.3390/systems10060213

Jana, S. K. (2017). Measure of e-cash on delivery payment convenience option in the context of demonetisation and its effect on customer loyalty. Ushus - Journal of Business Management, 16(3), 1-9. https://doi.org/10.12725/ujbm.40.1

Le, H. B., & Lam, T. H. (2021). Vietnam economy under the impact of COVID-19. The Russian Journal of Vietnamese Studies, 5(4), 45-70. https://doi.org/10.54669/2618-9453-2021-5-4-45-70

Michie, J. (2020). The COVID-19 crisis-and the future of the economy and economics. International Review of Applied Economics, 34(3), 301-303. https://doi.org/10.1080/02692171.2020.1756040

Nguyen, H. V., Tran, H., Van Huy, L., Nguyen, N., Do, M., & Nguyen, N. (2020). Online book shopping in Vietnam: The impact of the COVID-19 pandemic situation. Publishing Research Quarterly, 36(1), 3-20. https://doi.org/10.1007/s12109-020-09732-2

USING THE FUZZY ANALYTIC HIERARCHY PROCESS TO EVALUATE CIRCULAR ECONOMY APPLICATION IN COMMUNITY - BASED TOURISM DEVELOPMENT: A CASE STUDY OF MOC CHAU, SON LA

PhD. Nguyen Thi Quynh Huong* - PhD. Nguyen Ngoc Quynh* - PhD. Nguyen Minh Quang*

Abstract: ***This study investigates the integration of circular economy (CE) principles into community-based tourism (CBT) in Moc Chau, Vietnam, employing the Fuzzy Analytic Hierarchy Process (FAHP). Through expert elicitation from 25 diverse stakeholders, the research identifies and prioritizes key factors for CE implementation in CBT. FAHP analysis reveals "Waste and pollution reduction," "Natural resource preservation," and "Generation of local economic and social value" as paramount. The findings offer a robust evaluation framework and actionable recommendations for advancing sustainable CBT via CE, contributing to theoretical understanding and practical application in developing tourism contexts.***

• Keywords: *circular economy, community-based tourism, sustainable development, FAHP method, Moc Chau, Son La.*

JEL codes: Q01, Z30, Z32

Date of receipt: 24th Jan., 2025
Date of delivery revision: 26th Feb., 2025
Date of receipt revision: 15th Apr., 2025
Date of approval: 20th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.14

1. Introduction

Tourism, a significant global economic sector, faces increasing pressure regarding sustainability due to its environmental and social impacts. Community-based tourism (CBT), emphasizing local community involvement and cultural preservation, has emerged as a promising alternative (Okazaki, 2008), though it can still pose environmental challenges, particularly in developing destinations (Kontogeorgopoulos et al., 2015). The circular economy (CE), focused on minimizing waste and optimizing resource utilization, is recognized as a potential solution for sustainability in tourism (Ellen MacArthur Foundation, 2015).

1. Which CE principles are most important for application in CBT in Moc Chau?

2. What are the main barriers and opportunities for implementing CE in the CBT context in Moc Chau?

3. How can the FAHP method provide an effective evaluation framework to support decision-making regarding CE application in CBT?

The paper is structured as follows: section 2 presents a theoretical overview of CE, CBT, and their interrelationship, as well as the theoretical basis of the FAHP method. Section 3 describes the research methodology, including the FAHP procedure and data collection. Section 4 presents the FAHP analysis results. Section 5 discusses the findings, offering theoretical and practical implications. Section 6 concludes and suggests directions for future research.

2. Literature review

2.1. Circular economy (CE)

The circular economy (CE) is an economic paradigm aimed at maximizing resource value retention, thereby minimizing waste and regenerating natural systems (Ellen MacArthur Foundation, 2015). Diverging from the linear "take-make-dispose" model, CE emphasizes closing material and energy loops through core principles: designing out waste and pollution, keeping products and materials in use, and regenerating natural capital. CE is widely recognized as instrumental in achieving Sustainable Development Goals (SDGs), particularly SDG 12 and SDG 13 (United Nations, 2015).

2.2. Community-based tourism (CBT)

Community-based tourism (CBT) empowers local communities with ownership and control over tourism development, ensuring their participation and benefit (Goodwin & Santilli, 2009). CBT prioritizes the preservation of local culture and environment alongside socio-economic advantages for the community (Ashley et al., 2001). Key tenets include genuine community participation, equitable benefit distribution, and a strong focus on cultural and environmental integrity. Consequently, CBT is viewed as a potent vehicle

** Thuongmai University, Hanoi*

for sustainable tourism in rural and remote regions, contributing to poverty alleviation and conservation (Scheyvens, 1999).

2.3. Interconnection between CE and CBT

CE and CBT are inherently complementary in advancing sustainable tourism (Tukker, 2015). CE offers a strategic framework and practical tools for minimizing CBT's environmental footprint and optimizing resource efficiency. Conversely, CBT's community-centric approach facilitates the grassroots implementation of CE initiatives (Font & McCabe, 2017). The application of CE within CBT can manifest in diverse areas such as integrated waste management (Pham et al., 2019), renewable energy adoption (Buckley, 2012), sustainable water practices (Gössling et al., 2012), development of circular products and services (Lewandowski, 2016), and fostering multi-stakeholder collaboration (Kirchherr et al., 2017).

2.4. Fuzzy analytic hierarchy process (FAHP) method

The Fuzzy Analytic Hierarchy Process (FAHP) integrates Saaty's Analytic Hierarchy Process (AHP) (1980) with Zadeh's fuzzy set theory (1965) to form a robust multi-criteria decision-making (MCDM) tool. This approach excels at managing uncertainty and linguistic vagueness in expert judgments by employing fuzzy numbers, while retaining AHP's hierarchical problem structuring (Kahraman et al., 2014).

Key FAHP stages include: constructing a decision hierarchy; developing fuzzy pairwise comparison matrices from expert assessments using a fuzzy scale; calculating fuzzy weights for criteria and alternatives; performing consistency checks to ensure judgment reliability; and finally, defuzzifying these weights for a crisp ranking.

FAHP's capacity to handle imprecise data has led to its wide application in fields like environmental management and strategic decision-making (Chan & Kumar, 2007; Büyüközkan & Güleryüz, 2016). In tourism, it is notably used for evaluating sustainability, selecting destinations, and assessing policy effectiveness (Boley et al., 2017; Pulido-Fernández & Lozano-Oyola, 2021).

3. Research methodology

3.1. Case study and expert selection

This research employs a case study methodology, focusing on Moc Chau, Son La, Vietnam. Moc Chau was selected because it is a developing CBT destination with significant potential for CE application but also faces numerous challenges.

To collect data, we selected 25 experts from five different stakeholder groups:

Tourism Specialists (5): Researchers, lecturers, and tourism consultants with experience in CBT and CE. Local Leaders (5): Representatives of local authorities (district, commune level) responsible for tourism management and socio-economic development. Tourism Business Managers (5): Owners or managers of CBT businesses in Moc Chau (hotels, homestays, restaurants, travel agencies). Tourists (5): Tourists who have experienced CBT in Moc Chau and are interested in sustainable tourism. Local Residents (5): Representatives of local communities involved in CBT activities or affected by tourism.

Selecting experts from different groups aimed to ensure diversity and comprehensiveness in the evaluation, gathering different perspectives on CE application in CBT.

3.2. FAHP procedure and data collection

This study follows the steps of the FAHP method as presented in section 2.4. The FAHP hierarchical structure was constructed with the overall goal of "Evaluating CE Application in CBT in Moc Chau." The main criteria were identified based on CE principles and the CBT context, including:

- Waste and pollution reduction (WP): Focusing on activities to reduce waste generation from tourism and environmental pollution (air, water, soil). (Zaman & Lehmann, 2011).

- Natural resource preservation (NR): Ensuring the sustainable and efficient use of natural resources (water, energy, land, biodiversity). (Holden, 2008).

- Generation of local economic and social value (ESV): Enhancing economic benefits for local communities, creating jobs, developing skills, and preserving culture. (Murphy & Murphy, 2004).

- Awareness raising and participation (ARP): Raising awareness of CE and sustainable CBT among tourists, local communities, and stakeholders, encouraging their participation in CE activities. (Moscardo, 2008).

Table 1: Triangular Fuzzy number (TFN) scale and meaning

Fuzzy Scale	TFN	Meaning
Equally Important	(1, 1, 1)	Two factors are of equal importance.
Slightly More Important	(3, 5, 7)	One factor is slightly more important than the other.
Much More Important	(5, 7, 9)	One factor is much more important than the other.
Extremely More Important	(7, 9, 9)	One factor is extremely more important than the other.
Intermediate Values	(2, 4, 6, 8)	Intermediate values between the above levels (when necessary).
Reciprocal	(1/9, 1/7, 1/5, 1/3, 1) to (1, 1/3, 1/5, 1/7, 1/9)	Used when comparing in reverse (e.g., if A is more important than B, then B is less important than A).

To develop fuzzy pairwise comparison matrices, we used expert survey questionnaires. The questionnaire

was designed based on the triangular fuzzy number (TFN) scale (Table 1). Experts were asked to compare the relative importance of the criteria in pairs, using fuzzy language and scales. For example, the question "Compare the importance of the criterion "Waste and Pollution Reduction" versus the criterion "Natural Resource Preservation" in applying CE to CBT in Moc Chau?" and experts would choose a value on the fuzzy scale ("Slightly more important," corresponding to TFN (3, 5, 7)).

Survey data were collected in October 2024 through face-to-face interviews and online questionnaire distribution.

3.3. FAHP data analysis

Survey data from 25 experts were aggregated and processed according to the following steps:

- Constructing an aggregated fuzzy pairwise comparison matrix: The pairwise comparison matrices of individual experts were aggregated into an aggregated fuzzy pairwise comparison matrix using the geometric mean operation for each fuzzy element (Buckley, 1985).

- Calculating fuzzy weights: We used Chang's Extent Analysis Method (1996) to calculate fuzzy weights for each criterion from the aggregated fuzzy pairwise comparison matrix. This method is considered effective and widely used in FAHP.

- Consistency checking: Calculating the Consistency Ratio (CR) for the aggregated fuzzy pairwise comparison matrix to ensure consistency in expert assessments. A CR value < 0.1 is considered acceptable (Saaty, 1980). In case CR > 0.1, data should be reviewed, and further information collection or adjustment of expert assessments may be required.

- Defuzzifying fuzzy weights: Using the centroid (center of area) defuzzification method to convert fuzzy weights into crisp weights.

- Ranking criteria: Ranking the criteria in descending order of crisp weights to determine the priority level of each criterion in applying CE to CBT in Moc Chau.

- FAHP data analysis was performed using specialized software (e.g., MATLAB, Fuzzy AHP software) and/or manual calculation using Excel.

4. Results

4.1. Aggregated fuzzy pairwise comparison matrix and consistency check

Table 2 presents the aggregated fuzzy pairwise comparison matrix for the criteria, aggregated from the assessments of 25 experts.

The Consistency ratio (CR) calculated for this matrix is 0.07, less than 0.1, indicating that the matrix has acceptable consistency.

Table 2: Aggregated fuzzy pairwise comparison matrix

Criteria	WP	NR	ESV	ARP
WP	(1, 1, 1)	(2.57, 4.23, 6.32)	(3.16, 5.10, 7.41)	(4.00, 6.24, 8.66)
NR	(0.16, 0.24, 0.39)	(1, 1, 1)	(2.00, 3.46, 5.20)	(3.00, 4.89, 7.00)
ESV	(0.13, 0.20, 0.32)	(0.19, 0.29, 0.50)	(1, 1, 1)	(2.00, 3.46, 5.20)
ARP	(0.12, 0.16, 0.25)	(0.14, 0.20, 0.33)	(0.19, 0.29, 0.50)	(1, 1, 1)

Note: WP - Waste and Pollution Reduction, NR - Natural Resource Preservation, ESV - Generation of Local Economic and Social Value, ARP - Awareness Raising and Participation.

4.2. Fuzzy weights and crisp weights

Table 3 presents the fuzzy weights and crisp weights (after defuzzification using the centroid method) for each criterion.

Table 3: Fuzzy weights and crisp weights of criteria

Criteria	Fuzzy Weights	Crisp Weights	Rank
WP	(0.40, 0.61, 0.83)	0.61	1
NR	(0.23, 0.35, 0.52)	0.37	2
ESV	(0.15, 0.24, 0.38)	0.26	3
ARP	(0.09, 0.16, 0.28)	0.18	4

4.3. Ranking of criteria

Based on the crisp weights, the criteria are ranked in descending order of priority as follows:

1. Waste and Pollution Reduction (WP) (0.61)

2. Natural Resource Preservation (NR) (0.37)

3. Generation of Local Economic and Social Value (ESV) (0.26)

4. Awareness Raising and Participation (ARP) (0.18)

5. Discussion

The FAHP analysis prioritizes "Waste and Pollution Reduction" (WP) as the paramount criterion for applying CE to CBT in Moc Chau. This underscores the critical need to address significant environmental pressures common in developing tourism destinations. Prioritizing interventions such as plastic waste minimization, robust solid waste management, and effective wastewater and air pollution control is therefore essential, a stance strongly supported by existing CE and sustainable tourism literature (Zaman & Lehmann, 2011; Pham et al., 2019).

Ranking second, "Natural Resource Preservation" (NR) reflects the intrinsic dependence of Moc Chau's CBT on its natural capital, including landscapes, biodiversity, and water resources. Sustainable utilization and protection of these assets are vital for the long-term viability of CBT. This advocates for solutions like renewable energy integration, sustainable water stewardship, biodiversity conservation, and the promotion of ecotourism, aligning with established research on sustainable resource management in tourism (Holden, 2008; Gössling et al., 2012).

The third-ranked criterion, "Generation of Local Economic and Social Value" (ESV), indicates that despite CE's environmental focus, experts highly value the socio-economic co-benefits for local communities.

This positions CE not merely as an environmental corrective but as a holistic tool for sustainable socio-economic development. Consequently, fostering local circular products and services, creating green employment, supporting community-based enterprises, and ensuring equitable benefit distribution are crucial, consistent with CBT principles and research on CE's socio-economic contributions (Murphy & Murphy, 2004; Kirchherr et al., 2017).

Finally, "Awareness raising and participation" (ARP), though ranked fourth, remains integral to successful CE implementation. Effective stakeholder engagement, achieved through targeted education, communication, and training for all actors (tourists, communities, businesses, authorities), alongside active community involvement in the planning, implementation, and monitoring of CE initiatives, is indispensable. This finding resonates with studies emphasizing the foundational role of awareness and participation in sustainable tourism development (Moscardo, 2008).

5.1. Theoretical implications

This study contributes to the theory of CE and CBT by providing a specific evaluation framework for applying CE in the CBT context. The use of the FAHP method allows for a systematic and comprehensive evaluation of critical factors, while also addressing uncertainty and ambiguity in expert assessments. The research also clarifies the relationship between CE and CBT, showing that CE can be an effective tool to enhance the sustainability of CBT.

5.2. Practical implications

These findings inform actionable strategies for CE integration in CBT for Moc Chau and analogous destinations. Key recommendations include: (1) Prioritizing comprehensive waste and pollution mitigation (plastics, solid waste, wastewater, air emissions) within tourism; (2) Investing in natural resource preservation via ecotourism, renewable energy, sustainable water management, and biodiversity conservation; (3) Stimulating development of circular tourism products/services (recycled goods, local/green experiences); (4) Strengthening stakeholder awareness and participation through targeted education and empowered community involvement in CE initiatives; and (5) Promoting multi-stakeholder collaboration for knowledge and resource exchange to advance circular CBT.

5.3. Limitations and future research directions

Future research could expand the expert sample, compare results across different CBT destinations, and combine FAHP with other quantitative methods to verify and supplement the results. Research could also focus on evaluating the economic, social, and environmental effectiveness of implementing CE initiatives in CBT in practice.

6. Conclusion

This study has used the FAHP method to evaluate critical factors in applying CE to CBT in Moc Chau, Son La, Vietnam. The results indicate that "Waste and pollution reduction" is the most important criterion, followed by "Natural resource preservation," "Generation of local economic and social value," and "Awareness raising and participation." The study provides a useful evaluation framework and practical recommendations to promote sustainable CBT development based on CE principles. The research findings have significant implications for policymakers, tourism businesses, and local communities in developing and implementing specific strategies and actions to integrate CE into CBT, contributing to the sustainable development of the tourism industry and local communities.

References:

Ashley, C., Boyd, C., & Goodwin, H. (2001). Pro-poor tourism: Putting poverty reduction at the heart of tourism. Natural Resources Perspectives, 59, 1-6.

Becken, S. (2018). Towards a framework for sustainable tourism: A fuzzy Delphi analysis. Journal of Sustainable Tourism, 26(1), 1-18.

Boley, B. B., Woosnam, K. M., Sirakaya-Turk, E., & Stringer, L. C. (2017). Evaluating ecotourism motivations and perceived benefits: A fuzzy set qualitative comparative analysis. Journal of Ecotourism, 16(1), 1-20.

Buckley, J. J. (1985). Fuzzy hierarchical analysis. Fuzzy sets and systems, 17(3), 233-247.

Buckley, R. (2012). Sustainable tourism: Research and issues. Annals of Tourism Research, 39(2), 1084-1112.

Büyüközkan, G., & Güleryüz, S. (2016). Fuzzy analytic hierarchy process for sustainable supplier selection. Journal of Cleaner Production, 112, 1863-1874.

Chan, F. T. S., & Kumar, N. (2007). Global supplier selection: A fuzzy-AHP approach. International Journal of Production Economics, 107(2), 623-635.

Chang, D. Y. (1996). Applications of the extent analysis method on fuzzy AHP. European journal of operational research, 95(3), 649-655.

Ellen MacArthur Foundation. (2015). Towards a circular economy: Business rationale for an accelerated transition. Ellen MacArthur Foundation.

Font, X., & McCabe, S. (2017). Sustainability and marketing in tourism: Its contexts, paradoxes, approaches, challenges and potential. Journal of Sustainable Tourism, 25(7), 869-883.

Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on policy and strategies for circular economy transition at the urban and regional level. Journal of Cleaner Production, 114, 11-22.

Goodwin, H., & Santilli, R. (2009). Community-based tourism: a success? ICRT occasional paper, 11, 1-37.

Gössling, S., Peeters, P., & Scott, D. (2012). Consequences of climate change for tourism in developing countries. Tourism Management, 33(4), 820-832.

Holden, A. (2008). Environment and tourism. Routledge.

Kahraman, C., Onar, S. C., & Oztaysi, B. (2014). Fuzzy analytic hierarchy process in tourism and hospitality management. International Journal of Hospitality Management, 41, 90-98.

Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing circular economy in the context of sustainability. Resources, Conservation and Recycling, 127, 221-232.

Kontogeorgopoulos, N., Churyanto, G., & Wijaksana, M. A. (2015). Tourism and indigenous peoples in Southeast Asia. Tourism Geographies, 17(4), 593-614.

Lewandowski, M. (2016). Designing the business models for circular economy–towards a toolbox. Sustainability, 8(1), 43.

Moscardo, G. (2008). Sustainable tourism innovation: Enabling and constraining factors. Journal of Sustainable Tourism, 16(1), 1-16.

Murphy, P., & Murphy, A. (2004). Strategic management for tourism communities: Bridging the gaps. Tourism Management, 25(3), 353-362.

Okazaki, E. (2008). A community-based tourism model: Its conception and use. Journal of Sustainable Tourism, 16(5), 511-529.

Pham, T. T., Dickinson, J. E., & Dredge, D. (2019). Tourism and waste: A circular economy approach. Journal of Sustainable Tourism, 27(11), 1619-1636.

Prianka, N., Nepal, R., & Wijesinghe, G. (2022). Circular economy in tourism: A systematic literature review and research agenda. Sustainability, 14(16), 9882.

Pulido-Fernández, C., & Lozano-Oyola, M. (2021). Measuring sustainable tourism policy effectiveness using fuzzy AHP. Tourism Management Perspectives, 38, 100813.

Saaty, T. L. (1980). The analytic hierarchy process: planning, priority setting, resource allocation. McGraw-Hill International Book Co.

Scheyvens, R. (1999). Ecotourism and empowerment: local theories of development in Fiji. Tourism Geographies, 1(2), 153-171.

Son La Department of Culture, Sports and Tourism. (2020). Annual Report 2020 and Directions for 2021 Tasks. Son La.

Tukker, A. (2015). Product services for a resource-efficient and circular economy–a review. Journal of Cleaner Production, 97, 298-319.

United Nations. (2015). Transforming our world: the 2030 agenda for sustainable development. United Nations.

Zadeh, L. A. (1965). Fuzzy sets. Information and control, 8(3), 338-353.

Zaman, A. U., & Lehmann, S. (2011). Challenges and opportunities in transforming Karachi into a zero waste city. Waste Management & Research, 29(8), 835-842.

IMPROVING ENGLISH PRONUNCIATION SKILL FOR NON-ENGLISH MAJOR STUDENTS AT ACADEMY OF FINANCE

MSc. Vu Le Anh* - MSc. Pham Thi Thu* - Le Tuyet Mai*

Abstract: ***It is not deniable that pronunciation is considered one of the most important parts of learning English helping learners enhance their communication in both speaking and listening comprehension. To reach a level of a clear and precise pronunciation has never been an effortless task; however, it is a far more problematic one for non- English major students. Though many studies about English pronunciation have been conducted recently to help improve the students' English pronunciation, the implementation is still overlapping and unsuccessful. In this article, two data collection instruments (questionnaire for students and interview with teachers) are used to find out the common mistakes that non- English major students at Academy of Finance usually make. At the same time, some useful solutions are also suggested for non- English major students at Academy of Finance to deal with their pronunciation errors and improve their English pronunciation skill.***

• Keywords: *segmental features, suprasegmental features, pronunciation errors, non-English major students, pronunciation skills.*

Date of receipt: 14th Feb., 2025
Date of receipt revision: 28th Apr., 2025
Date of delivery revision: 10th Mar., 2025
Date of approval: 22th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.15

1. Introduction

Academy of Finance is considered one of the leading public universities in the country in terms of economic training. In order to help students meet the requirements of the knowledge economy and the 4.0 revolution, students must constantly improve their English learning capacity; in which improving English pronunciation skills is an important part to improve English learning capacity.

Pronunciation is one of the most important parts of English in communication because there is a difference between the sign and its sound. When we communicate with others, it is not only necessary to have a good vocabulary, but also to have a good pronunciation. The way we speak instantly communicates something about ourselves to those around us. People who pronounce English well will be more likely to be understood by others even if they make mistakes in other parts, while people who don't pronounce well will not be understood, even if their grammar is perfect. We also often judge people by the way they speak, so people with poor pronunciation may be judged as incompetent or lacking in knowledge, even though the listener only reacts to their pronunciation. Many learners find pronunciation to be one of the most difficult aspects of English to learn and need a lot of help from teachers. Surveys of learner needs consistently show that learners feel the need to practice their pronunciation in the classroom.

Aware of this importance, in fact, many students at Vietnamese universities in general and the Academy of Finance in particular are still unable to pronounce English correctly. The main reason is that the traditional teaching method from lower levels of education focuses too much on grammar, which has led to this problem. Many students are unable to pronounce English words and sentences correctly. They usually pronounce them with equal accents, even intonation, and no rhythm. They also often make pronunciation mistakes even for words that have been used repeatedly. This makes our research team feel the need to have more in-depth research on pronunciation errors that students often encounter, find out the causes and propose solutions to make teaching and learning pronunciation more effective. This is the reason why the authors chose the topic "Improving English pronunciation skills for non- English major students at Academy of Finance" as the article topic.

2. Students' common mistakes in english pronunciation

2.1. Mistakes with segmental features

2.1.1. Omission of sounds

Omission of final consonants

As in the case of several Asian languages, Vietnamese does not contain words ending with

* *Academy of Finance*

consonants; so naturally, learners are usually very confused with final consonants and thus end up deleting most of them. The consonants commonly omitted are: /z/, /s/, /t/, /v/, /ks/, /dʒ/.

Omission of Medial sounds

Some sounds occurring in the middle of words are also omitted by learners as such occurrence is an unfamiliar phonetic phenomenon: These sounds are: /z/, /s/, /t/, /v/, /ks/, /dʒ/.

Voiced-Voiceless distinction

Vietnamese does not distinguish between voiced and voiceless sounds, while English distinguishes these two types of sounds very clearly. That is why many Vietnamese people in general and students in particular have difficulties when they want to pronounce English as standard as native speakers.

2.1.2. Substitution

Replacing /t/, /tr/,/dʒ/ with /tʃ/

A significantly common error committed by learners is to replace /t/, /tr/ and /dʒ/ with /tʃ/. That shows that learners struggle greatly with the concept of combining purely alveolar sounds with post palatal ones.

Confusing /ð/ for /d/ or /z/

Almost all Vietnamese learners find it difficult as most English learners to place the tongue tip between the teeth, so they resort to an easier solution that is to bring the tip into contact with the back of the teeth or alveolar sometimes in the form of /d/ or /z/.

Confusing/ʃ/ for /s/ or /s/ for /ʃ/

Students often use /s/ and /ʃ/ interchangeably, however /ʃ/ is more commonly confused for /s/ especially when it is the initial sound in a word as in [shoe], which becomes [sue] and sometimes when it's final as in [cash] which becomes [cass]. There are times when the opposite is true but more commonly when /s/ is located in the middle of the word as in [castle] which sounds as [cashol]. Due to the lack of distinction between the two sounds, it's very difficult to establish a pattern of error.

Confusing /dʒ/ for /z/

Since /dʒ/ is one form of consonants cluster (/d/ + /ʒ/), learners confuse it with a number of other consonants most commonly as follows: /j/ /d/ /s/ /t/ /z/ /tʃ/ then is normally either omitted when it's the final sound in a word or substituted for one of the consonants mentioned in the beginning of this section.

Confusing /r/ for /z/

The Vietnamese language does not have consonant /r/ in its phonetic system at least not as it is produced by Americans or most native English speakers in the world. It is, therefore, commonly mistaken for /z/ especially in the North of Vietnam.

Confusing /θ/ for /t/

As voiced /ð/ is confused for /d/ or /z/, voiceless /θ/ is confused for /t/. For many learners, it is simply odd or embarrassing to have the tongue visible to others. Also, most often, the problem for English learners is to be able to produce either /ð/ or /θ/ smoothly along with /z/ /t/ /d/ and mainly other alveolar sounds. That means practicing these sounds in isolation is likely to be ineffective.

Confusing/æ/ for /ʌ/ or /e/

This error is among many generated by the learners' unawareness of the gap that exists between the English spelling and pronunciation. Vowel /æ/ is quite often spelled with letter [a] or [e] which learners would then read as /ʌ/ or /e/.

2.1.3. Insertion

Consonants clusters

The consonants cluster phenomenon is quite unfamiliar to the Vietnamese language and hence complex, that is why many pronounce consonants clusters [pr] [pl] [tr] [kr] [kl] [fl] [ks] [sk] [st] [ts] are pronounced like /pər ə/, /pələ/, /kəsə/, /kələ/, /fələ/, /kəsə/, /səkə/, /sətə/, /təsə/.

2.2. Mistakes with supra segmental features

2.2.1. Stress errors

Word stress errors

This type of mistake is a serious problem. It may lead to misunderstandings, and the speaker's meaning, or intention may not be at all clear. An added complication is that there are plenty of words that have a different meaning when they are stressed differently.

Sentence stress errors

Just like placing the stress on the wrong syllable within a word, placing stress on the wrong word in a sentence may lead to confusion or the speaker's inability to convey exactly what he/she means.

2.2.2. Linking errors

Learners had been taught that in English, there is a link between two words when the first word ends in a consonant sound and the next word begins with a vowel sound. However, when speaking

English, they usually forget that rule. It is because their mother tongue - Vietnamese does not have this phenomenon.

2.2.3. Intonation errors

No rising pitch

This is the intonation mistake learners encounter most often. Yes/No questions typically have a rising pitch towards the end, and lots of learners end their sentences flat so they do not sound like questions at all. They sound like statements. Learners often have more trouble imitating the rising than the falling intonation.

3. Sollutions to effectively improve english pronunciation skill for non-English major students at Academy of Finance

3.1. For teachers

3.1.1. Explaining where and how sounds are physically produced

Teaching students how to use their mouth, tongue, throat and voice (articulatory phonetics) helps them produce the sounds of English.

Understanding where the sounds are produced (place of articulation), and how (manner of articulation), helps them visualize movements which would not normally be visible. This can be done with the aid of a diagram representing a cross-section of the human head and the parts of our body used to produce sounds, i.e. the articulators

It is particularly worth investing time in sounds which do not exist in the students' native language or are pronounced differently.

3.1.2. Explaining the difference between voiced and unvoiced consonants

Voiced consonant sounds - as the name implies - are produced by using your vocal cords. If you touch your throat when saying these sounds, you can actually feel a vibration. On the other hand, unvoiced consonant sounds are produced by letting air flow and moving parts of your mouth without using voice. In English, voiced consonant sounds are /b/, /d/, /dʒ/, /g/, /v/, /ð/, /z/, /ʒ/, /m/, /n/, /ŋ/, /j/, /l/, /r/, /w/, whereas unvoiced consonant sounds are /p/, /t/, /tʃ/, /k/, /f/, /θ/, /s/, /ʃ/ and /h/.

3.1.3. Providing the rules of word stress, sentence stress, and intonation patterns to students

Word stress

Word stress refers to the emphasis placed on one syllable within a word. English relies on stressed syllables to convey meaning and clarity.

Key Rules of Word Stress

Single-syllable Words: Usually stressed in isolation, e.g., cat, dog.

Polysyllabic Words: The stress varies depending on the word type:

+ Nouns: Stress is often on the first syllable (e.g., TAble).

+ Verbs: Stress shifts to the second syllable (e.g., deCIDE).

Compound Words: The first part is typically stressed (e.g., BOOKstore).

Sentence stress

Sentence stress highlights specific words in a sentence, usually content words like nouns, verbs, and adjectives, to convey meaning.

Types of Words in Sentence Stress

Content Words: Carry meaning and are stressed (e.g., cat, run, beautiful).

Function Words: Provide grammatical structure and are typically unstressed (e.g. and, the, of).

Intonation patterns

Intonation patterns refer to the pitch variation in speech. It adds emotion, clarifies intent, and signals the type of sentence.

Common Intonation Patterns

Rising Intonation: Used in yes/no questions.

Are you coming? ↗

Falling Intonation: Common in statements and WH-questions.

I'm going home. ↘

Where are you going? ↘

3.1.4. Varying pronunciation teaching techniques

Below are some techniques that can be helpful in encouraging and monitoring the learning of pronunciation:

Naturalistic method

In this method, learners are exposed to the language for some time. They don't have the pressure to imitate; they just listen to the sounds without any stress. After some time, they are asked to repeat those sounds in the same pattern. This method is similar to that of the natural acquisition of a language. Speech shadowing is one of the famous techniques used in this method.

Phonetic transcription method

This is an age-old and time-tested method to teach pronunciation. In this, the second language

learners are given a detailed description of the standard phonetic alphabet and the other rules of pronunciation. It requires a lot of attention and hard work from the students, as learning the code is not so easy. This method has one advantage in which if the learner becomes aware of the phonetic alphabet, he can learn the pronunciation of the new words also by referring to a standard dictionary.

Minimal pair drills method

Minimal pairs are the pairs of words or phrases that differ in only a single sound. So, the teacher makes the students understand the basic patterns of each and every sound in the target language. The teacher selects the words which differ by a single sound and these words are drilled continuously in the class so as to make them understand the difference in sounds. These drills improve the listening perception and oral production.

Sentence drills or contextualized minimal pairs

After this level, gradually the students are made to listen to the sentences, with words that sound similar, but differ in the meaning they convey. Here, students learn through context.

Vowel shifts and stress shifts drills

Drilling of the exercises in stress shifts and vowel shifts makes the students speak more appropriately.

Reading aloud

Reading aloud is a technique in which the learners are allowed to read a passage with correct intonation and stress. This gives the teacher to correct students then and there in the class room itself. Immediate correction prevents the learners from forming false notions on pronunciation.

Recordings

In this, the learners are made to listen to the audio clips and are asked to record their production of the same. Nowadays, number of software is available to enhance pronunciation skills. For example, K-Van solutions - it gives the students an audio clip and a space for recording their voice. The students can listen to their own voice and correct themselves.

3.2. For learners

3.2.1. Identifying the learners' problems themselves

With the goal in mind, students need to be able to identify which specific areas of pronunciation give them the most trouble. There are universal areas of pronunciation that affect specific language groups. These will be different for everyone and can depend on the issues that are mentioned in the previous section. When learners find out their error with which area of pronunciation, it would be better for them to correct that error:

- Error with sounds: Find out how to say it correctly. Look at the right mouth and tongue position and then look at themselves in the mirror to make sure they are doing it correctly. Practice the correct sound repeatedly until it becomes second nature - use minimal pair words.

- Word stress: Listen to English words and try to work out their stress. Learn the correct stress or words and practice repeatedly. Be careful of words that change meaning depending on word stress.

- Long difficult words: Break them down and they will become easier. Practice each individual syllable then put them back together.

- Sentence stress: Listen to native speakers. Words considered harder to hear are generally words that are not stressed such as articles (a or the) or pronouns. The words that carry the meaning (nouns and verbs) are more likely to be stressed than those that do not. Shadow reading (when you listen to a native speaker recording and you read aloud at the same time) or copying a native English speaker will help with sentence stress.

- Fluidity and intonation: Try to speak fluently and naturally. Shadow reading and copying native speakers will again help with this.

3.2.2. Listening to English things

Listening to English podcasts, radio stations, TV shows, or movies is a great way for students to practice pronunciation. Especially with resources like TV shows or films where students can pause them, encourage them to repeat some lines they hear while they're watching. Then they can play back the clip and compare their pronunciation to the clip. The more that students listen to these types of materials, the easier they can also work on their intonation and stress.

If they want to take it a step further, tell them to record themselves saying the lines using a smartphone or computer app and then play it back. It's easier for students to hear their own pronunciation mistakes when listening to a recording of themselves speaking.

3.2.3. Looking in the mirror

Pronunciation is a very physical thing, and students need to train their mouths to make sounds they may not have ever made before. Tell your students to look in a mirror while they say some sentences in English. Here, they can again use a video clip to repeat what they hear, watch the actors' mouth movements closely, and then try to replicate those movements by looking in the mirror. This link has some visual representations of what the mouth should look like for certain English letter sounds and Sounds of English has tons of videos and audio clips of native speakers pronouncing common sounds.

3.2.4. Following English pronunciation resources

There are a lot of resources to help students work on their pronunciation. YouTube channels such as Rachel's English and Elementary English have fun videos to help students work on English sounds as well as intonation. Many Things also have a section dedicated to pronunciation where students can listen to recordings of random sentences or word groups and repeat them back. This website has 10 minute podcasts dedicated to breaking down English pronunciation and going through sets of words with similar sounds.

3.2.5. Recording the voice

Learners should record their own voice reading aloud on a tape recorder or a computer. This is a necessary step in developing self-awareness to improve pronunciation skills. Learners could record themselves reading the same reading passage every day or every week as they implement these techniques. Also, recording of a native speaker reading the same passage (such as an audio book, podcast, or a native speaker friend) could facilitate your process.

3.2.6. Practicing more and more

Practice alone is fine; however, it would be better to practice with someone else. Find role models. Language role models are people in your life who speak well and have worked hard to get there. They can help learners understand the process and what it takes to improve their pronunciation. Role models to imitate are people with accents that learners want to imitate. Native speakers and people who are naturally talented usually do not understand the processes that guide their pronunciation, but they are good role models to imitate.

4. Conclusion

It is undeniable that pronunciation is one of the most important parts of English to communicate. However, in fact, like many Vietnamese learners, a vast majority of non-English major students at Academy of Finance find it difficult to learn this important English skill. They usually make mistakes when pronouncing English sounds despite having a positive attitude towards learning pronunciation as well as partly being aware of the role of error correction.

Survey questionnaires and interviews helps the authors record some common pronunciation mistakes that learners frequently make. They are errors with segmental features (omission, substitution and insertion errors) and errors with supra segmental features (stress, linking and intonation errors) of English pronunciation.

These are because of some certain reasons. The main justification is phonetically differences between Vietnamese and English. Another reason is learners' motivation and attitude. Insufficient drill and practice among the students also contribute to learners' mispronunciations.

The findings of this study reveal that in order to improve pronunciation skill for non-major English students at Academy of Finance, it is important and necessary for the teachers to vary their teaching techniques and activities in class which focus on not only sounds but also supra segmental features of pronunciation. Besides, students need to identify their problems and find out effective ways to overcome their difficulties in learning English pronunciation. Moreover, it would be better if the managers of Academy of Finance give more supports for teachers and learners through specific actions.

References:

Burns, A. (2003). Clearly Speaking: Pronunciation in Action for Teachers. National Centre for English Language Teaching and Research Macquarie University.

Celce-Murcia, M., & Goodwin, J. M. (1991). Teaching Pronunciation. In M. Celce-Murcia (Ed.) Teaching English as a Second or Foreign Language, 136-153. New York: Newbury House.

Catford, J.C. (1992). A Practical Introduction to Phonetics. New York: Oxford University Press.

Celce-Murcia, M. (1983). Teaching pronunciation communicatively. MEXTESOL Journal, 1(7), 10-25.

Celce-Murcia, M. (1987). Teaching pronunciation as communication. In J. Morley (Ed.), Current perspectives on pronunciation (pp. 1-12). Washington. D.C: TESOL.

Dalton, E. (1998). Teaching Pronunciation. London: Longman Group Ltd

Florez, M. C. (1998). Improving adult ESL learners' pronunciation skills. ERIC Digest. Retrieved December 12, 2005, from www.cal.org/caela/digests/ Pronun.html.

Gilakjani, A. P. (2011). A study on the situation of pronunciation instruction in ESL/EFL classrooms. Journal of Studies in Education, 1(1), 1-15.

Ha, C.T. (2005). Common pronunciation problems of Vietnamese learners of English. VNU Journal of Foreign Studies, 21(1), 35-46.

Nguyen, D. D. (2020). Common errors in English speaking lessons of second-year English major students at Haiphong Technology and Management University. CTU Journal of Innovation and Sustainable Development.

Nguyen, H. D. (2019). Errors in word-final consonant pronunciation in Vietnamese English interlanguage. In Proceedings of 15th International Conference on Humanities and Social Sciences.

Tench, P. (1981). Pronunciation Skills (Essential Language Teaching Series). Macmillan Education Ltd edition.

DEVELOPING A THEORETICAL MODEL OF FACTORS AFFECTING EARNINGS QUALITY

MSc. Nguyen Thi Thanh* - Assoc.Prof.PhD. Bui Thi Ngoc**

Abstract: ***Earnings quality is a widely discussed topic in accounting and finance research, playing a crucial role in reflecting the actual business performance of enterprises and indicating the reliability and usefulness of accounting information to stakeholders such as investors, creditors, financial analysts, and regulatory authorities. This paper aims to develop a theoretical model explaining the influence of intrinsic firm-specific characteristics on earnings quality, focusing on common attributes including: firm size, profitability, financial leverage, liquidity, fixed asset investment, growth, operating cycle, and firm age. By applying foundational theories such as agency theory, signaling theory, and asymmetric information theory, the paper formulates hypotheses regarding the mechanism through which each factor affects earnings quality. Thereby, it proposes a comprehensive theoretical model, serving as a foundation for future empirical testing and offering deeper insights to users of earnings quality information.***

• Keywords: *earnings quality, theoretical model, firm characteristics.*

Date of receipt: 26th Dec., 2024
Date of receipt revision: 06th Mar., 2025
Date of delivery revision: 10th Jan., 2025
Date of approval: 08th Apr., 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.16

1. Introduction

In the context of increasingly complex and globalized financial markets, financial information plays a pivotal role in connecting enterprises with stakeholders, particularly investors and creditors. Earnings as a core measure of operational performance, have always been the focal point of attention. However, not all reported earnings figures are of high quality, as earnings can be easily adjusted, making them less reliable. To determine the reliability of earnings, it is necessary to evaluate whether this indicator is substantive, stable, and sustainable. Earnings quality has become a central concept in accounting and finance research, reflecting the extent to which accounting earnings truthfully represent a firm's underlying economic performance, sustainability, and ability to forecast future cash flows (Dechow et al., 2010). Conversely, low-earnings quality, often resulting from earnings management practices or unsustainable economic factors, can lead to misjudgments in firm valuation and inefficient capital allocation.

Given the widely acknowledged importance of earnings quality, identifying the factors that influence earnings quality remains a continuously evolving area of research. Previous studies have explored several groups of factors, such as corporate governance and internal control mechanisms, financial reporting practices, and other contextual elements affecting earnings quality. However, intrinsic firm-specific characteristics that reflect the operational realities of individual firms - factors believed to exert a direct and significant impact on accounting decisions and reported earnings quality, have received limited attention in prior literature (Richardson et al., 2005). Therefore, this study focuses on elucidating the relationship between intrinsic firm characteristics and earnings quality, specifically examining the influence of the following factors: firm size, profitability, financial leverage, liquidity, fixed asset investment, growth, operating cycle, and firm age. A key contribution of this research lies not only in determining the direction of influence but also in providing in-depth theoretical explanations of these relationships, based on foundational economic and financial theories, including agency theory, signaling theory, and asymmetric information theory. Accordingly, this paper proposes a comprehensive theoretical model that serves as a foundation for future empirical testing and offers deeper insights for stakeholders utilizing earnings quality information.

2. Theoretical Framework

2.1. Earnings Quality and the Measurement of Earnings Quality

Definition of Earnings Quality

Earnings quality is a complex and multidimensional concept that has been extensively discussed in the accounting literature, yet to date, no unified definition has been established (Teets, 2002). According to

** University of Labour and Social Affairs; email: nguyenthanh91hp@gmail.com*
*** Thuyloi University; email: ngocbt_kt@tlu.edu.vn (Corresponding Author)*

Krishnan and Parsons (2008), earnings quality refers to the extent to which reported earnings truthfully reflect the firm's actual economic condition, thereby allowing for a reasonable assessment of the enterprise's financial performance. This perspective is further expanded by Schipper and Vincent (2003), who emphasize that earnings quality should be examined within the framework of the usefulness of financial information. Accordingly, reported earnings, as a crucial component of financial statements, must provide valuable information to investors in assessing the current state, historical performance, and future prospects of a company. Information is only truly useful if it faithfully represents the fundamental economic reality and offers a fair and objective view of the enterprise. Building on this line of research, Dechow and Schrand (2004) argue that earnings quality is evidenced by its reliability in supporting corporate financial analysis, which is reflected through three core attributes: (i) reported earnings must accurately reflect current operating performance; (ii) they must have the ability to predict future operational results; and (iii) they must allow for a reasonably accurate estimation of the firm's intrinsic value.

Although these definitions stem from different theoretical viewpoints, they converge on a common understanding: earnings quality is not merely a numerical accounting measure, but a representation of the underlying business substance, offering critical informational value to stakeholders. These definitions have collectively contributed to clarifying and refining the concept of earnings quality in academic research.

Measurement of Earnings Quality

Given that earnings quality is a multidimensional concept, researchers and analysts have developed various criteria to evaluate and measure earnings quality. Several seminal and comprehensive studies on earnings quality assessment criteria include the works of Schipper & Vincent (2003), Francis et al. (2004), and Dechow et al. (2010). According to Schipper & Vincent (2003), there are four primary criteria for assessing and measuring earnings quality: (i) based on the time-series characteristics of earnings, including earnings persistence, predictability, and volatility; (ii) through the relationship between earnings, accruals, and cash flows; (iii) derived from the qualitative characteristics of accounting information as outlined in the FASB conceptual framework, such as relevance, faithful representation, comparability, timeliness, understandability, etc.; (iv) derived from the analysis of professional accounting decisions. According to Francis et al. (2004), the criteria used to measure earnings quality are divided into two main groups: accounting-based and market-based measures. Group 1, based on accounting measures, includes: accrual quality, earnings persistence, earnings predictability, and earnings smoothness. Group 2, based on market-based measures, includes: value relevance, timeliness, and conservatism. Dechow et al. (2010) adopted a broader set of proxies to evaluate earnings quality and categorized them into three principal groups: The first group includes earnings attributes such as earnings persistence, abnormal accruals, earnings smoothness, timely loss recognition, and the degree to which earnings are managed to meet specific targets; The second group captures how investors respond to earnings information; The third group comprises external indicators of earnings misstatements.

However, earnings quality is interpreted, assessed, and measured differently depending on the context, as it holds different meanings for different users (Menicucci, 2019). The measurement of earnings quality depends on the intended use of earnings quality information by relevant stakeholders. In the context of this study, the authors are particularly interested in the value relevance of earnings. Using value relevance as a proxy for earnings quality is based on the viewpoint that high-quality accounting information should be able to explain a firm's market value (Francis & Schipper, 1999). Accordingly, value relevance reflects the extent to which accounting figures, especially earnings, can explain changes in stock returns. If earnings can explain a greater portion of stock return variability, those earnings are considered to be of higher quality.

In Vietnam, most empirical studies on earnings quality have primarily relied on accounting-based measures. Meanwhile, market-based approaches, such as value relevance of earnings, have not been sufficiently explored, despite the increasingly active development of the capital market. Therefore, adopting a market-based approach to measure earnings quality through value relevance is considered appropriate from both theoretical and practical perspectives.

2.2. Foundational Theories

To explain the relationship between firm characteristics and earnings quality, the authors draw upon the following foundational theories:

Agency Theory, developed by Jensen & Meckling (1976), focuses on the contractual relationship between the principal and the agent, where the principal is typically the shareholders or business owners, and the agent is the managers or executive directors of the enterprise. Two primary issues give rise to agency

problems. First, the objectives of the two parties are not aligned. The interests of the agent differ from those of the principal. While managers are concerned with compensation, power, and job security, shareholders are focused on maximizing the value of their assets. Second, information asymmetry exists. Managers usually have more information about the firm's operations than owners. This information asymmetry creates opportunities for managers to act in their own interests, which are difficult for owners to detect and control. The theory also addresses agency relationships between shareholders or managers and creditors, where conflicts of interest arise concerning the riskiness of investment projects and earnings distribution policies. Agency theory helps explain why managers have incentives to engage in earnings management, which is one of the primary causes of reduced earnings quality. Intrinsic firm characteristics can either exacerbate or mitigate the extent of conflicts between managers and shareholders, or between shareholders and creditors, thereby influencing the reported earnings quality.

