

The Business of Sustainable Food: Economic and Financial Implications of Eco-Friendly Culinary Practices in Vietnam

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ABSTRACT: This study focuses on the food and beverage industry in Vietnam, a rapidly growing sector that also faces many challenges in terms of environmental sustainability. In the context of increasing pressure from consumers, legal regulations and global trends, the study aims to assess the economic and financial impacts of adopting sustainable food practices. Using two theoretical approaches based on the Relational View and the Natural Resource-Based View, the study collected data from 217 managers and business owners in the industry to identify the factors that promote and hinder the transition to sustainable practices. The results of the study show that four sustainable practices such as using organic ingredients, saving energy, separating food waste, and optimizing green supply chains all have positive and significant impacts on the economic and financial performance of food service enterprises in Vietnam. In addition, structural factors such as enterprise size and geographical location, although still having some influence, become less important when enterprises implement sustainable practices, suggesting that green strategies can help narrow the gap between large and small enterprises. The study recommends that food businesses in Vietnam should integrate green strategies into their business operations, such as using organic ingredients, saving energy, managing waste, and optimizing supply chains. These measures help reduce costs, enhance brand recognition, increase customer trust, and expand markets. In particular, small and medium-sized enterprises can apply simple but effective green solutions to increase their competitive advantage. At the same time, sustainable practices also help businesses be more ready for international integration and access support from green policies and capital.

KEYWORDS: Eco-friendly culinary practice; food business; green supply chain optimization; sustainable food practice.

I. INTRODUCTION

Vietnam's food service industry has emerged as one of the most dynamic and rapidly expanding sectors in the country, fueled by accelerating urbanization, a growing middle class with increasing disposable income, and a rising demand for culinary diversity and convenience. The sector's diverse landscape, including restaurants, street food vendors, cafés, catering services, and digital food delivery platforms, not only reflects the country's rich cultural heritage but also contributes significantly to national economic development. In recent years, however, this sector has come under increasing pressure to adopt more sustainable practices due to heightened environmental concerns, shifting consumer values, and global climate change commitments. Similar to other developing economies, Vietnam's food service industry is facing several sustainability challenges that span environmental, social, and economic dimensions (Chopra & Meindl, 2015). These include the excessive use of plastic packaging, food waste, high carbon emissions resulting from logistics and imported ingredients, limited access to local or organic food sources, and a general lack of consumer awareness regarding sustainable alternatives. Moreover, businesses in this sector often lack clear strategic guidance, regulatory support, or effective implementation models for integrating sustainability into operations. Sustainable food production and consumption are becoming global trends across the food industry. However, there remains a critical lack of empirical research that evaluates the economic and financial impacts on businesses such as restaurants, food chains, and food service providers when adopting green, sustainable, and ecofriendly practices. This research gap is particularly pronounced in developing countries like Vietnam, where regulatory enforcement in the domain of environmental protection and sustainable business conduct remains relatively weak and inconsistent.

Sustainable food practices in the food service sector encompass a wide range of environmentally and socially responsible strategies, such as sourcing local or organic ingredients, minimizing food waste, transitioning to plant-based menus, conserving

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energy, reducing packaging waste, and upholding fair labor practices. As the global demand for ethical and sustainable food grows, Muslim travellers, for instance, place considerable emphasis on halal food (67%), affordability (53%), and Muslim-friendly experiences (49%) when making leisure travel decisions. This illustrates a broader consumer trend toward responsible consumption, which food businesses can capitalize on through sustainable offerings. International case studies, such as the AZKA Farms initiative in Saudi Arabia, demonstrate that embedding sustainability into food service operations can yield not only environmental benefits but also improved customer engagement, operational efficiency, and long-term business competitiveness (Baig et al., 2021; Food Export, 2023). Nonetheless, the majority of existing studies tend to focus on agricultural production or food waste management in isolation, with limited attention paid to the broader economic and financial implications of adopting sustainable food practices in emerging market contexts like Vietnam (Baig et al., 2019).

Moreover, while stakeholders in food supply chains increasingly express support for environmental sustainability, many lack the technical knowledge and strategic clarity to implement effective initiatives, particularly in the face of a proliferation of green options and complex decision-making environments (Chen et al., 2013). Thailand, for example, has invested 8 billion Baht under its 2017–2021 plan to improve manufacturing, expedite certification, and enhance R&D to become a leading exporter of halal and sustainable food. This reinforces the urgency for developing a systematic understanding of the key drivers and barriers to the adoption of sustainable food practices, and how such practices affect the financial and operational performance of businesses in the food service industry, particularly in developing economies like Vietnam (Leat & Revoredo-Giha, 2013). Against this backdrop, the present study seeks to investigate the economic and financial implications of eco friendly culinary practices in Vietnam's food service industry. Specifically, it examines how the adoption of sustainable food practices is influenced by various factors, including customer and stakeholder sustainable behaviors, government laws and regulations, corporate commitment to climate change mitigation, financial and nonfinancial incentives, and the organizational values and culture surrounding sustainability. Furthermore, the study evaluates the extent to which the promotion of sustainable food practices influences environmental, economic, and social performance outcomes among Vietnamese food service businesses. To achieve these objectives, the study is grounded in two established theoretical perspectives: the Relational View and the Natural Resource Based View. These frameworks offer valuable insights into how firms can create competitive advantage through collaborative relationships and sustainable resource management (Camanzi et al., 2017). The research adopts an empirical approach, collecting data from restaurant owners and senior managers to explore the relationships among sustainability drivers, sustainable food practice adoption, and business performance outcomes.

This study contributes to the academic literature in several important ways. First, it provides empirical evidence from a developing country context, addressing the significant gap in understanding the economic and financial implications of sustainable culinary practices in Vietnam. Second, by identifying the most influential drivers of sustainable food practice adoption, the study informs the design of effective sustainability strategies and business models tailored to the Vietnamese context. Third, its findings offer practical insights for policymakers, investors, and industry stakeholders in developing targeted incentives and support mechanisms for sustainability transitions. Finally, the study introduces a data driven framework that draws upon global best practices and business analytics to guide food service businesses in prioritizing and allocating resources toward sustainability (Chopra & Meindl, 2015). As Vietnam continues to deepen its engagement with global sustainability commitments and economic integration, the food service industry is poised to play a pivotal role in shaping responsible consumption patterns and contributing to national development goals. Understanding the complex interplay between sustainable culinary practices and business performance is therefore both timely and essential for building a resilient, inclusive, and future ready food ecosystem.

After the introduction part, Section 2 presents the conceptual framework and hypothesis development, including a review of sustainable food concepts, eco-friendly culinary practices, and the current status of sustainable food business development in Vietnam. Section 3 describes the research methodology, including the measurement instrument, questionnaire design, and data collection process. Section 4 presents the results and discussion, including descriptive statistics, reliability testing, exploratory factor analysis, and multiple regression analyses to test the proposed hypotheses. The effects of control variables such as firm size, age, location, and promotion via KOLs/KOCs are also examined to provide a more nuanced understanding of the model. Finally, Section 5 offers conclusions, theoretical and managerial implications, and outlines limitations and directions for future research.

II. CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Sustainable Food

The field of sustainability is a relatively new discipline that has developed over the last 15–20 years (Coad & Pritchard, 2017). In an HBR article from 2009 (Nidumolu et al., 2009), the authors showed that 10 years ago, sustainability became innovation's new frontier and sustainability is a mother lode of organizational and technological innovations that yield both bottom-line and top-line returns, and this has escalated even more the last decade. The majority of businesses are now well aware of the

importance of sustainability, and it is the key driver of innovation, even though it is a challenge in many aspects. The challenges include not only, obvious parts such as products, processes, technologies and business models but also the more abstract dimensions like cognitive, psychological and organizational challenges (Sharma, 2017).

When it comes to sustainability in the agri-food sector, it is of vital importance in this large sector which represents a significant part of the EU economy accounting for about 4.4% of total employment in EU-27. Many businesses in the agri-food sector, often small family-owned businesses with primary production as the dominating part of the business, need new ideas and approaches to become more profitable at the same time as they are exposed to external and internal pressure to become more sustainable (Tell et al. 2016). External pressure can be increased competition and pressure from special groups and government regulation-legislation. Internal pressure can come from management, shareholders and employees to build a business on sustainable values. There is also forces working in the opposite direction, contributing to an increasing 'unsustainability' of the agri-food sector already identified by Fritz & Matopoulos (2008), which are still valid: (1) A globalization of the agri-food industry that results in increased imports and exports; (2) Consumer changes in consumption, resulting in a larger demand of food products, often out of season, that are processed at longer distances; (3) The concentration of the sector has resulted in an ever-increased power imbalance in favour of retailers; and (4) Major changes in delivery patterns with most goods now routed through supermarket regional distribution centre's using larger heavy goods vehicles.

Recent research by Cagliano et al. (2016) has identified three main, integrated, challenges for sustainability in the agri-food sector. First, the interdependency between food production and environmental, human and physical resources. Second, the important role of sustainability and health aspects of food for humans. Third, the special characteristics of the food supply chain, with companies of different size and different sustainability focus. Despite the pressure to raise efficiency and lower costs from strong actors in the food value chain, many agri-food companies strive to conduct a sustainable business from social and ecological perspectives as well as from an economic perspective. The conscience of the owners and/or the managers of the agri-company can be an important factor for the development of sustainability-oriented innovation (Cagliano et al., 2016.) Walker has identified this as a values-based driver (Walker, 2012; 2014). Further, research has also suggested that many agri-food producers have a strong value intention to conduct their agri-business in a sustainable way (Barth et al., 2017). Explanations for this could be that many agri-companies are family businesses, rooted in their communities and strongly connected to the land of the ancestors (Barth et al. 2017). The owners/managers have experienced the effect of their actions on their land and production. They have accepted a responsibility for coming generations. Taken together, the businesses in the agri-food sector is facing difficult challenges, but has also unique opportunities to develop sustainability oriented innovation and sustainable business models which create value in other ways than low-cost production.