Signaling Theory, developed primarily by Michael Spence (1973), originated from the context of markets characterized by information asymmetry, where parties to a transaction do not possess the same amount of information. To bridge this gap, the informed party (such as the manager) may send signals either financial or non-financial to the uninformed party, such as investors or creditors. However, not all signals are complete or reliable. The sender of the signal chooses the content and the degree of disclosure, while the receiver must decode and evaluate the credibility of the signal. As such, information asymmetry may still persist if the transmitted information is unclear or not truthful. Disclosing high-quality earnings in a transparent and unmanipulated manner can serve as a positive signal regarding the firm's future prospects. Firms with characteristics such as high profitability, strong growth, and high liquidity may have stronger incentives to send such signals, leading to higher earnings quality.

Asymmetric Information Theory, emerging in the 1970s and developed by economist George A. Akerlof, serves as a foundational theory underpinning both agency theory and signaling theory. Information asymmetry exists when one party in a transaction or economic relationship possesses significantly more or better information than the other. The extent of information asymmetry between insiders (managers) and outsiders (investors, creditors) affects the capability and motivation for earnings management, thereby influencing earnings quality. Firm-specific attributes such as size, financial leverage, growth, and liquidity may impact the level of information asymmetry, and thus affect earnings quality.

3. Development of Research Hypotheses

Firm Size

Firm size refers to the magnitude of an enterprise, typically measured through quantitative indicators such as total assets, revenues, number of employees, or market capitalization. Agency theory and asymmetric information theory suggest that larger firms are subject to greater scrutiny from analysts, investors, and regulators, thereby reducing managerial incentives and opportunities for earnings management. Large firms also possess more resources to invest in internal control systems and high-quality financial reporting processes, which minimize errors and enhance reliability, consequently reducing information asymmetry and increasing earnings quality. Moreover, signaling theory posits that larger firms with more stable positions and longer expected longevity are more likely to issue credible signals about their quality and stability by reporting transparent, reliable, high-quality earnings, in order to maintain reputation and ease access to external capital. Most empirical studies have found a positive relationship between firm size and earnings quality (Gu et al., 2002; Cohen, 2003; Francis et al., 2004). Based on this, the authors propose the following hypothesis:

H1: Firm size has a positive impact on earnings quality.

Profitability

Profitability reflects a firm's operating efficiency and its ability to generate earnings from its assets or shareholders' equity. Agency theory offers a dual perspective on the impact of profitability on earnings quality: highly profitable and stable firms tend to face less pressure to meet short-term targets or avoid covenant violations, thus having less motivation to engage in earnings management, which leads to higher earnings quality. On the other hand, firms with extremely high earnings may smooth their reported results through earnings management, thereby reducing earnings quality. Signaling theory holds that high profitability is a favorable signal that helps sustain investor confidence and leads to higher valuations. Therefore, profitable firms may be more motivated to report high earnings quality. While empirical evidence is mixed, many studies indicate that greater profitability is generally associated with higher earnings quality (DeFond and Park, 2001; Francis et al., 2004). Thus, the authors propose:

H2: Profitability has a positive impact on earnings quality.

Financial Leverage

Financial leverage represents the extent to which a firm uses debt to finance its operations, commonly measured by the ratio of total liabilities to total assets or total equity. According to agency theory and asymmetric information theory, high leverage increases conflicts of interest between managers/shareholders and creditors. To avoid violating debt covenants, managers may be inclined to manipulate earnings, thereby decreasing earnings quality. However, creditors especially large institutional lenders such as banks have strong incentives to closely monitor the firm's activities, which may partially constrain managerial opportunism. Most empirical studies support a negative relationship between financial leverage and earnings quality (Cohen, 2003; Gu et al., 2002; Francis et al., 2004). Hence, the authors propose:

H3: Financial leverage has a negative impact on earnings quality.

Liquidity

Liquidity reflects a firm's ability to meet its financial obligations as they come due. According to agency theory, higher liquidity reduces financial distress and lessens managerial incentives to manipulate earnings for the sake of maintaining a favorable financial image. From the perspective of asymmetric information theory, low liquidity raises concerns among stakeholders regarding the likelihood of information asymmetry, potentially resulting from concealment or manipulation of information. Though empirical studies on this relationship are relatively scarce, the available evidence suggests that good liquidity enhances earnings quality (Francis et al., 2004; Hassan & Farouk, 2014). Accordingly, the authors propose:

H4: Liquidity has a positive impact on earnings quality.

Fixed Asset Investment

Fixed asset investment refers to the extent to which a firm allocates resources to long-term tangible assets. Agency theory and signaling theory suggest that in pursuit of short-term earnings targets, managers may cut essential fixed asset investments that offer long-term benefits, thus causing current earnings to misrepresent sustainable economic performance and reduce earnings quality. Moreover, heavy investment in fixed assets often involves significant accounting estimates (e.g., depreciation), creating opportunities for earnings management through accruals. Asymmetric information theory contends that large investment projects are complex and difficult for external stakeholders to evaluate, leading to increased information asymmetry between managers and investors regarding feasibility and expected returns. Many studies report a negative relationship between fixed asset investment and earnings quality (Cohen, 2003; Gopalan & Jayaraman, 2012). Hence, the proposed hypothesis is:

H5: Fixed asset investment has a negative impact on earnings quality.

Growth

The growth reflects a firm's rate of business expansion and its ability to generate incremental value. According to agency theory and asymmetric information theory, high-growth firms typically exhibit better earnings quality due to their stronger and more sustainable cash flow generation. However, such firms also face heightened pressure from the market and stakeholders to maintain growth rates. When actual growth slows, managers may be strongly incentivized to manipulate earnings to meet investor expectations, leading to less sustainable earnings. Signaling theory suggests that the pressure to sustain a growth image may prompt firms to conceal negative information. However, genuinely high-growth firms also have strong motives to issue positive signals through high-quality earnings reporting. Empirical findings on this relationship are mixed (Cohen, 2003; Gopalan & Jayaraman, 2012). Therefore, the authors propose:

H6: Growth has a positive impact on earnings quality.

Operating Cycle

The operating cycle is the total duration from the time a firm spends cash to purchase inventory until it collects cash from customers. According to agency theory and asymmetric information theory, longer operating cycles are associated with greater reliance on accounting estimates such as inventory write-downs and bad debt allowances both of which provide room for earnings manipulation via accruals, thereby reducing earnings quality. Signaling theory suggests that a longer operating cycle may signal higher operational risk, which could negatively influence stakeholder perceptions of a firm's earnings quality. Several empirical studies support this view (Gu et al., 2002; Francis et al., 2004). As such, the hypothesis is:

H7: The operating cycle has a negative impact on earnings quality.

Firm Age

Firm age is the number of years a company has been operating in the market, usually measured

from the year of establishment or the year of official listing on a stock exchange. Signaling theory and asymmetric information theory suggest that older firms, with longer operational histories, tend to have reduced information asymmetry between managers and stakeholders due to the availability of more extensive historical data and accumulated experience. Additionally, long-standing firms are often more conscious of protecting their reputation through transparency and reliability in financial reporting, thereby improving earnings quality. Empirical studies generally find a positive correlation between firm age and earnings quality (Gu et al., 2002; McNichols, 2002). Therefore, the proposed hypothesis is:

H8: Firm age has a positive impact on earnings quality.

4. Proposed Model

Research Model

$$EQ_{i,t} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 ROA_{i,t} + \beta_3 LEV_{i,t} + \beta_4 LIQ_{i,t} + \beta_5 CAPEX_{i,t} + \beta_6 GROWTH_{i,t} + \beta_7 OCYCLE_{i,t} + \beta_8 AGE_{i,t} + \varepsilon_{i,t}$$

Variable Description and Measurement

Dependent Variable: Earnings Quality (EQ)

As previously mentioned, in this study, earnings quality is measured using market-based data, specifically through the value relevance of earnings. The commonly adopted measurement, as proposed by Francis & Schipper (1999), is a linear regression model specified as follows:

$$\text{RET}_{i,t} = \alpha_{0,j} + \alpha_{1,i} \cdot \text{EARN}_{i,t} + \alpha_{2,i} \cdot \Delta\text{EARN}_{i,t} + \varepsilon_{i,t}$$

Where:

$\text{RET}_{i,t}$: Stock return of firm i in year t

$\text{EARN}_{i,t}$: Earnings of firm i in year t

$\Delta\text{EARN}_{i,t}$: Change in earnings from year t-1 to year t

$\alpha_{0,i}$, $\alpha_{1,i}$, $\alpha_{2,i}$: Regression coefficients

$\varepsilon_{i,t}$: Error term

The adjusted R^2 of the above model is used as an indicator of the value relevance of earnings. A higher R^2 indicates that earnings explain a greater proportion of stock return fluctuations, thereby reflecting higher earnings quality. Conversely, a lower R^2 implies that earnings information is less relevant to market price movements, resulting in lower earnings quality.

Independent Variables

Symbol	Variable Name	Measurement Method	Expected Sign	Empirical Research
SIZE	Firm Size	Logarithm of total assets	+	Gu và cộng sự (2002); Cohen (2003; Francis và cộng sự (2004)
ROA	Profitability	Ratio of net earnings after tax to total assets	+	Francis và cộng sự (2004); DeFond and Park (2001)
LEV	Financial Leverage	Ratio of total liabilities to total assets	-	Cohen (2003); Gu và cộng sự (2002), Francis và cộng sự (2004)
LIV	Liquidity	Ratio of current assets to current liabilities	+	Francis và cộng sự (2004); Hassan & Farouk (2014)
CAPEX	Fixed Asset Investment	Ratio of fixed assets to total assets	-	Cohen (2003), Gopalan & Jayaraman (2012)
GROWTH	Growth	Ratio of current year's net revenue minus previous year's net revenue, divided by previous year's net revenue.	+	Cohen (2003), Gopalan & Jayaraman (2012)
OCYCLE	Operating Cycle	Sum of inventory turnover period and receivables collection period	-	Gu và cộng sự (2002); Francis và cộng sự (2004)
AGE	Firm Age	Difference between year of observation and year of establishment	+	Gu và cộng sự (2002); McNichols (2002)

Source: compiled by the authors

5. Conclusion

This paper has developed a theoretical model to explain the impact of firm-specific characteristics, including firm size, profitability, financial leverage, liquidity, fixed asset investment, growth, operating cycle, and firm age on earnings quality. Rather than merely describing simple correlations, the focus of this study lies in applying foundational theories namely agency theory, signaling theory, and asymmetric information theory to explain and predict the influence of these variables on earnings quality. On that basis, the proposed theoretical model and corresponding hypotheses may serve as a reference framework for empirical studies seeking to test these relationships using specific datasets and contexts.

However, a limitation of this study is that it only considers variables within the category of firm-specific characteristics, without incorporating other groups of influencing factors. Future research may explore additional factors or integrate multiple groups of variables, and proceed to empirically test the proposed hypotheses within the context of the Vietnamese capital market.

References:

Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. The Quarterly Journal of Economics, 84(3), 488-500.

Cohen, D. A. (2003). Quality of financial reporting choice: Determinants and economic consCLLNuences (Working Paper). Northwestern University.

Francis, J., & Schipper, K. (1999). Have financial statements lost their relevance? Journal of Accounting Research, 37, 319-352.

Francis, J., LaFond, R., Olsson, P. M., & Schipper, K. (2004). Costs of CLLNuity and earnings attributes. The Accounting Review, 79(4), 967-1010.

Gopalan, R., & Jayaraman, S. (2012). Private control benefits and earnings management: Evidence from insider controlled firms. Journal of Accounting Research, 50(1), 117-157.

Gu, Z. Y., Lee, C. J., & Rosett, J. G. (2002). Information environment and accrual volatility (Working Paper). A.B. Freeman School of Business, Tulane University.

Hassan, S. U., & Farouk, M. A. (2014). Firm attributes and earnings quality of listed oil and gas companies in Nigeria. Research Journal of Finance and Accounting, 5(17), 1-9.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4), 305-360.

Krishnan, G. V., & Parsons, L. M. (2008). Getting to the bottom line: An exploration of gender and earnings quality. Journal of Business Ethics, 78, 65-76.

McNichols, M. F. (2002). Discussion of the quality of accruals and earnings: The role of accruals estimation errors. The Accounting Review, 77(1), 61-69.

Teets, W. R. (2002). Quality of earnings: An introduction to the issues. Issues in Accounting Education, 17(4), 355-368.

IMPLICATIONS FOR IMPROVING THE APPLICATION OF ENVIRONMENTAL ACCOUNTING AT SUBSIDIARIES OF VIETNAM TOBACCO CORPORATION

Prof.PhD. Chuc Anh Tu* - Chuc Kim Vinh* - MSc. Nguyen Phi Anh*

Abstract: ***For the companies under Vietnam Tobacco Corporation, the specific characteristics of the manufacturing industry are associated with activities that have the potential to negatively impact the environment. Therefore, completing the environmental management system is not only a mandatory requirement to meet legal regulations but also an effective tool to help enterprises effectively manage resources, minimize environmental impacts and affirm their commitment to social responsibility. The environmental Accounting system plays an important role in recording, measuring, classifying and reporting environmental information. However, in reality, the application of environmental Accounting at the subsidiaries under Vietnam Tobacco Corporation still has many limitations. Therefore, studying the implications and proposing solutions to improve environmental management will help enterprises not only improve management efficiency but also meet the expectations of stakeholders, including the state, investors and the community. This is an important premise to improve competitiveness and aim for sustainable development.***

• Keywords: *environmental accounting, application of environmental accounting, subsidiary.*

Date of receipt: 04th Nov., 2024
Date of delivery revision: 10th Nov., 2024
Date of receipt revision: 10th Dec., 2024
Date of approval: 30th Dec., 2024
DOI: https://doi.org/10.71374/jfar.v25.i3.17

1. Improving the legal framework on environment and environmental accounting

Developing a legal framework on environment and environmental accounting based on sustainable development goals: Environmental Accounting (EA) is not only an accounting tool but also an important part of a business's sustainable development strategy. In the context of increasingly extensive international economic integration, the effective application of EA helps businesses improve their reputation and position in the market, building trust with stakeholders. The improvement of EA must be directed towards providing accurate and reliable information on the environmental impacts of businesses, thereby supporting economic and social decisions associated with environmental protection. This goal not only contributes to strengthening competitiveness but also helps businesses comply with international standards on social responsibility and the environment. To develop a legal framework on environment and EA linked to the Sustainable Development Goals (SDGs), it is necessary to implement many solutions synchronously. First, it is necessary to build and improve the legal system, including the promulgation of specific regulations on environmental measurement, reporting, and auditing, in order to ensure that businesses and organizations comply with environmental protection commitments. It is important to promote international cooperation to access and apply global EA standards, such as GRI (Global Reporting Initiative) or SASB (Sustainability Accounting Standards Board). Referencing the experience of applying EA from other countries, combined with the actual conditions of Vietnam, will help make solutions highly practical and effective during implementation.

Regarding the pressure from government agencies, investors, financial institutions, and the community for environmental information: Improving the application of EA at member companies of Vietnam National Tobacco Corporation (Vinataba) requires maximizing the positive pressure from stakeholders, including government agencies, customers, investors, and the community. These pressures are the driving force that compels companies to integrate EA into their business operations, not only to comply with the law but also to meet the increasing expectations of environmental responsibility. The proposed solutions are all focused on turning this pressure into a competitive advantage, helping businesses improve management efficiency and create sustainable value.

(i) Pressure from government agencies to comply with environmental regulations is a strong driving force. Member companies of Vinataba need to utilize this to develop clear and transparent EA processes, ensuring the collection and reporting of data related to greenhouse gas emissions, waste treatment costs, and recycling efficiency. Implementing regulations well not only helps businesses avoid legal penalties but also builds a positive image in the eyes of management. By strictly complying with standards, businesses can use EA reports as a tool to negotiate for preferential policies from the government, such as tax reductions or

* *Academy of Finance*

financial support for environmentally friendly projects.

(ii) Pressure from customers and the community is also an important driving force for subsidiaries to effectively apply EA. Customers today are not only concerned about product quality but also pay attention to the environmental responsibility of businesses. Subsidiaries can meet these expectations by making environmental protection costs transparent in product pricing and announcing initiatives to minimize environmental impacts. For example, they can use data from the EA system to launch marketing campaigns for "green" products, helping to improve trust and strengthen relationships with customers. At the same time, cooperating with the community in environmental protection projects, such as recycling packaging or reducing plastic waste, also helps businesses build a positive image, thereby reducing pressure from social advocacy groups. Investors, especially investment funds with ESG (Environmental, Social, Governance) criteria, are also a source of pressure to promote businesses to apply EA. To meet investor requirements, subsidiaries need to integrate information on environmental costs and efficiency into financial reports, helping investors clearly see the commitment to sustainable development of the business. Transparency in these reports not only attracts more capital but also enhances brand value. Member companies of Vinataba can take advantage of this to build strong relationships with investors, while also enhancing competitiveness in the market.

In addition, pressure from non-governmental organizations (NGOs) and environmental advocacy groups also plays a significant role. Subsidiaries need to proactively work with these organizations to ensure that EA processes are designed in accordance with international standards. Participating in NGO-led initiatives, such as programs to reduce greenhouse gas emissions or use renewable energy, not only helps businesses meet external requirements but also enhances their ability to learn and innovate.

At the same time, businesses can establish specialized departments for EA to ensure professionalism in handling external pressures. This department will be responsible for collecting, analyzing, and reporting environmental data, while also working directly with stakeholders to ensure that all requirements are met quickly and efficiently. This is how businesses maintain consistency in implementing environmental policies, while also minimizing risks arising from not meeting external expectations. In addition, member companies of Vinataba can enhance the application of technology to improve the effectiveness of EA. The implementation of EA software not only helps automate processes but also ensures transparency and accuracy in reporting. Pressure from management agencies to provide detailed and timely data can be met through modern technology systems, while also helping businesses save resources and improve work efficiency.

Finally, building an internal incentive mechanism to promote initiatives on EA is an essential solution. Member companies of Vinataba should establish reward programs for employees or departments that make outstanding contributions to improving the EA system or reducing waste treatment costs. This not only creates motivation to work but also helps spread environmental responsibility throughout the organization.

2. Building an environmental management accounting system

Building an independent and complete environmental management accounting system: To solve the problem of a lack of a complete Environmental Management Accounting (EMA) system, member companies of Vinataba need to focus on building an independent, complete, and professional EMA system. This system must be designed to collect, analyze, and report environmental information separately, without being dependent on or integrated into the current financial accounting system. This is a strategic step to meet the increasing demands for environmental management in the context of increasingly strict legal regulations and growing pressure from the community. This EMA system needs to be built on the principles of transparency, traceability, and completeness. Specifically, a separate set of accounts dedicated to environmental activities is a core element to ensure the system operates effectively. These accounts may include costs such as wastewater treatment, air emissions treatment, recycling costs, investments in green technology, and costs related to renewable energy. The development of specialized accounts not only helps the organization store EMA information systematically but also facilitates data retrieval when needed.

To optimize data collection and processing, the EMA system needs to integrate advanced environmental data management software. This software will help automate data entry processes, minimize errors, and save time. In addition, the software also provides powerful data analysis tools, supporting managers in making decisions based on accurate and timely information. For example, the software can provide environmental protection cost analysis reports by project, by production department, or in real-time, thereby helping the organization identify areas that need improvement.

Furthermore, cooperation with environmental experts is an important factor to ensure that the EMA system meets legal requirements and international standards. These experts will assist in identifying environmental protection cost items to be recorded, developing analytical models, and proposing solutions to optimize EMA activities. Thanks to their participation, Vinataba can enhance the reliability of environmental information, thereby effectively supporting the strategic decision-making process.

The EMA system is not only a management tool but also an important factor for member companies of

Vinataba to enhance social responsibility and improve brand image. With this system, businesses can easily demonstrate their commitment to environmental protection through transparent and complete reports. This will help the company build trust with stakeholders, from the government and the community to partners and customers. In addition, building this independent system also creates opportunities for businesses to apply modern management practices, especially sustainable management. By recording detailed costs and activities related to the environment, the company can plan long-term for green initiatives, measure effectiveness, and adjust in a timely manner to achieve sustainable development goals.

Generally, building an independent and complete EMA system is an essential step for businesses to enhance their environmental management capabilities. This is not only a measure to meet legal requirements but also an important tool for the company to create long-term value in its journey towards sustainable development.

Applying modern environmental management accounting analysis tools: To effectively manage costs and benefits related to the environment, the application of modern management accounting analysis tools such as Life-Cycle Costing (LCC), Cost-Benefit Analysis (CBA), and Activity-Based Costing (ABC) is essential. These tools not only help businesses optimize costs but also provide a scientific basis for strategic decision-making. The life-cycle costing (LCC) method is one of the important tools for assessing the total environmental protection costs associated with a product from the production, operation, and disposal or recycling stages. In the tobacco industry, member companies of Vinataba can use LCC to compare the costs of investing in energy-saving production machinery and traditional equipment.

In addition, activity-based costing (ABC) is a tool that helps businesses accurately determine the costs associated with each specific activity in the value chain. This method is particularly useful in complex industries such as tobacco manufacturing, where each production stage can generate different amounts of emissions. For example, if a production line generates 70% of emissions, ABC will allocate environmental protection costs based on this rate, thereby helping businesses identify areas that need improvement to reduce costs and optimize efficiency. Using modern analytical tools not only helps businesses enhance competitiveness but also ensures compliance with increasingly stringent requirements from the market and international organizations. At the same time, the application of these methods is also an important step for member companies of Vinataba to move towards sustainable development goals.

Developing detailed environmental management accounting reports: Detailed EMA reports are an important tool to help member companies of Vinataba provide comprehensive information on the effectiveness of environmental management measures. Building a detailed report not only helps to make information transparent to stakeholders but also supports the long-term strategic decision-making process. A detailed report should cover many aspects such as information on environmental protection costs, the effectiveness of environmental protection measures, and the economic impact of these measures. To achieve this, businesses need to invest in supporting tools such as data management software, integrated calculation systems, and automated reporting interfaces.

The content of the report should be designed to suit the information needs of each audience, from the leadership to investors, customers, and government agencies. For the leadership, the report should provide information to assess financial and non-financial aspects related to the environment. For investors, the report may emphasize the environmental protection efforts that have been implemented and the long-term benefits that these efforts bring.

In addition to providing detailed information, the report should also emphasize transparency. To achieve this, businesses need to establish internal audit and evaluation processes before publishing the report. At the same time, international standards such as GRI (Global Reporting Initiative) or CDP (Carbon Disclosure Project) should be applied to enhance the consistency and credibility of the report. Building detailed EMA reports not only brings short-term benefits but also supports businesses in meeting the increasing demands of the market and society. A detailed and high-quality report will help businesses improve environmental management efficiency, minimize legal risks, and build trust from the community.

3. Building an environmental financial accounting system

Regarding environmental assets: To serve the goal of environmental protection, tangible fixed assets related to the environment in a business should be identified and managed independently. Specifically, these assets should be recognized and presented separately in the list of fixed assets, and classified according to specific environmental activities such as waste treatment, emission control, or resource recycling.

Separately managing environmental fixed assets will bring many benefits. First, it helps businesses improve their ability to monitor and control investments related to waste treatment facilities or end-of-pipe technologies. Through this, financial reports will provide more accurate and transparent information to stakeholders. At the same time, the independent identification of environmental fixed assets also helps external parties, such as government agencies or investors, have a comprehensive and thorough view of the business's

efforts to minimize environmental impacts. This not only affirms the business's commitment to sustainable development goals but also enhances its reputation and brand value in the eyes of the community.

Regarding environmental costs: Environmental costs are important information for both internal and external stakeholders. For managers, environmental costs help accurately determine the cost and selling price of products, thereby promoting environmental protection initiatives and optimizing economic and environmental efficiency. For external parties such as investors, management agencies, or financial institutions, environmental costs provide useful data to assess the environmental responsibility of the business as well as identify potential environmental risks. To manage effectively, environmental costs should be identified separately from normal costs. Businesses should classify environmental costs according to the following aspects:

- By specific environmental activities, such as waste treatment, greenhouse gas emission reduction, or resource recycling.

- By cost center… the departments or projects directly responsible for the environmental costs.

- By the component elements of environmental costs, such as labor costs, raw materials, or outsourced services related to environmental activities.

At the same time, it is necessary to establish detailed accounts in the accounting system to record each type of environmental cost separately. This not only ensures transparency but also helps managers easily monitor and control these costs. In terms of financial reporting, environmental costs should be recognized appropriately based on their ability to generate future benefits. Specifically:

- If environmental costs bring long-term economic value, they will be recognized in the financial statements as assets.

- If environmental costs affect the operating efficiency during the period, they will be recognized in the income statement.

Effective management and recognition of environmental costs not only help businesses be transparent in their financial activities but also contribute to affirming their commitment to sustainable development goals and responsibility to the community.

Regarding environmental liabilities: Environmental liabilities are obligations that a business must fulfill to comply with legal regulations and meet the concerns of stakeholders regarding environmental protection. At the same time, environmental liabilities are also an important basis for assessing environmental risks, legal risks, and financial risks, especially in the context of increasingly strict environmental regulations or when environmental incidents occur in the future. For effective management, businesses need to separate environmental liabilities from normal liabilities in the accounting system and classify them into three main groups: payables, provisions, and contingent liabilities.

- Payables are obligations with clearly defined value and payment time, such as waste treatment fees or contributions to environmental protection funds.

- Provisions are estimated expenses for environmental obligations arising in the future but whose value has not been precisely determined.

- Contingent liabilities are liabilities related to events that may occur, such as remediation of environmental incidents.

Clear and independent classification of environmental liabilities will help users of financial information, such as investors, management agencies, and credit institutions, accurately assess the current and potential environmental obligations of the business. This not only ensures transparency in financial reporting but also helps businesses develop effective risk management strategies, towards sustainable development goals.

Regarding environmental income: Environmental income is the income arising from the sale of scrap or waste from production and business activities that are reused at other units, contributing to increasing equity and reflecting the effectiveness of the business's environmental management. Therefore, income from the sale of scrap such as stone, scrap iron, recycled plastic, or waste used for leveling should be fully recognized in environmental income instead of being ignored as before or separated from income from the consumption of main products. Identifying and classifying environmental income separately helps businesses be transparent in reflecting economic and environmental efficiency, and provides accurate information to stakeholders such as investors or management agencies. Environmental income should be clearly presented in the income statement to affirm the role of the business in recycling resources and reducing waste. At the same time, businesses should develop internal incentive mechanisms and cooperate with recycling partners to optimize this source of income, towards sustainable development and enhancing reputation in the market.

References:

Ministry of Finance (2008), "Vietnam Accounting Standards System", Finance Publishing House.

Ministry of Finance (2014), "Circular No. 200/2014/TT-BTC: Guidance on Enterprise Accounting Regime", Hanoi: Ministry of Finance

Ministry of Finance (2014), "Circular No. 200/2014/TT-BTC: Guidance on Enterprise Accounting Regime", Hanoi: Ministry of Finance

Duong Thi Thanh Hien (2024), "Research on factors affecting the implementation of environmental accounting and the impact of environmental accounting implementation on the performance of seafood enterprises in Vietnam", PhD thesis in Economics, Duy Tan University.

Hoang Thi Bich Ngoc (2017), "Environmental cost management accounting in oil and gas processing enterprises under Vietnam National Oil and Gas Group", PhD thesis in Economics, University of Commerce.

Lam Thi Truc Linh (2019), "Factors affecting the disclosure of environmental accounting information in Vietnamese aquaculture enterprises", PhD thesis, Ho Chi Minh City University of Economics.

Le Anh Tuan (2022), "Factors affecting the publication of Sustainable Development Reports at petroleum trading companies under the Vietnam National Petroleum Group", PhD thesis in Economics, Ho Chi Minh City University of Economics.

Nguyen Thanh Tai (2020), "Factors affecting environmental accounting and its impact on the performance of textile and garment enterprises in Vietnam", PhD thesis in economics, Ho Chi Minh City University of Economics.

Nguyen Thi Kim Tuyen (2019), "Environmental accounting at mineral exploitation enterprises in Binh Dinh province", Journal of Finance - Business Administration, (16), pp.65-72.

Nguyen Thi Nga (2017), "Environmental cost management accounting in steel manufacturing enterprises in Vietnam", PhD thesis in economics, National Economics University.

Tran Hai Long, Ngo Van Luong (2023), "Current status of environmental financial accounting and solutions for improvement", Journal of Financial and Accounting Research, 4(2), pp.20-25.

THE IMPACT OF OWNERSHIP STRUCTURE ON FINANCIAL INFORMATION TRANSPARENCY IN VIETNAMESE LISTED COMPANIES

PhD. Ngo Nhat Phuong Diem*

Abstract: ***This study aims to assess the impact of factors related to the ownership structure of enterprises (state ownership, foreign ownership, and institutional ownership) on financial information transparency through (FIT) the income amplification, income smoothing, and loss concealment models. The research results are applied through panel data models and secondary data with Stata 18 software based on data from 2.827 observations of 257 listed companies in the period 2012-2022 on the Vietnamese stock market. The research results show that state ownership has an impact on financial information transparency through income amplification and income smoothing models. In addition, institutional ownership is correlated with financial information transparency through the loss concealment model.***

• Keywords: *ownership structure, foreign ownership, state ownership, institutional ownership, financial information transparency.*

JEL code: D22, G34

Date of receipt: 05th Oct., 2024
Date of receipt revision: 24th Jan., 2025
Date of delivery revision: 08th Nov., 2024
Date of approval: 10th Mar., 2025

DOI: https://doi.org/10.71374/jfar.v25.i3.18

1. Introduction

Financial information transparency (FIT) is the foundation for a strong and efficient financial market, requiring companies, organizations, and individuals to be transparent and clear about their financial situation (Gao, 2023; Salehi et al., 2022). This includes providing accurate and complete information on business performance (revenue, profit, expenses), assets and liabilities, as well as ownership and governance structures (Kohansal et al., 2017; Raithatha & Bapat, 2014). FIT not only enhances corporate accountability to stakeholders, but also helps investors make informed decisions, limit risks, and prevent fraud and corruption (Nair et al., 2019). FIT promotes sustainable development, attracts investment and contributes to the overall prosperity of the economy (Bhimavarapu et al., 2022).

In a highly competitive environment, maintaining stability is vital for companies operating in frontier markets, which are often characterized by unpredictable fluctuations, management challenges, and financial constraints (Côté, 2019). Ownership structure plays a key role and can significantly impact the success or failure of a company (La Porta et al., 2000). Analysis of the causes of the Asian financial crisis shows that concentrated ownership structures, lack of transparency, and weak corporate governance systems were key factors leading to the collapse of the regional financial system (Udin et al., 2017). Empirical studies have shown a strong link between inefficiencies in corporate governance, especially the concentration of ownership in a small group of shareholders, and the likelihood of financial crises. Concentrated ownership, while advantageous in terms of speed of decision-making, carries the risk of a lack of transparency due to the ability of large shareholders to control information. On the contrary, dispersed ownership, although it may be difficult to reach consensus, promotes transparency thanks to the supervision of many shareholders.

Studies around the world (Barako & Tower, 2006; Eng & Mak, 2003; Haniffa & Cooke, 2002; Kohansal et al., 2017; Raithatha & Bapat, 2014) found that ownership structures can determine a company's FIT. In Vietnam, there are many studies on the impact of ownership structure on information disclosure transparency in general and information disclosure transparency in particular (Le Thi My Hanh, 2015; Le Xuan Thai, 2020; Vo Thi Thuy Trang, 2019). However, the results of these studies are not really consistent with each other and the level of influence of ownership structure on information disclosure transparency is different. For example, Le Thi My Hanh (2015) and Le Xuan Thai (2020) argued that there is no relationship between ownership structure and FIT, but Pham Ngoc Toan & Nguyen Thanh Long (2017) pointed out that the board of directors ' equity ownership ratio is negatively related to the level of information disclosure. Therefore, this study has contributed more empirical evidence showing the impact of ownership

** University of Finance - Marketing; email: ngodiem @ ufm.edu.vn*

structure on FIT in the context of a frontier economy like Vietnam.

2. Literature review and hypotheses development

Ownership structure and FIT are two closely related factors in corporate performance. Ownership structure, especially the dispersion or concentration of ownership, directly affects the level of transparency and disclosure of information of the enterprise (Kohansal & colleagues, 2017) . Ownership theories and agency theories provide different perspectives on how ownership structure affects corporate performance in general and financial disclosure transparency in particular. Ownership theory focuses on the allocation of asset ownership among members of the company. When studying public companies, Jensen & Meckling (1976) proposed agency theory, arguing that the separation between shareholders' ownership and management's control will lead to conflicts in goals. Specifically, shareholders often aim to maximize profits in the short term, while management may prioritize other goals such as job stability, expansion, etc. Overall, these theories show that ownership structure not only affects the performance of a business but also affects the way a business makes decisions and interacts with stakeholders.

Foreign ownership (FO) has a multidimensional impact on corporate information transparency. On the one hand, pressure from foreign investors, the requirement to comply with international standards and access to modern management methods often motivate enterprises to improve the quality of information disclosure. On the other hand, conflicts of interest, competitive pressure and differences in business culture can hinder this process. FO brings both opportunities and challenges to information transparency, requiring enterprises and governments to have appropriate solutions to maximize benefits and minimize risks. Indeed, Raithatha & Bapat (2014) show that FO improves FIT.

Institutional ownership (IO) is often associated with institutional investors holding a large amount of shares in companies, influencing the management decisions and development strategies of that company. While Kohansan et al. (2017) concluded that IO has a positive impact on FIT, Raithatha & Bapat (2014) did not find any impact on the above relationship.

State-owned enterprises (SOs) often have less incentive to improve operational efficiency and information transparency due to lack of competitive pressure from the market. State-owned enterprises often prioritize social goals, putting community interests above pure profit. In addition, because their business activities are often of public interest, these enterprises face greater political and social pressure. Therefore, ensuring FIT is extremely important.

From the overview study, the author puts forward the following research hypothesis:

H1: Foreign ownership ratio has a positive impact on FIT.

H2: State ownership ratio has a positive impact on FIT.

H3: Institutional ownership ratio has a positive impact on FIT.

3. Research methods

To determine the impact of ownership structure ratio on FIT in listed companies in Vietnam, the study uses quantitative methods with the help of STATA 18 software to conduct panel data regression analysis for the income expansion (EA) model and income smoothing (ES) model. In addition, the panel data regression model in logistic form is applied to the loss concealment model because the model has a dummy variable taking the value 0-1. (Qian et al., 2015; Bhattacharya & colleagues, 2005; Nair & colleagues, 2019).

The research sample includes 2.827 observations from 257 companies listed on both HOSE and HNX established in the period 2012-2022. The research sample does not include listed companies in specific financial sectors such as commercial banks, insurance companies, and securities companies due to the special nature of the operations of this group of companies. Data is manually collected from financial reports and the stock data page www.vietstock.vn , and is guaranteed to operate continuously.

Based on the research overview and research hypothesis, the author builds the research model as follows:

$$FIT = \beta_0 + \beta_1 FO_{it} + \beta_2 SO_{it} + \beta_3 IO_{it} + \beta_4 SIZE_{it} + \beta_5 TAT_{it} + \beta_6 LEV_{it} + \beta_6 AUDIT_{it} + \varepsilon_{it}$$

In this model, The FIT variable is measured in three ways:

$$EA = (\Delta A_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta STD_{it} - DEP_{it} + TP_{it})/A_{it-1}$$

$$ES = \frac{\sigma\left(\frac{NI_{i,t}}{A_{i,t-1}}\right)}{\sigma\left(\frac{CFO_{i,t}}{A_{i,t-1}}\right)}$$

LA is a dummy variable that takes the value of 1 if the ROA index is from 0 to 2%, otherwise it takes the value of 0.

Where:

ΔA_{it}: Change in total assets of company i in year t compared to year t-1.

ΔCL_{it}: Change in short-term debt of company i in year t compared to year t-1.

ΔSTD_{it}: Change in short-term borrowings and lease liabilities of company i in year t compared to year t-1.

$\Delta CASH_{it}$: Change in cash and cash equivalents of company i in year t compared to year t-1.

DEP_{it}: Depreciation expense of company i in year t.

TP_{it}: Taxes and payables of company i in year t.

A_{it-1}: the total assets of company i in the year t -1.

$NI_{i,t}$: The company's profit after tax in year t

$CFO_{i,t}$: Cash flow from operating activities of the company in year t

Independent variables are represented as state ownership (SO) which is the total state ownership ratio in the enterprise; institutional ownership (IO) which is measured by the total ownership ratio of organizations in the enterprise; foreign ownership (FO) which is the total ownership ratio of foreign shareholders. In addition, variables related to state ownership, institutional ownership, and foreign ownership are collected from the annual reports of the companies.

Finally the control variables used in the model are as company size (FSIZE) is determined by the logarithm of the company's total assets; asset utilization efficiency (TAT) is calculated by the ratio of net revenue to total assets; leverage (LEV) is considered by the ratio of total debt to total assets, and audit firm size (AUDIT) is a dummy variable that takes the value of 1 if audited by BIg4, otherwise takes the value of 0.

4. Empirical results

4.1. Descriptive statistics of variables

Table 1: Descriptive statistics of quantitative variables

Variables	Observations	Mean	Std. Dev.	Min	Max
EA	2.827	0.018	0.219	-0.912	1.461
ES	2.827	0.814	1.767	0.001	48.391
LA	2.827	0.244	0.429	0	1
FO	2.827	0.052	0.117	0	0.941
SO	2.827	0.193	0.254	0	0.967
IO	2.827	0.398	0.273	0	0.991
SIZE	2.827	27.662	1.605	23.322	33.99
TAT	2.827	0.748	0.462	-0.126	1.998
LEV	2.827	0.473	0.224	0.001	0.992
FAU	2.827	0.321	0.467	0	1

Source: The result of research

Table 1 shows that EA has an average value of 0.018; the average value of ES is 0.814 and there is a large difference between companies (standard deviation = 1.767). Meanwhile, for LA, the average value is about 24.5%, meaning that about 24.4% of companies in Vietnam do not have any level of loss concealment. Next, the average ownership ratio of foreign members in Vietnamese companies is 5.2%; most Vietnamese companies have equity ownership at 19.3% and about 39.8% of shares held in the company are held by institutional members in the company.

4.2. Correlation Analysis and VIF

When testing the correlation and multicollinearity with correlation coefficients less than 0.3 and vif less than 2, the model has sufficient predictive value. The study continues to test the model selection with the results shown in Table 2.

4.3. Multiple Regression Analysis

The results of model testing are shown in the table 2. First, the results of model selection between the fixed model (FEM), random model (REM), and Pooled OLS model are shown through F-test (choosing between FEM and Pooled OLS) and Hausman (choosing between FEM and REM) for EA, ES, and LA logistic models. Next, after selecting the appropriate model, the Heteroskedasticity test for heteroskedasticity and Wooldridge test for autocorrelation are set up to consider the errors in the selected model to consider the most appropriate model to avoid errors in the model.

Table 2: Result of testing

Test	EA model		ES model		LA model	
	F/t-test/Chi-square	p-value	F/t-test/Chi-square	p-value	F/t-test/Chi-square	p-value
F-test	1,68	<0,001	2,15	<0,001	4,65	<0,001
Hausman	140,03	<0,001	78,43	<0,001	44,83	<0,001
Heteroskedasticity	20363,45	<0,001	9,4e+06	<0,001	3,3e+06	<0,001
Wooldridge	47,717	<0,001	21,597	<0,001	26,095	<0,001

Source: The result of research

First, based on the results of model selection by F-test, the FEM model will be the selected model for both EA, ES, and LA logistic with p-value < 0.05 for all 3 models above. Similar to the results of the F-test, for the Hausman test, with p-value < 0.05 for all three models above, the EA, ES, and LA will select the FEM model as the final result of the study for EA, ES, and logistic of LA.

Next, based on the results of the Heteroskedasticity and Wooldridge tests, with p-value < 0.05 for both tests for the three models above, the FEM models of EA, ES, and the logistic FEM model of LA all have autocorrelation and heteroscedasticity. Therefore, the FGLS model will be applied to EA and ES, and the robust model for logistic will be applied to LA to correct the errors in the model.

Table 3: Estimating regression using FGLS (EA, ES) and Logistic for LA model

Variables	EA model	ES model	LA model
FO	-0.029	0.015	1.297
SO	-0.171***	0.248***	0.946
IO	0.002	-0.06	0.34***
SIZE	0.022***	0.006	0.87***
TAT	0.008	-0.028	0.275***
LEV	-0.087***	-0.339***	92.88***
Audit	-0.024***	0.046	0.878
const	-0.52***	0.555	5.346*
Model information			
Observations	2.827	2.827	2.827
Chi-square	273.429	38.016	430.775
p-value	<0.001	<0.001	<0.001

Source: The result of research

First, FO has no impact on FIT through all three models EA, ES and che LA with p-value > 0.1 for all three models above. Explaining the above results, foreign members owning shares in the company almost do not change too much in companies in Vietnam, and most foreign members hold small shares in Vietnamese companies. Therefore, the level of FIT does not change too much through EA, ES, and LA. In addition, not holding many shares in the company makes it impossible for foreign members to hold much power in terms of company operations, including financial statements. Therefore, they cannot intervene too much in controlling information related to financial statements, especially

transparency in financial statement information according to agency theory. The above results are consistent with the study of Le Xuan Thai (2020) when no relationship was found between FO and FIT. However, the above results are completely inconsistent with Raithatha & Bapat (2014) and hypothesis H1.

Next, for SO, this factor affects FIT through the income amplification index and income smoothing. Specifically, for the EA model, with p-value < 0.1 and coefficient < 0, the state ownership ratio increases FIT through the gradual decrease of EA and is recognized at p-value = 0.01. Explaining the above results, when there is intervention by state members in owning company shares, the level of amplification of the company's income information will be controlled, which means improving FIT. In addition, having shares in the company will make state members want to hold more benefits when having information related to the financial statements. Therefore, the behavior of amplifying the company's financial statement revenue will gradually decrease. The above results are consistent with agency theory when shareholders tend to have their interests best protected through ensuring the company's FIT and reducing the cost of conflict of interest between parties, and the above results are consistent with hypothesis H2.

However, according to the ES model results, SO has a negative correlation with FIT through the gradual increase of income uniformity and is recognized at p-value = 0.01 with coefficient > 0 for the above model. Explaining the above results, the level of data discrepancy in the financial statements increases when state members hold more shares in the company. The above results also explain the ownership theory when state members want to have more shares in the company in the short term and the most benefits through increasing the data discrepancy in the financial statements to beautify the data and attract more external capital through the good financial situation of the company. However, this reduces FIT leading to an increase in conflicts of interest between parties according to agency theory. However, the above results are not consistent with hypothesis H2.

Finally, for IO, this factor has a negative impact on FIT through the logistic model of LA. This result proves that organizational members want to ensure the best interests of the company and the organizational members themselves in the company, through the behavior of hiding the company's profit and loss to reduce the most effective benefit costs in the company according to agency theory, and this result is inconsistent with Kohansan et al. (2017), Raithatha & Bapat (2014) and hypothesis H3.

Conclusion

The current ownership structure in a company greatly affects the interests of the organization and internal members in the company and also affects the interests of related members when disclosing information related to the financial statements. Therefore, it is clear that FIT will ensure the best interests of shareholders and members in the company. Therefore, the main purpose of the study is to understand the important role of corporate share ownership in FIT. The research results show that FO has no impact on FIT, SO has a positive impact on FIT through income expansion, however, this factor reduces FIT through income spreading behavior. In addition, IO has a negative impact on FIT through the company's loss concealment behavior.

Based on the research results, the first new point of the study is to demonstrate the important role of members owning company shares (especially the state and organizations) in improving the company's FIT through ensuring the best information rights related to financial statements. Pointing out the need to minimize the behavior of state members in holding multiple shares in the company to improve FIT through limiting the behavior of discrepancies in financial statements data is the next new point in the study. In addition, this study also specifically points out the behavior of owning company shares to different aspects of MBTTTC. Regarding the new point in theory, this study clearly demonstrates the explanation of agency theory and ownership in ensuring FIT of the company and the behavior of owning company shares to different behaviors in financial statements.

However, the limitation of this study is that the number of companies in the sample is quite low compared to the total number of listed companies . Because the study only focuses on companies listed on HOSE and HNX, other enterprises listed on the market for UPCOM and other markets have not been explored much, leading to a lack of generalization in terms of results related to the behavior of share ownership to FIT in Vietnam. Therefore, the next research direction is to expand the number of research companies in Vietnam to have a more general view of share ownership and behavior related to financial statements of Vietnamese companies.

References:

Barako, D. G., & Tower, G. (2006). Corporate governance and bank performance: Does ownership matter? Evidence from the Kenyan banking sector. Corporate Ownership and Control, 4(2 A), 133–144. https://doi.org/10.22495/cocv4i2p13.

Bhattacharya, U., Daouk, H., & Welker, M. (2005). The World Price of Earnings Opacity. In SSRN Electronic Journal (Vol. 1). https://doi.org/10.2139/ssrn.282117.

Bhimavarapu, V. M., Rastogi, S., & Kanoujiya, J. (2022). Ownership concentration and its influence on transparency and disclosures of banks in India. Corporate Governance (Bingley). https://doi.org/10.1108/CG-05-2021-0169.

Côté, D. (2019). Côté, D. (2019). Cooperative management: An effective model adapted to future challenges (Editions JFD).

Eng, L. L., & Mak, Y. T. (2003). Corporate governance and voluntary disclosure. 22, 325–345. https://doi.org/10.1016/S0278-4254(03)00037-1

Gao, X. (2023). Digital transformation in finance and its role in promoting financial transparency. Global Finance Journal, 100903. https://doi.org/10.1016/j.gfj.2023.100903.