Eco-Friendly Culinary Practices

Eco-Friendly Culinary Practices (ECPs) refer to a set of strategies and operational measures within the foodservice and restaurant industry that aim to minimize environmental impact while maintaining or enhancing food quality, cultural identity, and economic viability (Blay-Palmer, 2016; Kwon, 2015). These practices encompass efforts such as sourcing local and seasonal ingredients, reducing food waste, promoting sustainable menus, and adopting energy-efficient technologies (Perramon et al., 2014; Filimonau et al., 2022). ECPs are not limited to operational improvements but also reflect a broader transformation in organizational values and consumer engagement. Restaurants can act as agents of change by educating customers, embedding sustainability into their brand identity, and encouraging responsible consumption (Reisch et al., 2013; Filimonau & Krivcova, 2017).

At the heart of ECPs lies the interconnection between environmental, economic, and social sustainability. Environmentally, these practices seek to mitigate climate change by lowering greenhouse gas emissions, often through actions such as using locally grown produce, composting organic waste, and implementing water- and energy-saving technologies (Tehrani et al., 2020; Kfourri et al., 2022). Economically, sustainable food practices can reduce operational costs and improve market competitiveness by appealing to a growing segment of environmentally conscious consumers (Perramon et al., 2014; Namkung & Jang, 2013). Socially and culturally, ECPs support the preservation of traditional cuisines, promote health and wellness, and foster deeper connections between restaurants and the communities they serve (Blay-Palmer, 2016; Niederle & Schubert, 2020).

The adoption of ECPs is influenced by both external and internal drivers. External factors include increasing regulatory requirements, growing consumer awareness, and stakeholder pressures for transparency and ethical responsibility (Cho & Yoo, 2021; Raab et al., 2018). Governments and industry bodies play a pivotal role by providing incentives and enforcing environmental standards, which can accelerate green transitions in foodservice businesses (Abdou et al., 2022; Ayuso, 2007). On the internal side, leadership commitment, organizational culture, and the perceived long-term benefits of sustainability significantly affect the implementation of ECPs (Saengchai & Jermisittiparsert, 2020; Martin-Rios et al., 2018). The attitudes of restaurant managers and entrepreneurs are particularly vital; when sustainability is viewed as a core organizational value rather than a compliance issue,

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businesses are more likely to innovate and invest in sustainable solutions (Cantele & Cassia, 2020). Despite their benefits, ECPs come with notable challenges, including high initial investment costs, complex supply chain logistics for sustainable ingredients, and gaps in employee training or managerial expertise (Madanaguli et al., 2022; Jacobs & Klosse, 2016). For small and medium-sized enterprises, the financial and knowledge barriers may be more pronounced. However, empirical studies show that long-term gains often outweigh these costs, especially when sustainable practices lead to improved brand equity, customer loyalty, and operational efficiency (Namkung & Jang, 2013; Wang et al., 2021).

The theoretical foundations of ECPs can be explained through the lens of institutional theory, theory of planned behavior, and resource-based view. Institutional theory highlights how normative, coercive, and mimetic pressures influence firms to adopt sustainable practices in order to gain legitimacy (Raab et al., 2018). The theory of planned behavior emphasizes how managerial attitudes, perceived control, and social norms shape sustainability intentions (Cho & Yoo, 2021). Meanwhile, the resource-based view posits that internal capabilities, such as green innovation and employee training, are essential for achieving a competitive advantage through sustainability (Cantele & Cassia, 2020; Wang et al., 2021).

The Current Status of Sustainable Food Business Development

The Business of Sustainable Food

In the context of Vietnam's rapidly evolving foodservice industry, the business of sustainable food emerges as a multidimensional challenge and opportunity that lies at the intersection of innovation, environmental responsibility, and economic viability. The development of sustainable food practices is increasingly viewed not only as an operational adjustment but also as a business model transformation that requires companies to rethink how they create, deliver, and capture value. As noted by Rohrbeck et al. (2013), sustainability-oriented innovations (SOIs) are often framed as business model challenges, especially in sectors like agri-food and culinary services where resource interdependencies and societal expectations are particularly high.

Sustainable business models (SBMs) as defined by Boons & Lüdeke-Freund (2013), integrate environmental and social dimensions into four core components: value proposition, supply chain configuration, customer interface, and financial model. In Vietnam's culinary context, this could mean offering value through locally sourced, healthy meals; structuring supply chains through partnerships with sustainable producers; engaging customers with transparency and education; and redistributing financial benefits to all stakeholders. This holistic view aligns with the core objective of the Brundtland Report (WCED, 1987), which emphasizes development that meets present needs without compromising future generations. The rise of SBMs also calls for leadership styles rooted in stewardship, as described by Jones & Upward (2014). For restaurants and food enterprises in Vietnam, adopting the Strongly Sustainable Business Model Canvas (SSBMC) can provide a strategic roadmap for integrating sustainability goals into daily operations, customer engagement, and long-term investment planning. It is through this lens that eco-friendly culinary practices transition from isolated green actions into a cohesive and scalable business model.

Current state

The development of sustainable food businesses has become an increasingly critical issue in the face of mounting environmental, social, and economic challenges associated with the modern food system. Globally, food consumption and production patterns continue to exert substantial pressure on natural ecosystems, contributing to climate change, water scarcity, soil degradation, and biodiversity loss (Reisch et al., 2013). Food systems account for a significant share of global greenhouse gas emissions and freshwater use, with industrialized agricultural practices often prioritizing yield over sustainability.