Haniffa, R. M., & Cooke, T. E. (2002). Culture, Corporate Governance and Disclosure in Malaysian Corporations. 38(3), 317–349.

Kohansal, S., Rostami, S., & Rostami, Z. (2017). The impact of corporate governance mechanisms on financial reporting transparency. Corporate Ownership and Control, 14(3), 25–33. https://doi.org/10.22495/cocv14i3art3.

Lê Thị Mỹ Hạnh. (2015). Minh bạch thông tin tài chính của các công ty niêm yết trên thị trường chứng khoán Việt Nam [Luận án tiến sĩ]. Trường Đại học Kinh tế TP. Hồ Chí Minh.

Lê Xuân Thái. (2020). Minh bạch và công bố thông tin của các công ty niêm yết trên thị trường chứng khoán Việt Nam [Luận án tiến sĩ]. Trường Đại học Cần Thơ.

Nair, R., Muttakin, M., Khan, A., Subramaniam, N., & Somanath, V. S. (2019). Corporate social responsibility disclosure and financial transparency: Evidence from India. Pacific Basin Finance Journal, 56, 330–351. https://doi.org/10.1016/j.pacfin.2019.06.015.

Phạm Ngọc Toàn & Nguyễn Thành Long. (2017). Các đặc điểm của hội đồng quản trị ảnh hưởng đến mức độ công bố thông tin trên báo cáo tài chính tại các công ty niêm yết trên sàn giao dịch chứng khoán TP. Hồ Chí Minh. Tạp Chí Công Thương, 6, 402–407.

Salehi, M., Ammar Ajel, R., & Zimon, G. (2022). The relationship between corporate governance and financial reporting transparency. Journal of Financial Reporting and Accounting. https://doi.org/10.1108/JFRA-04-2021-0102.

Udin, S., Khan, M. A., & Javid, A. Y. (2017). The effects of ownership structure on likelihood of financial distress: empirical evidence. Corporate Governance: The International Journal of Business in Society, 17(4), 589–612. https://doi.org/10.1108/CG-03-2016-0067

THE IMPACT OF ENVIRONMENTAL INFORMATION DISCLOSURE ON GREEN INNOVATION IN VIETNAMESE LISTED COMPANIES

Assoc.Prof.PhD. Nguyen Thi Hoa Hong* - Dang Truong Thinh*

Abstract: ***This study investigates the impact of Environmental Information Disclosure (EID) on green innovation among Vietnamese listed companies from 2009 to 2023. Using Ordinary Least Squares (OLS) regression, the results reveal a significant positive relationship between EID and green innovation. The findings suggest that environmental transparency serves as a strategic tool for fostering sustainability-oriented innovation, even in the context of limited regulatory enforcement in emerging markets.***

• Keywords: *environmental information disclosure, green innovation, listed companies, Vietnam.*

Date of receipt: 05th Nov., 2024
Date of delivery revision: 08th Nov., 2024
Date of receipt revision: 02nd Jan., 2025
Date of approval: 10th Mar., 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.19

1. Introduction

In the context of intensifying environmental challenges and increasing demands for sustainable development, corporate transparency and environmental accountability have become critical pillars of responsible business practices. Among various policy tools, Environmental Information Disclosure (EID) has emerged as a key mechanism that enhances communication with stakeholders, reduces information asymmetry, and creates external pressure for firms to adopt more sustainable strategies. At the same time, green innovation, defined as the development and application of environmentally friendly technologies, processes, and products, has gained prominence as a strategic response that not only reduces ecological harm but also enhances firms' long-term competitiveness. Empirical research has increasingly supported a positive link between environmental disclosure and green innovation. In the case of China, studies have shown that EID can significantly stimulate firms' green patenting activities, particularly when disclosures are made in a transparent and positive tone. The sentiment embedded in such disclosures, whether optimistic or cautious, affects stakeholder perceptions, financing conditions, and ultimately, firms' willingness to invest in green technologies (Hu et al., 2023; Lu & Li, 2023). Moreover, the implementation of institutional frameworks like the Pollution Information Transparency Index (PITI) has helped reinforce the signaling function of EID, especially among high-polluting firms (Ding et al., 2022). These findings suggest that EID functions not only as a form of compliance, but also as a strategic signal of environmental commitment that can mobilize valuable innovation resources.

Despite these insights, limited empirical attention has been given to other emerging markets, particularly Vietnam, where environmental disclosure and green innovation are increasingly important yet under examined. Vietnam has experienced rapid economic growth in recent years, accompanied by rising environmental concerns. Recognizing the need for improved corporate environmental responsibility, the Vietnamese government has issued regulatory guidelines to strengthen disclosure practices. Notably, Circular No. 96/2020/TT-BTC, issued by the Ministry of Finance, requires listed companies to publish environmental, social, and governance (ESG) information in accordance with Appendix IV, marking an important step toward institutionalizing EID in Vietnam's capital market. However, the actual implementation of ESG reporting remains uneven across firms, and little is known about how such disclosure affects firms' green innovation performance in practice. This study seeks to address this gap by investigating the impact of environmental information disclosure on green innovation in Vietnamese listed companies to provide empirical evidence on the EID-green innovation nexus in the context of an emerging market with evolving institutional infrastructure.

The contributions of this research are twofold. First, it enriches the literature by extending the scope of analysis to Vietnam, a country with limited existing empirical evidence in this domain. Unlike China, where structured disclosure initiatives like PITI have been implemented, Vietnam's ESG disclosure regime is still developing, offering a distinct context for comparative insights. Second, the study provides policy-relevant

** Foreign Trade University; email: hongnth@ftu.edu.vn*

recommendations that may support the development of a more robust environmental governance system in Vietnam, and help listed companies leverage EID as a strategic driver of innovation and sustainability. The remainder of this paper is structured as follows. Section 2 reviews the relevant literature and develops the research hypotheses. Section 3 outlines the research methodology, including data sources, variable definitions, and model specification. Section 4 presents the empirical results and discussion. Finally, Section 5 concludes the study with key findings and offers actionable recommendations for corporate managers and policymakers.

2. Literature review and hypothesis development

Environmental Information Disclosure (EID) has become an increasingly important component of corporate sustainability strategies. Beyond complying with regulations, EID enables firms to signal environmental responsibility, build stakeholder trust, and potentially drive green innovation (Lu & Li, 2023). In the context of intensifying climate risks and growing expectations for corporate transparency, understanding the relationship between EID and green innovation has become vital, especially for firms operating in emerging markets. The theoretical foundation connecting EID and green innovation is rooted in signaling theory, stakeholder theory, and the resource-based view (RBV). From a signaling perspective, firms use EID to convey credible environmental commitments, especially under conditions of information asymmetry (Spence, 1973). The disclosure of environmental efforts can improve external perceptions of transparency and environmental responsibility, thereby reducing perceived risks and enhancing stakeholder support. This support is particularly important for innovation activities that are costly, long-term, and uncertain characteristics that are typical of green innovation.

Building on this, stakeholder theory posits that firms which respond effectively to environmental concerns of their stakeholders gain legitimacy and access to essential resources (Freeman, 2010). EID serves as a mechanism to align corporate behavior with the expectations of regulators, investors, customers, and the public. By providing timely and verifiable environmental information, companies can strengthen their relationships with these stakeholders, which in turn facilitates the adoption of sustainable innovation strategies (Surroca et al., 2010; Du & Yu, 2021). The resource-based view adds another layer by highlighting the importance of valuable, rare, and inimitable resources in sustaining competitive advantage (Wernerfelt, 1984). High-quality EID can serve as a channel through which firms attract these resources, including green finance, policy support, and reputational capital. Lu & Li (2023) provide evidence that EID helps firms reduce financing constraints and enhances innovation outcomes. Their study shows that companies with stronger environmental disclosure performance, particularly those undergoing digital transformation, exhibit significantly higher levels of green patenting.

In addition to the content of disclosure, recent research has examined the tone and structure of EID. Hu et al. (2024) emphasize that the sentiment embedded in environmental disclosure, particularly the use of positive tone, plays a critical role in influencing stakeholder expectations and resource allocation. Their study finds that a net positive tone, along with tone dispersion (how sentiment is distributed throughout the report), enhances the signaling power of EID and has a significant positive impact on green innovation. The effect is especially strong under the presence of institutional pressures such as government supervision and media attention. These findings are supported by other studies in China, where mechanisms like the Pollution Information Transparency Index (PITI) have been shown to foster green innovation through increased disclosure quality and institutional engagement (Xiang et al., 2020; Zhang et al., 2022). Detailed and readable EID helps reduce uncertainty around innovation investments, lowers the cost of external financing, and increases firms' capacity to implement environmentally friendly technologies (Luo et al., 2019; Liu et al., 2023). Furthermore, optimistic disclosures are more likely to mobilize stakeholder support and signal confidence in future environmental performance (Arena et al., 2015).

While these results are compelling, most of the current evidence stems from China, where environmental regulations and disclosure mechanisms are relatively well established. In contrast, Vietnam represents an emerging market context where EID is still evolving. Although the Ministry of Finance issued Circular No. 96/2020/TT-BTC, requiring listed companies to disclose ESG information (including environmental metrics), the actual implementation remains fragmented and lacks a unified enforcement framework. This regulatory gap raises important questions about the effectiveness of EID as a driver of green innovation in Vietnam. Addressing this gap, the study seeks to explore the relationship between EID and green innovation among Vietnamese listed companies. Building on established theoretical

frameworks and recent empirical insights, we propose the following hypothesis:

Hypothesis 1: Environmental Information Disclosure (EID) is positively associated with green innovation in Vietnamese listed companies.

3. Research methodology

3.1. Data and sampling

This study uses panel data from firms listed on the Hanoi Stock Exchange (HNX) and Ho Chi Minh City Stock Exchange (HOSE) during the period 2009-2023. To ensure relevance to environmental activities, firms in banking, finance, and other non-manufacturing sectors are excluded. Companies without accessible or complete annual reports are also removed. The final sample includes 531 listed firms, generating 7,965 firm-year observations, and provides a solid basis to examine the relationship between environmental information disclosure and green innovation in the Vietnamese context.

3.2. Empirical model and research method

To examine the influence of environmental information disclosure on green innovation among Vietnamese listed companies, this study employs a quantitative panel data regression approach. The empirical model (1) is specified as follows:

$$(1)\quad GI_{it} = \alpha_0 + \alpha_1 EID_{i,t-1} + \alpha_2 SIZE_{i,t-1} + \alpha_3 LEV_{i,t-1} + \alpha_4 LIQ_{i,t-1} + \alpha_5 AGE_{i,t-1} + \alpha_6 BIG4_{i,t-1} + \alpha_7 CAPEX_{i,t-1} + \alpha_8 MTB_{i,t-1} + \varepsilon_{it}$$

In this equation, GI_{it} represents the level of green innovation for firm *i* in year *t*. The variable of interest, $EID_{i,t-1}$, measures the quality or intensity of environmental information disclosure, lagged by one year to address potential endogeneity and temporal causality. A positive and statistically significant coefficient α_1 would suggest that firms disclosing more environmental information are more likely to engage in green innovation in subsequent periods.

The model incorporates several firm-level control variables commonly used in the environmental disclosure literature. Firm size ($SIZE_{i,t-1}$) is proxied by the natural logarithm of total assets, while financial leverage ($LEV_{i,t-1}$) is captured by the debt-to-asset ratio. Liquidity ($LIQ_{i,t-1}$) is measured by the current ratio, and firm age ($AGE_{i,t-1}$) is the logarithm of the number of years since incorporation. Audit quality ($BIG4_{i,t-1}$) is a binary variable equal to 1 if the firm is audited by one of the Big 4 audit firms (PwC, Deloitte, EY, or KPMG), and 0 otherwise. Capital expenditure ($CAPEX_{i,t-1}$) is measured as the ratio of capital investment to total assets. Market-to-book value ($MTB_{i,t-1}$) is used to capture growth opportunities and market valuation relative to book equity.

All explanatory variables are lagged by one period to mitigate potential reverse causality and reduce simultaneity bias. The model is estimated using the Pooled Ordinary Least Squares (OLS) method, with year and industry fixed effects included to control for time-specific shocks and sectoral heterogeneity, respectively. This estimation approach provides a robust framework for assessing whether environmental transparency leads to higher levels of green innovation, particularly within the context of an emerging market like Vietnam, where disclosure practices are still evolving.

In addition, the two key variables of interest: green innovation and environmental information disclosure, are measured using content analysis of corporate reports to adapt to the Vietnamese context.

**** Green Innovation (GI)***

The green innovation index in this study is constructed by averaging firm-level scores across 25 predetermined indicators, following the methodology adapted from Hong et al. (2024). These indicators span four core dimensions of environmentally oriented innovation: green products, green processes, green marketing, and green R&D investment. Data are manually extracted from publicly available sources such as firms' annual reports and official press releases. Each indicator is assessed using a binary scoring system: a value of 1 is assigned if the firm discloses relevant qualitative information, and 0 if no such disclosure is found. The final GI score for each firm-year reflects the extent of green innovation activities disclosed and ranges from 0 to 1.

**** Environmental Information Disclosure (EID)***

Environmental information disclosure (EID) is assessed using a scoring system based on content analysis of annual reports and sustainability disclosures. This framework builds on the GRI 300 series and is aligned with Appendix IV of Circular No. 96/2020/TT-BTC issued by the Vietnamese Ministry of Finance. The EID score comprises 12 disclosure criteria grouped into six main environmental dimensions: materials, emissions, waste, energy, water, and environmental compliance. Each criterion is evaluated as either disclosed (scored 1) or not disclosed (scored 0). The overall EID index for each firm-year is calculated as the average of the 12 binary indicators, resulting in a continuous variable ranging from 0 to 1 that reflects the extent and quality of environmental reporting. The data for EID are manually collected from firm annual reports, ESG reports, and other publicly available disclosures.

4. Findings and discussion

Table 1 presents the descriptive statistics for all variables in the model (1), used in the model examining the relationship between environmental information disclosure (EID) and green innovation (GI) among 7,965 firm-year observations.

Table 1: Descriptive Statistics of all variables in Eq.(1)

Variable	Obs	Mean	Std. Dev.	Min	Max
GI	7965	0.163	0.369	0	1
EID	7965	0.074	0.137	0	0.667
SIZE	7965	11.791	0.696	9.109	14.274
LEV	7965	0.213	0.194	0.001	0.890
LIQ	7965	2.399	3.747	0.002	68.080
AGE	7965	1.323	0.320	0	2.127
BIG4	7965	0.231	0.422	0	1
ROA	7965	0.070	0.085	-0.625	0.839
CAPEX	7965	0.053	0.078	0	0.863
MTB	7965	1.345	1.521	-9.450	38.660

Source: Authors calculated from Stata 16

The dependent variable GI has a mean of 0.163, indicating that about 16.3% of firms engage in green innovation activities, with considerable variation across the sample. The key independent variable EID has a mean of 0.074 and ranges up to 0.667, suggesting that while most firms disclose a relatively low level of environmental information, a few demonstrate significantly higher disclosure intensity. This variation allows for an effective assessment of EID's potential influence on green innovation. The control variables reflect diverse firm characteristics. On average, firms are of moderate size and age, with varied levels of leverage, liquidity, and capital expenditure. About 23.1% are audited by Big 4 firms, and profitability (ROA) shows wide dispersion. These variables are included to account for differences in firm structure, financial health, and external credibility that may influence green innovation outcomes.

Next, table 2 presents the correlation matrix among all variables in the model (1), with green innovation (GI) as the dependent variable and environmental information disclosure (EID) as the main independent variable.

Table 2: Correlation matrix among variables in Eq.(1)

	GI	EID	SIZE	LEV	LIQ	AGE	BIG4	ROA	CAPEX	MTB
GI	1.000									
EID	0.138	1.000								
SIZE	-0.051	0.144	1.000							
LEV	-0.074	-0.011	0.405	1.000						
LIQ	0.023	0.076	-0.185	-0.298	1.000					
AGE	0.035	0.232	0.139	0.059	0.004	1.000				
BIG4	0.065	0.051	0.451	0.083	-0.054	0.051	1.000			
ROA	-0.035	-0.027	-0.018	-0.001	0.003	0.028	-0.029	1.000		
CAPEX	-0.011	0.004	0.004	0.016	0.014	0.006	0.016	0.150	1.000	
MTB	-0.014	-0.006	-0.041	0.002	-0.003	0.003	-0.020	0.321	0.091	1.000

Source: Authors calculated from Stata 16

The correlation between GI and EID is 0.138, indicating a weak but positive relationship. This result provides initial support for the hypothesis that firms with higher levels of environmental disclosure are more likely to engage in green innovation activities. Although the correlation is not strong, it is in the expected direction and justifies further investigation through regression analysis. Regarding the control variables, their correlations with GI are generally low, suggesting weak direct linear associations. Importantly, the correlations among EID and the control variables are also modest, with the highest being 0.451 between SIZE and BIG4. All other correlations are well below commonly accepted multicollinearity thresholds 0.5, indicating that multicollinearity is not a serious concern in the model.

Finally, the study employed the OLS method for Model (1) to explore the impact of Environmental Information Disclosure (EID) on green innovation among Vietnamese listed companies during the period 2009-2023. The regression results are shown in Table 3 below.

Table 3: Regression results on the impact of environmental information disclosure on green innovation in Vietnamese listed companies from 2009 to 2023

Variables	Coefficient	t-statistics
EID	0.357***	11.5
SIZE	-0.003***	-1.58
LEV	-0.140***	-6.13
LIQ	-0.0004	-0.38
AGE	0.014	1.08
BIG4	0.060***	6.11
ROA	-0.125**	-2.44
CAPEX	-0.036	-0.64
MTB	-0.0007	-0.23
Constant	0.181***	7.79
Number of observations	7965	7965
R^2	0.172	

Source: Authors calculated from Stata 16

As can be seen from Table 3, the model (1) explains approximately 17.2% of the variation in green innovation ($R^2 = 0.172$), which is a reasonable explanatory power for firm-level panel data in sustainability research. Most notably, the coefficient for EID is 0.357 and is statistically significant at the 1% level (t = 11.5), indicating a strong and positive relationship between EID and green innovation. This suggests that companies with better environmental disclosure practices are more likely to implement environmentally innovative activities. Other significant variables include SIZE, LEV, ROA which have negative coefficients (-0.003; -0.140; 0.125), and BIG4, which has a positive impact (0.060, t = 6.11).

These findings indicate that larger size, higher financial leverage and profitability discourage green innovation, while companies audited by major international firms tend to engage more in sustainable innovation.

These results provide strong support for Hypothesis 1, which proposed a positive association between EID and green innovation. The significant and positive impact of EID confirms that transparency in environmental matters plays a key role in driving green innovation initiatives within Vietnamese firms. This relationship is in line with several empirical studies, such as those by Lu and Li (2023), who found that high levels of environmental disclosure, especially in digitally transforming firms, enhance green patenting. The findings are also consistent with Hu et al. (2024), who highlight the role of tone and readability in environmental disclosure as influential factors in securing stakeholder support for innovation.

In the Vietnamese context, where regulatory enforcement on environmental disclosure remains inconsistent, the strong positive effect of EID on green innovation highlights the strategic role of voluntary transparency. Rather than responding passively to weak regulations, many firms appear to treat EID as a proactive tool to build trust, attract resources, and differentiate themselves in an increasingly sustainability-conscious market. This behavior reflects an adaptive application of signaling and stakeholder theories, where disclosure is less about compliance and more about securing informal legitimacy and long-term benefits. The findings suggest that in emerging markets like Vietnam, where institutional frameworks are still developing, firms can still leverage disclosure to overcome uncertainty and resource constraints commonly associated with green innovation. This not only validates the broader relevance of international theories but also emphasizes the importance of fostering voluntary, market-driven sustainability practices alongside formal policy reforms.

5. Conclusion and Recommendations

This study investigates the relationship between Environmental Information Disclosure (EID) and green innovation among Vietnamese listed companies from 2009 to 2023. Using the OLS regression method, the findings reveal a statistically significant and positive impact of EID on green innovation, suggesting that environmental transparency serves as a strategic asset that enhances firms' innovation capacity. Despite the relatively underdeveloped regulatory environment in Vietnam, the results show that firms that voluntarily engage in environmental disclosure are more likely to pursue sustainable innovation practices. These findings validate the relevance of signaling theory, stakeholder theory, and the resource-based view in an emerging market context.

Based on the study's findings, several practical recommendations are proposed to support the development of green innovation through environmental disclosure in Vietnam. Firms should recognize environmental information disclosure as a strategic channel to support green innovation, not merely a reporting obligation. By enhancing the transparency, relevance, and usability of their disclosures, companies can improve stakeholder engagement, access to funding, and competitiveness in sustainability-driven markets. Rather than focusing solely on meeting minimum regulatory requirements, firms are encouraged to invest in the quality and credibility of their disclosures, including third-party assurance and stakeholder-targeted communication. At the same time, policymakers should prioritize not only expanding ESG disclosure requirements but also improving enforcement and institutional support. This may include developing standardized reporting guidelines, incorporating ESG performance into regulatory assessments, and offering technical assistance to firms, particularly in less regulated sectors.

However, this study has certain limitations. It focuses solely on listed companies, which may not represent the broader business landscape in Vietnam, particularly smaller or unlisted firms. Additionally, green innovation is measured using a scoring method based on disclosed content, which may not fully capture the depth or quality of firms' actual innovation activities. Future research could adopt broader samples and more diverse indicators to enhance the robustness of findings.

References:

Arena, C., Bozzolan, S., & Michelon, G. (2015). Environmental reporting: Transparency to stakeholders or stakeholder manipulation? An analysis of disclosure tone and the role of the board of directors. Corporate Social Responsibility and Environmental Management, 22(6), 346-361. https://doi.org/10.1002/csr.1350.

Ding, J., Lu, Z., & Yu, C. H. (2022). Environmental information disclosure and firms' green innovation: Evidence from China. International Review of Economics & Finance, 81, 147-159. https://doi.org/10.1016/j.iref.2022.05.007.

Du, S., & Yu, K. (2021). Do corporate social responsibility reports convey value relevant information? Evidence from report readability and tone. Journal of Business Ethics, 172(2), 253-274. https://doi.org/10.1007/s10551-020-04496-3.

Freeman, R. E. (2010). Strategic management: A stakeholder approach. Cambridge university press.

Hu, S., Zhang, C., Ji, Y., & Zhang, C. (2024). Does environmental information disclosure tone affect corporate green innovation in China? Based on the institutional perspective. Environment, Development and Sustainability, 26(5), 12239-12282. https://doi.org/10.1007/s10668-023-03782-0.

Liu, J. Y., Zhang, Y. J., & Cho, C. H. (2023). Corporate environmental information disclosure and green innovation: The moderating effect of CEO visibility. Corporate Social Responsibility and Environmental Management, 30(6), 3020-3042. https://doi.org/10.1002/csr.2535.

Lu, Z., & Li, H. (2023). Does environmental information disclosure affect green innovation?. Economic Analysis and Policy, 80, 47-59. https://doi.org/10.1016/j.eap.2023.07.011.

Luo, W., Guo, X., Zhong, S., et al. (2019). Environmental information disclosure quality, media attention and debt financing costs: Evidence from Chinese heavy polluting listed companies. Journal of Cleaner Production, 231, 268-277. https://doi.org/10.1016/j.jclepro.2019.05.237.

Spense, M. (1973). Job market signaling. Quarterly Journal of Economics, 87(3), 355-374. https://doi.org/10.2307/1882010.

Surroca, J., Tribó, J. A., & Waddock, S. (2010). Corporate responsibility and financial performance: The role of intangible resources. Strategic management journal, 31(5), 463-490. https://doi.org/10.1002/smj.820.

Wernerfelt, B. (1984). A resource-based view of the firm. Strategic Management Journal, 5(2), 171-180. https://doi.org/10.1002/smj.4250050207.

Xiang, X., Liu, C., Yang, M., et al. (2020). Confession or justification: The effects of environmental disclosure on corporate green innovation in China. Corporate Social Responsibility and Environmental Management, 27(6), 2735-2750. https://doi.org/10.1002/csr.1998.

Zhang, J., Lei, X., Su, T., et al. (2022). The effect of a list: How firms on key pollution supervisory list disclose environmental information? Finance Research Letters, 47, 102614. https://doi.org/10.1016/j.frl.2021.102614.

CAPITAL STRUCTURE AND FIRM PERFORMANCE: EVIDENCE FROM THE RETAIL INDUSTRY OF VIETNAM

PhD. Nguyen Huu Tan* - Vu Thi Ha Uyen**

Abstract: ***This study examines the impact of capital structure on firm performance in the Vietnamese retail industry using panel data from listed firms from 2018 to 2024. By employing fixed-effects (FE), random-effects (RE), and feasible generalized least squares (FGLS) models, the analysis investigates the relationship between total debt (TTD), short-term debt ratio (SD), long-term debt ratio (LTD), asset turnover (TURN), firm size (SIZE), and growth rate (GROWTH) with profitability, measured by Return on Equity (ROE). The findings indicate that while total debt exhibits a positive but insignificant effect on profitability, both short-term and long-term debt negatively impact ROE, highlighting the challenges of debt financing in the retail sector. Additionally, growth rate positively influences firm performance, suggesting that expansion strategies contribute to profitability. The study contributes to the literature on capital structure in emerging markets and provides practical implications for managers, policymakers, and investors. Retail firms should adopt conservative debt policies, focus on operational efficiency, and leverage growth opportunities to enhance financial performance.***

• Keywords: *capital structure, firm performance, retail industry, vietnam, panel data, debt financing.*

Date of receipt: 20th Dec., 2024
Date of receipt revision: 10th Feb., 2025
Date of delivery revision: 23th Dec., 2024
Date of approval: 28th Mar, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.20

1. Introduction

In recent years, the retail industry in Vietnam has experienced remarkable growth, driven by rapid economic development, rising consumer purchasing power, and increasing urbanization. As one of the most dynamic sectors in the Vietnamese economy, retail businesses play a critical role in job creation, domestic consumption, and overall economic growth. However, operating in a highly competitive environment characterized by thin profit margins and volatile consumer demand poses significant challenges for firms in this sector. To sustain growth and enhance competitiveness, retail enterprises must carefully manage their financial resources, particularly their capital structure.

Capital structure, defined as the mix of debt and equity financing used to fund a firm's operations, is a key determinant of financial performance. The optimal balance between debt and equity can help firms minimize costs, maximize returns, and maintain financial stability. However, excessive reliance on debt may lead to financial distress, while over-reliance on equity could dilute ownership and reduce shareholder value. For retail firms in Vietnam, which often face liquidity constraints and seasonal fluctuations in revenue, determining the appropriate capital structure is particularly crucial.

Despite the growing importance of the retail sector in Vietnam, there remains a lack of empirical research examining the relationship between capital structure and firm performance within this context. Most existing studies focus on broader industries or are conducted in developed economies, where market conditions and institutional frameworks differ significantly from those in Vietnam. This gap in the literature highlights the need for a more localized investigation into how capital structure decisions impact the financial performance of retail firms in Vietnam.

This study aims to address this gap by analyzing the effect of capital structure on firm performance in the Vietnamese retail industry. Using panel data from retail firms over the period 2018 - 2024, we examine how various components of capital structure influence Return on Equity, a widely used measure of profitability. By employing both fixed-effects (FE) and random-effects (RE) models, we seek to provide robust insights into the dynamics of capital structure and its implications for retail firms in Vietnam.

The remainder of this paper is structured as follows: Section 2 provides a review of relevant literature and develops the research hypotheses. Section 3 outlines the methodology, including data collection and model specification. Section 4 presents the empirical results and discusses their implications. Finally, Section 5 concludes the study with key findings and recommendations for future research.

2. Literature review and research hypothesis

2.1. Literature review

The relationship between capital structure and firm performance has been a central topic in corporate

** Academy of Finance; email: nguyenhuutan@hvtc.edu.vn*

finance research for decades. This section reviews key theoretical frameworks and empirical studies that have explored this relationship, with a focus on their relevance to the retail industry in Vietnam.

Global evidence on capital structure and firm performance

Empirical research conducted across various global markets has underscored the pivotal role that capital structure plays in influencing firm performance. Studies from North America, Europe, and emerging markets reveal that the combination of debt and equity financing directly affects a firm's profitability, risk profile, and long-term sustainability. Early theoretical contributions, such as those by Modigliani and Miller (1958), laid the foundation for understanding that in perfect markets, financing decisions do not affect firm value. However, as researchers began to account for real-world factors such as taxes, bankruptcy costs, and agency issues, a substantial body of evidence emerged demonstrating that the choice and balance between debt and equity can have significant financial implications.

This global body of research highlights the complexity of the relationship between capital structure and firm performance. Studies have found that while moderate levels of debt can lead to improvements in profitability - mainly through tax advantages and a lower weighted average cost of capital (WACC) - excessive leverage may impose considerable financial risk. The evidence suggests that an optimal mix exists where the benefits of debt financing are maximized without exposing the firm to the heightened risk of financial distress. Such findings provide a robust context for analyzing the nuanced trade-offs inherent in capital structure decisions.

Moderation of debt levels and financial performance

A considerable portion of the literature focuses on the positive aspects of moderate debt utilization. Researchers have demonstrated that debt financing, when employed judiciously, provides a valuable tax shield because interest expenses are tax deductible. This advantage helps reduce the overall cost of capital and, in many cases, enhances Return on Equity (ROE). Empirical investigations from well-developed markets, such as those by Frank and Goyal (2003), have shown that firms with a balanced approach to debt financing typically outperform their over-leveraged counterparts.

However, the relationship between debt and performance is not linear. Several studies suggest a U-shaped or non-linear pattern where the initial benefits of increased leverage eventually plateau and may even reverse if the firm becomes too reliant on debt. This non-linearity implies that while moderate debt can drive growth and operational efficiency, excessive reliance on debt increases the risk of liquidity problems and financial distress. In turn, this can lead to higher borrowing costs and decreased financial flexibility, ultimately offsetting the initial performance benefits.

Differential impacts of short-term and long-term debt

The literature also makes an important distinction between short-term and long-term debt, recognizing that each type affects firm performance in different ways. Short-term debt is often utilized for managing day-to-day operational needs, such as inventory financing and covering working capital requirements. While this form of financing can provide the necessary liquidity and flexibility, it is also associated with significant risks. Studies have consistently shown that an over-reliance on short-term borrowings can lead to heightened liquidity risks and increased refinancing pressures, especially during periods of economic uncertainty. This vulnerability can lead to volatility in earnings and reduced overall performance.

In contrast, long-term debt is typically used to finance capital investments and strategic expansions. Although long-term debt offers the advantage of spreading repayment obligations over an extended period, thereby reducing immediate financial strain, it often comes with higher interest rates and stricter covenants. Empirical evidence from cross-country analyses, including research by Rajan and Zingales (1995), suggests that the heavier interest burden associated with long-term debt can constrain a firm's cash flow. This constraint is particularly problematic during revenue fluctuations, as the fixed cost of servicing long-term debt may erode net income and diminish firm profitability.

Equity financing and the pecking order theory

Complementing the findings on debt financing, extensive research has also investigated the role of equity financing within the capital structure. According to the pecking order theory developed by Myers and Majluf (1984), firms prefer internal financing over external sources due to concerns over information asymmetry and the potential negative signals associated with external equity issuance. This theory suggests that when firms must seek external funding, they tend to choose debt financing over issuing new equity in order to avoid diluting existing ownership and to mitigate adverse market perceptions.

Global evidence supports this notion, showing that many firms across diverse markets maintain a conservative equity base, opting instead to utilize internal funds or take on debt. This behavior is particularly evident in industries where market conditions or regulatory environments make equity financing more costly or less accessible. The preference for debt, however, is tempered by the need to manage the inherent risks associated with excessive borrowing.

Thus, maintaining an optimal balance between internal funds, debt, and equity is critical for sustaining firm performance and achieving long-term growth.

2.2. Research hypothesis

Building on the global empirical evidence, the following hypotheses are proposed to further investigate the impact of capital structure on firm performance in the retail industry:

Hypothesis 1: Total Debt has a positive impact on firm performance.

Moderate levels of debt financing can enhance profitability by providing tax shields and reducing the cost of capital.

Hypothesis 2: Short-Term Debt Ratio has a negative impact on firm performance.

Over-reliance on short-term debt increases liquidity risk and refinancing pressure, leading to reduced operational flexibility and lower profitability.

Hypothesis 3: Long-Term Debt Ratio has a negative impact on firm performance.

Although long-term debt can offer financial stability, its higher interest costs may erode net income and thus negatively affect firm performance.

3. Research methodology

3.1. Research design

The study employs a quantitative research approach using panel data analysis. Panel data combines cross-sectional and time-series dimensions, allowing for a more comprehensive understanding of the dynamics between capital structure and firm performance. The dataset includes financial information from retail firms in Vietnam over the period 2018 - 2024.

3.2. Variables and measurement

Table 1 presents the variables employed in the econometric models, including their measurement formulas and references to prior research. The dependent variable, ROE, is a widely accepted measure of firm performance, while the independent variables capture different aspects of capital structure and operational efficiency. The ratios for total, short-term, and long-term debt help differentiate the impacts of overall leverage, short-term financing, and long-term borrowing on firm performance. Control variables such as asset turnover, firm size, and revenue growth further enhance the model's explanatory power by accounting for operational efficiency, scale, and growth potential.

Table 1. Variables in the models

Variable	Calculation/Definition	Previous Research / Source
ROE	Net Income / Shareholders' Equity	Frank & Goyal (2003); Rajan & Zingales (1995)
TTD	Total Debt / Total Assets	Modigliani & Miller (1958); Trade-off Theory
SD	Short-Term Debt / Total Assets	Various empirical studies on liquidity risk and capital structure
LTD	Long-Term Debt / Total Assets	Rajan & Zingales (1995); studies on long-term borrowing impacts
TURN	Sales / Total Assets	Ohlson (1980); literature on asset efficiency
SIZE	Natural Logarithm of Total Assets	Titman & Wessels (1988); standard measure in capital structure research
GROWTH	Annual Revenue Growth Rate	Rajan & Zingales (1998); studies on growth opportunities

Source: Authors' synthesis

3.3. Research models

To analyze the impact of capital structure on firm performance, two panel data regression models are employed: the Fixed Effects (FE) model and the Random Effects (RE) model . These models account for unobserved heterogeneity across firms and time periods. The general form of the regression model is as follows:

$$ROE_{it} = \beta_0 + \beta_1 TTD_{it} + \beta_2 SD_{it} + \beta_3 LTD_{it} + \beta_4 TURN_{it} + \beta_5 SIZE_{it} + \beta_6 GROWTH_{it} + \epsilon_{it}$$

Where:

i represents the firm,

t represents the time period,

β_0 is the intercept,

β_1, β_2, …, β_6 are the coefficients of the independent variables,

ϵ_{it} is the error term.

4. Research results

4.1. Descriptive statistic

Table 2. Descriptive statistics of variables in the model

Variables	Mean	Std. Dev.	Min	Max
ROE	.178275	.1182809	-.1747	.4527
TTD	.5534429	.1675575	.2239	.8688
SD	.5002202	.1796553	.1209	.8687
LTD	.0782262	.1136963	0	.4478
TURN	3.120481	2.184233	.2155	9.4113
SIZE	16.23145	4.052027	12.5922	28.9278
GROWTH	.1341214	.3041786	-.4758	1.0672

Source: Authors' calculations

Table 2 presents the descriptive statistics for the key variables used in this study. These statistics offer an overview of the central tendencies, dispersion, and range of the data, which provides insight into the variability and distribution of the sample.

The dependent variable, Return on Equity (ROE), exhibits a mean value of 0.1783, indicating an average profitability of approximately 17.83% relative to shareholders' equity. However, ROE values range from -0.1747 to 0.4527, suggesting significant variability among firms in terms of performance.

The Total Debt (TTD) ratio has a mean of 0.5534, implying that, on average, about 55.34% of a firm's assets are financed by debt. The TTD values range from 22.39% to 86.88%, reflecting a wide dispersion in firms' overall leverage. Similarly, the Short-Term Debt (SD) ratio shows a mean of 0.5002 with a comparable

range, indicating that a substantial portion of firms rely on short-term financing.

In contrast, the Long-Term Debt (LTD) ratio has a much lower mean of 0.0782, which suggests that only a small proportion of the total debt is in the form of long-term borrowings. This lower reliance on long-term debt might indicate firms' preference for short-term financing or challenges in accessing long-term credit markets.

4.2. Correlation analysis

Table 3 shows that all correlation coefficients among the variables are below 0.8. This indicates that there is no significant multicollinearity among the independent variables.

Table 3. Pearson correlation coefficients among the variables in the model

	ROE	TTD	SD	LTD	TURN	SIZE	GROWTH
ROE	1.0000						
TTD	0.0455	1.0000					
SD	0.0858	0.7580	1.0000				
LTD	-0.2302	-0.0988	-0.5922	1.0000			
TURN	-0.1684	0.2027	0.2755	-0.4048	1.0000		
SIZE	-0.0187	0.3123	0.1960	-0.0210	-0.1897	1.0000	
GROWTH	0.2274	0.2095	0.1882	-0.1092	0.2271	0.0665	1.0000

Source: Authors' calculations

4.3. Regression results

In table 4, the Hausman test yields a p-value of 0.0184, which is below the conventional 5% threshold. This result indicates that the Fixed Effects model is preferable to the Random Effects model since the individual effects are correlated with the regressors.

However, diagnostic tests reveal some issues with the FE estimates. The Modified Wald test reports a p-value of 0.0000, signaling the presence of heteroskedasticity in the FE model. Additionally, the Wooldridge test for autocorrelation returns a p-value of 0.0306, indicating that autocorrelation is also a concern. In contrast, the Variance Inflation Factor (VIF) is 3.24, which is well below the typical cutoff of 10, suggesting that multicollinearity is not a serious issue among the explanatory variables.

Table 4. Regression results

ROE	FE	RE	FGLS
TTD	.4188027***	.4076535**	.3936774*
SD	-.2805562***	-.4370569**	-.4972113*
LTD	-.6033344**	-.7538507*	-.7450536*
TURN	.0256555	-.0247688*	-.0227896*
SIZE	-.0420157	-.0056867	-.0047203
GROWTH	.026513*	.1070004*	.0972898*
const	.7323907	.3854997*	.3978105*
Hausman Test	Prob>chi2 = 0.0184		
Modified Wald test	Prob>chi2 = 0.0000		
Wooldridge test	Prob > F = 0.0306		
VIF	3.24		

Source: Authors' calculations

*Note: *, **, and *** represent significance levels at 1%, 5%, and 10%, respectively.*

The regression results from the FGLS model in table 4 provide important insights into how capital structure affects firm performance in Vietnam's retail industry. Given the rapid expansion of modern retail chains, e-commerce platforms, and omnichannel strategies, understanding the financial dynamics behind profitability is crucial. The findings suggest that different forms of debt, operational efficiency, firm size, and growth rates all play a role in shaping the return on equity (ROE) of retail firms.

The analysis shows that total debt (TTD) has a positive and significant impact on ROE. This suggests that Vietnamese retail firms benefit from financial leverage, as debt financing allows them to expand store networks, invest in logistics, and enhance digital capabilities. The positive effect may also be linked to the tax shield advantage, where interest expenses reduce taxable income, thereby increasing net profitability. However, retail firms must manage debt levels carefully, as excessive borrowing could lead to financial distress, especially in times of economic downturn or declining consumer demand.

In contrast, short-term debt (SD) and long-term debt (LTD) have a strong negative relationship with ROE. This finding highlights the risks associated with high debt dependency in Vietnam's retail industry. Short-term debt often involves high-interest rates and frequent refinancing, which can create cash flow instability, particularly for firms with thin profit margins. Many Vietnamese retailers operate in a highly competitive market where price wars and promotional campaigns reduce profitability, making it difficult to service short-term liabilities.

For long-term debt, the negative impact suggests that excessive reliance on long-term loans may not be an efficient financing strategy for Vietnamese retailers. Many firms in this sector prioritize quick expansion but may struggle with long payback periods on large investments in new stores, warehouses, and technology. The low-margin nature of retailing means that the cost of long-term borrowing can outweigh the financial benefits if revenue growth does not keep pace.

While total debt positively impacts ROE, the composition of debt matters. Short-term and long-term debt carry different risks: short-term debt increases liquidity pressure, while long-term debt can lead to inefficient capital allocation. This suggests that Vietnamese retailers benefit from leveraging debt but need to maintain an optimal debt structure to avoid financial strain.

Interestingly, asset turnover (TURN) is negatively associated with ROE. In theory, higher asset turnover should indicate greater operational efficiency, leading to improved profitability. However, in the Vietnamese retail industry, this may reflect the growing dominance of low-margin, high-volume business models. Supermarkets, convenience stores, and online platforms prioritize rapid inventory turnover and aggressive discounting strategies, which can erode profitability

despite strong sales performance. Additionally, large-scale promotions and price competition in Vietnam's retail market may drive revenue but fail to translate into higher returns for shareholders.

A key finding is that growth rate (GROWTH) significantly improves ROE. This aligns with the current trends in Vietnam's retail sector, where firms that focus on expansion, technology adoption, and customer experience tend to outperform competitors. High-growth companies, such as those investing in e-commerce, digital payments, and data-driven marketing, are able to capture a larger share of Vietnam's rapidly growing consumer market. The strong relationship between growth and profitability reinforces the importance of continuous investment in new retail formats, omnichannel strategies, and personalized shopping experiences.

Firm size appears to have an insignificant impact on ROE, suggesting that being larger does not necessarily lead to higher profitability in Vietnam's retail industry. While large retail chains benefit from economies of scale, bulk purchasing power, and brand recognition, they also face challenges such as high operating costs, complex supply chain management, and increased competition from online retailers. The rise of digital transformation has also blurred the lines between small and large retailers, allowing even smaller firms to compete effectively through e-commerce and social media-driven sales.

5. Conclusion

5.1. Summary of key findings

This study examines the impact of capital structure on firm performance in the Vietnamese retail industry using panel data from 12 firms over the period 2018 – 2024. The analysis employs both fixed-effects (FE) and random-effects (RE) models to assess the relationship between total debt (TTD), short-term debt ratio (SD), long-term debt ratio (LTD), asset turnover (TURN), firm size (SIZE), and growth rate (GROWTH) with profitability, measured by Return on Equity (ROE).

The results reveal several key insights. Total debt (TTD) has a positive but statistically insignificant effect on ROE, suggesting that moderate leverage does not significantly enhance profitability. Short-term debt (SD) negatively affects ROE, highlighting that reliance on short-term financing may harm profitability due to increased financial costs and liquidity constraints. Similarly, long-term debt (LTD) shows a strong negative impact on ROE, indicating potential inefficiencies and high costs associated with long-term borrowing in the retail sector.

Asset turnover (TURN) negatively influences ROE, suggesting that higher operational efficiency does not necessarily translate into improved profitability. Firm size (SIZE) has a negative but insignificant impact, implying that larger firms do not necessarily outperform smaller ones in terms of profitability. In contrast, growth rate (GROWTH) positively affects ROE, emphasizing the importance of pursuing expansion strategies to enhance financial performance.

5.2. Contributions to theory and practice

This study contributes to the academic literature by providing empirical evidence on the relationship between capital structure and firm performance in the under-researched context of the Vietnamese retail industry. The findings highlight the unique challenges faced by retail firms in emerging markets, such as limited access to long-term financing and intense competition. The results align with both the trade-off theory and pecking order theory, reinforcing the need for firms to balance debt and equity financing carefully.

From a practical standpoint, the findings offer valuable insights for managers and policymakers. Retail firms in Vietnam should adopt conservative leverage policies to avoid excessive debt, which can lead to financial distress. Additionally, improving operational efficiency and implementing sustainable growth strategies can help firms enhance profitability and competitiveness in a dynamic market environment.

5.3. Limitations and future research directions

While this study provides important insights, certain limitations should be acknowledged. First, the sample size may limit the generalizability of the findings. Future research could expand the dataset to include a larger sample or a longer time period to enhance robustness. Second, this study focuses solely on the retail industry in Vietnam, which may differ from other industries or markets. Comparative studies across sectors or countries could offer broader insights.

Future research could also explore additional aspects of capital structure, such as the role of equity financing, hybrid instruments, and non-financial factors like corporate governance and macroeconomic conditions. Incorporating qualitative methods, such as interviews with managers, could provide deeper insights into the strategic decision-making processes behind capital structure choices.

References:

Brealey, R. A., Myers, S. C., & Allen, F. (2020). Principles of Corporate Finance (13th ed.). McGraw-Hill Education.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance, and the theory of investment. The American Economic Review, 48(3), 261–297.

Myers, S. C. (1984). The capital structure puzzle. The Journal of Finance, 39(3), 575–592.

Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. The Journal of Finance, 50(5), 1421–1460.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. The Journal of Finance, 43(1), 1–19.

Harris, M., & Raviv, A. (1991). The theory of capital structure. The Journal of Finance, 46(1), 297–355.

Nguyen, T. D., & Ramachandran, N. (2006). Capital structure in small and medium-sized enterprises: The case of Vietnam. ASEAN Economic Bulletin, 23(2), 192–211.

Vo, X. V. (2017). Determinants of capital structure in emerging markets: Evidence from Vietnam. Research in International Business and Finance, 40, 105–113.

Vietnam General Statistics Office. (2023). Vietnam Retail Market Report 2023. Hanoi: GSO.

World Bank. (2023). Vietnam Economic Update: Retail Sector Growth and Challenges. Retrieved from www.worldbank.org

Tan, N. H. (2021). FACTORS AFFECTING CORPORATE LIQUIDITY: EVIDENCE FROM STEEL LISTED COMPANIES IN VIETNAM. Academy of Accounting and Financial Studies Journal, 25, 1-7.

ENHANCING STATE MANAGEMENT OF INSURANCE AGENCY ACTIVITIES OF COMMERCIAL BANKS

PhD. La Thi Lam*

Abstract: ***Under current legal regulations, insurance agency activities are permitted for Vietnamese commercial banks. These activities not only diversify business operations to mitigate risks but also significantly contribute to increasing banks' income, particularly during the COVID-19 pandemic, which led to a decline in income from credit operations. To facilitate this, the legal system and the inspection and supervision work of state management agencies have been continuously improved. However, issues such as dishonest consultation and coercing customers into buying insurance, which have arisen recently from the insurance agency activities of Vietnamese commercial banks, reveal gaps in state management efforts. This reality necessitates further enhancement of state management for these activities to increase profit opportunities for commercial banks while maintaining risk control and operational safety.***

• Keywords: *state management; commercial banks; insurance agency; legal regulations; inspection and supervision.*

Date of receipt: 28th Feb., 2025
Date of delivery revision: 18th Mar., 2025
Date of receipt revision: 05th Apr., 2025
Date of approval: 12th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.21

1. Current state of state management for insurance agency activities of commercial banks

From a legal perspective, besides investing capital, purchasing shares to establish or acquire subsidiaries and affiliates, or contributing capital and purchasing shares of businesses in the insurance sector, Vietnamese commercial banks are also allowed to "delegate, receive delegation, and act as agents in areas related to banking, insurance business, and asset management as stipulated by the State Bank" (Article 106, Delegation and Agency Transactions - Law on Credit Institutions No. 47/2010/QH12).

On July 2, 2014, the Ministry of Finance (MOF) and the State Bank of Vietnam issued Joint Circular No. 86/2014/TTLT-BTC-NHNN, which regulates the content of insurance agency activities of credit institutions and foreign bank branches for life insurance enterprises, conditions for conducting these activities, rights and obligations of credit institutions and foreign bank branches, and the responsibilities of life insurance enterprises in training employees of credit institutions and foreign bank branches to perform insurance agency activities.

On December 31, 2019, the State Bank issued Circular No. 37/2019/TT-NHNN of the State Bank of Vietnam, guiding the insurance agency activities of credit institutions and foreign bank branches for insurance enterprises. According to Article 4 of Circular 37/2019/TT-NHNN, the insurance agency activities of commercial banks for insurance enterprises include the following:

- Introducing customers.
- Selling insurance.
- Arranging insurance contracts.
- Collecting insurance fees.
- Handling claims and payouts in case of insurance events.
- Other related activities.

Additionally, Article 6 of Circular 37/2019/TT-NHNN *outlines the rights and obligations of credit institutions in insurance agency activities:*

1. Credit institutions have the rights of insurance agents as stipulated by insurance business laws.

2. Credit institutions have the obligations of insurance agents as stipulated by insurance business laws and the following specific obligations:

a) Explain to customers that insurance products distributed through credit institutions are not products of the credit institution.

b) Manage and store lists of employees within the credit institution directly involved in insurance agency activities for insurance enterprises as per the agreements in the insurance agency contract.

c) Provide complete and accurate information to insurance enterprises about collected insurance fees, paid insurance benefits, and other payments as agreed in the insurance agency contract.

d) Fully transfer collected insurance fees to insurance enterprises after deducting agency commissions, paid insurance benefits, and other payments as agreed in the insurance agency contract.

đ) Provide complete and accurate information and reconcile necessary customer data that the credit institution is obligated to collect as stipulated in Article 7 of this Circular.

Alongside establishing subsidiaries to engage in insurance business activities, the distribution of insurance products through banks has developed rapidly,

* *Academy of Finance*

contributing significantly to the total revenue of Vietnam's insurance market.

Undeniably, the role of commercial banks as insurance agents has significantly increased the revenue of insurance companies during 2020-2022 and provided substantial fee income contributing to the overall profit of commercial banks. However, the rapid growth of bancassurance has led to challenges in managing and supervising the quality of insurance sales through banks. These issues contributed to the decline in the life insurance industry's performance in 2023, with profits from bancassurance fees for banks also experiencing a sharp decrease from 2023 onward.

To address this situation, under the decisive direction of the government, the Ministry of Finance has promptly improved mechanisms and policies and intensified inspection and supervision efforts. The Law on Insurance Business No. 08/2022/QH15 added several provisions to enhance the quality of insurance distribution through banks and included conditions for organizational agents (Article 125).

To clarify the provisions of the Law on Insurance Business and its guiding decree, on November 2, 2023, the Ministry of Finance issued Circular No. 67/2023/TT-BTC, *guiding certain provisions of the Law on Insurance Business and Decree No. 46/2023/NĐ-CP dated July 1, 2023, which provides detailed regulations on the implementation of certain articles of the Law on Insurance Business*. This circular added several provisions to further enhance enterprises' responsibilities in monitoring and controlling the quality of bancassurance activities.

A notable regulation states: "Credit institutions must not advise, introduce, sell, or arrange the conclusion of investment-linked insurance contracts for customers within 60 days before and 60 days after the full disbursement of loans."

Particularly, Clause 5, Article 15 of the Law on Credit Institutions No. 32/2024/QH15.

In addition to regulations on the conditions and scope of insurance agency activities, legal provisions also clearly define the inspection and supervision functions of state management agencies. Article 9 *(Responsibilities of the Banking Inspection and Supervision Agency and the State Bank's Branches in Provinces and Centrally Run Cities)* of Circular No. 37/2019/TT-NHNN.

Under the provisions of the Law on Insurance Business 2022, the Ministry of Finance - represented by the Insurance Supervisory and Administration Department - is only authorized to oversee the agency activities of banks through insurance companies in cases where banks sign agency contracts with insurance companies, and the scope is limited to insurance agency activities at those banks.

Thus, under these regulations, the State Bank of Vietnam *(Banking Inspection and Supervision Agency)* and the Ministry of Finance *(Insurance Supervisory and Administration Department)* have the functions of inspecting, auditing, and supervising the insurance agency activities of credit institutions. These tasks may be performed independently or in coordination with other functional agencies to enhance effectiveness.

After the robust development of life insurance and bancassurance channels, numerous issues have arisen, affecting customer trust in life insurance enterprises and many commercial banks. As a result, the government has directed relevant agencies to strengthen state management of these activities.

In 2022 and 2023, alongside studying and submitting for higher authority approval and issuing additional legal regulations, the Ministry of Finance conducted inspections of 10 out of 17 life insurance enterprises that distribute insurance through credit institutions and foreign bank branches. These inspected enterprises accounted for 96.83% of total premium revenue generated via bancassurance in the life insurance market. The inspections revealed violations in bancassurance operations, such as improper issuance of processes and regulations, non-compliance with product pricing schedules, and agents failing to adhere to company and legal requirements. The Ministry of Finance's inspection agency recommended financial sanctions totaling 21 trillion VND, including removing nearly 1.956 trillion VND from tax-deductible expenses when determining corporate income tax for 2021-2022. Additionally, the agency temporarily suspended new insurance contract signings through credit institutions and foreign bank branches and required the rectification of violations.

The State Bank has also intensified its inspection and supervision of insurance business and agency activities at commercial banks, incorporating these tasks into its annual inspection plans. Furthermore, based on the provisions of the 2022 Law on Insurance Business, the State Bank collaborates with the Ministry of Finance to improve related legal regulations, inspections, and supervision of insurance activities conducted through banks.

State Bank has also established hotlines to handle feedback and petitions from citizens, organizations, and enterprises regarding insurance agency activities of commercial banks. It closely cooperates with the Ministry of Finance during inspections of insurance enterprises and banks with significant feedback and petitions concerning insurance agency operations to promptly address and rectify legal violations.

Simultaneously, the Banking Inspection and Supervision Agency collaborates with the Insurance Supervisory and Administration Department to inspect and address violations in the insurance agency activities of commercial banks.

2. Limitations and causes of limitations in state management of insurance agency activities of commercial banks

2.1. Limitations

Firstly, the legal provisions ensuring the safety of insurance agency activities conducted by commercial

banks are slowly issued and lack a proactive approach to preventing potential risks.

During 2020-2023, numerous decrees, decisions, and circulars were issued to regulate the principles and conditions for insurance agency activities conducted by commercial banks. While the issued legal documents are considered relatively stringent in controlling emerging risks, in reality, many of these legal provisions were enacted after violations had already been identified. This delay has reduced the ability to identify and prevent arising losses. In other words, the continuous issuance of legal provisions reflects a reactive approach aimed at addressing violations rather than proactively guiding commercial banks toward safe and efficient operations.

Secondly, the legal provisions on insurance agency activities contain many loopholes that undermine the effectiveness of the regulatory framework in identifying, preventing, and controlling violations and risks associated with these activities by commercial banks.

Thirdly, the effectiveness of inspection and supervision of insurance agency activities by state management agencies for commercial banks remains limited.

In recent years, many banks linked with insurance companies to sell their products have been found to commit numerous violations. For instance, numerous savings customers were misled into signing life insurance contracts. Upon discovering the deception, affected customers filed complaints with the State Bank of Vietnam. However, the State Bank merely received and forwarded the complaints while advising individuals to contact the insurance companies for resolution, without initiating inspections to uncover the banks' wrongdoings.

Moreover, the Ministry of Finance's supervision of insurance sales at banks through insurance companies alone is insufficient to ensure compliance by banks in conducting insurance agency activities. According to the Law on Insurance Business, the Ministry of Finance has the authority to oversee insurance sales through banks via insurance companies but lacks the mandate to inspect or audit banks directly, as banks are merely agents. This responsibility falls under the jurisdiction of the State Bank of Vietnam. In 2023, many cases were reported to the Insurance Supervisory and Administration Department involving dishonest practices by bank employees when selling insurance through banks. However, these cases were not thoroughly resolved, as the department claimed that such matters were "beyond its jurisdiction".

2.2. Causes of limitations

Firstly, regulatory agencies have not fully assessed the potential risks when formulating legal provisions related to the insurance agency activities of commercial banks.

Secondly, state management agencies face difficulties addressing violations arising from overlapping functions among different regulatory bodies.

Thirdly, the technology used to collect and process information for remote supervision is outdated.

Fourthly, the organizational model of Vietnamese commercial banks, which primarily follows an administrative network structure, poses challenges for regulatory agencies in conducting inspections and audits of insurance agency activities at these banks.

Fifthly, penalties for violations of legal regulations regarding insurance agency activities are insufficient to deter violations by insurance businesses, securities firms, and commercial banks.

Currently, the punitive measures imposed by regulatory agencies under existing regulations lack sufficient deterrence for violating organizations. The benefits gained from violating legal provisions often far exceed the penalties imposed. As a result, many insurance companies and commercial banks intentionally disregard relevant legal regulations, even neglecting the ethical values of the profession by providing misleading advice, enticing, or supporting non-professional investors to enter the market, solely to attract cash flow.

3. Recommendations to enhance state management of insurance agency activities in the future

Improving legal regulations related to insurance agency activities of commercial banks

- Review and improve laws such as the Law on Insurance Business and the Law on Credit Institutions to include provisions aimed at preventing risks arising from insurance agency activities.

- Specify insurance agency activities, the legal basis for their regulation, and compliance requirements with insurance business laws and other related laws in the provisions governing commercial bank operations under the Law on Credit Institutions. Clearly include these provisions in the business licenses issued by the State Bank for commercial banks.

- Legislate violations by commercial banks and their employees regarding coercion or forcing customers to purchase non-compulsory insurance products as a condition for using banking services under the Law on Credit Institutions.

- Refer to international experiences in building a legal framework for insurance agency activities and services related to corporate bonds of commercial banks, adapting these to Vietnam's practical conditions.

Strengthening Inspection, Examination, and Supervision of Violations in Insurance Agency Activities of Commercial Banks

Although violations in insurance agency activities have been partially controlled thanks to improvements in legal regulations and the inspection and supervision efforts of specialized regulatory agencies, further measures are needed to enhance risk management. Inspection, examination, and supervision efforts should focus on the following:

1. Banking Inspection and Supervision Agencies and provincial branches of the State Bank should intensify

inspections, examinations, and supervision of insurance agency activities.

2. Develop and refine processes to strictly monitor compliance with legal regulations in the insurance sector in general and in the insurance agency activities of commercial banks in particular. Proactively detect and address shortcomings and violations during the provision of services by commercial banks, minimizing adverse impacts on customer rights.

3. Clearly define the responsibilities of units, branches of the State Bank, banking inspection and supervision agencies, and the Insurance Supervisory and Administration Department in managing insurance agency activities. Specifically:

- For State Bank units: Upon receiving (via hotlines) feedback or complaints from individuals and businesses related to insurance agency activities, classify, handle, and forward these to the Banking Inspection and Supervision Agency or the relevant provincial branches of the State Bank for resolution in accordance with regulations.

- Provincial branches of the State Bank: Receive and verify information provided by individuals and businesses through feedback or complaints. If violations are detected, provincial branches of the State Bank should issue administrative violation records and forward the violation dossiers to the Banking Inspection and Supervision Agency. Periodically compile and report on resolution results to the Banking Inspection and Supervision Agency for monitoring and follow-up.

- Banking Inspection and Supervision Agencies: Coordinate with the Insurance Supervisory and Administration Department (Ministry of Finance) to handle violations in accordance with legal regulations. Regularly compile information on violations related to insurance agency activities of commercial banks to report to competent authorities.

Enhancing the state bank's directives to commercial banks for compliance with legal regulations on insurance agency activities

To prevent violations in insurance agency activities of commercial banks, the State Bank should strengthen its directives to commercial banks on the following:

- The State Bank should direct commercial banks to only provide insurance agency services as per their business licenses issued by the State Bank and in compliance with relevant legal regulations.

- Require commercial banks to enhance internal inspection and control of insurance agency activities to promptly detect, prevent, and strictly handle cases of providing incomplete, unclear, or inaccurate information that leads to customer misunderstandings about insurance products; dishonest consultation that confuses customers between purchasing life insurance and depositing money into the bank; failure to comply with internal regulations, operational procedures, directives from the State Bank, and relevant laws; or pressuring or "forcing" customers to purchase life insurance.

- Prohibit commercial banks from placing pressure on employees or business units to introduce or provide information to customers about life insurance products to meet performance evaluation targets (KPIs). Commercial banks must ensure the confidentiality of customer information and protect customer rights.

Strictly handling violations in insurance agency activities of commercial banks

To improve warning mechanisms and prevent violations by commercial banks in insurance agency activities, in addition to strengthening inspection and supervision, stricter sanctions are necessary for violations by commercial banks, specifically:

- The government should take decisive actions, including criminal prosecution, for violations related to insurance agency activities.

- Penalties for violations by commercial banks in insurance agency activities should be revised to enhance deterrence. Instead of fixed administrative fines, authorities should impose penalties based on the revenue generated from the violating activities of commercial banks. Depending on the severity of the violation, a percentage of revenue generated from the activity could be fined, with a maximum of 100% of the revenue.

Strengthening collaboration between the state bank, the ministry of finance, and related agencies in managing insurance agency activities of commercial banks

To further enhance state management efficiency in insurance agency activities of commercial banks, continued close cooperation is required between the two specialized regulatory agencies, the Ministry of Finance and the State Bank. Additionally, collaboration with the Ministry of Public Security and the judiciary is necessary to strengthen sanctions and enforce laws on insurance agencies and commercial banks.

Conclusion: The trend of promoting non-credit services in general and insurance agency activities of Vietnamese commercial banks in particular is inevitable. Therefore, state management of these activities by commercial banks must be continuously strengthened. Improving the legal framework and enhancing the effectiveness of inspection and supervision of insurance agency activities of commercial banks are key solutions to improving state management efficiency.

References:

Trần Huyền (2023), Quản lý chặt chẽ hoạt động phân phối bảo hiểm qua ngân hàng https://mof.gov.vn/webcenter/portal/vclvcstc/pages_r/l/chi-tiet tin?

Phan Linh (2024), Thanh tra đã kiến nghị xử lý tài chính 21.000 tỷ đồng với 10 doanh nghiệp bảo hiểm nhân thọ; https://vneconomy.vn/techconnect//thanh-tra-da-kien-nghi-xu-ly-tai-chinh-21-000-ty-dong-voi-10-doanh-nghiep-bao-hiem-nhan-tho.htm]

Trang Linh (2023), Năm bận rộn của thanh tra bảo hiểm, https://www.tinnhanhchungkhoan.vn/nam-ban-ron-cua-thanh-tra-bao-hiem-post336051.html

DEVELOPING FINTECH TO SUPPORT SMALL AND MEDIUM ENTERPRISES IN VIETNAM: POTENTIALS, CHALLENGES AND POLICY IMPLICATIONS

PhD. Bui Thi Ha Linh* - PhD. Dam Thanh Tu**

Abstract: ***Fintech is emerging as a strategic solution that not only facilitates digital transformation but also fosters the sustainable development of small and medium enterprises (SMEs) in Vietnam by improving access to capital and addressing financial management challenges. This article delves into the analysis of various Fintech models and their potential in advancing the growth of SMEs in Vietnam while identifying the challenges faced by these enterprises. Based on this, the study proposes recommendations to establish a favorable legal environment for the development of Fintech to support SMEs in Vietnam. The article comprises five main sections: an introduction to the research context; a literature review and research methodology; an analysis of Fintech models tailored for SMEs in Vietnam; research findings and discussion; and conclusions with key policy implications.***

• Keywords: *blockchain, e-payment, fintech, insurtech, p2p lending, SMEs.*

Date of receipt: 08th Mar., 2025
Date of receipt revision: 29th Apr., 2025
Date of delivery revision: 10th Mar., 2025
Date of approval: 23th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.22

1. Introduction

The rapid development of Fintech over the past decade has profoundly transformed how financial services are accessed and provided globally. In developing countries like Vietnam, Fintech is not only a driver of digital transformation in the financial sector but also a strategic tool to address the capital access challenges faced by small and medium enterprises (SMEs) and micro-enterprises. In this context, peer-to-peer (P2P) lending platforms and digital banking are opening up new opportunities. Specifically, P2P lending enables SMEs and micro-enterprises to access loans directly from individual investors without the need for traditional financial intermediaries. This model not only reduces transaction costs but also enhances transparency and flexibility in financial transactions (Zhang & Beaverstock, 2018). Meanwhile, digital banking is growing rapidly, offering digital-based financial services that provide a seamless user experience, helping businesses optimize their financial management processes, from payments to accounting, in a swift and efficient manner (Nguyen & Pham, 2021).

Alongside the significant benefits Fintech brings, especially for SMEs and micro-enterprises, several challenges remain. The primary issues lie in risk management, information security, and regulatory compliance. These challenges are particularly crucial as Vietnam's Fintech market is still in its infancy, lacking a comprehensive regulatory framework to govern the operations of P2P lending platforms and digital banks. According to a report by the State Bank of Vietnam (2022), only around 20% of Fintech companies in Vietnam are strictly regulated under current laws, while the majority operate in a partially regulated environment with potential risks for financial fraud and money laundering.

This article will delve into various Fintech models and their potential in promoting SME development in Vietnam, thereby clarifying the challenges these enterprises face. The main content of the article is structured into five sections: Introduction to the research context; Literature review; Fintech models for SMEs in Vietnam; Research findings and discussion; and Conclusion along with policy implications.

2. Literature reviews and research methodology

In recent years, Fintech has been driving significant transformations within the ecosystem of SMEs globally. Fintech encompasses a wide range of applications, including electronic payments, crowdfunding, blockchain, and automated lending platforms (Philippon, 2016). These innovations have opened numerous opportunities for SMEs to access capital, optimize operational processes, and expand their market reach. Research has demonstrated that Fintech not only enhances the financial efficiency of SMEs but also

** Academy of Finance; email: halinhhvtc@gmail.com*
*** Academy of Policy and Development; email: tudt@apd.edu.vn*

boosts their competitiveness and sustainable growth (Gomber, Koch, & Siering, 2017).

One of the primary impacts of Fintech on SMEs is the improved access to financial resources. Traditionally, small and medium-sized businesses often face challenges in securing loans from banks due to stringent credit requirements and lengthy approval processes. Fintech has revolutionized this aspect by introducing peer-to-peer lending platforms and online financial services, making it easier for SMEs to obtain funding at lower costs and with simpler procedures (Puschmann, 2017). This increased accessibility not only fosters the development of new businesses but also supports the expansion of existing enterprises (Zavolokina, Dolata, & Schwabe, 2017).

Additionally, Fintech contributes to operational efficiency and cost reduction for SMEs. Tools such as automated accounting software, electronic invoicing, and integrated payment systems help businesses streamline their financial management, thereby minimizing the time and resources spent on administrative tasks (Dapp, 2014). As a result, SMEs can focus more on their core activities, leading to enhanced productivity and profitability. Furthermore, Fintech enables SMEs to expand their market presence and improve customer engagement. E-commerce platforms and digital marketing tools allow SMEs to reach a larger customer base, while data analytics help them better understand consumer behavior. This enables businesses to tailor their products and marketing strategies effectively, resulting in increased sales and market penetration (Gai, Qiu, & Sun, 2018).

However, the adoption of Fintech also presents several challenges for SMEs. Regulatory compliance, cybersecurity concerns, and the high costs associated with implementing advanced technologies are significant barriers that SMEs must navigate (Haddad & Hornuf, 2019). Moreover, a lack of technological knowledge and resistance to change among business owners can hinder the integration of Fintech solutions into their operations (Lee & Shin, 2018). Addressing these challenges is crucial for SMEs to fully leverage the benefits that Fintech offers.

Despite the extensive global research on the impact of Fintech on SMEs, there remain significant research gaps, particularly concerning the specific context of Vietnamese SMEs. While international studies provide valuable insights, the unique economic and regulatory environment of Vietnam requires focused investigation. One key area lacking sufficient research is the role of financial services in determining appropriate strategies to promote Fintech adoption among Vietnamese SMEs. Understanding how different financial services can be tailored to meet the needs of Vietnamese businesses is essential for developing effective support mechanisms (Nguyen, 2020).

This study aims to address these gaps by exploring how various Fintech services can be leveraged to enhance the growth and sustainability of SMEs in Vietnam. By identifying the specific financial services that are most beneficial and the strategies that can facilitate their adoption, this research seeks to provide actionable recommendations for Vietnamese SMEs. The findings are expected to support the sustainable development of these enterprises, thereby contributing to the overall economic growth of the country.

3. Fintech frameworks in Vietnam

SMEs in Vietnam make significant contributions to the economy, but they face numerous obstacles in accessing traditional capital sources. According to research by Le et al. (2020), over 70% of SMEs in Vietnam encounter difficulties in obtaining bank loans, mainly due to lack of collateral, unreliable credit history, and prolonged assessment procedures. Consequently, since 2018, a number of Fintech companies in Vietnam have emerged, providing digital banking services and solutions that cater not only to individual consumers but also to small and micro-enterprises (World Bank, 2022). Fintech development in Vietnam has presented vast opportunities for SMEs, particularly in accessing capital, improving operational efficiency, and enhancing competitiveness in the market. Some successful Fintech models in Vietnam include:

E-Payment Model

E-Payment has been one of the most robustly growing Fintech areas in Vietnam, with an increase in companies offering e-wallets, digital banking, and mobile payment solutions. E-wallets like Momo, ZaloPay, VNPay, and ShopeePay have gained high popularity due to their convenience, ease of use, and compatibility with various types of services. One of the drivers of rapid E-Payment growth is the digital transformation in retail and e-commerce. According to the State Bank of Vietnam (2023), non-cash transactions have grown significantly, with the total transaction value through e-wallets increasing by more than 100% in 2022. This trend became particularly prominent as the COVID-19 pandemic encouraged consumers to adopt online shopping and contactless payments. Fintech companies in the E-Payment sector in Vietnam provide not only swift payment solutions but also multi-service integration models. For instance, Momo functions not only as an e-wallet but also offers consumer loans, microinsurance, and investment services, creating a comprehensive digital financial ecosystem.

P2P Lending Model

Peer-to-peer (P2P) lending is an advanced Fintech model widely implemented in Vietnam. P2P lending connects lenders and borrowers directly through online platforms, eliminating the need for traditional financial intermediaries like banks. Notable platforms in this sector in Vietnam, such as Tima, Vaymuon.vn, and Interloan, have witnessed substantial growth in business customers, indicating an encouraging growth trend for this Fintech model. P2P lending brings considerable benefits to both lenders and borrowers. Specifically, lenders can earn higher interest rates than with traditional bank deposits, while borrowers, especially SMEs, can access capital more easily. According to the Ministry of Finance (2023), the P2P lending model has enabled over 10,000 SMEs in Vietnam to access quick and flexible funding.

Blockchain Technology in Finance

Blockchain is an advanced technology that is increasingly being applied in the financial sector in Vietnam. Blockchain is used not only in cryptocurrency transactions but also in financial services such as payments, international transfers, data management, and information security. Several companies in Vietnam have started to implement blockchain to offer safer and more transparent financial solutions. For example, TomoChain, a prominent blockchain project in Vietnam, provides efficient blockchain solutions for financial transactions and smart contracts. TomoChain has collaborated with several large companies to deploy blockchain-based financial technology solutions that enhance security and reduce transaction costs. Additionally, blockchain is also being used in supply chain management and product authentication, helping to reduce fraud in trade and increase transparency in transactions. Thus, blockchain has the potential to transform the operations of financial services, especially in banking and insurance.

Insurtech Model

Insurtech, or insurance technology, is a rapidly emerging Fintech sector in Vietnam. Insurtech leverages technology to improve the efficiency, flexibility, and accessibility of insurance services. Companies like Baoviet, PTI, and FWD are leading the application of digital technology to offer online insurance packages, making it easier for consumers to access and select suitable insurance products. A notable feature of Insurtech is its ability to use big data and artificial intelligence (AI) to personalize insurance products. This helps reduce risks for insurance companies and provides customers with packages tailored to their specific needs. According to the Ministry of Finance (2023), the Vietnamese insurance market has significant potential for Insurtech growth, with increasing adoption of digital insurance products. In addition to traditional insurance packages, Insurtech has expanded into microinsurance services, allowing low-income individuals and small businesses to access low-cost insurance packages. This not only contributes to financial security for individuals and businesses but also fosters the growth of an inclusive financial ecosystem.

4. Results and discussion

Based on the synthesis of reports from the Ministry of Finance (2023), Ministry of Information and Communications (2022), the State Bank of Vietnam (2022), the World Bank (2022) and other studies by domestic and international scholars, we identify several main challenges faced by SMEs when using Fintech services as follows:

First, an incomplete and unstable legal environment: In recent years, Fintech has developed rapidly, outpacing the regulatory capabilities of the existing legal system. The State Bank of Vietnam report (2023) show that, there are still many gaps in regulations related to data security, violation handling, and the rights of participating parties. The lack of a specific legal framework for digital financial services not only hinders SMEs' access to Fintech but also exposes them to numerous legal risks. Furthermore, instability in the legal environment forces SMEs to cope with unexpected, unpredictable changes. For instance, continuous changes in tax regulations and personal data security can create administrative burdens and high compliance costs for small businesses, which already have limited resources. According to the Ministry of Finance (2023), more than 60% of SMEs enterprises in Vietnam express concerns about the lack of specific guidelines from regulatory authorities when implementing Fintech services.

Second, limited access to technology and infrastructure: Although Vietnam has made significant progress in developing information and communication technology, many SMEs, particularly in rural or remote areas, still struggle to access modern technology. Data from the Ministry of Information and Communications (2022) shows that only about 45% of SMEs in Vietnam have sufficient investment in robust technology infrastructure to effectively deploy Fintech services. The lack of high-speed network connectivity, outdated hardware, and a shortage of skilled technological workforce are major barriers to the implementation and use of Fintech services. This is especially important as digital financial services require advanced and secure technology infrastructure to ensure stability and security.

Third, cybersecurity and data protection: This is a top concern for SMEs using Fintech. Digital financial services, which rely heavily on the internet and networked technologies, are always at risk of

cyberattacks and data breaches. Kaspersky report has shown that, Vietnam ranks among the top Southeast Asian countries in the number of cyberattacks, especially in the financial sector. For SMEs, investing in advanced security solutions to protect customer data and financial information often faces limitations due to tight budgets. Moreover, the lack of cybersecurity skills and knowledge within the enterprise also makes SMEs more vulnerable to security threats. This poses risks not only to finances but also to the reputation of businesses if they fail to ensure the safety of customer data. According to the State Bank of Vietnam (2023), more than 70% of SMEs in Vietnam do not have adequate cybersecurity measures to protect financial transactions through fintech. This highlights a significant gap in raising awareness and training in cybersecurity for SMEs.

Fourth, limitations in capital and deployment costs: While Fintech brings many opportunities to improve capital access, SMEs in Vietnam still struggle to access Fintech services due to capital limitations. Many small businesses lack the financial resources to invest in technology infrastructure, upgrade systems, and train staff. Additionally, the deployment costs of Fintech services pose a significant barrier. According to the International Finance Corporation (IFC, 2023), SMEs in Vietnam often have to pay high service fees when using Fintech platforms, which makes it difficult for them to maintain profitability and competitiveness. Furthermore, the lack of financial support packages from banks and traditional credit institutions also limits small businesses' ability to access Fintech services.

Fifth, lack of technology skills and knowledge: One of the final but equally important challenges is the lack of technology skills and knowledge within SMEs. To use Fintech services effectively, businesses need a team with in-depth knowledge of technology and digital finance. However, according to Le et al. (2020), most SMEs in Vietnam lack personnel with sufficient skills to manage and deploy Fintech services. This shortage not only affects the effectiveness of Fintech services but also increases the risk of errors and operational risks. Training and enhancing the technological capabilities of SME staff is an urgent need, but it is also a significant challenge due to time constraints and training costs.

5. Conclusions and policy implications

In Vietnam today, Fintech is revolutionizing the provision of financial services for SMEs and micro-enterprises, from P2P lending platforms to digital banking services. We cannot deny that Fintech has created revolutionary opportunities for expanding financial service access for SMEs. This reflects a clear reality: SMEs are recognizing Fintech's potential to address financial issues that traditional banking cannot meet (Nguyen, 2020).

However, to address significant challenges and maximize Fintech's benefits, some policy recommendations to create a favorable regulatory environment for Fintech development and support SMEs in accessing new financial services are as follows:

Firstly, the government should direct the State Bank and relevant ministries to expedite the completion of the legal framework for Fintech.

The legal environment is a core factor affecting Fintech's sustainable development. In Vietnam, the legal framework for Fintech remains incomplete, lacking specific regulations for transparently and securely managing digital financial services. One of the government's top priorities should be to build a comprehensive legal framework with clear criteria for consumer rights protection, data security, and responsibilities of participants in the Fintech ecosystem.

The United Kingdom, one of the world's most developed Fintech markets, provides an example where the Financial Conduct Authority (FCA) has established a detailed legal framework for Fintech through the Regulatory Sandbox program. This program allows Fintech companies to test new financial products and services under regulatory supervision, helping the government gather data to adjust policies appropriately. Vietnam could learn from this model, supporting Fintech companies and SMEs in accessing digital financial services safely while minimizing legal risks.

Secondly, the Ministry of Information and Communications, in coordination with other ministries, should develop technological infrastructure, addressing cybersecurity and data protection issues.

Technological infrastructure plays a crucial role in driving Fintech's growth and enhancing SMEs' access to new financial services. However, in Vietnam, technology infrastructure, especially in rural and remote areas, remains insufficient to support effective Fintech solutions. Vietnam could learn from India, which has made significant strides in expanding internet connectivity and telecommunications infrastructure through national programs like Digital India. This program includes upgrading telecommunications networks nationwide and promoting the application of IT in public services. As a result, India has seen explosive growth in Fintech, particularly in mobile payment and digital banking platforms (Mehra, 2020). Vietnam could implement similar programs to improve digital infrastructure, allowing SMEs, especially in rural areas, easier access to Fintech services. Additionally, Vietnam needs stronger public-private partnerships to develop telecommunications services, data infrastructure, and cloud computing. The government could encourage

businesses to invest in building data centers and technical infrastructure, providing conditions for Fintech companies to develop advanced, secure, and flexible digital financial solutions.

Cybersecurity and data protection are also critical elements of the Fintech ecosystem, especially as SMEs often lack the means to protect against cybersecurity threats. Fintech services based on internet and digital technologies are always at risk of cyberattacks and data loss, which could result in significant losses for small businesses. An essential policy Vietnam could adopt is establishing a mandatory cybersecurity framework for all Fintech companies and SMEs using digital financial services. The experience of the European Union with the General Data Protection Regulation (GDPR) has demonstrated that a strict data security legal framework protects consumer rights and fosters trust in Fintech services. Vietnam could create a similar version of GDPR to ensure that businesses' and consumers' financial information is protected.

International cooperation to share information on cybersecurity threats and preventive measures is also essential to safeguard Vietnam's Fintech ecosystem. The government should strengthen cybersecurity training programs for businesses and provide consulting services and advanced security solutions at reasonable costs to help SMEs protect their data and digital assets.

Thirdly, the government should continue to promote digital human resource training and development.

Human resources are a core factor in ensuring that SMEs can effectively utilize Fintech services. However, the lack of technology skills and digital finance knowledge in small businesses is a significant challenge in Vietnam. A feasible solution is for the government to direct the Ministry of Education and Training to take the lead in developing specialized Fintech training programs for small businesses, focusing on digital financial management skills and technology application in business activities. Israel, known for its strong Fintech ecosystem, has heavily invested in technology education and training programs for businesses. Universities and financial institutions in Israel frequently organize specialized Fintech courses for entrepreneurs and managers (Cohen, 2019). Vietnam could partner with universities and research institutions to develop similar training courses, helping SMEs improve their competitiveness in the digital era.

The Vietnamese government should also establish mechanisms to encourage collaboration between Fintech companies and training centers, ensuring that courses and training programs are designed to meet business needs. These programs should be supported by preferential financial packages to ensure feasibility and sustainability.

Fourthly, the government should implement policies to support SMEs' access to Fintech costs.

Currently, the costs of deploying and maintaining Fintech services remain a significant obstacle for SMEs in Vietnam. Limited capital and the lack of financial support packages from traditional banks restrict many small businesses' access to these services. The government could direct the Ministry of Finance and the State Bank to establish preferential financial programs specifically for SMEs using Fintech services, for example, low-interest loans or financial support packages from state financial institutions, tax exemptions for newly established Fintech companies. Singapore serves as an example, with its Startup SG Fintech program providing financial and support services for SMEs to access digital financial services at reasonable costs (MAS, 2021).

Furthermore, Vietnam should establish a Fintech support fund, collaborating with international financial institutions to provide development capital for Fintech, especially for SMEs. In order for Vietnam to effectively establish a Fintech support fund for SMEs, it is first necessary to mobilize capital from both the state budget and international financial institutions such as the World Bank or ADB, with cooperation from international investment funds and Fintech enterprises. This collaboration not only ensures sufficient capital but also brings fund management expertise and international financial standards, helping to enhance transparency and management efficiency.

References:

Bộ Tài chính (2023). Báo cáo về môi trường pháp lý cho phát triển Fintech tại Việt Nam. Truy cập từ: https://mof.gov.vn

Bộ Thông tin và Truyền thông (2022). Số liệu về hạ tầng công nghệ tại các doanh nghiệp nhỏ và vừa ở Việt Nam. Truy cập từ: https://mic.gov.vn

Cohen, E. (2019). Israel's thriving fintech ecosystem. The Times of Israel. Retrieved from https://www.timesofisrael.com/

Dapp, T. F. (2014). Fintech - The digital (r)evolution in the financial sector. Deutsche Bank Research.

Gai, K., Qiu, M., & Sun, X. (2018). A survey on FinTech. Journal of Network and Computer Applications, 103, 262-273.

Gomber, P., Koch, J. A., & Siering, M. (2017). Digital finance and FinTech: Current research and future research directions. Journal of Business Economics, 87(5), 537-580.

Haddad, C., & Hornuf, L. (2019). The emergence of the global FinTech market: Economic and technological determinants. Small Business Economics, 53(1), 81-105.

International Finance Corporation (IFC) (2023). Creating markets in Vietnam. Retrieved from https://www.ifc.org/content/dam/ifc/doc/mgrt/cpsd-vietnam-v2.pdf

Lê, P. H., Trần, N. H., & Nguyễn, T. T. (2020). Access to finance challenges for SMEs in Vietnam: Current situation and FinTech solutions. Journal of Vietnam Finance, 8(2), 34-48.

Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. Business Horizons, 61(1), 35-46.

Mehra, M. (2020). India's fintech revolution and digital transformation. McKinsey & Company. Retrieved from https://www.mckinsey.com

Monetary Authority of Singapore - MAS (2021). Startup SG fintech program: Supporting the development of innovative financial technologies. Retrieved from https://www.mas.gov.sg

Ngân hàng Nhà nước Việt Nam (2022). Báo cáo tình hình phát triển công nghệ tài chính tại Việt Nam. Truy cập từ: https://sbv.gov.vn

Nguyen, D. T. (2020). The rise of FinTech and its impact on financial inclusion in Vietnam. Journal of Financial Technology & Regulation, 5(1), 12-27.

Nguyen, T. M., & Pham, V. K. (2021). Digital banking and SMEs in Vietnam: Opportunities and challenges. Journal of Banking and Finance, 16(3), 89-102.

Philippon, T. (2016). The FinTech opportunity. National Bureau of Economic Research Working Paper No. 22476.

Puschmann, T. (2017). Fintech. Business & Information Systems Engineering, 59(1), 69-76.

World Bank (2022). Vietnam Digital Economy Report: Towards a Digital Vietnam. Retrieved from https://www.worldbank.org/

Zavolokina, L., Dolata, M., & Schwabe, G. (2017). The FinTech phenomenon: Antecedents of financial innovation perceived by the popular press. Financial Innovation, 3(1), 26.

Zhang, Y., & Beaverstock, J. (2018). Peer-to-peer lending: Transforming finance for SMEs. Journal of Economic Geography, 14(4), 67-85.

APPLICATION OF QUANTITATIVE MODELS IN EARLY CREDIT RISK WARNING SYSTEMS FOR CORPORATE CLIENTS AT COMMERCIAL BANKS IN VIETNAM

PhD. Do Thi Thu Ha* - PhD. Hoang Thi Thu Hien*

Abstract: ***Credit activities are the main activities of commercial banks, so credit risk is also the most common risk. One of the measures to manage credit risk is to provide early warning of credit risks in order to have appropriate prevention and handling measures. This study uses the Logit model with data from 257 corporate customers at 10 Vietnamese commercial banks in the period 2020-2023 to provide early warning of credit risks. The model's forecast results compared to the actual credit risk of customers have an accuracy rate of 94.9%. The author recommends that quantitative models such as the Logit model should be used more widely in Vietnamese commercial banks because of its objectivity and effectiveness.***

• Keywords: *credit risk, early warning systems, quantitative model, logit model.*

JEL codes: K1

Date of receipt: 04th Mar., 2025
Date of delivery revision: 12th Mar., 2025
Date of receipt revision: 25th Apr., 2025
Date of approval: 20th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.23

1. Introduction

Credit activities of Vietnamese commercial banks are developing in the direction of increasing scale and growth rate, however, with adverse fluctuations of the economy, credit quality is unstable.

The current situation of credit risk management at Vietnamese commercial banks mainly focuses on handling credit risk without paying due attention to credit risk prevention, especially credit monitoring after lending to detect credit risk at an early stage in order to have appropriate risk prevention measures, minimizing possible credit losses. Due to limitations in early warning of credit risk, credit risk is often only detected when the loan has become overdue debt or bad debt, making credit risk management measures not as effective as expected. Many commercial banks have not yet built a credit risk early warning system as the basic requirement of Circular 41.

During the period of restructuring and efforts to achieve safety standards according to international practices, to improve the operational efficiency as well as the position of Vietnamese commercial banks in the region and the world, the construction of an early warning system for credit risks by quantitative models plays a vital role in the operations of Vietnamese commercial banks.

2. Literature review and research methodology

The research hypothesis can be stated as below:

H1: X1-The short-term liquidity ratio (Current Assets/Current Liabilities) negatively correlates the probability of corporate insolvency.

Operating efficiency is a very important factor that directly affects the risk of corporate bankruptcy (Altman, 2000 and (Hoang Tung, 2011). This factor in the topic is represented by four variables: ROA, ROE, basic earning power ratio (EPS) and Total asset turnover. In this topic, the variable X2 (ROA) = Profit after tax / Total assets. X3 (ROE) = Profit after tax / Owner's equity. X4 (basic earning power ratio) = Earnings before tax and interest (EBIT) / Total assets. X5 (Total asset turnover) = Net revenue / Total assets. X6 (Profit rate on revenue) = EBIT / Net revenue.

These ratios are particularly suitable for studies related to corporate bankruptcy, as the ultimate survival of a company depends on its operational effectiveness. The hypothesis proposed is as below:

H2: "The company's operational performance is negatively correlated with the probability of corporate bankruptcy".

The independent variable financial leverage or capital structure is represented by the ratio of total debt to total assets (Beaver, 1966, Sori and Karbhari, 2004). For the financial leverage ratio, this study will use X7=Total debt/Total assets.

H3: "The ratio of total debt to total assets positively correlates the probability of a business's risk of bankruptcy" (Altman, 2000; Zang et al., 2007). Given

* *Banking Academy of Vietnam*

the unique characteristics of the Vietnamese economy and for the convenience of data collection, this study uses two variables to represent growth: X8 = the rate of revenue growth and X9 = the rate of total asset growth. A company that exhibits positive revenue and asset growth typically indicates that the company is performing well operationally, and vice versa. Additionally, it is important to note that companies with excessively high growth rates may sometimes experience the opposite effect (increased bankruptcy risk); therefore, caution is needed when analyzing the results. The research hypothesis is temporarily stated as follows:

H4: "Normal growth of a company has a negative effect on the probability of corporate bankruptcy."

For non-financial factors, the research uses X10= age of the company to represent industry experience because Lussier (2005) found that it affects the prediction of business success or failure, especially in emerging markets like Vietnam. Hypothesis for this non-financial variable:

H5: "The number of years of operation negatively correlates the probability of corporate bankruptcy".

And the research also adds another variable, X11= Company listing status, which is a non-financial variable. The listing status implies that a publicly listed company, with a larger scale, tends to have a lower probability of bankruptcy compared to a privately held company. Hypothesis

H6: "Listed enterprises have a lower risk of bankruptcy than unlisted enterprises".

The author also chooses the variable: X12= Loan utilization ratio calculated by log (Actual debt ratio/Credit limit) within 3 months of the enterprise representing the loan characteristics. Hypothesis

H7: "The ratio of loan utilization positively correlates the probability of default of the borrowing enterprise.

The study uses two control variables, X13 - Current Debt/Total Debt and X14 - Current assets/Total assets.

3. Data collection

The data used in this study is provided from the database of corporate customers borrowing capital from commercial banks in Vietnam. First, the author sent the information sheet to be collected about the borrowing enterprises to the directors of commercial banks in Vietnam. The researcher collected data from 385 corporate customers from 10 commercial banks. However, after reviewing the database, the author found that for some customers, important information was omitted; Therefore, the sample selected for model development includes 257 enterprises borrowing capital from 10 commercial banks in Vietnam.

The dependent variable is the customer's ability to repay debt, which takes the value of 1 if the customer has overdue debt as defined above (bad customer) and takes the value of 0 if the debt repayment status is good (good customer).

With that perspective, the sample selected for research includes 77 bad customers and 180 good customers.

First, the author conducted a basic quality check of the data sample, tested for multicollinearity, and built an early warning model for credit risk based on the Logit regression model on SPSS 20 software. The results of the model will be analyzed in the next section.

4. Model results

4.1. Descriptive statistics

Table 2: Descriptive statistics of variables

	N (number of observations)	Minimum (minimum value)	Maximum (maximum value)	Mean	Std. Deviation
X1	257	.00300	17.81200	1.1225175	1.44286582
X2	257	-6.460	4.172	-.01414	.781365
X3	257	-.17	7.97	7.3405	.86201
X4	257	-.492	5.469	.11571	.449409
X5	257	.0260	24.9434	2.587964	2.6402370
X6	257	-24.6	1.0	.449	2.7610
X7	257	.017	2.041	.56722	.275117
X8	257	-.999	24.351	.30575	1.885963
X9	257	-.999	1.901	.13465	.366750
X10	257	1	64	15.72	14.951
X11	257	.000	1.000	.52128	.500406
X12	257	.00045	.94572	.3082320	.23160453
X13	257	.187	1.000	.84433	.205181
X14	257	.017	.959	.45087	.237871

Source: Author's calculation

The descriptive statistics table shows significant differences among firms in terms of performance and short-term liquidity, reflecting the challenging economic conditions. Control variables related to financial leverage and growth are also included in the analysis.

4.2. Multicollinearity test

We need to check the VIF coefficient of the variables. The results show that the VIF of all variables is less than 10, so there is no multicollinearity between the variables in the model.

Table 3: Multicollinearity test

Coefficient								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.457	.273		1.671	.096		
	X1	-.065	.020	-.206	-3.206	.002	.553	1.808
	X2	-.065	.037	-.110	-1.731	.085	.564	1.773
	X3	-.063	.028	-.119	-2.219	.027	.797	1.254
	X4	.126	.077	.123	1.634	.104	.401	2.491
	X5	.003	.009	.015	.280	.779	.794	1.259
	X6	-.020	.009	-.123	-2.310	.022	.805	1.242
	X7	.806	.175	.483	4.611	.000	.207	4.828
	X8	-.001	.012	-.005	-.109	.913	.977	1.024
	X9	-.076	.063	-.060	-1.199	.232	.897	1.115
	X10	-.012	.002	-.381	-7.477	.000	.876	1.142
	X11	.036	.046	.039	.782	.435	.919	1.088
	X12	-.512	.112	-.259	-4.556	.000	.707	1.415
	X13	.734	.160	.328	4.573	.000	.442	2.260
	X14	-.835	.219	-.433	-3.808	.000	.176	5.668

a. Dependent Variable: Y

Source: Author's calculation

4.3. Multivariate logit regression

The Case Processing Summary table gives us information about the data entered into the binary regression analysis. Specifically, there are 257 observations (Included in Analysis), no observations are missing data: 0 (Missing Cases), no observations are not selected: 0 (Unselected Cases).