In developed economies such as those in the European Union and the United States, the food sector is witnessing a growing bifurcation between highly processed, low-cost food products and niche, health-oriented alternatives, including organic and locally sourced food (Oosterveer & Sonnenfeld, 2012; Reisch et al., 2013). However, the market for sustainable food remains relatively fragmented, dominated by small and medium-sized enterprises (SMEs) that face considerable structural challenges, including limited access to capital, low profit margins, and intense competition from large agribusiness corporations. These difficulties are exacerbated by the shrinking share of value that farmers retain from retail food prices, which has dropped from 50% a few decades ago to approximately 25% today (Tischner & Kjaernes, 2007).

In the U.S., the sustainable food business landscape is further constrained by socioeconomic disparities and uneven food access. Many low-income urban communities are characterized as food deserts—areas lacking affordable, fresh, and nutritious food options—leaving residents reliant on processed and fast foods with poor health outcomes (PolicyLink, 2011). This issue is compounded by the rapid decline of small farms and the aging farming population, with fewer young people entering the agricultural sector due to high barriers to entry and diminishing economic returns (USDA, 2010). The result is a systemic weakening of community-based food systems and rural economies. Despite these challenges, there is growing momentum for sustainability-oriented innovations in the agri-food sector. Sustainable business models are being explored that integrate value creation with

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environmental and social goals (Barth et al., 2017). Organic food markets continue to expand, driven by consumer concerns over health, environmental impact, and food safety. Nonetheless, widespread adoption of sustainable practices requires greater policy support, financial incentives, and integrated strategies that address the entire food value chain—from production and processing to distribution and consumption.

In Vietnam, the development of sustainable food businesses remains in its early stages, facing multiple structural and market-related challenges. Although consumer awareness of eco-friendly and organic food has grown, demand remains fragmented and price-sensitive, particularly outside major urban centers (Ho, Vo, & Rowley, 2024). Small-scale producers and agri-food enterprises are increasingly adopting sustainable farming practices; however, limited access to technical knowledge, capital, and certification systems hinders the transition from traditional to sustainable business models (Nguyen-Thi-Kim et al., 2024). In the northern region, organic rice production has emerged as a model for environmentally friendly agriculture, yet its scalability and commercial viability remain constrained by insufficient policy support and supply chain integration (Van Cuong et al., 2024). These realities highlight a gap between sustainability ambition and practical implementation, with significant implications for the economic and financial dimensions of Vietnam's green food sector.

Hypothesis Development

The integration of organic ingredients into food business operations is increasingly regarded as a strategic practice that enhances economic performance. In Vietnam, the rising consumer demand for organic products, especially among health-conscious and environmentally aware segments has created new opportunities for food businesses to differentiate themselves and tap into higher-value markets. Nguyen (2024) points out that organic milk, as a representative product, is gaining traction among Vietnamese consumers who associate organic labels with health, safety, and quality. As a result, food enterprises that prioritize the use of organic inputs may gain a competitive edge, allowing them to command premium prices, reduce waste through better demand forecasting, and improve overall operational efficiency. Furthermore, shifting to organic sourcing practices can lead to stronger supplier relationships and more resilient supply chains, both of which are critical for economic sustainability in a resource-constrained food sector. Based on these findings, the authors proposed the hypothesis:

H1: The use of organic ingredients has a positive impact on the economic performance of food businesses in Vietnam.

In recent years, the growing public concern over food safety, environmental degradation, and personal health has fueled a significant shift toward more sustainable consumption behaviors, particularly in emerging markets like Vietnam. Among these trends, the use of organic ingredients has become a central element of sustainable food business practices. Organic products are often perceived as healthier, safer, and more environmentally friendly, leading to increased consumer willingness to pay a premium for such items (Nguyen, 2024). This market behavior creates economic opportunities for food businesses that incorporate organic ingredients into their offerings. Furthermore, the integration of digital traceability tools such as blockchain has enhanced consumer trust in the authenticity and transparency of organic products, strengthening brand loyalty and customer retention (Duong et al., 2024). In the context of Vietnam's rising middle class and shifting consumption culture, food businesses that prioritize organic sourcing can gain competitive advantage, differentiate their brand, and increase their market share. These advantages translate into tangible economic benefits, such as higher revenue margins, reduced marketing costs through word-of-mouth, and access to export markets with strict organic standards. Therefore, based on these findings, the authors proposed the hypothesis:

H2: Energy saving practices have a positive impact on the economic performance of food businesses in Vietnam.

Food waste is one of the most pressing environmental and operational issues faced by the foodservice industry globally and in Vietnam. The implementation of food waste separation practices such as categorizing organic waste, reusing food scraps, or composting, which enables businesses to manage waste more efficiently and significantly reduce disposal costs. In addition, proper separation of food waste helps to streamline kitchen processes, improve inventory control, and minimize overproduction, thereby enhancing operational efficiency. Studies have shown that businesses that proactively manage food waste often experience increased productivity and reduced raw material loss (Martin-Rios et al., 2018; Maynard et al., 2020). In the Vietnamese context, where small and medium-sized food enterprises often operate under tight resource constraints, adopting such low-cost and high-impact practices could be a strategic move to improve economic performance while contributing to sustainability goals. Based on these findings, the authors proposed the hypothesis:

H3: Food waste separation practices have a positive impact on the economic performance of food businesses in Vietnam.