Table 4: Summary of regression analysis data information

		N (Number of observations)	Rate (%)
Selected Model	Analysis sample	257	100,0
	Sample missing data	0	.0
	Total	**257**	**100,0**
Model not selected		0	.0
Total		**257**	**100,0**

Source: Author's calculation

The Dependent Variable Encoding table for the dependent variable has 2 values as follows:

Y = 1: Bankruptcy risk (Unable to repay debt), encoded as 1

Y = 0: Able to repay debt, encoded as 0

Table 5: Coding of dependent variables

Dependent Variable Encoding	
Original Value	Internal Value
0	0
1	1

Source: Author's calculation

The first step in running the Logit model analyzes thThe Chi-square and Sig. columns show the results of the Chi-square test, which is a test to see if the regression coefficients of the independent variables are simultaneously equal to 0 or not. Because the selected method is Enter, the three values of Step, Block, and Model are the same. In this case, the Sig. of all three indices is 0.000 < 0.1 (90% confidence level), so the regression model is statistically significant with a confidence level of 90%.

Table 6: Analysis of model coefficients

		Chi-square	df	Sig.
Step 1	Step	239.266	14	.000
	Block	239.266	14	.000
	Model	239.266	14	.000

Source: Author's calculation

Nagelkerke R Square = 0.859 means that the model can explain the risk of default (bankruptcy) of 85.9%

Table 7: Model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	74.549	.606	.859

Source: Author's calculation

The Hosmer and Lemeshow test table for the appropriate model. Here Sig. = 0.947 > 0.1: appropriate model.

Table 8: Hosmer and Lemeshow test

Step	Chi-square	df	Sig.
1	2.785	8	.947

Source: Author's calculation

In 180 (175+5) observed cases with the ability to repay the debt, there are 175 cases where the model predicted correctly, the correct prediction rate is 175/180 = 97.2%

In 77 (8+69) observed cases of inability to repay debt, there were 69 cases where the model predicted correctly, the correct prediction rate was 69/77 = 89.6

Thus, the average correct prediction rate is 94.9%.

Table 9: Regression model results

		B	SE	Wald	Df	Sig.	Exp(B)	90% CIfor EXP(B)	
							Lower	Upper	
Step 1a	X1	-1.675	.567	8.733	1	.003	.187	.074	.476
	X2	-5.077	2.258	5.058	1	.025	.006	.000	.256
	X3	-6.245	2.829	4.873	1	.027	.002	.000	.204
	X4	-5.691	3.525	2.607	1	.106	.003	.000	1.113
	X5	-.264	.224	1.386	1	.239	.768	.532	1.110
	X6	-4.119	1.721	5.730	1	.017	.016	.001	.276
	X7	25.725	6.869	14.028	1	.000	148721688766.163	1844219.340	11993226742987974.000
	X8	-.389	.677	.331	1	.565	.677	.223	2.063
	X9	-.363	.759	.228	1	.633	.696	.200	2.427
	X10	-.599	.122	24.288	1	.000	.549	.450	.671
	X11	.716	.685	1.092	1	.296	2.046	.663	6.313
	X12	-6.367	1.918	11.024	1	.001	.002	.000	.040
	X13	25.410	6.167	16.975	1	.000	108540716705.858	4264810.483	276239406902235 6.000
	X14	-30.090	7.714	15.217	1	.000	.000	.000	.000
	Constant	36.327	20.431	3.162	1	.075	5981440955588875.000		

a. Variable(s) entered on step 1: X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14.

Source: Author's calculation

The "Variables in the Equation" table provides information on the regression model. The Sig. column from the Wald test indicates the statistical significance of the independent variables. In this dataset, variables with Sig. values below 0.1 (corresponding to a 90% confidence level) are considered to have an impact on the probability of default or debt repayment. The results show that variables X4, X5, X8, X9, and X11 are not statistically significant, while the remaining variables are.

The B column represents the regression coefficients, indicating whether the independent variables have a positive or negative influence on the dependent variable.

X1 - Short-term Liquidity Ratio:

This variable has a negative impact on the likelihood of bankruptcy, which is consistent with the initial hypothesis. A higher liquidity ratio is associated with lower bankruptcy risk. However, during periods of economic downturn, excessive allocation of resources to short-term liquidity at the expense of profitable investment opportunities may reduce overall performance, thereby increasing bankruptcy risk. Despite the legal importance of this ratio in Vietnam, some empirical studies suggest it is not statistically significant.

X2 (ROA), X3 (ROE), X6 (EBIT/Revenue): These variables all exhibit negative relationships with bankruptcy probability indicating that higher profitability reduces bankruptcy risk. The findings align with the research hypothesis and are supported by the literature reviewed.

X7 - Financial Leverage: This variable has a positive and statistically significant coefficient, suggesting that higher financial leverage increases the probability of bankruptcy.

X10 - Firm Age: This variable has a statistically significant and negative effect on bankruptcy risk, implying that older firms are less likely to go bankrupt.

X12 - Debt Utilization Ratio (Debt/Credit Limit): A positive relationship with bankruptcy risk is observed. Higher levels of debt utilization serve as early warning indicators of credit risk.

Control Variables - Debt Structure (X13) and Asset Structure (X14):

An increase in the proportion of short-term debt raises bankruptcy risk, while a higher share of short-term assets reduces it. Imbalances such as using short-term debt to finance long-term assets can weaken liquidity and heighten bankruptcy risk.

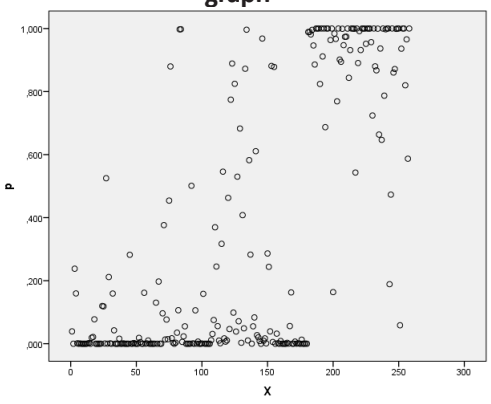
With the above results, substituting into the Logit regression equation we have:

log[y/(1-p)] = -1.675*X1 - 5.077*X2 - 6.245*X3 - 4.119*X6 + 25.725*X7 - 0.599*X10 - 6.367*X12 + 25.410*X13 - 30.090*X14 + 36.327

From there we can calculate the probability p as follows:

$$P = \frac{e^{-1,675*X1 - 5,077*X2 - 6,245*X3 - 4,119*X6 + 25,725*X7 - 0,599*X10 - 6,367*X12 + 25,410*X13 - 30,090*X14 + 36,327}}{1+e^{-1,675*X1 - 5,077*X2 - 6,245*X3 - 4,119*X6 + 25,725*X7 - 0,599*X10 - 6,367*X12 + 25,410*X13 - 30,090*X14 + 36,327}}$$

Figure 1: Debt repayment probability distribution graph



5. Conclusion and recommendations

From the distribution graph, the author found that the Pi values are not distributed evenly, so the author does not build a Credit risk ranking table according to debt repayment ability with equal distances but proposes a classification table suitable for the distribution properties as Table 10.

Consequently, the application of the Logit model to early warning of Credit risk for corporate customers with the database of enterprises borrowing capital at Vietnamese commercial banks was carried out in the period 2015-2018. With the selected variables having statistical significance and using the Logit regression method, the study has shown the factors affecting the probability of default of borrowers, the direction of impact and the specific level of impact by quantitative method. The forecast results of the model compared with the actual risk of customers have a high hit rate.

Table 10: Proposed Credit risk warning level

Pi	Classify	Proposed Credit risk early warning level
0.95 - 1	AAA	Low risk
0.9-0.95	AA	
0.8-0.9	A	
0.7-0.8	BBB	Medium risk
0.6-0.7	BB	
0.4-0.6	B	
0.2-0.4	CCC	High risk
0.1-0.2	CC	
0.05-0.1	C	
0.00-0.05	D	Insolvency

Source: Author's suggestion

Through the study of the Logit model above, the author found that the model has many advantages such as: customer credit rating is more objective and accurate... Meanwhile, most Vietnamese commercial banks are still using qualitative models to rate customers and give early warnings of credit risk. This method depends a lot on the subjective views of credit staff, so banks face many risks because the staff's appraisal skills are limited, staff can collude with customers to upgrade credit ratings...

Therefore, the author proposes that quantitative models such as the Logit model should be used more widely because of its objectivity and effectiveness. Vietnamese commercial banks should continue to research and experiment with their databases to build models that best suit their customer segments and business environments.

References:

Altman, E.& Suggitt, H. J (2000), 'Default rates in the syndicated bank loan market: A mortality analysis',Journal of Banking and Finance, 229- 253.

Basel Committee on Banking Supervision (2001), Principles for the Management of Credit Risk

Beaver, W. (1966), 'Financial ratios as predictors of failure, Empirical Research in Accounting: Selected Studies', Supplement to Vol.4, Journal of Accounting Research, pp. 71-111.

Banks Slovenija; 2015, 'Guidelines for monitoring customers and early warning systems (EWSs) for increased credit risk'.

Hoang Tung (2011), 'Analysis of corporate credit risk using Logit model', Journal of Science and Technology, Danang University, No. 2.

Lussier, R. (2005), 'A success Versus Failure Prediction Model for the Real Estate Industry', Springfield College, Spring 2005, Vol. 20, No. 1.

Mahen Priyanka Peiris (2016),'Credit Risk Managemant- EWS Early Warning System',https://www.linkedin.com/pulse/ews-early-warning-system-credit-risk-management-peiris?trk=portfolio_article-card_title

Martin, Daniel (1977), 'Early warning of bank failure: a Logit regression approach', Journal of Banking and Finance, number 1: 249-276

Ohlson, J. (1980), 'Financial Ratios and the probabilistic prediction of bankruptcy', Journal of Accounting Research, 18(1), pp. 109-131.

Treacy, W. F.& Carey, M. (1999), "Credit risk rating systems at large US banks", Journal of Banking and Finance, Volume 24, Issues 1-2, pp 167-201

Zavgren, Christine, (1983),'The prediction of corporate failure: the state of the art', Journal of Accounting Literature, number 2: 1-38.

Zhang, Guoqiang, Michael Hu, Eddy Patuwo& Daniel Indro (2007),'Artificial neural networks in bankruptcy prediction: General framework and cross-validation analysis',European Journal of Operational Research 116 (1999) 16-32.

Zmijewski, Mark E. (1984), 'Methodological issues related to the estimation of financial distress prediction models', Journal of Accounting Research, 20: 59-82.

THE IMPACT OF CORPORATE SOCIAL RESPONSIBILITY ON CUSTOMER LOYALTY OF COMMERCIAL BANKS IN VIETNAM: THE MEDIATING ROLE OF CUSTOMER SATISFACTION

PhD. Nguyen Thi Thu Trang*

Abstract: ***This study investigates the impact of Corporate Social Responsibility (CSR) on customer loyalty in commercial banks in Vietnam, with a specific focus on the mediating role of customer satisfaction. A total of 386 bank customers were surveyed, and the data were analyzed using Structural Equation Modeling (SEM). The results show that CSR positively affects both customer satisfaction and customer loyalty, with customer satisfaction acting as a significant mediator in the CSR-loyalty relationship. This study provides valuable insights for banking institutions in Vietnam, highlighting the strategic importance of CSR in fostering customer loyalty through improved customer satisfaction. The results also offer practical implications for banks to refine their CSR strategies to align with customer values and expectations.***

• Keywords: *commercial bank, CSR, customer loyalty, customer satisfaction, SEM.*

JEL codes: C83, G21, J50

Date of receipt: 10th Mar., 2025
Date of delivery revision: 23th Mar., 2025
Date of receipt revision: 10th Apr., 2025
Date of approval: 21th May, 2025

DOI: https://doi.org/10.71374/jfar.v25.i3.24

1. Introduction

The impact of Corporate Social Responsibility (CSR) on the banking sector has become increasingly significant as customers, investors, and stakeholders expect banks to contribute positively to society beyond their financial services. In recent years, customers have placed a growing emphasis on ethical business practices, environmental sustainability, and community development, all of which are core components of CSR. For banks, engaging in CSR initiatives is not only a moral obligation but also a strategic move to build trust, enhance brand reputation, and differentiate themselves in a highly competitive market (Hassan et al., 2011)

From a customer perspective, CSR activities are crucial in shaping their perceptions and attitudes toward a bank. Customers are more likely to develop loyalty to banks that they perceive as socially responsible, as these initiatives align with their values and beliefs. When banks engage in meaningful CSR practices, such as supporting local communities, promoting environmental sustainability, or ensuring ethical governance, they enhance customer satisfaction and loyalty (Kim, 2024). Banks, as pivotal institutions in the financial sector, are no longer only judged by their economic performance but also by their social and environmental impact. CSR activities have emerged as a strategic tool for building and maintaining customer loyalty in the banking industry (Al-Ghamdi & Badawi, 2019). Besides, the global financial crisis 2008 served as a stark reminder of the crucial role of ethics and social responsibility within the banking sector, suggesting that customers may place more excellent value on financial institutions perceived as ethical and responsible, which can positively influence their trust and subsequent loyalty.

In Vietnam's banking sector, customers increasingly expect banks to act socially responsibly, valuing CSR that aligns with local values (Sang, 2022). However, how CSR affects customer satisfaction and loyalty remains underexplored. This study addresses this gap by examining CSR's impact on loyalty, focusing on customer satisfaction as a mediator, offering insights for theory and practice in emerging markets.

2. Literature review and Hypothesis

Corporate Social Responsibility (CSR) in the Banking Industry

Corporate Social Responsibility (CSR) refers to businesses' voluntary actions to contribute to societal goals, including economic, social, and environmental concerns. In the banking sector, CSR activities range from charitable donations and environmental sustainability efforts to community development projects and ethical business practices (Velte, 2022). With increasing consumer awareness and expectations,

** Banking Academy of Vietnam; email: trangntt@hvnh.edu.vn*

CSR has evolved from a mere philanthropic endeavor to a strategic business tool fostering competitive advantage (Agyei et al., 2021).

Several studies have highlighted CSR's significant role in shaping customer perceptions and behaviors. According to Gu (2023), CSR practices enhance corporate reputation and trust, which is essential for cultivating customer loyalty. Banks that demonstrate a commitment to CSR are likely to attract and retain customers who align with their values. Furthermore, CSR in the banking sector helps differentiate banks from competitors, particularly in emerging markets where consumers are becoming more socially and environmentally conscious.

Customer Loyalty in the Banking Industry

Customer loyalty refers to the long-term relationship with a company, characterized by repeated patronage and positive attitudes toward the brand. In the banking sector, customer loyalty is often the result of various factors, including the quality of products and services, customer experience, and trust in the institution (Dam, 2021).

Research indicates that customer loyalty is strongly influenced by satisfaction, trust, and emotional connections with the brand (Ehigie, 2006). In banking, loyal customers are more likely to recommend a bank, use additional services, and remain with the bank for extended periods, which are crucial for a bank's profitability and market share (Ehigie, 2006). From the above analysis, the hypothesis asserts that implementing CSR practices by commercial banks directly affects customer loyalty.

Hypothesis H_1: CSR positively influences customer loyalty.

The Role of Customer Satisfaction

Customer satisfaction is the extent to which customers' expectations are met or exceeded by the products or services they receive. In the banking industry, customer satisfaction is a multidimensional construct that includes factors such as service quality, ease of transaction, responsiveness, and trustworthiness (Jamal, 2003). When a bank engages in CSR activities, such as contributing to environmental sustainability, supporting local communities, or ensuring ethical business practices, it enhances its reputation. It strengthens customers' positive perceptions of the bank (McDonald & Rundle-Thiele, 2008). Research by Alafi and Hasoneh (2012) suggests that CSR practices align with customers' values; it fosters a sense of pride and trust in the bank, directly influencing satisfaction. From the above analysis, the hypothesis suggests that implementing CSR practices by commercial banks directly affects customer satisfaction.

Hypothesis H_2: CSR positively influences customer satisfaction.

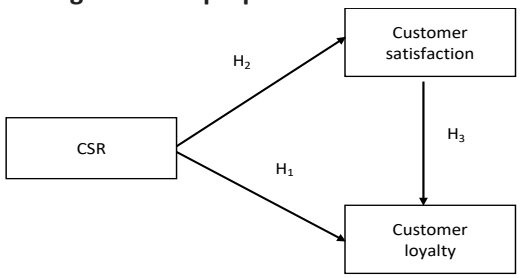
The Mediating Role of Customer Satisfaction

While many studies have examined the direct relationship between CSR and customer loyalty, fewer have explored the role of customer satisfaction as a mediator. Some studies suggest that CSR activities may influence customer satisfaction by improving the bank's overall customer experience and perception (Nareeman & Hassan, 2013). Customer satisfaction serves as a bridge between CSR and customer loyalty, mediating the effects of CSR on customer behavior. According to a study by Al-Ghamdi and Badawi (2019), CSR initiatives that enhance customer satisfaction increase loyalty, particularly when customers perceive these initiatives as authentic and aligned with their values. Furthermore, CSR-related satisfaction may strengthen customers' emotional connection toward the bank, fostering long-term loyalty. From the above analysis, this hypothesis suggests that customer satisfaction is a mediator between CSR and customer loyalty.

Hypothesis H_3: Customer satisfaction mediates the relationship between CSR and customer loyalty

The research model is shown in the figure 1

Figure 1: The proposed research model



3. Methodology

3.1. Sample

Table 1. Sample demographics

No	Variables/ Criteria	Frequency	Percentage
1	**Gender**		
	Male	177	45,85%
	Female	209	54,15%
2	**Age**		
	From 18 to 30 years old	186	48,18%
	From 31 to 40 years old	134	34,72%
	From 41 to 50 years old	52	13,47%
	From 51 to 60 years old	14	3,63%
3	**Education**		
	Undergraduate	298	77,20%
	Graduate	82	21,25%
	Other	6	1,55%

A survey was conducted among Vietnamese commercial bank customers using Google Forms and snowball sampling, yielding 386 valid responses meeting Hair et al.'s (2019) recommended sample size. The sample includes diverse demographics to capture

broad customer perceptions of CSR, satisfaction, and loyalty toward banks with CSR initiatives. Table 1 summarizes respondents' demographics: 54.15% female, mainly aged 18-40, with 48.18% aged 18-30 and 34.72% aged 31-40. Most have higher education 77.20% undergraduate and 21.25% graduate degrees.

3.2. Measurement

Data for this study were collected through an online survey distributed to bank customers. The survey includes questions measuring the key variables: CSR, customer satisfaction, and customer loyalty. The survey was designed using Likert-type scales, with responses ranging from 1 (strongly disagree) to 5 (strongly agree) to assess the degree to which customers agree with various statements related to CSR practices, their satisfaction with the bank, and their loyalty behaviors. Corporate Social Responsibility (CSR) was measured using a multi-item scale that evaluates the extent of the bank's engagement in socially responsible activities, including environmental efforts and community support. CSR was measured using the scale adopted by Fatma and Rahman (2016) and Muflih (2021).

Customer satisfaction (CR) was measured using a scale that evaluates the customer's overall satisfaction with the bank's services, the quality of customer service, and the bank's responsiveness to customer needs. Customer satisfaction (CS) was measured using the scale adopted by Karadeniz and Gozuyukari (2016) and Al-Ghamdi and Badawi (2019). Customer loyalty (CL) was measured through behavioral intentions and was measured using the scale adopted by Mohsan et al. (2011) and Hasan et al. (2021).

4. Results

4.1. The measurement model

Data analysis for this study will be conducted using Structural Equation Modeling (SEM), a statistical technique that tests complex relationships between multiple variables. SEM is particularly suited for examining direct and indirect effects in mediation models, making it ideal for testing the hypotheses proposed in this study. Table 2 provides various reliability and validity measures for the constructs used in the research, including Loading, Cronbach's Alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and Heterotrait-Monotrait Ratio (HTMT). The author applied the guidelines of Hair et al. (2019) to test the measurement model's reliability, convergence, and discriminant.

Table 2 shows factor loadings from 0.800 to 0.984, all exceeding the 0.70 threshold, indicating strong item-construct relationships. Cronbach's alpha and Composite Reliability (CR) values above 0.70 confirm internal consistency. AVE values over 0.50 indicate good convergent validity, while HTMT below 0.90 confirms discriminant validity, supporting a robust and reliable measurement model.

Table 2: Reliability, Convergence, Discriminant

Items	Loading	Cronbach's alpha	CR	AVE	HTMT
CSR1	0,871	0,924	0,929	0,817	0,407 – 0,866
CSR2	0,902				
CSR3	0,866				
CSR4	0,972				
CS1	0,820	0,956	0,960	0,853	0,335– 0,873
CS2	0,800				
CS3	0,873				
CL1	0,853	0,776	0,775	0,691	0,326 – 0,899
CL2	0,893				
CL3	0,899				
CL4	0,981				
CL5	0,984				

Note: CSR: Corporate Social Responsibility; CS: Customer satisfaction; CL: Customer loyalty

4.2. Hypothesis Testing

Table 3 presents the results of the hypothesis testing, showing the path coefficients, t-values, p-values, and decisions regarding the acceptance or rejection of the proposed hypotheses. The hypotheses relate to the relationships between Corporate Social Responsibility (CSR), Customer Satisfaction (CS), and Customer Loyalty (CL).

Table 3. Hypothesis testing results

Relationships	Path coefficient	t-value	P values	Decisions
CSR→ CL	0,114	2,343	0,019	Accept H_1
CSR → CS	0,414	9,371	0,000	Accept H_2
CSR → CS→CL	0,165	6,519	0,000	Accept H_3

Note: CSR: Corporate Social Responsibility; CS: Customer satisfaction; CL: Customer loyalty

The path coefficient between CSR and customer loyalty (CL) is 0,114, indicating a positive relationship with the p-value of 0,019 is below the commonly accepted significance level of 0,05. Therefore, the hypothesis (H1), which suggests that CSR positively influences customer loyalty, is supported and accepted. Besides, the path coefficient between CSR and customer satisfaction (CS) is 0,414, indicating a moderate positive effect, and the p-value of 0,000 is well below 0,05, indicating a powerful and statistically significant relationship. Therefore, the hypothesis (H2) posits that CSR positively influences customer satisfaction and is strongly supported and accepted. In addition, the indirect path from CSR to customer loyalty through customer satisfaction has a path coefficient of 0,165, indicating a moderate positive relationship. The p-value of 0,000 suggests that this indirect relationship is highly significant. Thus, the hypothesis (H3), which proposes that customer satisfaction mediates the relationship between CSR and customer loyalty, is supported and accepted.

5. Discussion and limitation

The data support all three hypotheses. The findings suggest that CSR has a positive effect

on customer loyalty, CSR significantly enhances customer satisfaction and Customer satisfaction plays a mediating role between CSR and customer loyalty. Firstly, the positive path coefficient between CSR and customer loyalty supports the notion that CSR initiatives can enhance customer loyalty in the banking sector. This finding aligns with previous research (Al-Ghamdi and Badawi (2019; Sang, 2022) demonstrating CSR's ability to strengthen customer relationships and loyalty. While the effect is statistically significant, the relatively low path coefficient suggests that CSR alone might not be a sufficient driver of customer loyalty. This finding highlights the importance of other factors, such as service quality, product offerings, and customer experience, in building loyalty. The relatively modest effect size could be attributed to the fact that customers may still prioritize other banking factors (e.g., convenience, service quality) over CSR efforts. However, CSR has a role in differentiating banks and enhancing customers' emotional connection with the institution, ultimately contributing to their loyalty.

Additionally, the path coefficient of 0,414 between CSR and customer satisfaction reveals a strong, positive relationship, supporting the argument that CSR activities significantly impact how customers perceive the bank. This finding corroborates prior studies (Nareeman & Hassan, 2013; Al-Ghamdi & Badawi (2019), which suggest that CSR initiatives improve customer satisfaction by aligning with their values and enhancing their overall banking experience. Banks that engage in CSR activities contribute to societal welfare and create a more favorable image among their customers, leading to increased satisfaction. Customers tend to view CSR-engaged banks as more trustworthy, responsible, and ethical, strengthening their emotional connection with the bank. This finding highlights the value of CSR as a strategic tool for banks aiming to build long-term relationships with their customers and foster customer satisfaction.

Moreover, the significant path coefficient (0,165) of the indirect relationship between CSR and customer loyalty, mediated by customer satisfaction, reinforces the importance of satisfaction in the CSR-loyalty relationship. This result aligns with the concept that CSR activities can influence customer loyalty directly and through customer satisfaction. The findings suggest that customer satisfaction plays a crucial role in strengthening the effects of CSR on customer loyalty, which is consistent with existing literature (Al-Ghamdi & Badawi, 2019). In short, CSR boosts customer satisfaction, which then drives greater loyalty. This mediation highlights that banks must align CSR efforts with customer expectations to enhance satisfaction. A holistic approach integrating CSR into overall customer relationship management is essential, with continuous monitoring of CSR's impact on customer perceptions to foster loyalty.

The results suggest that commercial banks in Vietnam can benefit from strengthening their CSR initiatives, as these activities positively correlate with customer satisfaction and loyalty. However, while CSR can enhance satisfaction and foster loyalty, banks must recognize that CSR should be considered part of a broader strategy. Banks should complement their CSR efforts with high-quality service, competitive product offerings, and effective customer relationship management to leverage CSR benefits fully. Banks can also use the findings to refine their CSR strategies further, ensuring that their initiatives align with customer values and preferences. For example, banks might focus on environmental sustainability, community development, or ethical business practices based on the most critical issues for their customers.

This study offers valuable insights but has limitations. The sample is limited to Vietnamese commercial bank customers, restricting generalizability to other regions or sectors. Future research should examine CSR, satisfaction, and loyalty across diverse contexts and consider additional factors like service quality, trust, and emotional attachment for a fuller understanding of customer loyalty drivers.

References:

Agyei, J., Sun, S., Penney, E. K., Abrokwah, E., & Ofori-Boafo, R. (2021). Linking CSR and customer engagement: The role of customer-brand identification and customer satisfaction. Sage Open, 11(3), 21582440211040113.

Alafi, K., & Hasoneh, A. B. (2012). Corporate social responsibility associated with customer satisfaction and financial performance a case study with Housing Banks in Jordan. International Journal of Humanities and Social Science, 2(15), 102-115.

Al-Ghamdi, S. A. A., & Badawi, N. S. (2019). Do corporate social responsibility activities enhance customer satisfaction and customer loyalty? Evidence from the Saudi banking sector. Cogent Business & Management, 6(1), 1662932.

Azizan, N. S., & Yusr, M. M. (2019). Customer satisfaction, brand trust, and brand image influence customer loyalty. International Journal of Entrepreneurship and Management Practices, 2(7), 93-108.

Dam, S. M., & Dam, T. C. (2021). Relationships between service quality, brand image, customer satisfaction, and customer loyalty. The Journal of Asian Finance, Economics and Business, 8(3), 585-593.

Ehigie, B. O. (2006). Correlates of customer loyalty to their bank: a case study in Nigeria. International Journal of Bank Marketing, 24(7), 494-508.

Emmanuel, B., & Priscilla, O. A. (2022). A review of corporate social responsibility and its relationship with customer satisfaction and corporate image. Open Journal of Business and Management, 10(2), 715-728.

Gu, S. (2023). Corporate social responsibility and customer loyalty: the mediating role of Co-creation and customer trust. Asian Journal of Economics, Business and Accounting, 23(3), 1–19.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate Data Analysis. Cengage.

Hasan, I., Farida, L., & Kholilah, K. (2021). The role of Islamic Corporate Social Responsibility in building corporate image to increase customer loyalty. Jurnal Ekonomi Modernisasi, 17(2), 83-94.

Hassan, M. K., Rabbani, M. R., Brodmann, J., Bashar, A., & Grewal, H. (2023). Bibliometric and Scientometric analysis on CSR practices in the banking sector. Review of Financial Economics, 41(2), 177–196.

Jamal, A., & Naser, K. (2003). Factors influencing customer satisfaction in the retail banking sector in Pakistan. International Journal of commerce and management, 13(2), 29-53.

Kim, L., Jindabot, T., & Yeo, S. F. (2024). Understanding customer loyalty in the banking industry: A systematic review and meta-analysis. Heliyon.

McDonald, L. M., & Rundle-Thiele, S. (2008). Corporate social responsibility and bank customer satisfaction: a research agenda. International Journal of Bank Marketing, 26(3), 170-182.

Muflih, M. (2021). The link between corporate social responsibility and customer loyalty: Empirical evidence from the Islamic banking industry. Journal of Retailing and Consumer Services, 61, 102558.

Nareeman, A., & Hassan, Z. (2013). Customer perceived practice of CSR on improving customer satisfaction and loyalty. International Journal of Accounting and Business Management, 1(1), 30–49.

Sang, N. M. (2022). Corporate social responsibility, electronic word-of-mouth and customer loyalty in Vietnam's banking sector. Banks and Bank Systems, 17(3), 38–48.

Velte, P. (2022). Meta-analyses on corporate social responsibility (CSR): a literature review. Management Review Quarterly, 72(3), 627–675.

IMPACT OF THE DIGITAL ECONOMY ON GREEN ECONOMY DEVELOPMENT IN VIETNAM

PhD. Tran Phuong Thao* - PhD. Tran Van Hai*

Abstract: ***This study investigates the impact of digital economic development on green economic development in Vietnam. Time series data compiled in Vietnam from 2016 to 2022, used to assess the level of digital economy development and investigate the impact of the digital economy on green economy development. In addition, the article examines the impact of factors that are control variables including total national income, number of workers, science and technology investment expenditure, foreign direct investment and production index industry to green economic development. The findings show that the digital economy significantly stimulates sustainable economic development, factors such as foreign direct investment, science and technology spending and total national income have an impact in facilitating this relationship. The contribution of this study provides management insights into how regions can promote green economy development in the digital age.***

• Keywords: *digital economy, green economy, scientific research and innovation development, foreign investment, economic growth.*

Date of receipt: 14th Nov., 2024
Date of delivery revision: 20th Dec., 2024
Date of receipt revision: 10th Apr., 2025
Date of approval: 03rd May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.25

1. Introduction

The United Nations Environment Program (UNEP, October 2008) launched the "Green Economy Initiative", after which the term green economy was widely used with many different definitions. A green economy can be considered an economy with low carbon emissions, efficient use of resources and social inclusion" (UNEP, 2011). The core meaning of green economy is economic growth that simultaneously ensures two goals: protecting a clean and sustainable living environment. In Vietnam, the issue of green growth and sustainable development has received special attention from the Party and State in recent times.

Vietnam is promoting the development of the digital economy, considering this a "breakthrough" in the context of the Fourth Industrial Revolution with increasingly rapid technological innovation, mobile communications technology with 4G network currently covering more than 95% of households. With the emergence of many new industries and the blurring of geographical borders between countries, the digital economy plays a role and has an impact not only in forming a new growth method - digital growth, but also, as a new source of growth, the environmental impact of the digital economy is receiving special attention. Considering the possibility of using the creativity and dynamism of the digital economy for the benefit of not only the economy, but also environmental and social values, has led to the concept of "sustainable digital economy" as a solution to environmental problems.

This study examines how the digital economy impacts green economic development in Vietnam using a quantitative regression model.

2. Research overview

The first type focuses on the synchronous development of the digital economy and the green economy, which benefits the recovering economy. Accordingly, the path to realizing the coordinated development of the digital economy and the green economy needs to go hand in hand. Regional governments should choose the right path to promote the coordinated development of the digital economy and the green economy according to their existing resources and local conditions according to Zhang M, Yin S. (2023). According to Lahouel BB, Taleb L, Zaied YB, Managi S. (2021), with the guidance of appropriate green policies, the synergistic effect between these two areas stimulates the development of related industries integration, enhancing labor market flexibility and facilitating transformation and upgrading of industrial structure. Castro GDR, Fernandez MCG, Colsa AU (2021) present a comprehensive systematic review and in-depth qualitative analysis of the research field and rationale behind the Development Goals Sustainability in the United Nations 2030 Agenda, sheds light on whether digital paradigms and ICT technologies, especially Big Data Analytics and Artificial Intelligence, can be exploited effectively responsibility or not.

The second type of research explores the impact of the digital economy on the development of the green

* *Hanoi Open University; email: thaotp@hou.edu.vn*

economy. It posits a positive relationship between the two, as the digital economy provides high-quality technological resources that support various aspects of life, according to Ghobakhloo M. (2020). The development of the digital economy promotes the green transformation of the Chinese economy (Lingzhang Kong, Jinye Li, 2023). Specifically, using China's provincial panel data from 2011–2019, this study builds a comprehensive digital economy index system and green economic performance to explore the impact of digital economy to green economic performance. This view is also shared by Shi, H., & Chen, L. (2023) when considering the role of the digital economy in green consumption, the digital economy can promote promote the development of green consumption. Li, Q., Cheng, H., & Liu, F. (2023) also examined the impact of digital financial inclusion on green consumption spending of Chinese rural households, and said that building green concepts and promoting green consumption are inherent requirements for promoting high-quality economic development in China. Seo et al. (2009) found that countries with relatively low productivity levels can take advantage of information technology knowledge spillovers to narrow gap with developed countries. Other view that the digital economy has improved economic efficiency compared to the traditional economy, improved economic structure and deeply integrated with the real economy (Gao et al., 2022; Niu et al., 2022; Niu et al. al., 2024). At the macro level, the digital economy can move the production point closer to the production possibilities frontier and push the frontier limit, thereby optimizing the ratio of production factors and increasing allocative efficiency (Nambisan et al., 2019; Sanders et al., 2019; Mishra et al. al., 2022). With an empirical research method using the entropy weighting method, An Q, Wang R, Wang Y and Pavel K (2024) investigated the impact of the digital economy on sustainable development outcomes concluded that the digital economy can promote sustainable development after conducting a baseline regression and several robustness checks. The above-mentioned findings are consistent with the results of Zhang (2022) and Xu et al. (2023). Zhang used a set of 12 indicators to measure the development of the digital economy at the provincial level in China. The study also uses a single metric method, total factor productivity, to evaluate the high quality of economic development. Xu confirms the development synergies between the digital economy and the green economy using an LSTM-GM Model. Savchenko and Borodina (2020) provided a Taxonomy of Sustainable Development Goals that advocates the integration of digital solutions to promote urban sustainability. In addition to the conclusions about the impact of the digital economy on the green economy, research by Li and colleagues (2022) suggests that the development of the digital economy is a new form of promoted economic growth by technological innovation. As a result, green innovation can help the digital economy grow.

In general, the above studies have focused on an overall assessment of the development of the digital economy and the impact of the digital economy on the green economy. However, there has been no official research analyzing and measuring the impact of the digital economy on the green economy in Vietnam with secondary data in the period 2016-2022. Therefore, the authors chose to analyze in this study.

3. Research model and research hypothesis

3.1. Research model

Diagram 1: Research model

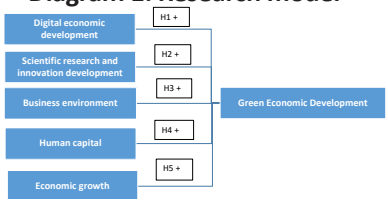


Table 1: Definition of variables

Encryption	Content of measurement variable	Data source	Reference
Dependent variable			
GE (measured by PCA)	**GE: Green economic development**		
	Electricity consumption ratio/Total energy consumption (%)	General Statistics Office (GSO) data	Suggested by the author
	Total emissions due to fuel combustion	GSO data	An Q, Wang R, Wang Y và Pavel K (2024)
	Emissions per capita	GSO data	Suggested by the author
	Emissions per GDP	GSO data	Chen, H.; Ma, Z.; Xiao, H.; Li, J.; Chen, W. (2023);
	Water supply; waste and wastewater management and treatment activities	GSO data	Suggested by the author
	Forest ratio	GSO data	Chen, H.; Ma, Z.; Xiao, H.; Li, J.; Chen, W. (2023)
	Solid waste is processed on average per day	GSO data	Suggested by the author
	Electricity consumption ratio/Total energy consumption (%)	Vietnam Energy Yearbook	An Q, Wang R, Wang Y và Pavel K (2024)
Independent variable			
DE: (measured by PCA)	**DE: Digital economic development**		
	Telephone subscriber number	GSO data	Zhao, T., Zhang, Z., and Liang, S. (2020), An Q, Wang R, Wang Y và Pavel K (2024); Zhang J, Zhao W, Cheng B, Li A, Wang Y, Yang N and Tian Y (2022)
	Number of mobile subscribers in the number of telephone subscribers	GSO data	
	Number of fixed broadband internet subscribers (ADSL)	GSO data	
	Telecommunications revenue	GSO data	
Control variable			
	Scientific research and innovation development		
CKH	Expenditure on science and technology	GSO data	Zhang J, Zhao W, Cheng B, Li A, Wang Y, Yang N and Tian Y (2022)
BPM	Number of patents granted protection	GSO data	Jiangquan Wang et al (2023)
	Business environment		
CCN	Industrial production index	GSO data	Suggested by the author
FDI	Realized foreign direct investment capital	GSO data	Zhang Yunfei (2022)
SDN	Number of operating enterprises with production and business results	GSO data	Suggested by the author
	Human capital		
LD1	Total number of employees	GSO data	Bustonov M. Mardonakulovich (2020)
LD2	Percentage of workers with informal jobs	GSO data	Suggested by the author
	Economic growth		
TT1	Gross domestic product GDP	GSO data	Zhang Yunfei (2022)
TT2	Gross national income GNI	GSO data	

Based on the research overview, the authors compiled a group of indicators including: Telephone subscriber number, Number of mobile subscribers among

telephone subscribers, Number of fixed broadband internet subscribers (ADSL), Telecommunication revenue information to measure the development of the digital economy. Indices reflecting the development of the green economy include: Ratio of electricity consumption/Total energy consumption (%); Total emissions due to fuel combustion; Emissions per capita; Water supply; waste and wastewater management and treatment activities; Forest ratio; Solid waste is processed on average per day; Ratio of electricity consumption/ Total energy consumption (%). In addition to research on the impact of digital economic development on green economic development, the authors propose a number of control variables including: research on science and innovation development; business environment; human capital; economic growth.

3.2. Research hypothesis

(i) With the prevailing economic uncertainties, the advancement of both the digital economy and the green economy has become indispensable to achieve a harmonious combination of economic growth and progress environment (WenqiLiao, 2023).

=> H1: Digital economic development has a positive impact on green economic development.

(ii) Scientific research and innovation development are the keys to the development of a green economy, especially for countries in the developing stage. This factor is quantified through two indicators: spending on science and technology and number of patents .

=> H2: Scientific research and innovation development have a positive impact on green economic development

(iii) According to Rosatom State Corporation (2018): Factors of the business environment related to access to financial resources, human resources and infrastructure as well as availability of conditions for establishment and development business development.

=> H3: The business environment has a positive impact on green economic development.

(iv) Human capital is a key factor ensuring economic growth efficiency (Voronin & al., 2020). The factor that plays a decisive role in the sustainable development of countries is high-quality human resources, not just material wealth.

=> H4: Human capital has a positive impact on green economic development.

(v) Economic growth based on GDP indicators helps businesses, investors and market analysts make decisions appropriate to the current state of the economy. An increase in GDP is a sign that the economy is performing well, businesses are confident to invest more, thereby promoting investment in innovating infrastructure, facilities and conditions for economic development. green. However, a study by author Pham Thi Bich Thao (2020) found that the higher Vietnam's economic growth, the more environmental hazards and resource scarcity risks there are because the research criteria tend to be inseparable.

=> H5: Economic growth has a positive/negative impact on green economic development.

3.3. Research methods

In this study, the author uses quantitative methods, using regression econometric tools to estimate and test the model and thereby determine the impact of the digital economy on the green economy in Vietnam. The author uses Stata 20 software to analyze secondary data. Secondary data on the development of the digital economy, green economy, business environment, scientific research and innovation development, human capital and economic growth were collected during the period 2016-2022 (7* 21 = 147 observations).

* Descriptive statistical analysis: The statistical indicators described include: Obs (Observation) - number of observations; Mean Std. - Average number; Dev. (Standard Deviation) - Standard deviation; Min - Minimum value; Max - The largest value is shown in the following results table:

Variable	Obs	Mean	Std. Dev.	Min	Max
GE	7	-2.86E-08	1.224095	-2.64399	0.971235
DE	7	1.59E-17	1.000002	-1.49112	1.41145
CKH	7	39273.29	6822.983	29694	45787
BPM	7	2713	1196	1505	4597
CCN	7	107.9571	2.974255	103.3	111.3
FDI	7	18142.86	2273.747	14500	20380
SDN	7	598579.1	101137.1	442485	718697
LD1	7	53112.56	1859.371	49072	54659.2
LD2	7	72.36286	2.644905	68.54	75.99
TT1	7	6910390	1249563	5191324	8487476
TT2	7	6556564	1205051	4927884	8053249

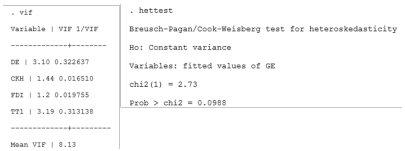
* Correlation analysis: The model's correlation analysis results show that the GE variable is correlated with indicators reflecting Scientific Research and Innovation Development, Business Environment, Human Capital and Growth economy.

	GE	DE	CKH	BPM	CCN	FDI	SDN	LD1	LD2	TT1	TT2
GE	1										
DE	0.6747	1									
CKH	0.7521	0.6267	1								
BPM	0.5891	0.267	0.8924	1							
CCN	0.8246	0.5688	0.9817	0.899	1						
FDI	0.825	0.7565	0.9779	0.8203	0.9591	1					
SDN	0.8225	0.577	0.984	0.895	0.9984	0.9636	1				
LD1	-0.1603	0.4144	-0.2073	-0.3463	-0.3272	-0.0742	-0.3232	1			
LD2	-0.7615	-0.4711	-0.9612	-0.9058	-0.9872	-0.914	-0.9852	0.4549	1		
TT1	0.7647	0.5173	0.9828	0.9227	0.9928	0.9454	0.9947	-0.3673	-0.9923	1	
TT2	0.7527	0.5094	0.9837	0.9308	0.9914	0.9436	0.9926	-0.361	-0.9912	0.9996	1

* Time series data regression model gives the following results:

```
reg GE DE CKH FDI TT1
------------------------------------------------------------------------------
          GE |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          DE |   1.095347    .375109     2.92   0.043     .0538773    2.136817
         CKH |   .0001349   .0000529     2.55   0.021    -1.01e-06    .0002709
         FDI |   .0004441   .0001361     3.26   0.022     .0000943    .0007939
         TT1 |   7.49e-07   2.82e-07     2.65   0.045     2.35e-08    1.47e-06
       _cons |   18.56977   10.71959     1.73   0.158    -11.19259    48.33213
```

* Checking the model's defects: multicollinearity, heteroskedasticity and autocorrelation obtained the following results:



```
. vif
Variable | VIF 1/VIF
-------------+--------
DE | 3.10 0.322637
CEH | 1.44 0.016510
FDI | 1.2 0.019755
TTI | 3.19 0.313138
-------------+---------
Mean VIF | 8.13
```

```
. hettest
Breusch-Pagan/Cook-Welsberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of GE
chi2(1) = 2.73
Prob > chi2 = 0.0988
```

- Multicollinearity test: with VIF value = 8.13 < 10, the model used does not have multicollinearity phenomenon.

- Testing heteroskedasticity: found that the value Prob>chi2 = 0.0988 > 0.05, so the model does not have heteroskedasticity.

The results show that the above model has 4 factors affecting green economic development: Digital economic development; Industrial development index; Spending on science and technology; Foreign direct investment. From the results of the study when estimating parameters on Stata20 software, the following conclusions can be drawn:

- Digital economic development: Strengthening information technology reduces carbon emissions and is a positive driving factor for economic growth. The results show that digital technology transformation and digital innovation capability transformation have a significant impact on green manufacturing performance and green service performance. Experimental results in Vietnam have also explored the impact of digital transformation on environmental pollution, arguing that the internet of things allows for more resource-efficient production and improved recycling processes.

- Spending on science and technology has a positive impact on the development of the green economy. In Vietnam when science and technology facilitate the transformation of the growth model from breadth to depth. Science and technology develop with the introduction of a series of new and modern technologies that contribute to changing and improving old and outdated growth models with economic development models consistent with trends globally towards a green growth economy.

- Foreign direct investment index has positive impact on green economic development. FDI activities contribute to the transfer of advanced and high technology into Vietnam. In fact, in Vietnam, FDI enterprises have contributed to changing thinking and behavior, creating new and groundbreaking changes in green consumption and green production. Typically: Coca Cola and Unilever built the "Zero to Waste"; Nestlé carries out many sustainable initiatives on combating climate change and managing water resources, waste recycling; Heineken Vietnam announced that it recycles nearly 99% of waste and by-products, with 4/6 breweries using renewable energy and biomass fuel, with no carbon emissions (Ly Hoang Phu, 2020).

- Economic growth index has a positive impact on green economic development. In fact, in the coming time, Vietnam will need about 368 - 380 billion USD for the whole period or 6.8% of GDP each year until 2040 to transition to a green economy and cope with the impacts of change. climate. Investment demand will focus largely on energy, agricultural transport and industry. Therefore, it requires close coordination of ministries and branches as well as the companionship of all people and businesses.

4. Conclusion and recommendations

From the results of empirical research, it shows that the development of the digital economy in Vietnam is influenced by the following factors: digital economic development; scientific research and innovation development; foreign direct investment and economic growth. In the current context of the country's economy, with the goal of sustainable and long-term economic growth, digital economy and green economy are the most appropriate and mainstream development methods in the current period, ensuring the goal of rapid and sustainable development. Thus, the core digital economic sector itself is information technology, which has a huge impact on economic development. Promote scientific research and innovation development, especially low-carbon emission technologies, encourage businesses to invest in innovation, absorption and mastery of technology, especially core technology, source technology, stabilizing the macroeconomy, especially controlling inflation, stabilizing the value of new currency create favorable conditions to maintain order and promote investment, production, business, consumption, through promotes overall economic growth. To enhance the impact of FDI and international trade on Vietnam's economic growth, there needs to be a policy of prioritizing projects with advanced, clean technology, modern management, high added value, spillover effects, and global connectivity. However, to achieve this goal, synchronous coordination of agencies and businesses is needed, people in promoting digital transformation and applying information technology in all areas of socio-economic life.

References:

An Q, Wang R, Wang Y và Pavel K (2024), Tác động của nền kinh tế kỹ thuật số đến phát triển bền vững: bằng chứng từ Trung Quốc. Đằng trước. Môi trường. Khoa học. 12:1341471. doi: 10.3389/fenvs.2024.134147;

Bustonov Mansurjon Mardonakulovich (2020), Digital Economy In Improving The Quality Of Economic Growth, European Journal of Molecular & Clinical Medicine ISSN 2515-8260 Volume 07, Issue 07;

Jiangquan Wang, Jun Zhang, Javier Cifuentes-faura, Sinisi Crenguta Ileana, Xin Zhao, Khám phá các yếu tố ảnh hưởng đến kinh tế số: khám phá cơ cấu mối quan hệ để cải thiện sự bền vững ở Trung Quốc. 2023. https://doi.org/10.3846/tede.2024.20600;

Li, J., Chen, L., Chen, Y. và He, J. (2022). Kinh tế số, đổi mới công nghệ và hiệu quả kinh tế xanh bằng chứng thực nghiệm từ 277 thành phố ở Trung Quốc. Quản lý. Quyết định. Kinh tế. 43, 616-629. doi:10.1002/mde.3406;

Mishra, R., Singh, RK và Papadopoulos, T. (2022). Liên kết định hướng kỹ thuật số và đổi mới dựa trên dữ liệu: khung liên kết SAP-LAP và các đề xuất nghiên cứu, IEEE Trans. Anh. Quản lý. 71, 1346-1358. doi:10.1109/TEM.2022.3153588;

Savchenko, AB và Borodina, TL (2020). Nền kinh tế xanh và kỹ thuật số để phát triển bền vững các khu đô thị. Reg. Res. Nga. 10, 583-592. doi:10.1134/ S2079970520040097

Shi, H., & Chen, L. (2023). Lộ trình thực hiện nền kinh tế số thúc đẩy phát triển tiêu dùng xanh. Kinh tế sinh thái, 39(5), 118-122. https://kns.cnki.net/

Seo H, Lee YS, Oh JH. Đầu tư CNTT-TT có làm gia tăng khoảng cách tăng trưởng? Chính sách Viễn thông (2009)

Zhang, J., Lyu, Y., Li, Y. và Geng, Y. (2022). Nền kinh tế số: yếu tố thúc đẩy đổi mới cho phát triển carbon thấp. Môi trường. Đánh giá tác động. Rev. 96, 106821. doi:10.1016/ j.eiar.2022.106821

Zhang M, Yin S. 2023. Liệu nền kinh tế số và nền kinh tế xanh của Trung Quốc có thể đạt được sự phát triển phối hợp? Sự bền vững.; 15(7):5666. https://doi.org/10.3390/su15075666

. Zhang Yunfei. The Impact of the Digital Economy on Industry's Green Transformation. Academic Journal of Business & Management (2022) Vol. 4, Issue 9: 64-67. https://doi.org/10.25236/AJBM.2022.040909.

ENHANCING THE COMPETITIVE CAPACITY OF REAL ESTATE ENTERPRISES IN HO CHI MINH CITY

Nguyen Duy Ngoc* - Assoc.Prof.PhD. Nguyen Viet Khoi**

Abstract: ***This study examines key factors influencing the competitive capacity of real estate (RE) enterprises in Ho Chi Minh City, including strategic vision, market research, financial access, technology adoption, organizational culture, and branding. Using a mixed-method approach with SmartPLS analysis, findings highlight financial access, strategic vision, and market research as the most impactful factors. Organizational culture and branding also contribute, while technology adoption shows no direct influence, indicating integration challenges. The study underscores the need for a holistic strategy combining financial, strategic, cultural, and branding efforts to sustain competitiveness in a dynamic market.***

• Keywords: *competitive capacity, real estate enterprises, strategic vision, branding.*

Date of receipt: 20th Dec., 2024
Date of delivery revision: 23th Dec., 2024
Date of receipt revision: 10th Apr., 2025
Date of approval: 28th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.26

1. Research rationale

The real estate sector in Ho Chi Minh City (HCMC), Vietnam, has boasted 35% and 41% profit margins (Nguyen & Chinda, 2018). This matches real estate market knowledge in developed and emerging nations (Nguyen & Chinda, 2018). The city faces various hurdles that real estate companies must overcome to stay competitive.

Rapid urbanisation and population growth in HCMC are serious challenges. More than 13 million people live, study, and work in the 9-million-person city, expanding by 200,000 annually (Nguyen et al., 2022). Seo et al. (2021) report a housing shortage and an expansion in informal slums in the city's periphery. Despite foreign direct investment in residential real estate development, most developers have focused on high-end, expensive home projects, causing a housing market imbalance (Seo et al., 2021).

To address this, real estate enterprises need to focus on developing affordable housing projects that cater to the needs of the growing middle-income population *(Seo et al., 2018)*. This can be achieved through public-private partnerships, which have been recognized as an option to resolve the infrastructure development challenges in HCMC *(Nguyen et al., 2020)*.

Rising real estate competition is another issue. Real estate firms must implement competitive strategies. Outsourced marketing can save costs, enhance revenue, free up time for specialised tasks, boost brand equity, and boost rental room system recognition (Dung, 2024).

Additionally, real estate enterprises can enhance their competitive capacity by focusing on factors that influence customers' purchase intention, such as location, financial status, corporate reputation, and private living space *(Le-Hoang, 2021; Le-Hoang et al., 2020)*. The location factor is particularly important in the context of HCMC, as it is the most influential factor in customers' intention to buy real estate *(Le-Hoang, 2021; Le-Hoang et al., 2020)*.

Real estate companies can also use CSR to gain a competitive edge. Legal, economic, philanthropic, ethical, and environmental CSR efforts can boost employee loyalty and business reputation, giving real estate companies a competitive edge (Mai, 2023).

Real estate companies must also adapt to digital transformation and evolving technology. Real estate companies can get a competitive edge from digital transformation leadership, government support, competitive pressure, IT expertise, and organisational agility (Phi, 2024).

Finally, real estate companies must examine HCMC's architectural dialectics of heritage and modernity and design sustainable architectural growth strategies (Dong & Sarena, 2024). This can include blending traditional components and design concepts into modern real estate developments while addressing city environmental and sustainability issues (Dong Ming Hui & Sarena Abdullah, 2024; Thi, 2023).

Enhancing the competitive capacity of real estate enterprises in HCMC requires a multifaceted approach that addresses the challenges of rapid population growth, housing affordability, competition, technological change, and sustainable development. By adopting strategies that focus on these key areas, real estate

** Nong Lam University, Ho Chi Minh City; email: ngoc.nguyenduy@hcmuaf.edu.vn*
*** Dai Nam University, Hanoi*

enterprises can strengthen their competitive position and contribute to the overall development of HCMC.

2. The theoretical framework for the competitive capacity of real estate enterprises

This study's theoretical framework includes models and concepts that evaluate internal and external factors affecting RE firms' competitiveness. External factors like economic conditions, legal frameworks, and market trends affect RE firm competitiveness. This study uses Porter's Diamond Model, Value Chain Theory, and sustainable development principles to analyse these dynamics.

2.1. Porter's diamond model

Porter's Diamond Model is a foundational framework for analyzing industry competitiveness. It identifies four key determinants influencing the competitive capacity of an industry or nation:

- Essential resources including skilled labour, natural resources, and infrastructure are factor conditions. This could include land, skilled labour, and transportation in the RE industry.

- Demand Conditions: Domestic demand affects industry competitiveness. For instance, real estate companies improve their products due to rising demand.

- Related and Supporting Industries Well-developed associated industries and suppliers can boost competitiveness. Construction and building materials support RE.

- Strategy, Structure, and Rivalry: Industry organisations and competition effect corporate competitiveness. RE companies must build market-leading strategies.

2.2. Value chain theory

Another useful tool for competitive capacity analysis is Michael Porter's Value Chain Theory. It divides company operations into major and support functions. Research and development, production, marketing, and customer service are primary activities; human resource management, financial management, and IT are supporting. Value chain optimisation in RE can boost efficiency and cut costs. Investing in IT helps streamline project management, increasing competitiveness. Strategic partnerships with suppliers and customers boost value and competitiveness.

2.3. Principles of sustainable development

Sustainability is increasingly important for RE competitiveness. Businesses must weigh earnings against social and environmental impacts. Research shows that sustainable practices give companies a long-term edge. Recycled materials and energy-efficient designs reduce environmental impact and attract eco-conscious customers. Customers and investors like RE companies with strong social responsibility, which increases their competitiveness.

3. Hypotheses development and research model

Porter's Diamond Model highlights four primary factors influencing the competitive capacity of an industry: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry. Drawing on this framework, prior studies by Hui et al. *(2010)* categorize the determinants of competitiveness in the real estate *(RE)* sector into similar groups. This approach enables enterprises to identify their strengths and weaknesses within the competitive landscape.

In addition, organizational culture plays a crucial role in enhancing competitiveness. Research by Wang *(2019)* demonstrates that a green organizational culture positively influences green performance and competitive capacity. This suggests that cultivating a robust organizational culture, especially one aligned with modern values, can establish sustainable advantages for RE enterprises.

Another significant factor is business strategy. According to Malancea *(2022)*, competitive strategies centered on building a strong corporate image significantly impact competitiveness. A well-established and reputable brand can help attract customers and differentiate a company from its competitors. Moreover, research by Giantari and Sukaatmadja *(2021)* highlights the role of green marketing strategies in creating competitive advantages for RE developers.

Access to capital also emerges as a critical determinant. Li et al. *(2021)* emphasize that financial resources and effective financial management directly impact the competitive capacity of RE enterprises. Companies must efficiently mobilize capital to invest in projects and develop products that deliver customer value and improve competitiveness.

The application of technology is becoming increasingly vital for competitiveness in the RE sector. Sümer *(2019)* notes that information technology governance significantly enhances a company's competitive positioning. Investing in innovative technologies and optimizing workflows can improve operational efficiency and reduce costs, resulting in a sustainable competitive edge.

Lastly, sustainability strategies are essential in today's market. Farida *(2022)* finds that sustainable development approaches not only meet customer demands but also protect the environment and contribute to societal progress, creating long-term competitive advantages for RE companies.

Based on the above analyses, the following hypotheses are proposed:

H1: A clear and appropriate strategic vision positively affects the competitive capacity of RE enterprises.

H2: Comprehensive market research and an understanding of customer needs positively affect the competitive capacity of RE enterprises.

H3: Access to financial resources significantly impacts the competitive capacity of RE enterprises.

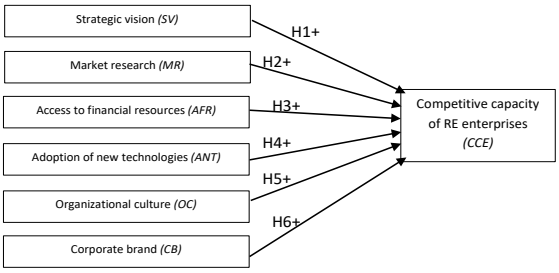
H4: The adoption of new technologies positively affects the competitive capacity of RE enterprises.

H5: A strong organizational culture, particularly one fostering collaboration and knowledge sharing, positively affects the competitive capacity of RE enterprises.

H6: Building a strong corporate brand and image positively affects the competitive capacity of RE enterprises.

From these hypotheses, the following research model is proposed:

Figure 1. Research model



Source: Developed by the authors

4. Research methodology

4.1. Data collection

The poll included 221 participants and a 70% response rate, ensuring good dependability. From July to October 2024, the survey was conducted, with data processing and study completed in the following month.

Sample representativeness was achieved via stratified random sampling. Senior management, key workers, and RE sector competitive capability experts attended. The selected companies showcase Ho Chi Minh City's RE industry, from large organisations to SMEs.

4.2. Data analysis

Quantitative data analysis was conducted using SPSS software, employing multivariate regression techniques to examine the relationships between the independent variables *(e.g., strategic vision, market research, capital access, technology, organizational culture, and branding)* and the dependent variable *(competitive capacity)*. This analysis provides an assessment of the relative influence of each factor, enabling the identification of the most critical determinants of competitiveness.

4.3. Research sample characteristics

The sample predominantly consists of RE enterprises that have been operating for 11–15 years *(92.3%)*, indicating a stable presence in the industry. Medium-sized enterprises *(100–200 employees)* account for the majority of respondents *(54.3%)*, followed by small and large enterprises. Most enterprises operate in the residential real estate sector *(63.8%)*, with a smaller focus on commercial real estate and land plots.

Table 1 summarizes the characteristics of the surveyed enterprises and participants

Variable	Category	Freq.	Percent (%)
Years of Operation	Less than 5 years	5	2.3
	5–10 years	2	0.9
	11–15 years	204	92.3
	Over 15 years	10	4.5
Enterprise Size	Small *(<100 employees)*	37	16.7
	Medium *(100–200 employees)*	120	54.3
	Large *(>200 employees)*	53	24
	Listed companies	11	5
Business Focus	Residential real estate	141	63.8
	Commercial real estate	43	19.5
	Land plots	35	15.8
	Industrial real estate	2	0.9
Position of Participants	Project managers	22	10
	Department managers	75	33.9
	CEOs	92	41.6
	Real estate experts	32	14.5
Total		**221**	**100.0**

Source: From the authors' data analysis results

4.4. Analytical approach

The regression analysis examines how independent variables affect RE business competitiveness. The study validates measurement scales using Cronbach's Alpha reliability tests to contain only reliable variables. Multivariate regression analysis determines how each component affects competitiveness.

This methodological rigour ensures statistically robust findings and actionable insights for improving RE firms' competitiveness in Ho Chi Minh City.

Table 2. Reliability and discriminant validity tests

	α	CR *(rho_a)*	CR *(rho_c)*	AVE	AFR	ANT	CB	CCE	MR	OC	SV
AFR	0.822	0.826	0.875	0.583							
ANT	0.608	-0.044	0.616	0.406	0.122						
CB	0.823	0.890	0.886	0.723	0.134	0.085					
CCE	0.765	0.765	0.865	0.681	0.751	0.097	0.207				
MR	0.820	0.826	0.881	0.649	0.539	0.093	0.091	0.770			
OC	0.821	0.849	0.872	0.576	0.107	0.106	0.232	0.417	0.116		
SV	0.795	0.806	0.859	0.550	0.272	0.144	0.110	0.570	0.238	0.124	

Source: From the authors' data analysis results

Table 2 shows high construct reliability and validity. Most constructs, including Access to Financial Resources (AFR), Corporate Brand (CB), and Organisational Culture (OC), have Cronbach's Alpha (α) values above 0.7, indicating excellent internal consistency. The Adoption of New Technologies (ANT) measurement scale has a lower Cronbach's Alpha of 0.608, suggesting it should be improved. All categories have Composite Reliability (CR) ratings above 0.7, with Corporate Brand (0.886) and Access to Financial Resources (0.875) being particularly reliable. These results demonstrate measurement model consistency and dependability.

Convergent validity is confirmed by most constructions' AVE values above 0.5. Corporate Brand (0.723) and Competitive Capacity of Enterprises (CCE) (0.681) have high AVE values, indicating that latent variables explain a lot of the variance in their observable measures. However, the Adoption of New Technologies (ANT) has an AVE value of 0.406, which is below the

acceptable level, suggesting that this construct may need more development to increase its validity. Despite this, cross-loadings and the Fornell-Larcker criterion show that the constructs are sufficiently separate, maintaining the study model's structural integrity.

5. Structural equation modelling

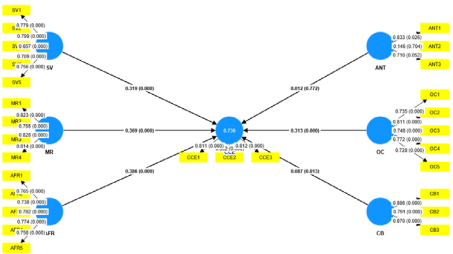
Table 3. Path coefficients and hypotheses testing

Hypothesis	Relationship	Original sample	Mean	STDEV	T statistics	P values	Result
H1	SV -> CCE	0.319	0.316	0.033	9.641	0.000	Acepted
H2	MR -> CCE	0.369	0.365	0.044	8.347	0.000	Acepted
H3	AFR -> CCE	0.386	0.384	0.043	8.871	0.000	Acepted
H4	ANT -> CCE	0.012	0.000	0.041	0.290	0.772	Rejected
H5	OC -> CCE	0.313	0.312	0.037	8.559	0.000	Acepted
H6	CB -> CCE	0.087	0.088	0.035	2.487	0.013	Acepted

Source: From the authors' data analysis results

Table 3 shows that most independent variables affect real estate (RE) firms' competitiveness. H1, H2, H3, H5, and H6 are allowed due to significant route coefficients (p-values < 0.05). Access to financial resources (H3) affects competitive capacity the most with a path coefficient of 0.386. This suggests that strong financial resources enable project investments and operational improvements, making RE firms more competitive. Strategic vision (H1) and market research (H2) also have high effects (0.319 and 0.369). To remain competitive, a clear, forward-looking strategy and a strong understanding of market dynamics are essential.

Figure 2. Result of PLS-SEM structural model path coefficient



The hypothesis that new technologies are adopted (H4) is rejected due to its low path coefficient (0.012) and low statistical significance (p-value = 0.772). This shows that technology adoption may not immediately affect RE firms' competitiveness in Ho Chi Minh City. Insufficient technical deployment or difficulty matching these technologies with organisational aims may be to blame. Organisational culture (H5) and corporate branding (H6) both significantly affect competitive capability with values of 0.313 and 0.087 (Figure 2). These findings emphasise the importance of a collaborative, knowledge-sharing culture and a strong corporate image for long-term competitive advantage. The results reveal the dominance of financial, strategic, and market-driven elements in RE competitiveness.

6. Discussions

This study reveals the key elements affecting Ho Chi Minh City real estate (RE) firms' competitiveness and their relative relevance. Financial resources had the greatest impact, with a path coefficient of 0.386. This shows how financial capacity helps companies invest in huge projects, innovate, and manage market changes. To be competitive in the capital-intensive RE sector, financial management must be strong, according to previous studies. Strategic vision (0.319) and market research (0.369) are strongly correlated with competitive capacity, emphasising the need for forward-thinking plans and market trends. These characteristics help companies anticipate client wants, spot market possibilities, and react to changing business conditions.

The study reveals that adopting new technologies (H4) does not significantly affect competitive capability, as shown by its low path coefficient (0.012). Technology adoption is often seen as a competitiveness driver, although its influence may depend on organisational strategy integration and alignment. RE firms in Ho Chi Minh City may face issues such limited technology infrastructure, a shortage of skilled workers to integrate new technologies, or an emphasis on old business strategies. This finding suggests a thorough investigation into sector technology adoption constraints and targeted initiatives to incorporate technology into fundamental business operations to uncover its potential advantages.

The large contributions of organisational culture (0.313) and business branding (0.087) to competitive capability demonstrate the relevance of intangible assets in long-term success. Strong organisational cultures encourage staff collaboration, innovation, and knowledge-sharing, which improve operational efficiency and customer happiness. Customer trust and loyalty are strengthened by a strong business brand, giving it an edge in a crowded market. These findings demonstrate that RE firms must invest in strong internal systems and a positive public image beyond financial and market strategies. The discussions suggest that RE firms in Ho Chi Minh City need a holistic approach that balances financial, strategic, cultural, and branding initiatives to improve their competitiveness.

References:

Dong Ming Hui & Sarena Abdullah (2024). Dialectics of tradition and modernity in the architectural landscape of ho chi minh city, vietnam. ISVS, 11(2), 251-262. https://doi.org/10.61275/isvsej-2024-11-02-16

Dung, M. (2024). Trends in the utilization of outsourced marketing departments by landlords of boarding rooms in ho chi minh city. International Journal of Scientific Research and Management, 12(06), 6606-6617. https://doi.org/10.18535/ijsrm/v12i06.em05

Le-Hoang, P. (2021). Behavior intention to purchase real estate: an empirical study in ho chi minh city. Independent Journal of Management & Production, 12(1), 080-094. https://doi.org/10.14807/ijmp.v12i1.1262

Le-Hoang, P., Ho, Y., Luu, D., & Le, T. (2020). Determinants of customer's apartment purchase intention: is the location dominant?. Independent Journal of Management & Production, 11(4), 1303-1322. https://doi.org/10.14807/ijmp.v11i4.1100

Mai, N. (2023). Corporate social responsibility strategy practices, employee commitment, reputation as sources of competitive advantage. Sage Open, 13(4). https://doi.org/10.1177/21582440231216248

Nguyen, N. and Chinda, T. (2018). A dynamic model of profit of residential projects in vietnam. International Journal of Strategic Property Management, 22(6), 489-500. https://doi.org/10.3846/ijspm.2018.6274

Nguyen, P., Likhitruangsilp, V., & Onishi, M. (2020). Success factors for public-private partnership infrastructure projects in vietnam. International Journal on Advanced Science Engineering and Information Technology, 10(2), 858-865. https://doi.org/10.18517/ijaseit.10.2.5839

Nguyen, P., Thu, N., & An, L. (2022). High-class apartment selection factors in ho chi minh city. Ho Chi Minh City Open University Journal of Science - Engineering and Technology, 11(1), 69-78. https://doi.org/10.46223/hcmcoujs.tech.en.11.1.1602.2021

Phi, H. (2024). The impact of digital transformation on the competitive advantage of businesses: case study of businesses providing logistic services in hcmc, vietnam. International Journal of Management and Economics Invention, 10(07). https://doi.org/10.47191/ijmei/v10i7.07

Seo, D., Chung, Y., & Kwon, Y. (2018). Price determinants of affordable apartments in vietnam: toward the public–private partnerships for sustainable housing development. Sustainability, 10(1), 197. https://doi.org/10.3390/su10010197

Seo, D., Shin, Y., & Kwon, Y. (2021). Property ownership and resettlement options in vietnam: the case of district 8, ho chi minh city. International Journal of Urban Sciences, 26(1), 129-147. https://doi.org/10.1080/12265934.2021.1877567

Thi, P. (2023). Economic development with environmental protection in ho chi minh city, vietnam: situations and problems. Journal of Law and Sustainable Development, 11(5), e781. https://doi.org/10.55908/sdgs.v11i5.781

THE EFFECTS OF FINANCIAL LEVERAGE AND FINANCIAL DISTRESS ON FIRM VALUE - A STUDY IN VIETNAM

PhD. Truong Thanh Hang*

Abstract: ***This study aims to assess the impact of financial leverage and financial distress on the enterprise value of Vietnamese listed firms from 2014 to 2023. The data source for this study is financial statements from 525 Vietnamese-listed firms. The study utilizes Stata 17 data analysis software, the regression is estimated using the ordinary least squares model (OLS), fixed effects model (FEM), and random effects model (REM). The Hausman test is used to select the most appropriate model, and tests for autocorrelation and heteroscedasticity are conducted. If these phenomena are present, they are corrected using the generalized least squares model (GLS). The study results indicate that financial leverage, enterprise size, and profitability positively impact enterprise value (measured by Tobin's Q). However, the financial distress factor (measured by Altman's Z-score (1968)) has a negative impact on firm value. These findings are important for managers, shareholders, and creditors when making decisions related to management, capital structure, funding sources, and future investments and credit decisions.***

• Keywords: *financial leverage, firm value, financial distress, z-score, Vietnamese-listed firms.*

Date of receipt: 05th Mar., 2025
Date of delivery revision: 08th Mar., 2025
Date of receipt revision: 02nd Apr., 2025
Date of approval: 10th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.27

1. Introduction

In the constantly changing global economy, Vietnamese enterprises are facing numerous challenges in maintaining and enhancing their value in the market. One crucial factor that determines the sustainable development of enterprises is the effective use of financial leverage. When used correctly, financial leverage can bring significant benefits by increasing returns on equity. However, if abused, it can lead to financial exhaustion and push the enterprise to the brink of bankruptcy. In recent years, there have been several cases in Vietnam where enterprises have experienced financial exhaustion due to unreasonable financial leverage strategies. According to Altman's financial distress theory (1968), excessive use of debt can increase the risk of bankruptcy and financial costs, ultimately reducing business performance and enterprise value. Similarly, the Static Trade-Off Theory by Kraus and Litzenberger (1973) emphasizes the importance of considering the benefits of borrowing (tax shield) and the potential costs of financial distress in determining the optimal level of financial leverage. This study aims to clarify how listed Vietnamese enterprises are utilizing financial leverage to maximize enterprise value while also limiting financial risks and avoiding bankruptcy to increase enterprise value.

2. Theoretical framework of the experimental research

The Static Trade-off Theory, first developed by (Kraus & Litzenberger, 1973), who pioneered the introduction of the theory, models the benefits of tax shields on interest expenses and the costs of financial distress. Krause and Litzenberger proposed that a company could optimize its capital structure by balancing these two factors. James Scott (1976) further expanded on this theory by using a mathematical model to describe the trade-off between these two factors. He suggested that there is an optimal capital structure where the value of the firm is maximized. The theory suggests that there is an optimal level of financial leverage at which tax benefits are maximized while minimizing the costs of financial distress, ultimately increasing the overall value of the firm.

Financial Distress Theory, developed by Edward I. Altman in 1968, is based on his Z-Score model. This theory states that a company is in financial distress when it struggles to meet its debt obligations, potentially leading to bankruptcy or the need for financial restructuring. The main contributing factors to financial distress are typically poor liquidity, high levels of debt, ineffective management, and declining operational efficiency. Altman also suggests that financial distress can result in suboptimal management decisions, increased borrowing costs, and a decrease in firm value. By using static equilibrium theory and financial distress theory as a foundation for studying the impact of financial leverage and distress on enterprise value, managers, investors, and financial analysts can better assess and predict the financial health of a company. This can help them make informed decisions

* *School of Economics - Hanoi University of Industry; email: truongthanhhang@haui.edu.vn*

to mitigate the risk of bankruptcy and assist managers in finding a balance between the benefits and costs of debt, ultimately determining the optimal capital structure.

At the present, in Vietnam and worldwide, many scholars have studied the impact of financial leverage and financial distress on company value. Notable studies include:

The group of studies on the impact of financial leverage on firm value

Financial leverage is an important indicator for investors and managers as it provides a clear understanding of the amount of debt a business has used to finance its operations. In simpler terms, it shows how much a business has borrowed to potentially increase its profits. Numerous quantitative studies have shown an inverse relationship between financial leverage and firm value, which can be attributed to various financial and economic factors. This relationship has been supported by empirical studies conducted by authors such as Nguyen Thi Nhien (2023), Hermuningsih et al. (2022), Kristi et al. (2020), Dang et al. (2020), Nguyen et al. (2020), Ibrahim et al. (2020), Al-Slehat et al. (2020). These studies have consistently found a negative impact of financial leverage on enterprise value, with higher levels of financial leverage leading to a decrease in the market value of the business.

In addition, there have been several published empirical studies by authors such as Aprilyani et al. (2021), Ibrahim and Isiaka (2021), and Gill et al. (2012) that have demonstrated a positive correlation between financial leverage and enterprise value.

The group of studies on the impact of financial distress on firm value

Financial distress is typically measured by Altman's (1968) Z-score, which reflects the impact of financial risk on market expectations and the overall financial health of a firm. A low Z-score indicates a higher risk of bankruptcy. As the Z-score decreases, it signals that the firm may face financial distress, making it more difficult to pay debts and maintain stable operations. Several studies (Bhimavarapu et al., 2023; Aminu et al., 2023; Utami et al., 2022; Dewi et al., 2021; Goetz, 2020; Witjaksono, 2020; Tan, 2012) have found a negative relationship between Z-score and firm value, indicating that higher financial risk can lead to a decline in firm value and uncertainty about its future prospects and business performance.

3. Hypotheses, data and research method

Research hypotheses

The theory of static trade-off highlights the potential benefits of using debt, as it allows for a tax deduction on interest and ultimately reduces the weighted average cost of capital (WACC). Empirical studies conducted by Aprilyani et al. (2021), Ibrahim and Isiaka (2021), Jihadi et al. (2021), and Gill et al. (2012) have all demonstrated a positive correlation between financial leverage and corporate value. Based on these findings, the author propose the following hypothesis:

H_1: Financial leverage (FL) has a positively impact on firm value (FV)

Several studies, including those by Bhimavarapu et al. (2023), Aminu et al. (2023), Utami et al. (2022), Dewi et al. (2021), Goetz et al. (2020), Witjaksono (2020), and Tan (2012), have demonstrated a negative relationship between financial distress and business value. Based on this, the author proposes the following hypothesis:

H_2: Financial distress (FD) has a negative impact on firm value (FV)

Several studies, including those by Hardi et al. (2023), Jihadi et al. (2021), Al-Slehat et al. (2020), and Gill et al. (2012), have found a positive correlation between corporate size and corporate value. Based on this evidence, the author's hypothesis (H_3) is as follows:

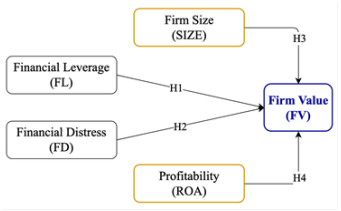
H_3: Firm size (SIZE) has a positive effect on firm value (FV)

Empirically, it has been shown that businesses with high profitability often reflect the excellent management ability of the board of directors in allocating and using financial resources, which creates confidence for investors and shareholders, thereby increasing the market value of the business. Studies by et Jihadi et al. (2021), Gill et al. (2012) have found a positive impact of profitability on business value. Thus, the author proposed the last hypothesis (H4) as:

H_4: Firm's profitability (ROA) has a positively effect on firm value (FV)

Data, research model, and research method

Figure 1: Proposed Research Model



The research sample comprises 525 companies with 5,250 observations spanning 10 years from 2014 to 2023. The data is extracted from the financial reports of publicly listed companies on the Vietnam stock exchange through the FiinPro-X database.

According to Figure 1, the dependent variable is firm value (FV), with two independent variables: financial leverage (FL) and financial distress (FD). The

control variables include company size (SIZE) and profitability (ROA).

Table 1: Measurement of independent variables and control variables

Abbreviation	Variable	Defined Formula	Source
Dependent Variable			
FV	Firm value	**Tobin's Q = (Liability Market Value + Equity Market Value)/Total Asset Replacement Value**	(Tan, 2012) (Gill & Obradovich, 2012) (Ibrahim & Isiaka, 2020) (Dewi et al., n.d.) (Jihadi et al., 2021)
Independent Variables			
FL	Financial leverage	FL = Total Liabilities /Total Assets	(Gill & Obradovich, 2012) (Jihadi et al., 2021)
FD	Financial distress measured by the Z-score indicator (Altman (1968)	Z-score = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1X_5 X_1 = Working Capital / Total Assets X_2 = Retained Earnings / Total Assets X_3 = EBIT / Total Assets X_4 = Market Capitalization / Book Value of Liabilities X_5 = Revenue / Total Assets The implication of Z-score indicator: *Z-score < 1.81: The enterprise has a severe financial crisis and is at high risk of bankruptcy.* *1.81 ≤ Z-score ≤ 2.99: The enterprise is in the warning zone and is potentially at risk of bankruptcy.* *Z-score > 2.99: The enterprise is in the safe zone and has no risk of insolvency.* *The lower the Z-score of an enterprise, the more likelihood of its financial distress.*	(Dewi et al., n.d.) (Altman, 1968) (Goetz, 2020; Witjaksono, 2020)
Control Variables			
SIZE	Firm size	Logarithm to the base e of total assets, ln(total assets)	(Gill & Obradovich, 2012) (Jihadi et al., 2021)
ROA	Profitability	ROA = Net Profit / Total Assets	(Gill & Obradovich, 2012) (Jihadi et al., 2021)

Source: The author research compilation

Given that the input is balance sheet data, the author performed estimation using the Ordinary Least Squares (OLS) model, the Fixed Effects Model (FEM), and the Random Effects Model (REM), employing the Hausman test to select the appropriate model. The authors tested for autocorrelation and heteroscedasticity and address these issues using the Generalized Least Squares (GLS) model.

4. Results and discussion

The authors performed descriptive statistics of the variables based on the mean, maximum, minimum, standard deviation, and the number of observations, summarized in Table 2 below.

Table 2. Descriptive statistics of the variables

Variables	Mean	Max	Min	Standard Deviation	Observations
FV	1.1544	17.1733	0.0040	0.6974	5,250
FL	0.4664	1.2949	0.0026	0.2261	5,250
FD	4.5984	241.8405	-0.8209	8.0036	5,250
SIZE	27.6078	34.1347	23.3303	1.6421	5,250
ROA	0.062	0.8391	-0.5172	0.0771	5,250

Source: The author calculation using STATA 17 software

Table 2 shows that: The enterprise value is measured by the Tobin's Q index, with the largest value being 17.1733 and the smallest value being 0.0040. The average value of Tobin's Q is 1.1544, indicating that the average enterprise in the data sample has a Tobin's Q value greater than 1. This suggests that the market has high expectations for the future prospects of these enterprises.

Upon analyzing the data in Table 2, it is evident that there is a significant variation in the level of financial leverage among enterprises. The largest value of financial leverage is 1.2949, while the smallest value is 0.0026. The average value of financial leverage shows that the enterprises in the sample have a relatively moderate debt-to-asset ratio of approximately 46.64%. This indicates a reasonable level of debt utilization in the overall financial structure of the enterprises.

Financial distress is typically measured by the Z-score, as proposed by Altman in 1968. Upon analyzing the data presented in Table 2, it is evident that there is a significant variation in the financial situations of the enterprises included in the sample. While some enterprises exhibit strong financial stability, others may be at a higher risk of experiencing financial distress. The lowest Z-score recorded in the sample is -0.8209, indicating that there are indeed some enterprises with a negative Z-score, placing them at a high risk of financial distress. However, the average Z-score suggests that the majority of enterprises have a stable or even favorable financial situation, with a Z-score greater than 3.

The average firm size is 27.6078, with the largest being 34.1347 and the smallest being 23.3330. Profitability is measured by the ROA index, with an average value of 0.062. This indicates that, on average, enterprises have modest profitability, with profits accounting for only 6.2% of asset value.

The results of the correlation coefficient and multicollinearity tests (shown in Table 3) indicate a statistically significant difference between the independent variables, control variables, and dependent variables of the model. This is sufficient to proceed with the regression analysis.

Table 3: Correlation and multicollinearity test between variables

	EV	FL	Z-SCORE	SIZE	ROA	VIF
EV	1.0000					
FL	-0.0920	1.0000				1.43
ZSCORE	0.3383	-0.3878	1.0000			1.19
SIZE	0.0781	0.3486	-0.1736	1.0000		1.15
ROA	0.3922	-0.3480	0.2144	-0.0616	1.0000	1.15

Source: The author calculation using STATA 17 software

Table 4 presents the regression results of three models, including the Ordinary Least Squares (OLS), the Fixed Effects Model (FEM), and the Random Effects Model (REM). The results show specific differences among these three methods. Thus, to determine the most appropriate model, the authors have further conducted the Hausman Test to decide whether the fixed or random effects estimator should be used. The Hausman Test results with a p-value of 0.000 indicates that the FEM model is the most fit.

Table 4: Regressions Results

	Constant	FL	FD	SIZE	ROA	R - Squared
OLS	-0.7057 (0.000)	0.3835 (0.000)	0.0284 (0.000)	0.0485 (0.000)	3.3680 (0.000)	25.4 %
FEM	2.5282 (0.000)	0.5424 (0.000)	0.0304 (0.000)	-0.0652 (0.000)	0.5725 (0.000)	14.89 %
REM	0.2707 (0.274)	0.3820 (0.000)	0.0301 (0.000)	0.0177 (0.053)	1.2581 (0.000)	13.79 %

In particular: The values in the first row are the coefficients.
The values in the parentheses are the corresponding p-values of the variables
Source: The author calculation using STATA 17 software

Assessing the Fixed Effects Model (FEM), following (Susmel, 2015), (Greene, 2000), and (Hair et al., 2010), this model does not expose to serial correlation because FEM only considers individual-specific differences that contribute to the model.

The author conducted the Wald test on the FEM estimation results to examine the presence of heteroscedasticity. The P-value is 0.0000, concluding that heteroscedasticity exists in the model. Thus, the authors have applied the GLS estimation to address this issue (according to (Susmel, 2015) and (Greene, 2000).

The regression results after addressing heteroscedasticity using the GLS model are presented in Table 5 as follows:

Table 5: GLS model result after addressing heteroskedasticity issue

	Constant	FL	FD	SIZE	ROA
GLS	-0.3014 (0.000)	0.3753 (0.000)	0.0329 (0.000)	0.0323 (0.000)	2.5887 (0.000)

Source: The author calculation using STATA 17 software

Given the result table, the proposed hypotheses H1, H2, H3, and H4 are accepted.

The regression results show that financial leverage has a positive impact on the enterprise value of listed companies on the Vietnam stock market during the period of 2014-2023. Vietnamese listed companies have effectively utilized financial leverage, optimizing capital costs and taking advantage of debt to increase profits and ultimately increase enterprise value. Additionally, the regression results also demonstrate the significant impact of financial distress on the value of listed companies on the Vietnam stock market during the period of 2014-2023. The results also support hypothesis H2 (with a positive β2 coefficient), indicating that the Z-score of a company has a positive relationship with its enterprise value. A higher Z-score reflects a stable and healthy financial situation, indicating the company's ability to withstand economic fluctuations and a lower risk of bankruptcy. On the other hand, a lower Z-score suggests a higher financial risk, including the possibility of defaulting on debt or lacking sufficient working capital to sustain operations. This not only decreases investor confidence, leading to a decrease in stock prices and market capitalization, but also affects the company's ability to access capital. The experimental results also show that larger companies have a competitive advantage in terms of economies of scale, leading to lower production costs and easier access to capital and markets, ultimately increasing profitability and firm value.

5. Conclusion: The study's findings indicate that financial leverage, company size, and profitability all have a positive impact on enterprise value. It is important for enterprises to avoid financial distress and maintain financial health in order to increase their value in the market. Based on these results, the authors recommend that enterprises utilize financial leverage to optimize their capital structure. This can be achieved by implementing a clear risk management strategy, particularly in regards to controlling interest costs and maintaining solvency. When considering borrowing, enterprises should carefully assess whether the benefits of using borrowed capital outweigh the associated costs. Additionally, enterprises should actively seek opportunities to expand their scale in order to reduce production costs, improve operational efficiency, and ultimately increase their overall value.

References:

Al-Slehat, Z. A. F. (2019). Impact of Financial Leverage, Size and Assets Structure on Firm Value: Evidence from Industrial Sector, Jordan. International Business Research, 13(1), 109. https://doi.org/10.5539/ibr.v13n1p109

Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. In The Journal of Finance (Vol. 23, Issue 4). http://www.jstor.org/about/terms.html.

Aprilyani, I., Heni Widyarti, Mt., & Hamidah, N. (2021). The effect of erm, firm size, leverage, profitability and dividend policy on firm value (evidence from food & beverage sub sector companies listed in IDX 2015 - 2019). 4(1)

Battisti, E., Bollani, L., Miglietta, N., & Salvi, A. (2020). The impact of leverage on the cost of capital and market value. Management Research Review, 43(9), 1081-1096. https://doi.org/10.1108/MRR-01-2019-0007

Bhimavarapu, V. M., Rastogi, S., Kanoujiya, J., & Rawal, A. (2023). Repercussion of financial distress and corporate disclosure on the valuation of non-financial firms in India. Future Business Journal, 9(1). https://doi.org/10.1186/s43093-023-00248-7

Dang, H. N., Nguyen, T. T. C., & Tran, D. M. (2020). The impact of earnings quality on firm value: The case of Vietnam. Journal of Asian Finance, Economics and Business, 7(3), 63-72. https://doi.org/10.13106/jafeb.2020.vol7.no3.63

Dewi, M., Foanto, G. N., & Christiawan, Y. J. (n.d.). Profitability, Liquidity, and Firm - PAPER. https://repository.petra.ac.id/19485/

Gill, A., & Obradovich, J. D. (2012). The Impact of Corporate Governance and Financial Leverage on the Value of American Firms. In International Research Journal of Finance and Economics. http://www.internationalresearchjournaloffinanceandeconomics.com

Goetz, S. (2020). Is Financial Distress Value Relevant?-Implications for Multiple-Based Valuation. Journal of Business Valuation and Economic Loss Analysis, 15(1), 20190015.

Greene, W. H. (2000). Econometric analysis 4th edition. International Edition, New Jersey: Prentice Hall, 201-215.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. (2010). Multivariate Data Analysis: Pearson Education. Upper Saddle River, New Jersey.

Hardi, I., Idroes, G. M., Hardia, N. A. K., Fajri, I., Furqan, N., Noviandy, T. R., & Utami, R. T. (2023). Assessing the Linkage Between Sustainability Reporting and Indonesia's Firm Value: The Role of Firm Size and Leverage. Indatu Journal of Management and Accounting, 1(1), 21-28. https://doi.org/10.60084/ijma.v1i1.79

Herminingsih, S., Kusuma, H., Erawati, T., & Rahmawati, A. D. (2022). Fundamental aspects of leverage, profitability and financial distress as mediating variables that influence firm value. Jurnal Akuntansi Dan Auditing Indonesia, 26(2), 2022. https://doi.org/10.20885/jaai.vol26.i

Ibrahim, U. A., & Isiaka, A. (2020). Effect of Financial Leverage on Firm Value: Evidence From Selected Firms Quoted on the Nigerian Stock Exchange. European Journal of Business and Management. https://doi.org/10.7176/ejbm/12-3-16

Jihadi, M., Vilantika, E., Hashemi, S. M., Arifin, Z., Bachtiar, Y., & Sholichah, F. (2021). The Effect of Liquidity, Leverage, and Profitability on Firm Value: Empirical Evidence from Indonesia. Journal of Asian Finance, Economics and Business, 8(3), 423-431. https://doi.org/10.13106/jafeb.2021.vol8.no3.0423

Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. The Journal of Finance, 28(4), 911-922.

Kristi, N. M., & Yanto, H. (2020). Accounting Analysis Journal The Effect of Financial and Non-Financial Factors on Firm Value ARTICLE INFO ABSTRACT. Accounting Analysis Journal, 9(2), 131-137. https://doi.org/10.15294/aaj.v8i2.37518

Nguyen, A. H., & Doan, D. T. (2020). The impact of intellectual capital on firm value: Empirical evidence from Vietnam. International Journal of Financial Research, 11(4), 74-85. https://doi.org/10.5430/ijfr.v11n4p74

Nhiên, N. T. (2023). Ảnh hưởng của tính thanh khoản, đòn bẩy tài chính và khả năng sinh lợi đến giá trị các doanh nghiệp niêm yết tại thị trường Việt Nam giai đoạn 2011-2021. Giải Thưởng Nhà Nghiên Cứu Trẻ UEH 2023, Đại học Kinh tế TP. Hồ Chí Minh.

Phuong, N. T. T., & Hung, D. N. (2020). Impact of corporate governance on corporate value: Research in Vietnam. Research in World Economy, 11(1), 161-170. https://doi.org/10.5430/rwe.v11n1p161

Rabiu, N. B., Aminu, D. A., Olanisebe, M., & Salihu, M. A. (2023a). The Mediating Effect of Financial Distress on the Relationship between Profitability and Value of Listed Non-Financial Firms in Nigeria. FUDMA Journal of Accounting and Finance Research [FUJAFR], 1(2), 1-15. https://doi.org/10.33003/fujafr-2023.v1i2.18.1-15

Rabiu, N. B., Aminu, D. A., Olanisebe, M., & Salihu, M. A. (2023b). The Mediating Effect of Financial Distress on the Relationship between Profitability and Value of Listed Non-Financial Firms in Nigeria. FUDMA Journal of Accounting and Finance Research [FUJAFR], 1(2), 1-15. https://doi.org/10.33003/fujafr-2023.v1i2.18.1-15

Stewart C. Myers. (1984). CAPITAL STRUCTURE PUZZLE.

Susmel, R. (2015). Panel data models. University of Houston.

Tan, T. K. (2012). Financial Distress and Firm Performance: Evidence from the Asian Financial Crisis.

Utami, N. D., Rasmini, N. K., Sari, M. R., & Sudana, I. P. (2022). effect of good corporate governance, enterprise risk management, and financial distress on company value. International Journal of Health Sciences, 6(S1), 1312-1329. https://doi.org/10.53730/ijhs.v6ns1.4871

Witjaksono, A. (2020). Effects of Earning Manipulation, Strength of Financial Position and Financial Distress on Firm Value (Case of Listed Manufacturing Firms in Indonesia). In International Journal of Innovation, Creativity and Change. www.ijicc.net (Vol. 12, Issue 8). www.ijicc.net

STRATEGIC MANAGEMENT ACCOUNTING IN SMEs AND RECOMMENDATIONS FOR VIETNAM

PhD. Dang Van Sang*

Abstract: ***Strategic management accounting (SMA) is essential in modern business management. SMA) is a form of management accounting that focuses on providing information to support strategic decision-making and performance monitoring, particularly in relation to external factors and competitors. It's essentially management accounting with a broader, more strategic perspective, moving beyond purely internal financial data. This paper discusses an overview of SMA; the challenges and obstacles that small and medium enterprises (SMEs) in the world and in Vietnam have to face. From there, the author proposes a number of solutions to apply SMA in SMEs in Vietnam.***

• Keywords: *strategic management accounting, nonfinancial information.*

Date of receipt: 10th Mar., 2025
Date of delivery revision: 31th Mar., 2025
Date of receipt revision: 05th Apr., 2025
Date of approval: 12h May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.28

1. Introduction

Strategic management accounting (SMA) was first discussed in the literature of the late 1980s as a response to concerns about management accounting losing its relevance for business practice (Roslender and Hart, 2003). SMA is still not clearly defined, so writers emphasise different perspectives and techniques or avoid defining it altogether.