In recent years, green supply chain optimization (GSCO) has emerged as a strategic approach for enhancing the economic performance of food businesses, particularly in the context of Vietnam's evolving agri-food systems. GSCO involves the integration of environmentally friendly practices across the entire supply chain from sourcing and production to distribution and logistics, with the goal of reducing environmental impact while improving operational efficiency. In Vietnam, food businesses that

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implement green procurement, energy-efficient logistics, and waste-reduction initiatives are increasingly able to cut costs, improve resource utilization, and mitigate operational risks. According to Le et al. (2024), GSCO not only enhances internal operations but also acts as a driver of green innovation, which in turn boosts corporate sustainability performance. This is especially relevant in the Vietnamese food sector, where fragmented supply chains and high resource intensity create both challenges and opportunities for optimization. As noted by Chiadamrong et al. (2024), optimizing supply chain networks using sustainability-focused metrics such as environmental cost and energy consumption may lead to improved economic outcomes through cost savings, better inventory control, and minimized inefficiencies. Based on these findings, the authors proposed the hypothesis:

H4: Green supply chain optimization has a positive impact on the economic performance of food businesses in Vietnam.

The adoption of organic ingredients in food business operations not only enhances economic viability but also contributes directly to financial outcomes such as profitability, revenue growth, and investment attractiveness. In Vietnam, consumers are showing increasing willingness to pay a premium for organic food products that are perceived as safer, healthier, and more environmentally friendly (Duong et al., 2024). This change in consumer behavior, reinforced by technological advancements such as blockchain-enabled traceability systems, allows businesses to charge higher prices, increase customer retention, and reduce reputational risks, thereby improving financial performance over time. Moreover, organic practices can reduce certain input costs related to synthetic chemicals, and generate long-term savings associated with environmental compliance and sustainable resource use. In a competitive food market like Vietnam's, where differentiation and trust are key to long-term growth, the financial benefits of adopting organic ingredients can be significant. Food businesses that proactively invest in organic sourcing and transparency can thus not only meet evolving regulatory and consumer expectations but also unlock new financial opportunities. Based on these findings, the authors proposed the hypothesis:

H5: The use of organic ingredients has a positive impact on the financial performance of food businesses in Vietnam.

Energy efficiency is not only a key environmental concern but also an increasingly strategic priority for businesses seeking to optimize operational performance. In the food service and processing industries which is known for their high energy demands, adopting energy-saving practices has been shown to yield significant cost reductions while simultaneously enhancing brand image (Nguyen et al., 2025). In Vietnam, where energy prices are projected to increase and governmental pressure for sustainable practices is intensifying, firms that proactively reduce their energy consumption can improve both short-term and long-term financial outcomes. According to Le (2024), the transition toward a circular economy and responsible energy use aligns with the broader agenda of corporate sustainability in Vietnam. Moreover, energy-efficient operations often benefit from incentives, tax reliefs, and preferential financing, which can further improve financial performance. Empirical studies have also indicated that firms implementing energy-saving practices not only lower their utility bills but also experience improvements in employee productivity, reduction in equipment wear-and-tear, and stronger appeal to environmentally conscious investors (Thuan et al., 2024). These collective benefits strongly support the proposition that energy-saving practices have a direct and positive impact on the financial performance of food businesses in Vietnam.

H6: Energy saving practices have a positive impact on the financial performance of food businesses in Vietnam.

Financial sustainability remains a central concern for Vietnamese food businesses amid increasing competition and shifting consumer expectations toward eco-conscious brands. Separating food waste enables firms not only to reduce overhead costs such as waste management fees and procurement expenses, but also to enhance their financial standing through reputational gains and market differentiation. Studies show that businesses adopting visible and verifiable sustainability practices, such as food waste separation, are more likely to attract environmentally conscious consumers, particularly younger and urban populations (Wang et al., 2013; Abdou et al., 2020). This can translate into increased customer loyalty, higher willingness to pay, and even access to impact investment or government sustainability incentives in the future. In Vietnam, where environmental regulations are expected to tighten and consumer awareness about food safety and environmental impact is rising, early adoption of sustainable practices can give businesses a competitive edge. Furthermore, aligning with sustainable development goals (SDGs) and ESG principles could help these businesses access partnerships with international buyers or investors who prioritize sustainability compliance. Based on these findings, the authors proposed the hypothesis:

H7: Food waste separation practices have a positive impact on the financial performance of food businesses in Vietnam.