SMA related to the increasing role of the accounting function within the company and the use of increasingly sophisticated management accounting tools as well as the reliability of business information are vital factors that must be considered by every business manager. SMA integrates financial and nonfinancial information to assist organizations in shaping their corporate strategies and making informed decisions. Unlike traditional management accounting, which primarily focuses on internal data, SMA emphasizes external factors such as market share, costs, and competitive positioning. This approach allows businesses to analyze their standing relative to competitors and assess the broader industry trends that impact their performance.

SMA plays a particularly important role in collecting, processing, analyzing and providing information to meet the requirements to help managers comprehensively perform management functions. Information provided by SMA includes detailed information related to production and business costs, serving the cost strategy planning of managers, including medium-term and long-term decisions, affecting the business's operating strategy.

After more than 40 years since the term was introduced, it is necessary to organize the literature and provide some insights on SMA practices among business organizations (Rashid et al., 2020). Furthermore, the Fourth Industrial Revolution (IR 4.0) technologies such as artificial intelligence (AI), and big data analytics that has been underway over the past half-century may influence the SMA practices in businesses.

2. Overview of Strategic management accounting

2.1. Definitions of Strategic management accounting

Simmonds (1981) defines the concept of SMA as the provision and analysis of management accounting data for use in developing and monitoring business strategy. Consistent with the notion of achieving competitive advantage, he advocates that attention be paid to competitors' relative levels and trends in such factors as costs, prices, market share, cash flow and financial structure.

SMA is usually described in ways which place emphasis on factors external to an organization (Bromwich and Bhimani, 1994). SMA is identified as a generic approach to accounting for strategic positioning, defined by an attempt to integrate insights from management accounting and marketing management within a strategic management framework (Roslender and Hart, 2003). SMA is the process of identifying, gathering, choosing and analysing accounting data for helping the management team to make strategic decisions and to assess organisational effectiveness (Hoque, 2003).

** Hung Vuong University of Ho Chi Minh City; email: anhsang7176@gmail.com*

SMA is the form of management accounting in which emphasis is placed on information that relates to factors external to the entity, as well as non-financial information and internally generated information CIMA (2005). SMA is a form of management accounting in which emphasis is placed on information which relates to factors external to the entity, as well as on non-financial information and internally generated information (Hadid and Al-Sayed, 2021).

2.2. The role of Strategic management accounting

SMA is essential for many companies because SMA directs management to not only see the financial aspect as the focus of control and to pay attention to the non-financial side (Setiawan et al., 2020). Previously, (Setiawan et al., 2019a) explained that SMA is a concept regarding the provision and analysis of management accounting data relating to businesses and their competitors, which play a role in developing and monitoring business strategy. Therefore, management accounting has shifted from traditional management accounting, which only focuses on cost, to SMA, which looks at the financial, customer, and even competitors in an integrated manner.

SMA plays an important role in guiding and promoting the sustainable development of businesses by providing strategic information and supporting decision-making for company leadership. Below are some of the key roles of SMA.

- *Providing information for strategic decisions:* By collecting, processing, and analyzing accounting information, it helps supply data for strategic decision-making. Additionally, to help businesses enhance their competitive capabilities, SMA needs to thoroughly understand external economic information to support planning for changes beyond control, such as new competitors entering the market or threats from substitute services and goods competing for the company's market share.

- *Supporting strategic decision-making:* SMA analyzes financial data, the company's financial situation, and operational performance to provide useful information for strategic decision-making. This includes evaluating the effectiveness of current strategies, proposing optimal options, and promoting adaptation to changing market and business environments.

- *Forecasting and planning:* Strategic management accountants often participate in the process of financial forecasting and business planning. They use financial data as well as strategic and market information to identify financial goals and develop appropriate scenarios.

- *Evaluating Performance and measuring achievement:* SMA helps measure the performance and achievements of implemented plans and strategies. This ensures that the company can track progress and assess the effectiveness of strategic activities over time.

- *Managing Risks:* SMA plays a role in identifying, measuring and managing risks in business operations. This helps the company minimize uncertainties and ensure long-term sustainability.

- *Developing policies and procedures:* SMA can participate in the creation and development of accounting policies, procedures, and standards that align with the company's strategic objectives.

- *Supporting communication*: Strategic management accountants can share financial and strategic information clearly and reliably with internal and external stakeholders of the company. This helps stakeholders better understand the financial situation and strategic plans of the business.

2.3. The purpose of Strategic management accounting

Robin Roslender, Susan Hart (2003) identified three distinct conceptions of SMA:

- Taking generic strategy tools and looking at how management accounting information can be used to better support strategy.

- Aligning management accounting with marketing for better strategic positioning. Essentially this means using management accounting within the company's marketing tools.

- A catch-all term for a number of modern management accounting techniques, which have a strategic element to them. This generally includes any element of management accounting that involves external and market-oriented information.

3. Challenges in applying Strategic management accounting in the world an in Vietnam

Babajide Oyewo, Syed Tanvir Hussain, Chipo Simbi (2022) show detailed challenges Applying SMA faces challenges related to human barriers, entrenched strategy practices, technological limitations, high implementation costs, and the need for government action and regulation. These challenges include issues like lack of skills, management inertia, resistance to change, and difficulties in integrating information between different departments. Additionally, SMA implementation can be hampered by a perception that it is unnecessary, high costs, and the need to address regulatory complexities. Many researches have showed challenges in applying SMA detailed in Table 1.

In Vietnam, the fact and the simple survey of the author show that, there are similar challenges in

applying SMA in the world. Vietnames enterprises also face challenges such as: Human barriers; Entrenchment of strategy issues in corporate pactice; Technological limitations; High implementation costs; Government action and regulation.

Table 1: Challenges in applying Strategic management accounting

Challenges	Problems	Meanings
Human Barriers	Lack of Relevant Skills and Experience	Many organizations lack the necessary expertise to implement and use SMA techniques effectively.
	Management Inertia	Resistance from management to adopting new systems and practices can hinder implementation.
	Resistance to Change	Individuals may be hesitant to embrace new ways of working, leading to delays in implementation.
	Poor Communication	Lack of clear communication between accounting and other departments can create information flow problems.
	Fear of Failure	Some individuals may be apprehensive about the potential consequences of implementing a new system.
Entrenchment of Strategy Issues in Corporate Practice	Perception of Unnecessary Implementation	Some organizations believe that SMA implementation is not needed as strategy issues are already integrated into their existing practices.
	Lack of Top Management Support	Without strong support from the top, SMA implementation may face resistance and delays.
	Low Awareness and Lack of Knowledge	Insufficient understanding of SMA concepts and techniques can lead to ineffective implementation.
Technological Limitations	Lack of Adequate Technological Equipment	Organizations may lack the necessary technology and infrastructure to support SMA implementation.
	Complexity of Compliance	Increasingly complex regulations and compliance requirements can add to the workload and difficulty for management accountants.
	Cost of Upgrading Technology	Upgrading technological infrastructure can be costly and time-consuming, limiting the use of technology in management accounting.
High Implementation Costs	Cost of Software and Hardware	Implementing SMA systems can involve significant costs for software, hardware, and related infrastructure.
	Cost of Training and Consulting	Training employees on SMA techniques and hiring consultants can add to the overall implementation costs.
Government Action and Regulation	Compliance with Regulations	Meeting regulatory requirements related to SMA can be challenging and time-consuming.
	Globalization and Changing Regulations	The complexities of global operations and changing regulations can further complicate SMA implementation.

Source: Synthesized by the author

Beside that, according to data from the Ministry of Planning and Investment, by December 31, 2024, Vietnam had approximately 940,078 operating enterprises (an increase of 2% over the same period in 2023). In Vietnam, SMEs account for nearly 98% of the total number of enterprises operating in the economy. In 2024 alone, the number of enterprises entering and re-entering the market was 233,419 enterprises. Of which, the majority are small-scale (from 0 - 10 billion VND) with 125,818 enterprises (accounting for 92.5%, up 4.3% over the same period in 2023), mainly in the service industry with 103,127 enterprises, accounting for 75.8% of the total number of newly established enterprises, up 2.73% over the same period in 2023. Although accounting for nearly 98% of the total number of enterprises, the SME sector has a total capital of only VND 16.6 million billion, accounting for less than 30% of the total capital for production and business activities of the entire enterprise sector. Outstanding credit for SMEs in 2024 will only reach nearly 17.6%. The size and the financial health of firms affect application of SMA because business managers only focus on finding benefits rather than making longterm strategies for sustainable development. Preliminary surveys by many researchers indicate that in Vietnam, the application of SMA in enterprises remains very low. Businesses are mostly interested in applying SMA for decision - making.

In addition, one of the biggest obstacles and challenges is the investment cost for the SMA personnels and the technology to operate the this team of strategic management accounts. Because most businesses are SMEs, their financial potential is weak. Basic financial resources cover the essential needs of business operations. Moreover, for the accounting staff, they are not familiar with the concept of SMA. They themselves have not taken the initiative to become professional SMAs to help business managers make timely decisions. Most accounting staff are too focused on professional tasks and have not paid attention to the task of advising and providing strategic advice to administrators through financial and non-financial data.

4. Recommendations of Vietnamese SMEs

The application of SMA in the operations of Vietnamese enterprises is very high because it is linked to the issues that business managers are currently trying to resolve. In the upcoming period, to accelerate the implementation of SMA in business activities, attention needs to be focused on the following matters:

Firstly, business managers need to change their mindset and actively promote the application of SMA in business operations. It is essential to recognize that the emergence of SMA is considered inevitable, as it supplements and improves upon the limitations of traditional management accounting. Currently, traditional management accounting clearly reveals shortcomings in supporting managers because the information it provides is mainly internal, limited in scope, focused on short-term forecasting, emphasizes financial data, and is historical in nature.

Secondly, master SMA techniques. Guilding and his colleagues compiled a list of SMA techniques between 2000 and 2002 that amounted to 20 (Guilding et al, 2000; Čadež et al, 2005; Guilding & McManus, 2002), but in reality, there is still no universally accepted list of SMA techniques (due to the lack of a unified definition of SMA). The determination of SMA techniques remains subjective and depends on the characteristics, capabilities, and strategies of each individual.

There are various SMA techniques that have been developed over the past few decades, and many researchers have categorized these techniques as those with internal focus and those with external focus. The following are 16 SMA techniques that Cadez and Guilding (Citation2008) listed based on past literature from Guilding et al. (Citation2000), which highlighted 12 SMA techniques from past literature. According to AAT (2022), there are typical SMA techniques as follow:

- *Activity-based costing:* Costing and monitoring of activities by tracing resources consumption and costing the final outputs. Resources are assigned to activities and activities to cost objects based on consumption estimates.

- *Benchmarking:* By using data gathering, targets, and comparators, the strategic management accountant identifies relative levels of performance and underperformance. It helps to determine best practices to improve performance.

- *Costing*: More specifically, strategic management accountants will complete costing based on activity, product attributes, life-cycles, quality, targets, and value chains. All of which work to determine whether an investment in a new or improved product or service is worth it.

- *Budgeting*: Strategic management accountants look at brand value budgeting, and monitoring and capital budgeting. The former involves assigning a financial value to the equity created by the name or image of the brand - it can be represented as the net present value of future cash flow estimates associated with the brand. The latter is all about selecting long-term capital investments.

- *Competitive position monitoring*: Pretty much what it says on the tin - reviewing the company's performance in the context of its market position, and the market position of key competitors. A strategic management accountant will also estimate competitor costs per unit based on available data and will look at competitor financial statements to determine their strengths and weaknesses.

- *Customer profitability analysis:* The strategic management accountant looks at the revenue streams and service costs involved with different customer groups.

Thirdly, there needs to be a unified framework, methodology, and clear content about SMA. The application of SMA in practice can be viewed from two perspectives: (i) SMA can be seen as a set of strategically oriented management accounting techniques; (ii) SMA can be seen as the participation of accountants in the strategic decision-making processes of the company (Cadez & Guilding, 2008). Applying SMA is essentially applying groups of strategically oriented SMA techniques. Although there are many significant differences in the definitions and descriptions of SMA, when applied in real enterprises, SMA always shows at least one of the following characteristics: Market orientation; Competitor focus; Long-term orientation (Guilding et al, 2000).

Forthly, prioritizing resources for management accounting in general and SMA in particular. Currently, most very large-scale enterprises only pay attention to management accounting in general and SMA in particular. However, with increasingly intense competition, managers need to utilize a variety of tools in their operational activities.

Firthly, *a*ccountants need to be proactive in becoming professional SMAs to help business managers make timely decisions. If they don't change their mind, with the development of digital technology and artificial intelligence, the opportunity to keep their jobs will become less and less..

5. Conclusion

SMA is considered an effective tool to support managers, helping them understand the operations of their own business and clearly understand its strengths and weaknesses, in order to make short-term and long-term management decisions. Therefore, businesses need to invest financial and human resources to help the accounting system operate effectively. In Vietnam, applying SMA in SMEs is very feasible. It is possible that the resources to pay for human resources and invest in this accounting department will be costly, but the long-term benefits are very clear. In addition, with the development of the Fourth Industrial Revolution and artificial intelligence, it will greatly support businesses. Therefore, promoting the application of SMA for businesses is an irreversible trend.

References:

AAT (2022). An overview of SMA. Available at: https://www.aatcomment.org.uk/career/an-overview-of-strategic-management-accounting/

Babajide Oyewo, Syed Tanvir Hussain, Chipo Simbi (2022). Challenges of implementing management accounting innovations: Evidence from the field. Prometheus. ISSN: 0810-9028 / e-ISSN: 1470-1030.

Bromwich, M. and Bhimani, A. (1994) Management Accounting: Pathways to Progress, London, CIMA Publishing.

CIMA (2005) CIMA Official Terminology, Oxford, CIMA Publishing.

HadidM. Al-Sayed. W. (2021) 'Management accountants and SMA: the role of organizational culture and information systems', Management Accounting Research, 50, paper 100725.

Hoque, Z. (2003) SMA, Frenchs Forest, NSW, Pearson Education Australia.

Khanh Linh(2025). Accounting for nearly 98% of total enterprises, where are small and medium enterprises in the economy? Available at: https://baodautu.vn/chiem-gan-98-tong-so-doanh-nghiep-doanh-nghiep-nho-va-vua-dang-o-dau-trong-nen-kinh-te-d249574.html.

Roslender, R., & Hart, S. J. (2003). In search of SMA: theoretical and fieldwork perspectives. Management Accounting Research, 14(3), 255-279. https://doi.org/10.1016/S1044-5005(03)00048-9.

Setiawan, A. S. Rahmawati, Djuminah, dan Widagdo, A. K. (2019a). Owners Ethnicity and SMA. Jurnal Akuntansi. Vol. 23 (2). pp. 160 - 176.

Setiawan, A. S. Rahmawati, Djuminah, dan Widagdo, A. K. (2019b). Owner Power, Deliberate Strategy Formulation, And SMA. Opción. Vol. 35 (89). pp. 254 - 270.

INTENTION TO USE PEER-TO-PEER LOAN SERVICES AMONG GEN-Z CUSTOMERS: THE MODERATING ROLES OF ELECTRONIC WORD OF MOUTH AND FINANCIAL LITERACY

PhD. Pham Thu Thuy* - Ho Thu Quynh**

Abstract: ***The article analyzes the factors affecting the intention to use peer-to-peer loan services of Gen Z customers and the moderating role of electronic word of mouth and financial literacy through the UTAUT model. The results from Smart PLS4 shows that Perceived usefulness and Facilitate condition have a positive impact on Attitude toward P2P loan. EWOM has a positive impact on behavioural intention and strengthens the relationship between attitude toward P2P and intention to use P2P loan. The study also proposes solutions for financial institutions to attract Gen Z customers using online loan services.***

• Keywords: *P2P, online loans, EWOM, financial literacy.*

JEL codes: G21, L81

Date of receipt: 20th Mar., 2025
Date of receipt revision: 10th Apr., 2025
Date of delivery revision: 23th Mar., 2025
Date of approval: 23th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.29

1. Introduction

In the era of the Industry 4.0 revolution, online loan services are increasingly becoming a popular choice for customers. Particularly, Generation Z customers-tech-savvy individuals with high spending needs but limited budgets is more inclined to utilize peer to peer (P2P) loan services. These services offer convenience, simple procedures, and easy access through mobile applications and online platforms. Furthermore, Gen Z is highly influenced by electronic word of mouth (eWOM) due to their online information-seeking behaviors and strong trust in peer experiences. Additionally, Gen Z possesses strong financial literacy, enabled by their ability to rapidly access information. They regularly research for information before making financial decisions. Understanding Gen Z's behavior is crucial for banks aiming to attract and retain this segment. This study aims to explore Gen Z's intention to use online loan services and provide actionable insights to help banks maintain and expand their Gen Z customer base.

2. Literature review

Peer to peer loan

P2P lending is a form of internet financing where individuals directly lend money to borrowers (Gomber et al., 2018), without the direct involvement of a traditional financial institution as an intermediary.

International research has highlighted the significance of P2P credit services, which offer benefits such as efficient asset allocation, intense interest rate competition, low transaction fees, and a mixed credit service mechanism (Arner et al., 2020). P2P lending provides better returns for lenders and greater access to affordable credit for borrowers who may have limited access to traditional banks, making it a competitive alternative to conventional lending models in the retail sector (Milne & Parboteeah, 2016). Furthermore, the P2P model plays a crucial role in promoting financial inclusion and is seen as an optimal method to reduce reliance on informal lending.

Factors affecting customers' intention to borrow online

Previous studies have identified several factors influencing borrowers' decisions to use online loans. Sundjaja & Tina (2019) found that consumers' trust, relative advantage, perceived usefulness, and perceived ease of use in P2P lending platforms significantly affect borrowers' attitudes toward adoption. Milne & Parboteeah (2016) asserted that financing knowledge and risk attitude are key factors associated with P2P borrowing. Gerelt-Od et al. (2022) claimed that borrowers' intentions are primarily driven by initial trust and perceived risk. Meanwhile, Devi et al. (2020) highlighted that hedonic motivation, price value, and habit are strongly correlated with the behavioral intentions to adopt P2P lending. In the case of Gen Z customers, Panjaitan et al. (2024) found that their online borrowing behavior is influenced by utilitarian value, risk perception, financial literacy, perceived ease of use, perceived usefulness, trust, innovativeness, and

** Banking Academy of Vietnam; email: thuypt@hvnh.edu.vn*
*** Email: quynhho392003@gmail.com*

views on government support when considering online loan services.

Electronic Word of Mouth (EWOM)

Al-Gasawneh et al., 2023 describes eWOM communication as any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a broad audience via the internet.

In the digital age, eWOM is a crucial marketing tool. Detailed feedback from the online community not only reinforces customer trust but also provides opportunities for product comparison and research, particularly in emerging markets where eWOM plays a critical role in shaping attitudes and consumer decisions (Al-Gasawneh et al., 2023).

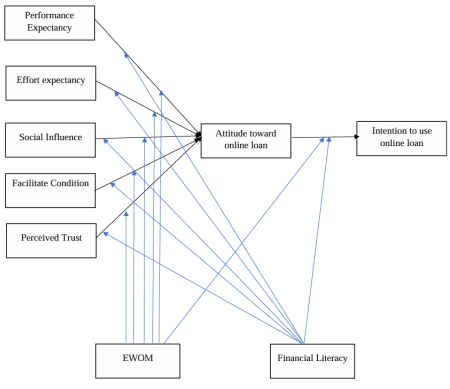
Financial literacy

Lusardi & Mitchell (2014) define financial literacy as an individual's ability to process financial information and make informed decisions regarding financial planning, wealth accumulation, pensions, and debt.

Financial literacy has a significant impact on customer purchasing behavior, especially in making financial services purchasing decisions. Financial literacy fosters sustainable purchasing decisions supporting short-term and long-term consumer goals (Disney & Gathergood, 2013). Van Rooij et al. (2011) indicated that individuals with greater financial knowledge are more likely to engage in behaviours associated with financial planning, such as savings, investing, budgeting or accumulating funds for future goals.

3. Research model

Figure 1: Research model



Source: Vankatesh et al. (2003) and authors' proposal

The study uses the Theory of Acceptance and Use of Technology (UTAUT) model proposed by Venkatesh et al. (2003). The study also extended the model with a new construct of "Perceived trust" to clarify the vital role of banks' reputation in Gen Z customers' online borrowing behavior. The research model incorporates two moderating factors, which are EWOM and Financial Knowledge. The research model is presented as figure 1.

Research hypothesis development

Performance Expectancy is defined as the degree to which an individual believes that his or her job performance will be enhanced when using a particular system (Vankatesh et al., 2003). When customers find that the platform saves them time with simplified procedures and convenience, they will have a more positive attitude and be more willing to use the service. Therefore, the following hypotheses were proposed :

H1: Performance Expectancy has positive effect on Attitude toward online loan

Effort expectancy can be described as the degree to which an individual believes that using a particular system would be free of physical and mental effort (Vankatesh et al., 2003). When customers find that an online lending platform has a friendly interface, simple and easy-to-understand operations, they will tend to evaluate it positively and be more willing to use the service. Therefore, the following hypotheses were proposed:

H2: Effort expectancy has positive effect on Attitude toward online loan

According to Venkatesh et al (2003), social influence can be defined as the degree to which an individual perceives that important others believe he or she should use the new system. Bhattacherjee (2000) asserted that there are several factors, including the influence of other people who are considered important, influence the behavioral intention. Therefore, the following hypotheses were proposed:

H3: Social Influence has positive effect on Attitude toward online loan

According to Chan et al (2010), facilitating conditions refer to the degree to which a person believes that the existing organizational and technical infrastructure can support the use of technology. When users believe that the existing organizational and technical infrastructure can support the lending process well, they will feel secure and willing to use the service. Lack of assistance, lack of timely support, incomplete information, and limited resources can prevent individuals from accepting web-based technology (Kamaghe et al., 2020). Therefore, the following hypotheses were proposed:

H4: Facilitate Condition has positive effect on Attitude toward online loan

Pavlou (2003) defines the Perceived Trust in e-commerce activities as consumers trust to take risks in online transactions. Due to the high level of uncertainty and dynamicity of the cyberspace, trust was theorized

as a direct determinant of attitudes (Hassanein and Head, 2007) Therefore, the following hypotheses were proposed

H5: Perceived Trust has positive effect on Attitude toward online loan

Attitude is defined as "learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein and Ajzen, 1975).Many research found that "attitude" has an positive effect on the behavior intention (Bhattacherjee, 2000; Chau & Hu, 2001). In terms of online loan, the following hypotheses were proposed:

H6: Attitude toward online loan has positive impact on Behavior Intention to use online loan

Electronic Word of Mouth (eWOM) plays a vital role in influencing customers' product and service usage behavior. This can be explained by the fact that numerous studies have emphasized the influence of electronic word-of-mouth (eWOM) on consumers' attitudes, intentions, and behaviors associated with purchases (e.g., Elwalda et al., 2016; Lee & Shin, 2014). Therefore, the following hypotheses were proposed:

H7, H8, H9, H10, H11, H12: EWOM has the moderate role in the relationship between Performance expectancy, Effort expectancy, Social Influence, Facilitate Condition, Perceived trust to Attitude toward service; and moderate role of relationship between Attitude toward service and Behavior Intention

Moorman et al. (2004) claimed that in the process of making personal decisions, consumers with more financial literacy differed a lot from those with less financial literacy. Financial literacy impacts individuals' financial planning behavior (Agarwal et al.,2015; Arrondel et al., 2013).Therefore, the following hypotheses were proposed:

H13, H14, H15, H16, H17: Financial Literacy has the moderate role in the relationship between Performance expectancy, Effort expectancy, Social Influence, Facilitate Condition, Peceived trust to Attitude toward service; and moderate role of relationship between Attitude toward service and Behavior Intention.

Methodology

The survey was designed on the google form platform and sent to Gen Z generation who have used, are using, and intend to use online loan services in Hanoi, Son La, Bac Ninh, and some other areas. The survey was conducted from January, 2025 to March, 2025 and collected a total of 221 response. After the refinement process, 202 qualified responses are used. This study adopted the partial least squares structural equation modeling (PLS-SEM) method to verify the theoretical model and hypotheses with Smart PLS 4 software.

Results

Measurement model

The study evaluates the measurement model based on the proposal of Hair et.al (2014). The Outer loading factor, Cronbach Alpha index and composite reliability (CR), AVE were used to measure the quality, reliability and coverage of the scale; Fornell and Larcker were used to measure discrimination. In terms of the Outer loading factors, Hair et.al (2014) suggested that this indicator should be ≥ 0.078 to be able to evaluate the observed variables as quality. Results of measurement model show most of the items are satisfied except 4 variables EWOM 4 (0.642) , EWOM 5 (0.693), FL1 (0.667), and PU 3 (0.691). Therefore, these observed variables are removed from the model. The Cronbach Alpha ranges from 0.721 to 0.848 and CR from 0.730 to 0.882, showing that all indicators are reliable scale. AVE ranges from 0.545 to 0.765, ensuring convergence.

To evaluate discrimination, the study used the Fornell and Larcker table. The results show that the values below the diagonal ($\sqrt{AVE}$) in each column are not greater than the diagonal value. Therefore, the discriminability of the scale is guaranteed. All the VIF is less than 3, suggesting that there is no serious multicollinearity in the model.

Structural model

Result from Bootstrap analysis are shown in Table 1. Attitude toward online loans has a positive impact on Behaviour intention to use online loans (P = 0.005), therefore, accepting H6 . Performance Expectancy and Facilitate condition has a positive impact on Attitude toward online loan, with P= 0.06 and P = 0.019, respectively. Therefore, H1 and H4 are accepted. Beside that, Effort Expectancy, Social Influence and Perceived Trust show no impact on Attitude toward online loan. Therefore, rejecting H2, H3 and H5.

EWOM has a positive impact on behavior intention to use online loan (P = 0.001). There is no impact of EWOM on Attitude toward online loan (P=0.909), Facilitate Condition (P=0.931), Performance Expectancy (P= 0.983), Social influence (P=0.955) and Perceived Trust (P =0.785). As a result, hypothesis H7, H8, H9, H10, H11 are rejected. However, EWOM has a positive impact and strengthens the relationship between Attitude toward online loan and intention to use online loan (P=0.014). Therefore, Hypothesis H12 is accepted.

Financial literacy does not have a moderate role in the relationship between independent variables, mediating variables and dependent variables. Therefore, hypotheses H13, H14, H15, H16, H17 are rejected.

Table 1: Path Coefficient Result

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistic (|O/STDEV|)	P values
PE → AT	0.313	0.284	0.113	2.764	0.006
EE → AT	0.184	0.178	0.141	1.310	0.190
SI → AT	0.143	0.137	0.143	0.999	0.318
FC → AT	0.220	0.204	0.094	2.341	0.019
TR → AT	0.104	0.111	0.093	1.123	0.261
AT → BI	0.285	0.299	0.101	2.827	0.005
EWOM x PE → BI	-0.003	0.022	0.157	0.022	0.983
EWOM x PU → BI	0.003	-0.058	0.153	0.019	0.985
EWOM x SI → BI	0.008	0.051	0.140	0.056	0.955
EWOM x FC → BI	-0.011	0.009	0.128	0.086	0.931
EWOM x TR → BI	-0.040	-0.080	0.148	0.273	0.785
EWOM x AT → BI	-2.067	-2.062	0.109	2.465	0.014
FL x PE → AT	-0.024	-0.050	0.169	0.143	0.887
FL x PU → AT	0.060	0.115	0.160	0.375	0.707
FL x SI → AT	0.032	-0.010	0.126	0.250	0.802
FL x FC → AT	-0.120	-0.137	0.126	0.957	0.339
FL x TR → AT	0.069	0.089	0.160	0.429	0.668
FL → AT	0.018	0.036	0.100	0.178	0.859
FL → BI	0.167	0.158	0.106	1.573	0.116
FL x AT → BI	0.162	0.155	0.093	1.733	0.083
EWOM → AT	-0.011	-0.006	0.009	0.114	0.909
EWOM → BI	0.328	0.335	0.095	3.472	0.001

Source: result from Smart PLS4 software

4. Discussion

The results of the study indicate that Performance Expectancy positively influences attitudes toward online loans. This can be attributed to the fact that when customers perceive the platform as time-saving, with simplified procedures and enhanced convenience, they are more likely to develop a positive attitude and a greater willingness to use the service. Moreover, the ability to apply for a loan quickly without the need to visit a branch, combined with an automated approval process, allows customers to access capital in a timely manner with minimal effort. These findings align with previous studies, which have confirmed that performance expectancy has a positive and significant effect on individuals' attitudes toward adopting various electronic and mobile-based services (Dwivedi et al., 2017)

Facilities Conditions positively impact attitudes toward online loans. This can be explained by the fact that when users believe the existing organizational and technical infrastructure adequately supports the lending process, they feel secure and are more likely to use the service. This finding is consistent with Chan et al (2010), which identified Facilitative Conditions as an important variable and a direct antecedent for explaining attitudes toward using a service.

E-WOM positively influences and strengthens the relationship between attitudes toward online loans and the intention to use online loans. This is primarily because when users have a positive attitude toward online lending services, reviews, shares, and feedback from other users on online platforms can enhance their trust, thereby increasing their intention to use the service. Consequently, eWOM acts as a mediating factor, transforming positive attitudes into purchase decisions to utilize online lending services.

Based on the results, several solutions are proposed to help banks retain and develop Gen Z customers using online loan services at commercial banks. Firstly, banks can enhance the digital experience and optimize their applications to better meet the needs of Gen Z customers. Secondly, they can promote and market their online loan products by collaborating with Key Opinion Leaders (KOLs) and influencers who have a strong presence on social media, particularly in the personal finance sector. Finally, banks can proactively build a financial community tailored to Gen Z through social networking platforms such as Facebook, Zalo, Instagram, and others.

Conclusion: The study examines the factors influencing the online borrowing behavior of Gen Z customers, with the moderating roles of electronic word of mouth and financial literacy. It is one of the first studies to explore this topic. However, the study has some limitations, as the sample size is small and may not be fully representative. Future research could expand the sample size and address these limitations.

References:

Al-Gasawneh, J. A., Hasan, M., Joudeh, J. M., Nusairat, N. M., Ahmad, A. M. K., & Ngah, A. H. (2023). Mediating role of E-word of mouth on the relationship between visual social media marketing and customer purchase intention in Jordanian real estate companies. Calitatea, 24(193), 189-198.

Al-Gasawneh, J. A., & Al-Adamat, A. M. (2020). The role of eWOM in enhancing marketing strategies: Evidence from emerging markets. Journal of Theoretical and Applied Information Technology, 98(2), 183-192

Agarwal, S., Amromin, G., Ben-David, I., Chomsisengphet, S., & Evanoff, D. D. (2015). Financial literacy and financial planning: Evidence from India. Journal of Housing Economics, 27, 4-21.

Arner, D. W., Buckley, R. P., Zetzsche, D. A., & Veidt, R. (2020). Sustainability, FinTech and financial inclusion. European Business Organization Law Review, 21, 7-35.

Arrondel, L., Debbich, M., & Savignac, F. (2014). Financial literacy and financial planning in France

Bhattacherjee, A. (2000). Acceptance of e-commerce services: the case of electronic brokerages. IEEE Transactions on systems, man, and cybernetics-Part A: Systems and humans, 30(4), 411-420.

Chan, F. K., Thong, J. Y., Venkatesh, V., Brown, S. A., Hu, P. J., & Tam, K. Y. (2010). Modeling citizen satisfaction with mandatory adoption of an e-government technology. Journal of the association for information systems, 11(10), 519-549.

Chau, P. Y., & Hu, P. J. H. (2001). Information technology acceptance by individual professionals: A model comparison approach. Decision sciences, 32(4), 699-719.

Devi, S. H. L., Ujang, S., & Noor, Y. L. (2020). Factors Encouraging the Use of Peer-To-Peer Lending By Farmers. Russian Journal of Agricultural and Socio-Economic Sciences, 103(7), 72-81.

Dwivedi, Y. K., Rana, N. P., Janssen, M., Lal, B., Williams, M. D., & Clement, M. (2017). An empirical validation of a unified model of electronic government adoption (UMEGA). Government Information Quarterly, 34(2), 211-230.

Disney, R., & Gathergood, J. (2013). Financial literacy and consumer credit portfolios. Journal of Banking & Finance, 37(7), 2246-2254.

Elwalda, A., Lü, K., & Ali, M. (2016). Perceived derived attributes of online customer reviews. Computers in Human Behavior, 56, 306-319.

Fishbein, M., & Ajzen, I. (1977). Belief, attitude, intention, and behavior: An introduction to theory and research.

Gerelt-Od, U., Delgertsetseg, D., Yo, C., & Oyundari, B. (2022). Factors Affecting Borrowers' Intention in Peer-To-Peer Lending Platform in Mongolia. Eduvest-Journal of Universal Studies, 2(7), 1-306.

Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. Journal of management information systems, 35(1), 220-265.

Garg, N., & Singh, S. (2018). Financial literacy among youth. International journaL of sociaL economics, 45(1), 173-186.

Han, L., Xiao, J. J., & Su, Z. (2019). Financing knowledge, risk attitude and P2P borrowing in China. International journal of consumer studies, 43(2), 166-177.

Kamaghe, J. S., Luhanga, E. T., & Michael, K. (2020). The challenges of adopting M-learning assistive technologies for visually impaired learners in higher learning institution in Tanzania.

Kuzma, I., Chaikovska, H., Levchyk, I., & Yankovych, O. (2022). Formation of financial literacy in primary school students. Journal on Efficiency and Responsibility in Education and Science, 15(3), 142-155.

Lee, E. J., & Shin, S. Y. (2014). When do consumers buy online product reviews? Effects of review quality, product type, and reviewer's photo. Computers in human behavior, 31, 356-366.

Litvin, S. W., Goldsmith, R. E., & Pan, B. (2008). Electronic word-of-mouth in hospitality and tourism management. Tourism management, 29(3), 458-468.

Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. American Economic Journal: Journal of Economic Literature, 52(1), 5-44.

Moorman, C., Diehl, K., Brinberg, D., & Kidwell, B. (2004). Subjective knowledge, search locations, and consumer choice. Journal of Consumer Research, 31(3), 673-680.

Milne, A., & Parboteeah, P. (2016). The business models and economics of peer-to-peer lending.

Omarini, A. E. (2018). Peer-to-peer lending: business model analysis and the platform dilemma. International Journal of Finance, Economics and Trade (, 2(3), 31-41.

Panjaitan, F., Setowati, S. M., & Mahulete, Y. C. (2024). PEER TO PEER LENDING: GENERATION Z ATTRACTION FACTORS AND FUTURE IMPLICATIONS. TRANSEKONOMIKA: AKUNTANSI, BISNIS DAN KEUANGAN, 4(4), 422-437.

Park, C., Lee, T. M., & Kim, S. (2021). Social media advertising and consumer response: The moderating role of social motives. International Journal of Advertising, 40(5), 798-816.

Pynoo, B., Devolder, P., Tondeur, J., Van Braak, J., Duyck, W., & Duyck, P. (2011). Predicting secondary school teachers' acceptance and use of a digital learning environment: A cross-sectional study. Computers in Human behavior, 27(1), 568-575.

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. International journal of electronic commerce, 7(3), 101-134.

Rosavina, M., Rahadi, R. A., Kitri, M. L., Nuraeni, S., & Mayangsari, L. (2019). P2P lending adoption by SMEs in Indonesia. Qualitative Research in Financial Markets, 11(2), 260-279.

Sundjaja, A. M., & Tina, A. (2019). The factors of the intention to use P2P lending financial technology (Fintech) website at Jadetabek intervening by perceived value. International Journal of Recent Technology and Engineering, 8(3), 3102-3107.

Triandis, H. C. (1979). Values, attitudes, and interpersonal behavior. In Nebraska symposium on motivation. University of Nebraska Press.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 425-478.

Van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. Journal of Financial economics, 101(2), 449-472.

Zetzsche, D. A., Buckley, R. P., & Arner, D. W. (2019). FinTech for financial inclusion: driving sustainable growth. Sustainable Development Goals: Harnessing Business to Achieve the SDGs through Finance, Technology, and Law Reform, 177-203.

THE EFFECT OF PARTNER RELATIONSHIP AND INNOVATION ON BUSINESS PERFORMANCE OF ENTERPRISES IN VIETNAMESE AGRICULTURAL PRODUCTION

MSc. Nguyen Quoc Toan* - Nguyen Ngoc Dung**

Abstract: ***This study aims to evaluate the impact of partner relationships and innovation on business performance. In this context, partner relationships are treated as a form of social capital, while innovation is examined in terms of product, process, and marketing innovation. The research employs a qualitative approach, utilizing in-depth interviews with 20 directors, general directors, and managers from 20 enterprises within the agricultural production sector. The findings reveal a strong connection between social capital, innovation, and business performance, highlighting the critical role these factors play in driving organizational success.***

• Keywords: *social capital, innovation, business performance, Vietnam.*

Date of receipt: 14th Feb., 2025
Date of receipt revision: 10th Apr., 2025
Date of delivery revision: 20th Mar., 2025
Date of approval: 03rd May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.30

1. Introduction

The relationship between innovation capability and business performance has been explored extensively by scholars through various methods, including both synthesis and empirical research. However, to date, there has been no study examining the impact of innovation capability on the business performance of technology companies in Vietnam's agricultural production sector. In addition, while current research on social capital focuses primarily on its general impact on operational efficiency within supply chains across different countries, there is a gap in studies specifically addressing how social capital and innovation capability together influence the business performance of enterprises.

Previous research suggests that social capital plays a crucial role in enabling technology companies to build and strengthen social networks (Akintimehin et al., 2019). These networks facilitate the flow of knowledge, information, and other resources between businesses, thereby enhancing their innovation capabilities (Maurer et al., 2011). In the context of increasing resource pressures, such as those exacerbated by the pandemic, transformation remains a critical driver of business innovation (Soto-Acosta, 2020). However, there is a lack of targeted research on how technology companies can enhance their innovation capabilities through the cultivation of social capital. Moreover, strengthening social capital could serve as a key factor in helping businesses improve their innovation capabilities and overall performance.

The relationship between social capital, innovation capability, and business performance has garnered significant attention from researchers. However, several research gaps remain. First, no study has simultaneously examined the combined impact of social capital and innovation capability on business performance. While there are a few studies exploring the role of social capital and innovation efficiency in business performance, most contemporary research tends to focus more on innovation efficiency and its direct effects on business performance, rather than on innovation capability and its relationship with performance. Second, most research on innovation efficiency and business performance has been concentrated in developed countries, with some studies conducted in emerging economies like China, India, and South Korea. However, in transition economies such as Vietnam, there has been little exploration of how social capital and innovation capability influence business performance. Third, while existing studies have investigated the individual impacts of social capital or innovation capability on business performance, no research has specifically

** Foreign Trade University; email: nqtoan1205@gmail.com*
*** Project Management Board of the Ministry of Education and Training; email: nndungmoet@gmail.com*

focused on technology enterprises in the agricultural production sector across different business contexts. Given that businesses vary widely, as do the sectors they operate in, the impact of social capital and innovation capability may differ accordingly. This makes research on the effects of social capital and innovation capability on business performance in technology enterprises within the agricultural production sector essential.

The findings of this study will not only contribute to the development of technology manufacturing enterprises in the agricultural production sector in Vietnam, but may also offer valuable insights that can be applied to other manufacturing enterprises in countries with similar economic conditions.

2. Literature review

2.1. Innovation

Innovation is widely recognized as a critical factor in driving organizational effectiveness and maintaining a competitive edge (Slåtten & Mehmetoglu, 2014). To remain competitive, organizations focus on innovating and continuously improving products, processes, and services within a dynamic market environment (De Dreu & West, 2001). Hart, Palmer, Christie, and Lander (2002) argue that innovation is a form of prosocial behavior that significantly influences an organization's success. Often embedded in organizational strategies, innovation is seen as essential for gaining a competitive advantage and ensuring long-term economic viability (Hyland & Beckett, 2004). On an individual level, employee innovative behavior refers to the ability to generate and implement new and useful ideas within the workplace (Scott & Bruce, 1994). This behavior is vital for fostering organizational innovation and sustaining a firm's competitive advantage (Newman et al., 2018).

2.2. Social capital

Social capital, which originates from social network theory, is particularly relevant to our study due to its focus on the relationships that exist at multiple levels. The use of social capital theory allows us to explore concepts such as social ties, social interaction, trust, and reciprocity (Pratono, 2018). Previous research on social capital has suggested it can be understood through three distinct dimensions: structural, relational, and cognitive (Chang et al., 2012). The structural dimension concerns the extent and closure of connections within a social network; the relational dimension focuses on the strength of these relationships, with trust and trustworthiness being central factors; and the cognitive dimension refers to the shared values, norms, and beliefs that bind the network together. This study explores social capital from the perspective of the relationship between businesses and their partners.

3. Methodology

This study involved conducting in-depth interviews with 20 enterprises operating within the agricultural production sector, covering a range of sub-sectors including animal feed production, veterinary medicine manufacturing, feed additives production, livestock, poultry, and aquatic feed production, as well as food processing. The interviews were carried out between September and December 2024, providing valuable qualitative insights into the perspectives and experiences of key stakeholders in these industries.

Each in-depth interview lasted between 90 and 120 minutes, allowing for a comprehensive exploration of the topics related to social capital, innovation capability, and business performance. Participants in these interviews included directors, general directors, and senior managers, all of whom played pivotal roles in shaping the strategic direction and operational practices of their respective companies. These individuals were selected for their deep knowledge of the companies' internal operations and their decision-making roles, ensuring that the data collected would be rich in strategic insights.

The diversity of the enterprises included in the study panning multiple segments of the agricultural production sector provided a broad range of perspectives on how social capital and innovation capabilities influence business performance. This approach also allowed for comparisons across different areas of the sector, helping to highlight sector-specific challenges and opportunities, as well as common trends that may inform broader industry practices. The findings from these interviews contribute to a deeper understanding of how social capital and innovation interact to drive performance, particularly in the context of Vietnam's agricultural production sector, where both challenges and opportunities related to technological adoption and resource access are rapidly evolving.

4. Results and findings

4.1. Partner Relationships and Business Performance

The results of in-depth interviews show that businesses have implemented many solutions to strengthen partnerships and supplier relationships. Businesses focus on close cooperation with strategic suppliers, in planning and implementing trade promotion programs, organizing conferences and seminars to increase engagement.

For our input material suppliers, we focus on timely payment of debts and participation in training sessions and seminars is also an important part of our strategy to develop long-term relationships with suppliers (animal feed manufacturers).

We provide comprehensive solutions to help reduce input costs for businesses, while creating sustainable cooperation opportunities. Regular meetings and exchanges with suppliers not only help improve product and service quality but also create conditions for discussing market needs and the ability of partners (veterinary medicine and animal feed, livestock, poultry, and aquatic product manufacturers).

In addition, businesses evaluate and select reputable suppliers with competitive prices and quality support services, and maintain close communication to jointly resolve arising issues. This process is carried out through evaluating transaction data with suppliers, exchanging information about difficulties in the cooperation process and finding effective solutions (Yigitbasioglu, 2010). Regular two-way discussions help both sides better understand each other's needs and expectations, thereby coming up with common development initiatives. Focusing on strategic partners and effectively exploiting trade promotion programs is the key to improve business efficiency and promote sustainable cooperation.

We also apply flexible and suitable solutions to each supplier in different business areas of the group, ensuring maximum cooperation efficiency and long-term development (enterprises producing veterinary medicine and animal feed, livestock, poultry, and aquatic products).

Some businesses believe that an important element in a relationship-building strategy is to maintain credibility and fulfill commitments agreed upon with suppliers. This not only helps to strengthen trust but also contributes to increasing sales, creating a harmonious and mutually beneficial cooperative environment.

We organize annual customer conferences to meet, exchange directly and listen to feedback from customers. In addition, giving Tet gifts, organizing regular sports and dining events are also part of the strategy to maintain long-term relationships (animal feed and veterinary medicine manufacturing enterprises).

We pay special attention to providing comprehensive services during and after sales, supporting customers to the maximum in the business process. Relationships with customers are built on the basis of approaching, understanding needs, providing suitable products and services, as well as organizing meetings and exchanges to update information on needs and products (animal feed manufacturing enterprises).

In addition, businesses also emphasize improving and enhancing the quality of products and services to better meet the needs of customers. The cooperative relationship is built on the principle of mutual benefit, ensuring common interests in every stage of development (Bauwens & Defourny, 2017).

For suppliers, we maintain close cooperation through exchanges on technical services and training for employees, while with agents, we continue to organize support activities such as conferences and care for farm customers (Enterprises producing animal feed, livestock, poultry, and aquatic products).

Most of the companies interviewed said that building social relationships has a direct impact on their ability to innovate and their business results. This is evident when companies and suppliers share the benefits and risks in the cooperation process. This not only helps reduce production costs and increase profits, but also enhances the reputation of the company thanks to the quality and brand of the supplier. Changing the relationship with suppliers can help achieve better prices, improve the ability to supply on time, and ensure flexibility in production (Mclvor & McHugh, 2000).

The results of in-depth interviews with enterprises show that solutions and sources of raw materials, products and services from suppliers will directly affect production costs. This will have a significant impact on the business results of the enterprise, especially when there is a change in the supply source. However, for agricultural production companies with foreign direct investment, with

cooperation from many suppliers from many different countries, the change does not greatly affect the business results, but on the contrary, these enterprises can take advantage of this diversity to better meet the needs and expectations of customers.

When considering customer relationships, most enterprises affirm that changes in customer relationships have a direct impact on the business results of the enterprise. The positive impact can be clearly seen when the relationship with customers is improved, helping to increase sales and profits, while at the same time, accessing more easily, reducing intermediaries. When there is a closer bond with customers, revenue will grow due to trust and long-term cooperation, and conversely, weak relationships can lead to decreased sales and profits (Gounaris, 2005).

Improving the relationship helps the company better understand the needs of customers, while customers will also better understand the products and strategies of the business. This cooperation creates practical results and promotes the common development of both parties, helping each party to fully develop the potential of our company (Enterprise producing animal feed, livestock, poultry, aquatic products).

By maintaining good customer relationships, businesses can quickly grasp customer requirements and expectations, and then set improvement goals to meet those needs more effectively. This not only helps sustainable growth but also strengthens customer trust. However, changes in relationships with large customers can have a negative impact, especially when there is a decrease in production. Other customers may question the change. However, to properly assess the impact, it is necessary to carefully consider the reasons behind the change, such as price, product quality, or after-sales care, and then have an appropriate remedial strategy.

4.2. Innovation and Business Performance

Most of the agricultural enterprises interviewed said that they are implementing innovation strategies, of which a few enterprises are implementing comprehensive innovation, most of them are implementing product, process, and marketing innovation. Enterprises all said that product innovation to meet market demand is an important factor, but at the same time, related activities such as management processes and marketing strategies also need to be improved to suit the product. This not only helps improve productivity but also enhances market relevance, expands market share, increases the number of customers and output. In the context of rapidly changing markets, enterprises also need to flexibly adjust their strategies to ensure sustainable development (Broman & Robert, 2017).

Innovate products to suit market demand, combined with that, it is also necessary to innovate related activities from management processes, innovate marketing activities to suit the product. From there, improve productivity, improve market suitability and expand the market, number of customers, increase output (Enterprises producing veterinary drugs, additives, animal feed)

The market changes rapidly, so we change according to strategy and develop sustainably (Enterprises producing animal feed)

In addition, most businesses in agricultural production realize that innovation has a strong impact on business performance. In the context of strong market fluctuations, especially the shift from small-scale to large-scale farming, companies are forced to reform their organizations, products, processes and marketing strategies to keep up with trends. Organizational innovation, in particular, is considered the factor with the most obvious and positive impact on business results (Abdi & Senin, 2014). Product innovation is an important key to help businesses increase revenue, expand markets and attract customers more easily thanks to expectations of superior quality of new products. However, if the change is not obvious, this can cause disappointment and reduce customer confidence in future products.

Currently, there are many market fluctuations, especially the shift from small-scale farming to large-scale farming, so companies must innovate their organization, products, processes, and marketing accordingly. The innovation of the organization has a more positive and obvious impact on business results than other activities (Animal feed and additive production enterprises). Product innovation increases sales by 50%. Organizational innovation increases productivity and reduces costs (Animal feed production enterprises)

Furthermore, process and organizational innovation is a key factor to help businesses thrive in the new era, especially in the context of the global economic recession. Meanwhile, product innovation to meet the needs of the market and consumers not only creates a competitive advantage but also helps

businesses dominate the digital market. From there, building a strong organization, combined with product design suitable for each specific market and program, will create sustainable and effective revenue.

Through interviews, most agricultural enterprises believe that the conditions for successful innovation are close connection with common goals and strong commitment from leaders. Innovation thinking needs to be deployed from top to middle leaders, implemented synchronously from top to bottom and following clearly defined processes. This process requires active participation and promotion from the top leader, who will be the main driving force in the implementation. The innovation process needs to be built on specific criteria, with effectiveness evaluated through detailed reports and clear data collection, helping to identify actual progress (Martinsuo & Poskela, 2011).

Another important condition is a deep understanding of market needs, along with investment in R&D, training and capacity building of the workforce. Investment in modern technology and equipment also plays an important role in improving operational efficiency. The key factor for successful innovation is the consensus and commitment of people – those in the organization must adapt to change and be ready to support the transformation process. To implement innovation, there must be increased investment in science and technology, research, recruitment of talented personnel and, more importantly, the company's leadership must clearly recognize the need for change and be committed to it.

When implementing innovation, we focus on human resources and each specific requirement of product innovation, or process, or marketing (enterprises producing veterinary drugs, animal feed)

To implement innovation, we invest resources in research and development (enterprises producing animal feed)

When implementing innovation, our enterprise needs to clearly understand market needs, invest in R&D, invest in training, improve employee capacity and invest in upgrading technological equipment (enterprises producing animal feed)

Innovation is not limited to products, but also includes areas such as marketing, finance, personnel training and processes. Specifically, product innovation requires investment in finance, experts and suppliers; process innovation requires equipment and supporting experts; while organizational innovation requires a focus on human resources and training. To ensure success, a clear and consistent product strategy must be developed, and strong investment in research and development (R&D) must be made (Cooper, 2019). Collaboration and leveraging of knowledge resources from partners are also important factors. These innovations must be directly applied in production practices to bring practical value.

5. Conclusions

To innovate and improve partner relationships, businesses should focus on fostering open communication, co-innovation, and aligning strategic goals. This includes regular check-ins, establishing feedback loops, and co-developing products through joint innovation efforts. Investing in shared technology platforms and AI tools can enhance collaboration and efficiency. Additionally, creating win-win solutions through incentive programs, mutual training, and cross-training helps strengthen relationships. Long-term contracts and clear conflict resolution mechanisms promote trust and commitment. Focusing on sustainability initiatives and expanding into new markets through referrals or affiliate programs also boosts growth. Celebrating joint milestones and sharing success stories solidifies the partnership and encourages continued innovation.

References:

Abdi, K., & Senin, A. A. (2014). Investigation on the impact of organizational culture on organization innovation. Journal of Management Policies and Practices, 2(2), 1-10.

Akintimehin, O. O., Eniola, A. A., Alabi, O. J., Eluyela, D. F., Okere, W., & Ozordi, E. (2019). Social capital and its effect on business performance in the Nigeria informal sector. Heliyon, 5(7).

Bauwens, T., & Defourny, J. (2017). Social capital and mutual versus public benefit: The case of renewable energy cooperatives. Annals of Public and Cooperative Economics, 88(2), 203-232.

Broman, G. I., & Robèrt, K. H. (2017). A framework for strategic sustainable development. Journal of cleaner production, 140, 17-31.

Chang, C. W., Huang, H. C., Chiang, C. Y., Hsu, C. P., & Chang, C. C. (2012). Social capital and knowledge sharing: effects on patient safety. Journal of advanced nursing, 68(8), 1793-1803.

Cooper, R. G. (2019). The drivers of success in new-product development. Industrial marketing management, 76, 36-47.

De Dreu, C. K., & West, M. A. (2001). Minority dissent and team innovation: the importance of participation in decision making. Journal of applied Psychology, 86(6), 1191.

Gounaris, S. P. (2005). Trust and commitment influences on customer retention: insights from business-to-business services. Journal of Business research, 58(2), 126-140.

Hyland, P. W., & Beckett, R. C. (2004). Innovation and enhancement of enterprise capabilities. International Journal of Technology Management & Sustainable Development, 3(1), 35-46.

Martinsuo, M., & Poskela, J. (2011). Use of evaluation criteria and innovation performance in the front end of innovation. Journal of Product Innovation Management, 28(6), 896-914.

Maurer, I., Bartsch, V., & Ebers, M. (2011). The value of intra-organizational social capital: How it fosters knowledge transfer, innovation performance, and growth. Organization Studies, 32(2), 157-185.

McIvor, R., & McHugh, M. (2000). Collaborative buyer supplier relations: implications for organization change management. Strategic Change, 9(4), 221-236.

Newman, A., Tse, H. H., Schwarz, G., & Nielsen, I. (2018). The e ff ects of employees' creative self-e ffi cacy on innovative behavior: The role of entrepreneurial leadership. 89 (March), 1–9.

Pratono, A. H. (2018). From social network to firm performance: The mediating effect of trust, selling capability and pricing capability. Management Research Review, 41(6), 680-700.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. Academy of management journal, 37(3), 580-607.

Slåtten, T., & Mehmetoglu, M. (2015). The effects of transformational leadership and perceived creativity on innovation behavior in the hospitality industry. Journal of Human Resources in Hospitality & Tourism, 14(2), 195-219.

Soto-Acosta, P. (2020). COVID-19 pandemic: Shifting digital transformation to a high-speed gear. Information Systems Management, 37(4), 260-266.

Yigitbasioglu, O. M. (2010). Information sharing with key suppliers: a transaction cost theory perspective. International Journal of Physical Distribution & Logistics Management, 40(7), 550-578.

SWOT ANALYSIS OF VIETNAMESE LOGISTICS ENTERPRISES IN THE CONTEXT OF CPTPP INTEGRATION

PhD. Thai Bui Hai An* - MSc. Phan Thi Minh Tam - Nguyen Ba Nguyen*****

Abstract: ***With Vietnam's participation in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the country is undergoing a deeper and more extensive phase of economic integration than ever before. This integration brings numerous opportunities but also presents significant challenges, particularly for the logistics sector. In response, Vietnamese logistics enterprises are compelled to restructure and innovate to align with the evolving competitive landscape. This study aims to analyze and identify the strengths, weaknesses, opportunities, and threats (SWOT) of Vietnamese logistics enterprises in the context of CPTPP integration, thereby providing strategic insights to enhance their adaptability and competitiveness.***

• Keywords: *CPTPP, Vietnamese logistics enterprises, SWOT (strengths, weaknesses, opportunities, and threats) of Vietnamese logistics enterprises.*

JEL codes: O15, I29, J49

Date of receipt: 13th Jan., 2025
Date of delivery revision: 22th Jan., 2025
Date of receipt revision: 22th Apr., 2025
Date of approval: 02nd Jun., 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.31

1. SWOT analysis of Vietnamese logistics enterprises in the context of CPTPP integration

Vietnam has engaged in numerous free trade agreements (FTAs), including traditional ones such as ATIGA, ACFTA, AKFTA, and AJEPA, as well as new-generation FTAs like CPTPP, EVFTA, and RCEP. These agreements have significantly expanded the import and export markets available to Vietnamese enterprises. In addition, many international logistics companies have extended their operations in Vietnam, contributing to the growth of import-export turnover, promoting cross-border logistics activities, and enhancing the competitiveness of domestic logistics enterprises. Furthermore, improving the competitiveness of Vietnamese logistics enterprises brings long-term benefits to the national economy. A sustainably developed logistics sector not only enables Vietnam to take full advantage of opportunities arising from FTAs but also helps mitigate risks in the face of global economic shocks.

This study develops a SWOT model to provide a comprehensive view of the strengths, weaknesses, opportunities, and threats facing Vietnamese logistics enterprises in the context of CPTPP integration. This model serves as a strategic tool to help these enterprises fully leverage the advantages offered by the CPTPP in order to enhance their operational efficiency and overall business performance.

Table 1: SWOT analysis of Vietnamese logistics enterprises in the context of CPTPP integration

Strengths S1: Geostrategic location S2: Competitive labor costs (low and cost-effective workforce) S3: Rapid infrastructure development S4: Strong inflow of foreign investment	**Weaknesses** W1: High logistics operating costs W2: Incomplete logistics infrastructure W3: Lack of high-quality logistics human resources W4: Absence of internationally certified logistics centers
Opportunities: O1: Attracting investment and international cooperation in the sector O2: Expanding and developing the logistics market O3: Promoting digital transformation and technology application O4: Enhancing the quality of logistics human resources	**Threats** T1: Competitive pressure from foreign enterprises T2: Pressure from international standards and digitalization requirements T3: Policy fluctuations and international trade risks T4: Internal pressure to develop value-added logistics services

Source: Author's compilation

From the SWOT analysis table above, the following detailed analyses can be made:

Strengths of Vietnamese logistics enterprises include:

First, Vietnam's geostrategic location.

Located in the heart of Southeast Asia with a long coastline and close proximity to major international shipping routes, Vietnam enjoys a strategic location that facilitates trade connectivity with CPTPP member countries, offering a considerable advantage for logistics enterprises.

Second, competitive labor costs.

Compared to many other CPTPP countries, labor costs in Vietnam's logistics sector remain relatively

** Academy of Finance*
*** Danang College of Economics and Planning*
**** CQ61/06.01CLC, Academy of Finance*

low. This allows enterprises to maintain a competitive edge in pricing and provides cost-effective services to domestic and international clients.

Third, rapid infrastructure development.

The Vietnamese government is making substantial investments in ports, airports, highways, and warehouses, providing favorable conditions for logistics enterprises to enhance their transportation and distribution capabilities within the CPTPP region.

Fourth, strong inflows of foreign investment.

The CPTPP enables Vietnamese logistics enterprises to collaborate with international partners, access investment capital, acquire advanced technologies, and learn from global management experiences, thereby improving service quality and competitiveness.

Weaknesses of Vietnamese logistics enterprises include

First, high logistics operating costs.

Vietnamese logistics services remain largely traditional and underdeveloped, with limited value-added offerings such as supply chain management (SCM) or fourth-party logistics (4PL). Moreover, quality management systems are not yet professionally standardized, leading to suboptimal performance and high operational costs.

Second, incomplete logistics infrastructure.

There is a lack of effective integration among different transport modes such as road, rail, and seaport systems. Ports and railway networks in Vietnam do not adequately meet import-export demands, reducing overall logistics competitiveness. Poor intermodal connectivity, the absence of transfer hubs, and limited use of smart technologies (e.g., automated cargo management systems) result in congestion and delays.

Third, shortage of high-quality human resources.

Vietnam's logistics workforce often lacks critical skills in supply chain management, technological proficiency, and foreign language ability. These shortcomings hinder international cooperation and limit operational effectiveness in a globalized context.

Fourth, limited internationally certified logistics centers.

Vietnam currently has only a few large-scale logistics hubs. Most enterprises rely on small, fragmented warehouses and traditional transport systems. As a result, exporters are often dependent on foreign logistics providers, which raises costs and undermines competitiveness. In contrast, countries like Singapore and Japan have made significant investments in modern logistics systems, optimizing supply chains and lowering costs.

Opportunities for enhancing competitiveness include

First, attracting investment and international collaboration.

The CPTPP opens doors for Vietnamese logistics enterprises to attract investment and form strategic partnerships. With access to an expanded market of 11 member countries, businesses can engage with large global partners, adopt cutting-edge technologies, and implement automation and AI in supply chain management, thereby increasing competitiveness and enabling sustainable growth.

Second, expanding and developing the logistics market.

Tariff reductions and the removal of trade barriers under the CPTPP stimulate import-export activities, boosting demand for logistics services. Vietnamese enterprises can scale up operations, enhance international transport services, and optimize supply chains, strengthening their position in regional and global markets.

Third, accelerating digital transformation.

Modern technologies such as AI, the Internet of Things (IoT), and Big Data offer opportunities to optimize logistics operations, cut costs, and improve service quality. Digital transformation helps Vietnamese enterprises meet international standards and compete with foreign companies. Emerging logistics models like green logistics, logistics 4.0, and multichannel services increase flexibility and operational efficiency, enhancing Vietnam's global logistics standing.

Fourth, improving workforce quality.

CPTPP integration provides momentum for logistics enterprises to improve workforce capacity in line with international requirements. Collaboration with global partners allows access to advanced training and modern management practices. This boosts productivity and opens up international career pathways for workers, contributing to the long-term sustainability of the industry.

Challenges for Vietnamese logistics enterprises include:

First, competitive pressure from foreign enterprises.

Market liberalization under the CPTPP enables foreign logistics firms to enter Vietnam with minimal legal and investment restrictions. These firms often have stronger financial backing, global networks,

and advanced technologies, creating substantial competitive pressure for domestic enterprises.

Second, stringent international standards.

CPTPP members impose strict service quality, environmental, and technological standards. Vietnamese firms must adopt international certifications such as ISO 28000, ISO 9001, and ISO 14001 to remain competitive. Meeting these requirements demands significant upgrades in infrastructure, human resources, and technological capability.

Third, exposure to trade policy risks.

Despite tariff benefits, CPTPP members may implement sudden changes in trade regulations or technical barriers. Anti-dumping, anti-subsidy measures, and complex origin rules (e.g., the "yarn-forward" rule in textiles) limit Vietnam's ability to fully capitalize on CPTPP preferences. Smaller firms, in particular, struggle to meet these stringent requirements.

Fourth, limited development of value-added logistics services.

Vietnamese logistics firms mostly offer basic services like transportation and warehousing, lacking integration across modes and automation. Systems such as warehouse management (WMS) or digital customs processing are rarely implemented. Most providers are SMEs with limited capital and technological capacity, restricting their competitiveness against international firms.

2. Several strategic recommendations for Vietnamese logistics enterprises under CPTPP

Based on the insights derived from the SWOT analysis above, several strategic directions can be proposed to help Vietnamese logistics enterprises strengthen their competitive position in the context of CPTPP integration. These include:

SO (Strengths - Opportunities) strategies insights

- Leverage Vietnam's geostrategic location and rapidly developing infrastructure to expand cross-border logistics operations within CPTPP markets.

- Attract foreign investment and technological transfer by promoting Vietnam's competitive labor costs and stable investment environment.

- Invest in digital transformation, including automation and smart logistics, to enhance operational efficiency and service quality.

ST (Strengths - Threats) strategies insights

- Develop integrated and value-added logistics services (e.g., 3PL, 4PL) to compete with foreign logistics corporations.

- Form domestic logistics alliances to consolidate resources and counteract competitive pressure from international firms.

- Standardize service quality and operations to meet international certifications (ISO 9001, ISO 28000) and improve global credibility.

WO (Weaknesses - Opportunities) strategies insights

- Enhance logistics workforce capacity through international training programs focusing on SCM, digital skills, and foreign languages.

- Invest in internationally certified logistics hubs to support efficient supply chain services and reduce reliance on foreign logistics providers.

- Collaborate with international partners to adopt advanced technologies and professional management practices.

WT (Weaknesses - Threats) strategies insights

- Establish industry-specific logistics associations to support SMEs in standardization, cost reduction, and compliance with CPTPP requirements.

- Implement digital solutions to reduce logistics costs and improve service accuracy, especially in warehousing and multimodal transport.

- Promote green logistics and sustainability initiatives to comply with strict environmental and labor standards in CPTPP markets.

Conclusion

The CPTPP not only presents tremendous opportunities for trade expansion but also poses substantial challenges for Vietnamese logistics enterprises, particularly in meeting international standards, ensuring efficient supply chain management, and adopting modern technologies. By clearly identifying their strengths, weaknesses, opportunities, and threats, Vietnamese logistics firms can formulate effective strategies to enhance competitiveness and achieve sustainable development in the context of CPTPP integration. Based on the SWOT analysis above, the following strategic insights are suggested. Within the scope of this study, only a few strategic recommendations are proposed. More in-depth analyses and comprehensive strategies will be addressed in future research reports.

References:

Ministry of Trade (2023, 2024), Vietnam Logistics report 2023, 2024.

Hoàng Minh Thành, Nguyễn Bá Nguyên, Nguyễn Thị Ánh Ngọc, Lê Nguyên Phương, CQ61.06.01CL, Học viện Tài chính, Đề tài NCKH sinh viên cấp Học viện (2025), Nâng cao năng lực cạnh tranh cho doanh nghiệp logistics Việt Nam trong bối cảnh hội nhập hiệp định CPTPP.

Phạm Thị Thanh Bình, Viện Kinh tế và Chính trị thế giới (2019), Việt Nam với CPTPP: Cơ hội và thách thức, Tạp chí Cộng Sản.

Thái Bùi Hải An, Nguyễn Thị Minh Hòa, Học viện Tài chính, Đề tài NCKH cấp Học viện (2023), Đào tạo nhân lực logistics tại Học viện Tài chính - Thực trạng và giải pháp.

Thái Bùi Hải An, Học viện Tài chính, Đề tài NCKH cấp Học viện (2024), Hoàn thiện chính sách quản lý nhà nước về Hải quan nhằm tạo thuận lợi cho phát triển dịch vụ logistics ở Việt Nam.

REGULATING CRYPTO-ASSETS FOR ANTI-MONEY LAUNDERING AND TERRORIM FINANCING - INTERNATIONAL EXPERIENCE AND POLICY IMPLICATIONS FOR VIETNAM

Assoc.Prof.PhD. Nguyen Le Cuong* - PhD. Tran Thi Lan* - PhD. Nguyen Thi Thuy Dung*
PhD. Phung Thanh Loan*

Abstract: ***The rapid rise of crypto-assets has transformed the financial landscape, providing new opportunities for investment and innovation. However, this growth has also introduced significant risks related to money laundering and terrorist financing. In 2023, Vietnam was included in the "grey list" of FATF mainly because Vietnam's regulatory response to risks arising from crypto-assets has been deemed insufficient. The paper reviews the latest FATF recommendations concerning crypto-assets and examine how different countries have implemented these guidelines. The research will analyze the effectiveness of various regulatory strategies in addressing ML/TF risks associated with crypto-assets and will subsequently propose relevant implications for the Vietnamese government.***

• Keywords: *crypto assets, regulation, anti-money laundering, terrorism financing, Vietnam.*

Date of receipt: 03rd Feb., 2025
Date of delivery revision: 27th Feb., 2025
Date of receipt revision: 12th Mar., 2025
Date of approval: 15th Mar., 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.32

1. Introduction

The rapid rise of crypto-assets has transformed the financial landscape, providing new opportunities for investment and innovation. Vietnam is indexed in the top 5 countries in the world with the highest crypto-assets adoption in 2024 (Chainalysis, 2024). However, this growth has also introduced significant risks related to money laundering and terrorist financing (ML/TF). In 2023, Vietnam was included in the "grey list" (aka jurisdictions under increased monitoring) of The Financial Action Task Force (FATF) mainly because Vietnam's regulatory response to risks arising from crypto-assets has been deemed insufficient. Being included in the grey list could lead to several adverse consequences such as decreased foreign investment and economic activity. This explains why the Vietnamese government issued Decision No. 194/QD-TTg dated February 23, 2024 in promulgating the National Action Plan to remove Vietnam from this "grey list"; particularly, Action 6 specifies "*Building a legal framework to ban or regulate virtual assets and organizations providing virtual asset services, and demonstrate the implementation of regulations including measures to ensure compliance*", which needs to be completed before May 2025.

The primary objective of this study is to review the latest FATF recommendations concerning crypto-assets and examine how different countries have implemented these guidelines. The research will analyze the effectiveness of various regulatory strategies in addressing ML/TF risks associated with crypto-assets and will subsequently propose relevant implications for the Vietnamese government. This study employs a qualitative research methodology, involving a literature review of FATF reports, regulatory documents from multiple jurisdictions, and academic articles on crypto-assets. Comparative analysis will be used to identify best practices and challenges faced by different countries in implementing FATF recommendations.

2. International ML/TF regulation related to crypto-assets

2.1. FATF rules on regulating virtual assets

The latest guidance from the FATF on virtual assets (VAs)[1] and virtual asset service providers (VASPs) emphasizes the need for robust regulatory frameworks to combat money laundering and terrorist financing risks associated with these assets. FATF recommends the following points in regulating virtual assets:

[1] *There has not been a consersus in defining crypto-assets and virtual- assets; but generally, these two terms are used interchangeably.*

* *Academy of Finance*

+ Risk-Based Approach: Authorities are encouraged to implement a risk-based approach to VAs and VASPs, tailoring regulation based on the specific risks posed by different types of assets and activities.

+ Regulatory Frameworks: Countries should ensure that VASPs are subject to the same AML/CFT obligations as traditional financial institutions, including registration, licensing, and compliance with customer due diligence (CDD) requirements.

+ Travel Rule Compliance: The guidance reiterates the importance of the travel rule, requiring VASPs to collect and transmit information about the originator and beneficiary of transactions, similar to traditional banking systems.

+ Definition Clarity: VAs and VASPs should be clearly defined within national legislation to ensure comprehensive coverage under AML/CFT regulations.

+ Supervisory Practices: Effective supervision of VASPs is crucial. Authorities are advised to develop supervisory practices that are adaptable to the rapidly evolving nature of the cryptoasset market.

Despite FATF's efforts and detailed guidelines on this matter, BIS (2021) still report that the adoption of these recommendations especially the Travel Rule widely vary across jurisdictions. Additionally, jurisdictions also differ in their approach to implementing AML/CFT measures for crypto-asset service providers. Some apply existing frameworks, while others have developed new, tailored regulations. Generally, crypto-asset service providers are required to comply with AML/CFT preventive measures similar to traditional financial institutions. This includes conducting customer due diligence (CDD), maintaining records, applying a risk-based approach, and reporting suspicious transactions to the relevant financial intelligence units.

2.2. Case studies

KOREA

In 2020, South Korea passed an amendment to the Act on Reporting and Using Specified Financial Transaction Information, which took effect on March 25, 2021 (FSC, 2021). The law establishes direct regulations on anti-money laundering and counter-terrorism financing for Virtual Asset Service Providers (VASPs). The law defines VASPs as entities engaged in the buying/selling, exchanging, transferring, storing, brokering, and managing virtual assets. Thus, VASPs include cryptocurrency exchanges, wallet operators, and cryptocurrency custodians. The main obligations that VASPs must fulfill include:

+ Registration: VASPs must register with the Korea Financial Intelligence Unit (KoFIU). They are required to provide detailed information about the company and its legal representatives to KoFIU.

+ Information Security Management System (ISMS) Certification: VASPs must obtain ISMS certification from the Korea Internet & Security Agency (KISA) under the Act on Promotion of Information and Communications Network Utilization and Information Protection to verify that they can protect the important assets and information of investors.

+ ML/TF Obligations: VASPs have specific anti-money laundering and counter-terrorism financing responsibilities and must comply with three main obligations: (i) customer identification (KYC); (ii) reporting suspicious transactions (STR); and (iii) data retention. VASPs must verify the identity of customers when they open accounts and further verify the purpose of transactions and the sources of funds involved.

+ Obligations for Financial Institutions: The Act on Reporting and Using Specified Financial Transaction Information also imposes obligations on financial institutions when transacting with VASPs. When financial institutions engage with VASPs, they must verify the identity of the VASP by requiring them to open real-name accounts and check whether the VASP's assets/deposits are segregated from their customers' deposits.

SINGAPORE

Singapore's Anti-Money Laundering and Counter-Terrorist Financing Notice PSN02 guidance provides that the board of directors and senior management of Digital Payment Tokens service providers have strong and sound governance responsibilities to control money laundering and terrorist financing risks. The board of directors and senior management of the payment service provider are ultimately responsible for ensuring compliance with anti-money laundering and terrorist financing laws, regulations and notices (MAS, 2024).

Under Guidance PSN02, DPT service providers must establish three lines of defense to combat the use of DPTs for money laundering and/or terrorist financing.

+ The first line of defense consists of business units (e.g., departments that directly interact with customers at the business premises of payment service providers). Payment service providers are obligated to ensure adequate resources, including IT, to detect illegal transactions and to train employees so that they are fully aware of their obligations and avoid legal violations when interacting with customers.

+ The second line of defense is the anti-money laundering and counter-terrorism financing compliance department, which continuously monitors compliance with all anti-money laundering and counter-terrorism financing obligations. The compliance department is responsible for reporting to the board of directors or senior management when employees are struggling or not adequately addressing risks and concerns related to money laundering and terrorist financing.

+ The third line of defense is the internal control department of the payment service provider or an independent auditing firm. This department plays a crucial role in independently assessing the framework for managing money laundering and terrorist financing risks.

The three lines of defense of the payment service provider must ensure the implementation of the following requirements: Risk Prevention; Customer Due Diligence, enhanced Due Diligence, Transaction Monitoring, Reporting Suspicious Transactions; Record Keeping.

TURKEY

Similar to Vietnam, in 2021, the FATF placed Turkey on the "grey list" due to the fact that Turkey only "partially compliant" with FATF standards regarding new technologies such as cryptocurrencies. In 2021, the Amendment Regulation on Imposing Specific Obligations on Virtual Asset Service Providers (VASPs) under Law No. 5549 on the Prevention of Laundering of the Proceeds of Crimes (Law No. 5549) was introduced. Then, Financial Crimes Investigation Board (FCIB) published Guidelines on the Main Principles Regarding the Prevention of Money Laundering and Financing of Terrorism for VASPs (AML Guidelines). According to the definition in the aforementioned Guidelines, VASPs "intermediate transactions of virtual assets through electronic trading platforms." (Global Insight, 2025)

The key compliance obligations of VASPs include:

+ The primary obligations of VASPs are (1) customer identification (KYC), (2) reporting suspicious transactions, and (3) providing information and documentation.

+ The KYC process must be completed before entering into a contract (establishing a business relationship) or conducting a transaction. The accuracy of the name, surname, date of birth, identification number (for Turkish citizens), and type and number of identification documents must be verified with documentation.

+After submitting the original or notarized copy of the identification documents to be verified to the VASP, a copy or electronic image or identity information will be recorded for submission to the competent authority upon request.

+ The accuracy of the declared address in the long-term business relationship must be verified through (i) a residence certificate, (ii) a bill in the name of the individual related to subscription services such as electricity, water, natural gas, or telephone issued within three months from the date of the transaction, or (iii) other documents and methods deemed appropriate by the FCIB.

+ Reporting suspicious activities to the FCIB is another crucial principle for preventing money laundering and terrorist financing. VASPs are also obligated to provide ongoing information to the FCIB, in addition to reporting suspicious transactions as described above.

3. Policy implications for Vietnam

Based on global experiences and FATF guidance on regulating crypto-assets for anti-money laundering and terrorism financing (AML/TF), here are several recommendations for Vietnam:

Establish a Clear Regulatory Framework

The first step is to develop clear definitions for crypto assets and crypto asset service providers within Vietnamese legislation to ensure comprehensive regulatory coverage. Currently, a Draft Law on Digital Technology Industry is proposing definition for "digital assets", "crypto

assets"; but there has not been a definition for "crypto asset service providers". Additionally, the framework should adopt a risk-based classification system for different types of crypto-assets, considering their functionalities and risks. For example, if a crypto asset has a function being similar to a financial instrument, it should be subject to related financial regulation like the traditional financial assets. if a crypto asset does not meet this criterion, should alternative classifications be considered. Likewise, some activities or certain types of assets need to be considered and managed immediately due to many potential risks for investors. For example, the public issuance of security token; transaction activities including storage services (hot and cold wallets), activities with potential risk of money laundering to finance terrorism.

Conduct Risk Assessment and Review over risks arising from crypto-assets.

Vietnam should conduct a comprehensive national risk assessment (NRA) focusing on the potential risks posed by crypto-assets and VASPs to inform regulatory measures. The latest NRA was 2018-2022; the next round of this assessment should include the risk arising from crypto-assets. The assessment should identify potential risks from crypto-assets, including market volatility, fraud, and systemic risks to the financial system. The assessment should evaluate how these risks could affect various sectors, including finance, consumer protection, and national security. To ensure the proper assessment, the government involve relevant stakeholders, including government agencies, financial institutions, and industry experts, to gather diverse perspectives and insights.

Implement AML/CFT Obligations applied to crypto-asset service providers

Various countries have fully adopt different requirements KYC Requirements. Currently, in line with the Law on Anti-money laundering issued in 2022, there are various organizations being subject to apply AML/CFT requirement. Hence this requirements should be also applied to cryto-asset service providers in the future. The key requirements include: mandate cryto-asset service providers to perform robust customer due diligence (KYC) during onboarding and ongoing monitoring of transactions; require cryto-asset service providers to report suspicious transactions to the relevant financial intelligence unit store relevant data similarly to other organizations responsible for the administration of the Anti-Money Laundering Law. Some stringent requirement could specify all cryptocurrency transactions to be made through a bank account registered with a real name. Investors can only deposit and withdraw money between real-name bank accounts.

Enhance Supervisory Capacity

Vietnam should establish a dedicated regulatory body to oversee the crypto-assets market, ensuring it has the expertise and resources to monitor compliance effectively. It is important to provide guidance and training for regulatory staff to understand the complexities of crypto-assets and associated risks.

Promote International Cooperation

The regulatory bodies should engage in international cooperation with other jurisdictions to share best practices, intelligence, and resources for combating ML/CFT risks in the crypto sector. It would be helpful to collaborate with international organizations such as the FATF and World Bank to gain insights and assistance in crafting regulatory frameworks.

4. Conclusion

As Vietnam continues to embrace the digital economy, addressing the ML/TF risks associated with crypto-assets is critical. By learning from the FATF recommendations and the regulatory experiences of other countries, Vietnam can develop a robust framework that promotes innovation while safeguarding its financial system. This research contributes to the ongoing discourse on effective regulation of crypto-assets, offering practical insights for policymakers in Vietnam.

References:

BIS (2021), Supervising cryptoassets for anti-money laundering. Accessed via https://www.bis.org/fsi/publ/insights31.pdf

Chain Analysis, 2024: 2024 Global Crypto Adoption Index. Truy cập tại https://www.chainalysis.com/blog/2024-global-crypto-adoption-index/

FATF (2025), Virtual Assets. Accessed via https://www.fatf-gafi.org/en/topics/virtual-assets.html

FSC (2021), FSC Proposes Additional Rules Change on Virtual Asset Service Providers- Press Release. Accessed via https://www.fsc.go.kr/eng/pr010101/75410

Global Insight (2025), Turkey Blockchain & Cryptocurrency Laws and Regulations 2025. Accessed via https://www.globallegalinsights.com/practice-areas/blockchain-cryptocurrency-laws-and-regulations/turkey-turkiye/

MAS (2024), Notice PSN02 Prevention of Money Laundering and Countering the Financing of Terrorism – Digital Payment Token Service. Accessed via https://www.mas.gov.sg/regulation/notices/psn02-aml-cft-notice---digital-payment-token-service

OPPORTUNITIES OF VIETNAM'S SEAFOOD EXPORTS TO EU MARKET IN THE NEW CONTEXT

PhD. Nguyen Thi Hoai Thu*

Abstract: ***Vietnam has advantages in seafood exports, and at the same time has many opportunities to promote seafood exports to the European Union (EU) market since the EVFTA Agreement came into effect. The study shows that Vietnam's seafood export turnover to the EU market by 2024 has many fluctuations, in which in terms of export structure, the export turnover of shrimp and tuna products has grown well. On the basis of analyzing the current situation of Vietnam's seafood exports to the EU market, assessing Vietnam's opportunities when exporting seafood to this market.***

• Keywords: *opportunities, EVFTA, fisheries...*

Date of receipt: 31th Mar., 2025
Date of delivery revision: 08th Apr., 2025
Date of receipt revision: 24th Apr., 2025
Date of approval: 10th May, 2025
DOI: https://doi.org/10.71374/jfar.v25.i3.33

Vietnam's seafood products have gradually penetrated and created a solid foothold in the EU market in general and each EU member in particular. From having only one or a few rudimentary seafood products, we have gained prestige and preference among EU consumers in most of the key seafood products with increasing export volumes and turnover. Vietnamese seafood exporters are facing a great opportunity to export to the potential EU market when the EVFTA takes effect. EVFTA helps Vietnam's seafood industry have a competitive advantage compared to competitors such as China, Thailand, India, etc. and help Vietnamese businesses benefit greatly from taxes to adjustment policies.

The effective EVFTA creates great opportunities for Vietnam's seafood exports to the EU market with a series of tariff incentive commitments, contributing to helping Vietnam's seafood industry increase price competitiveness compared to products of the same industry in neighboring countries; attracting foreign investment is increased, production technology and quality of aquatic products are also focused on improving to meet EU standards; institutions and business environment are ensured in the direction of more stability and transparency because the legal system is also adjusted and supplemented with regulations to be in line with the signed FTAs. Vietnamese seafood exporters are facing a great opportunity to export to the potential EU market when the EVFTA takes effect. EVFTA helps Vietnam's seafood industry have a competitive advantage compared to competitors such as China, Thailand, India, etc. and helps Vietnamese businesses benefit greatly from taxes to adjustment policies.

1. The current situation of Vietnam's seafood exports to the EU market

Exporting Vietnamese seafood to the EU Over the years, the EU has always been one of Vietnam's leading seafood export markets. However, Vietnam's seafood exports to the EU in recent years have faced many difficulties, especially since October 2017 - the time when Vietnam was imposed by the EC with an IUU yellow card (Illegal, undeclared and unregulated fishing), along with the negative impact of the Covid-19 pandemic in the period 2020-2022.

In 2023, Vietnam's seafood exports to the EU market witnessed a significant decline, reaching more than 869.54 million USD, down 28.9% compared to 2022. The main reason is believed to be the tightening of regulations on IUU fishing in the EU market, making it difficult for Vietnam's seafood exports. Vietnam has been warned by the EU with an IUU "yellow card" since 2017 and is making efforts to improve the management and traceability system of seafood; and at the same time raise fishermen's awareness of IUU fishing. However, there are still many shortcomings that make the process of overcoming the IUU "yellow card" face many obstacles. Despite facing challenges from IUU, seafood exports to the EU still possess strong growth potential thanks to the Vietnam-EU Free Trade Agreement (EVFTA). The agreement brings significant tariff preferences for Vietnamese seafood products, especially shrimp.

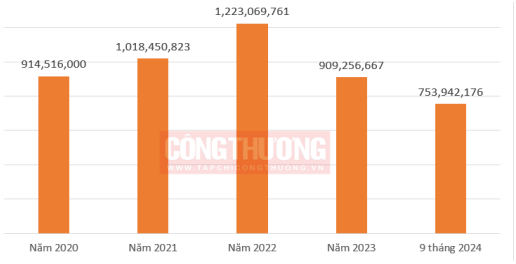
Therefore, despite being supported by the EVFTA Agreement, Vietnam's seafood export turnover to the EU market in the period 2017-2022 only reached an average growth rate of 4.68%/year, lower than the

* *People's Academy of Public Security Politics; email: mecuamoon1601@gmail.com*

overall growth rate of seafood exports of the whole country (7.98%). Specifically, in the period 2018-2020, Vietnam's seafood export turnover has continuously decreased. Particularly in 2020, under the heavy impact of the COVID-19 pandemic, seafood export turnover to the EU market has fallen below the threshold of 1 billion USD. After the EVFTA Agreement came into effect (in August 2020), Vietnam's seafood exports to the EU have witnessed a recovery and recorded a positive growth rate. In 2022, Vietnam's seafood export turnover to the EU market will reach 1.3 billion USD, up 21.43% over the previous year, accounting for 11.95% of the total seafood export turnover of the country, ranking 4th in the group of leading seafood export markets of Vietnam (after the US, Japan and China).

However, entering 2023, the decline in consumer and import demand of the EU market caused seafood export turnover to this market in the first 9 months of 2023 to only reach 713.7 million USD, down 31.3% over the same period last year and dragging the proportion of seafood exports to the EU to 10.81%.

Vietnam's seafood exports to the EU market in the period of 2019 - 2024 (USD)



Source: General Department of Customs

In particular, the structure of Vietnam's seafood exports to the EU in the coming time is expected to have many changes when Vietnam's seafood exporters actively promote the export of seafood products that enjoy incentives from the EVFTA Agreement while the partners also prioritize choosing seafood products from Vietnam due to the price more competitive and stable source of raw materials. According to the VASEP Association, the EVFTA Agreement is expected to help seafood exports grow by about 2% in the period of 2020 - 2030.

In terms of the structure of EU member markets, in addition to key and traditional export markets such as the Netherlands, Germany, France, etc., Vietnam's seafood exports still have a lot of room and opportunity to more effectively exploit some potential markets and niche markets in the EU.

2. Opportunities of Vietnam's seafood exports to the EU market in the new context

The EVFTA will help Vietnam soon be recognized by the EU as a market mechanism, Vietnam's seafood exports will avoid most of the discrimination in anti-dumping lawsuits and other issues such as labor, environment and society. However, through non-tariff measures, the EVFTA will have a deeper impact on institutional issues, production methods, and internal structures of Vietnam's seafood industry, which will also create challenges for seafood exporters when they have to meet the EU's "non-traditional" requirements. Concrete:

Firstly, the EVFTA helps Vietnam enjoy import tax incentives for seafood products, which will facilitate the expansion of the market for Vietnam's seafood exports to the EU market. Seafood exporters need to take advantage of tariff advantages on seafood products to increase exports. In particular, Vietnam's seafood exports have a more competitive advantage when participating in EVFTA and this is also a good opportunity for Vietnamese seafood to increase competitiveness by using cheaper production support services such as transportation, animal feed, raw materials, etc equipment; It is an opportunity to strengthen joint venture cooperation to improve product quality, improve the value-added production chain for export seafood... Meanwhile, most of Vietnam's rival countries have not signed FTAs with the EU, so this will be a competitive advantage in terms of import taxes for Vietnamese seafood.

Box 1: EVFTA commits to provide import tax incentives for Vietnam's seafood products

Shrimp: Crayfish, black tiger shrimp will enjoy 0% tax compared to the previous GSP tax rate of 4.2%. This is a huge price advantage for Vietnam to compete with competitors, because Indian shrimp exported to the EU market are only entitled to GSP tax, while shrimp from China, Thailand, and Ecuador are even subject to an MFN tax rate of 12% because they are not entitled to the EU's GSP.

Pangasius fish: Chilled pangasius fillets will have a tax rate of 4.13% compared to the previous GSP tax rate of 5.5%.

Tuna: For frozen tuna fillets, the EU will eliminate the tax according to the 3-year roadmap, from the current 18%, processed tuna will have a 0% tax rate according to the quota.

Squid and octopus: Squid and octopus will have a huge competitive opportunity when the applicable tariff rate is 0% in the first year when the EVFTA takes effect because competitors are India only have GSP, while China, Thailand and the US only have MFN.

Source: EVFTA portal of the Ministry of Industry and Trade, http://evfta.moit.gov.vn/

It can be seen that the majority of seafood products have tariff advantages, including roadmaps or are immediately taxed, except for processed tuna and surimi, which are two highly competitive products with the EU that will have to have quotas. Another note for seafood exporters, after the EVFTA takes effect, seafood exports will enjoy the tax rate of this FTA instead of GSP tax as before. This brings many benefits in terms of tax rates in the EVFTA for the vast majority of export products while GSP is only for certain types of products. In addition, GSP tax is a unilateral EU incentive for Vietnam and can be withdrawn at any

time; meanwhile, the EU-FTA tariff commitment is a bilateral commitment that the two sides are required to fulfill, without the right to arbitrarily unilaterally cancel this obligation.

Secondly, the opportunity to improve the production process, improve the quality of exported seafood products to meet the regulations of the EU market and increase the competitiveness of Vietnam's seafood industry compared to some other countries. When the EVFTA takes effect, it creates a legal basis for trade exchange activities for Vietnamese seafood products to be exported to the EU market, meeting the quality and safety standards required by this market. Commitments in areas such as trade remedies (anti-dumping, anti-subsidy, safeguard), TBTs, SPS, etc. has had certain impacts on Vietnam's seafood exports to the EU market in recent times, which are expected to have more positive impacts, bringing significant benefits to Vietnam's seafood exports in the coming time. With the main content not committing to specific regulations on detailed issues but focusing on establishing a cooperation mechanism to make transparent and quickly handle arising disputes, the EVFTA will increasingly contribute to improving the implementation of relevant regulations. The pressure to improve the quality of exported seafood that contributes to improving EU consumers' confidence in Vietnam's seafood products in this market.

Third, the EU market is increasingly dependent on imported seafood because the EU's naturally exploited seafood production tends to decline due to regulations related to the protection of aquatic resources and the environment. Therefore, the EU will have supportive policies to help developing countries, including Vietnam, better understand the WTO, technical barriers in trade or animal quarantine.

Fourth, *the* economies of EU member states are on track to recover thanks to widespread vaccination and the implementation of post-Covid support packages. Service stores in the EU market have begun to reopen. The demand for seafood consumption in the EU is increasing, the amount of seafood reserves is at a low level. Meanwhile, the major suppliers to the EU market, namely India and Indonesia, are facing many labor difficulties due to the impact of the Covid-19 epidemic, which will leave a large market gap for the EU market. This is an opportunity for Vietnam's seafood exporters to further promote seafood exports to the EU in the coming time. In particular, Vietnam's seafood products enjoy many tax incentives from the EVFTA plus the results of Vietnam's seafood exports in recent years, showing that the prestige and brand of Vietnamese seafood in the EU are increasing compared to the time before the EVFTA came into effect.

Fifth, currently, the EU only has a single regulatory body, the EU Food Safety Administration with a common law on food so that if a risk related to food safety occurs, it has been submitted to the EU regulator in a short time. If the proposed measure is agreed by most members of the EU's regulatory authority, the seafood product will be removed from distribution channels on the EU market. These regulations of the EU market are completely beneficial for Vietnam's seafood exporters because they are easy to apply, do not have to learn many documents that are being implemented; regulations on food hygiene and safety have been systematized and logically ensured; No EU member state has the right to set its own regulations on imported seafood.

For many years, the EU market has been a major consumer of Vietnam's seafood products. From a very humble position, Vietnam's seafood products have gradually penetrated and created a solid foothold in the EU market in general and each EU member in particular. With a high growth rate, many seafood products are popular with EU people, Vietnam's seafood exporters are actively increasing export activities to the EU market.

However, besides the successes, Vietnam's seafood exports to the EU market also contain many unstable and unsustainable factors. Finding a firm foothold in the EU market is not easy for Vietnamese seafood exporters, they always have to deal with trade barriers from the EU market, facing competitors with extensive experience in dominating the export market. Meanwhile, the development of Vietnam's seafood industry still has many spontaneous factors, lack of synchronous investment, and the state's management mechanism is incomplete. Therefore, in the coming time, in order to further improve the competitiveness of Vietnamese seafood exports, create an increasingly solid position in the EU market, Vietnamese seafood exporters need to make efforts to research the market, boldly invest in equipment innovation, etc make the most of the advantages that are still considered Vietnam's strengths such as natural conditions, cheap labor costs, make the most of opportunities and reasonable support of the State, take advantage of the incentives of the EVFTA to minimize the risks that occur in the process of entering this market.

References:

Ministry of Industry and Trade, European Market Department (2014), Regulation on Generalized Tariff Preferences (GSP) of the European Union for the period 2014-2023, Hanoi.

Ministry of Industry and Trade (2011), Export of Vietnamese seafood to the European Union market, Industry and Trade Publishing House, Hanoi.

Ministry of Industry and Trade, Institute of Trade Studies (2012), Participating in the Global Agricultural Value Chain through Transnational Companies (TNCs) - Lessons for Vietnam, Ministerial Project, Ministry of Industry and Trade, Hanoi.

Communist Party of Vietnam (2021), Document of the 13th National Party Congress, Volume 1, Volume 2, National Political Publishing House - The Truth, Hanoi.

Vo Van Duc (2004), Promoting comparative advantages to boost Vietnam's export growth in the current conditions, National Political Publishing House, Hanoi.

Eli Hecksher (1879-1852) and B. Ohlin (1899-1979), Inter-regional and International Trade, Statistics Publishing House, Hanoi.