Beyond its operational advantages, green supply chain optimization can significantly enhance the financial performance of food enterprises by enabling long-term value creation and risk reduction. In the Vietnamese market, where food businesses increasingly face pressure from environmentally conscious consumers, regulatory standards, and global sustainability benchmarks, implementing GSCO offers both direct and indirect financial benefits. These include lower input costs, reduced energy usage, and improved access to green financing or ESG-oriented investors. Le and Nguyen (2024) emphasize that in both manufacturing and service sectors, green operations management when supported by supply chain integration, correlates strongly with improved

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sustainability outcomes and financial success. Moreover, aligning with green supply chain principles allows food businesses to strengthen their brand image, attract loyal customers, and differentiate themselves in a highly competitive industry. Given the growing importance of sustainability in investment decision-making, especially under frameworks like ESG and SDG compliance, GSCO serves not only as a cost-saving measure but also as a catalyst for enhanced revenue potential and stakeholder trust. Based on these findings, the authors proposed the hypothesis:

H8: Green supply chain optimization has a positive impact on the financial performance of food businesses in Vietnam.

Firm size plays a pivotal role in shaping how food businesses implement and benefit from eco-friendly practices. Larger firms often possess greater access to capital, human resources, and infrastructure, enabling them to adopt sustainability innovations at scale and achieve operational efficiencies. These firms are more likely to invest in green procurement, energy-saving technologies, and food waste reduction systems, which can enhance productivity and reduce costs. According to Lee et al. (2024), firm size significantly influences digital transformation and productivity in the restaurant industry, while Ji et al. (2024) found that larger agri-food firms were more financially resilient due to better resource endowments. Larger food businesses often have access to economies of scale and better financial planning capabilities, which can improve profitability when adopting sustainability. These firms are more likely to secure favorable financing, invest in sustainability certification, and attract ESG-conscious investors. In studies by Lee et al. (2024) and Ahmad et al. (2024), firm size was positively correlated with financial returns and CSR adoption in hospitality and food-related sectors. Thus, firm size is expected to significantly influence the financial performance of sustainable culinary businesses in Vietnam. Based on these findings, the authors proposed the hypotheses:

H9a: Firm size has a significant effect on the economic performance of food businesses in Vietnam.

H9b: Firm size has a significant effect on the financial performance of food businesses in Vietnam.

Location influences access to infrastructure, green suppliers, customer bases, and policy support, and all of which affect the economic viability of sustainable practices. Businesses in urban centers like Hanoi or Ho Chi Minh City may benefit from increased demand for eco-conscious dining, better logistics, and enhanced digital connectivity. In contrast, rural enterprises may face costlier sourcing and limited consumer awareness. Ji et al. (2024) emphasized regional disparities in digital adoption and financial performance in agri-food businesses, suggesting that geographic location can shape economic outcomes. As such, firm location is a crucial determinant in assessing the success of sustainable food business models in Vietnam. Geographical disparities in income levels, infrastructure, and sustainability awareness across Vietnam influence consumer purchasing power and operational costs. Urban firms may benefit from higher demand for sustainable dining and government support programs, whereas rural businesses may face limitations in financing and access to green technologies. Ji et al. (2024) highlighted that the financial performance of firms engaged in e-commerce and sustainability efforts varied significantly by region, indicating the influence of location on profitability. Based on these findings, the authors proposed the hypotheses:

H10a: Firm location has a significant effect on the economic performance of food businesses in Vietnam.

H10b: Firm location has a significant effect on the financial performance of food businesses in Vietnam.

Older firms typically benefit from accumulated managerial experience, established networks, and organizational maturity, which can enhance their ability to integrate sustainable practices into their operations. With years of market understanding, they are better positioned to adapt their culinary processes and supply chains to meet sustainability goals. Furthermore, firms with longer histories often enjoy stronger reputations and stakeholder trust, which are key advantages when promoting eco-friendly business models. Prior research by Ahmad et al. (2024) and Ji et al. (2024) also highlighted that older enterprises tend to be more stable and better equipped to implement CSR and digital innovations, translating to improved economic performance. Besides, older firms typically maintain long-standing supplier relationships and customer loyalty, which provide financial stability and resilience. These characteristics enable them to better absorb the costs of transitioning to sustainable models while leveraging their established reputation to attract investment and premium markets. Ji et al. (2024) confirmed the role of firm age in improving financial resilience through digital and sustainable transformations in agri-food enterprises, while Ahmad et al. (2024) noted similar effects in the context of CSR in food firms. Based on these findings, the authors proposed the hypotheses:

H11a: Firm age has a significant effect on the economic performance of food businesses in Vietnam.

H11b: Firm age has a significant effect on the financial performance of food businesses in Vietnam.

In Vietnam's digitally engaged society, partnerships with key opinion leaders (KOLs) and key opinion consumers (KOCs) offer an effective marketing strategy for sustainable food businesses. Influencers can enhance brand visibility, improve consumer trust, and amplify messages around eco-friendly values. Luong and Ho (2023) found that food vloggers significantly shaped Vietnamese consumers' dining decisions. By leveraging social media influence, restaurants promoting green practices can boost traffic, attract new customer segments, and increase brand differentiation, ultimately leading to stronger economic performance. Collaborating with influencers enables sustainable food businesses to increase brand awareness, differentiate themselves from competitors, and reach eco-conscious consumers more effectively. These efforts can boost revenue, build loyal customer bases, and reduce

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marketing costs. Luong and Ho (2023) revealed that food-related influencers on social media in Vietnam significantly shaped consumer preferences, translating into tangible financial gains for businesses. Thus, leveraging KOLs/KOCs is likely to enhance the financial performance of eco-friendly culinary enterprises. Based on these findings, the authors proposed the hypotheses:

H12a: Promotion through KOLs/KOCs has a significant effect on the economic performance of food businesses in Vietnam.

H12b: Promotion through KOLs/KOCs has a significant effect on the financial performance of food businesses in Vietnam.

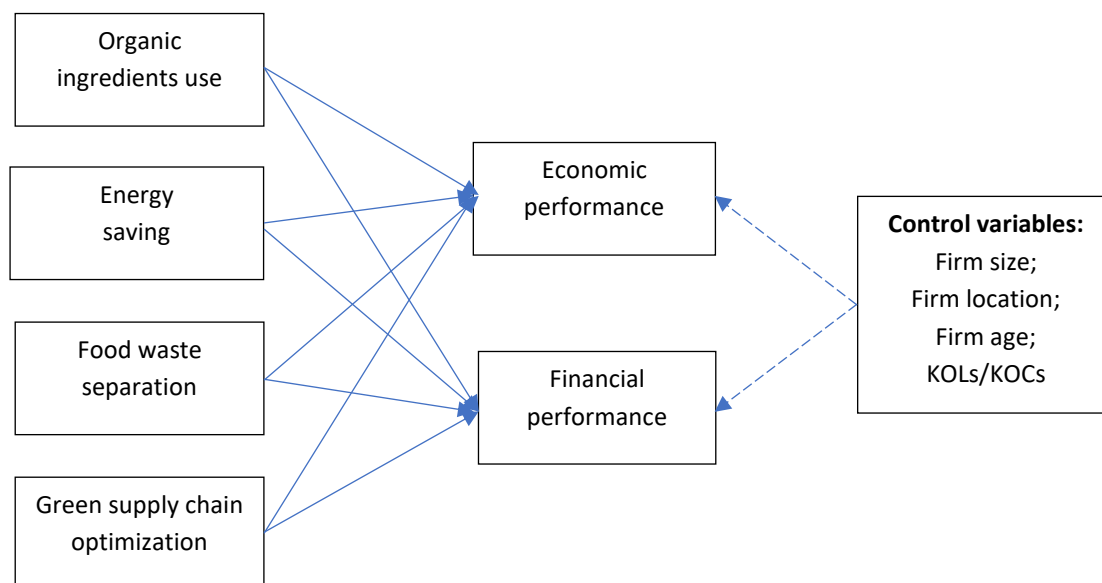


Figure 1. Proposed Research Model

III. METHODOLOGY

Measurement Instrument and Questionnaire Design

This study adopted measurement items from prior validated studies to ensure both reliability and content validity of the constructs. The questionnaire was structured into three main parts. The first part aimed to identify and select suitable respondents, targeting individuals in decision-making positions within food service businesses, such as owners or managers. The second part addressed the core concepts of the study, including perceptions and implementation of sustainable practices. The final part comprised five-point Likert scale items, ranging from 1 = “Strongly disagree” to 5 = “Strongly agree,” which represented all measurement indicators used to evaluate the research constructs.

Specifically, organic ingredients (OI) were measured by three items capturing the use of certified organic and chemical-free inputs, adapted from Nguyen (2024) and Duong et al. (2024). Energy saving (ES) was assessed with four items reflecting energy-efficient technologies and conservation efforts, based on the frameworks of Martin-Rios et al. (2018) and Maynard et al. (2020). Food waste separation (FW) included three items focusing on waste categorization, composting, and resource efficiency, adopted from Le et al. (2024) and Chiadamrong et al. (2024). Green supply chain optimization (GO) was measured by four items that evaluated green procurement, sustainable logistics, and collaboration with environmentally responsible partners, following Duong et al. (2024). In terms of outcomes, economic performance (EP) was assessed through five items covering operational efficiency, market competitiveness, productivity gains, and customer satisfaction, as informed by Nguyen (2024), Duong et al. (2024), and Le (2024). Financial performance (FP) was measured with five items reflecting profitability, revenue growth, cost reduction, and return on investment, based on Nguyen et al. (2025), Thuan et al. (2024), and Le & Nguyen (2024).

To test the research model and hypotheses, data were analyzed using SPSS software. All constructs were measured reflectively, and variables were coded accordingly. The questionnaire was first developed in English and then translated into Vietnamese using a back-translation method to ensure both linguistic accuracy and conceptual consistency (Hair et al., 2019).

Sampling and Data Collection

The target population of this study consisted of food service firms operating in Vietnam, including restaurants, food chains, and catering service providers. The unit of analysis was the firm, and the respondents were individuals in managerial or ownership positions (e.g., owners, co-founders, or senior managers) who had sufficient knowledge of the firm’s operations and its engagement in sustainable food practices. To ensure diversity, the sample covered firms of different sizes categorized as small (0–49 employees), medium (50–199 employees), and large (200+ employees). In terms of geographic distribution, the firms were

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located in key economic regions, including Hanoi, Ho Chi Minh City, Da Nang, and other provinces. Firm age was also considered, with firms grouped into four categories: less than 3 years, 3–5 years, 6–10 years, and over 10 years. Additionally, the survey collected information on whether the firm had used KOLs or KOCs for marketing or promotional purposes, which was later used as a control variable in the analysis. The data collection process was conducted using both online and offline methods. Questionnaires were distributed via email, professional business networks, and direct outreach at trade events and business hubs. A total of 217 firm-level responses were collected and considered valid for statistical analysis after careful data screening to ensure that all respondents were qualified decision-makers within the firms. This sample size is deemed adequate for multiple regression analysis using SPSS, ensuring acceptable statistical power based on the number of predictors in the research model. The inclusion of firms of varying sizes, locations, and stages of business development helps enhance the representativeness and generalizability of the study's findings.

IV. RESULTS AND DISCUSSION

Demographics of Respondents

In order to gain a deeper understanding of the participating firms' characteristics, demographic information was collected and analyzed. The study focused specifically on food service businesses operating in Vietnam, covering a diverse range of firm sizes, locations, years of operation, and promotional strategies. These factors are important in shaping the firms' adoption of sustainable food practices and their overall performance outcomes. In terms of firm size, the sample includes a relatively balanced distribution, with 41.0% of firms categorized as small (0–49 employees), 34.1% as medium-sized (50–199 employees), and 24.9% as large enterprises (200+ employees). This spread allows for meaningful comparisons across different operational capacities and resource availability. Regarding firm location, the firms surveyed are predominantly located in Hanoi (44.2%) and Ho Chi Minh City (33.2%), the two major urban centers where food service activities are highly concentrated. A smaller share of firms is based in Da Nang (9.7%) and other provinces (12.9%), reflecting a modest regional diversity in the sample. In terms of firm age, the majority of the participating businesses are relatively young, with 36.4% having operated for less than three years, and 33.6% existing for 3–5 years. Meanwhile, 17.5% of firms have been in business for 6–10 years, and only 12.4% have more than 10 years of operational experience. This suggests that most of the sampled firms are still in early to mid stages of development, which may influence their readiness and motivation to adopt sustainable practices. Finally, to assess marketing and visibility strategies, the study examined whether firms have ever used KOLs (Key Opinion Leaders) or KOCs (Key Opinion Consumers) for promotional purposes. A majority of the firms (64.1%) reported using KOLs/KOCs in their marketing activities, indicating a trend toward influencer-based strategies in the Vietnamese food service sector. In contrast, 35.9% of the firms had not employed such approaches, possibly due to budget constraints or differing marketing priorities.

Table 1. Demographics of Respondents

Demographics		Frequency	Percent
Firm size	Small (0 - 49 employees)	89	41.0
	Medium (50 -199 employees)	74	34.1
	Large (200+ employees)	54	24.9
Firm location	Hanoi	96	44.2
	Ho Chi Minh City	72	33.2
	Da Nang	21	9.7
	Other	28	12.9
Firm age	Less than 3 years	79	36.4
	3–5 years	73	33.6
	6–10 years	38	17.5
	Over 10 years	27	12.4
	Yes	139	64.1

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Has your business ever used KOLs/KOCs for marketing or promotional activities?	No	78	35.9
Total		217	100

Reliability and EFA Analysis

The results show that all scales have Cronbach's Alpha values greater than 0.7, indicating an acceptable level of reliability or higher. Specifically, the OI scale has a Cronbach's Alpha coefficient of 0.783 with 3 observed variables, showing quite good reliability. Similarly, the FW scale has an Alpha value of 0.725 (3 variables), also showing a suitable level of internal consistency. Meanwhile, the remaining scales such as ES (0.919 with 4 variables), GO (0.908 with 4 variables), EP (0.936 with 5 variables) and FP (0.931 with 5 variables) all have Alpha coefficients exceeding the threshold of 0.9, showing very high reliability. This shows that the observed variables in these scales measure the same concept well and can continue to be used in the next steps of analysis. Overall, the reliability test results showed that no scales needed to be eliminated. The scales were consistent and completely suitable for inclusion in exploratory factor analysis (EFA) to test the structure of research concepts.

Table 2. Scale Reliability Result

Variables	Cronbach's Alpha	N of Items
OI	.783	3
ES	.919	4
FW	.725	3
GO	.908	4
EP	.936	5
FP	.931	5

The results of the Exploratory Factor Analysis (EFA) for the dependent variables—Economic Performance (EP) and Financial Performance (FP)—indicate that the dataset is well-suited for factor extraction. The Kaiser-Meyer-Olkin (KMO) values are 0.896 for EP and 0.897 for FP, both exceeding the minimum threshold of 0.5 and demonstrating strong sampling adequacy. In addition, Bartlett's Test of Sphericity is statistically significant for both models (Sig. = 0.000), confirming that the observed variables are sufficiently correlated to justify factor analysis. The Total Variance Explained reaches 79.901% for EP and 78.612% for FP, indicating that the extracted factors account for a substantial proportion of the variance in the data. Furthermore, the eigenvalues for EP (3.995) and FP (3.913) are both greater than 1, supporting the validity of the underlying factor structure. Overall, these results provide strong evidence for the reliability and construct validity of the measurement models used to assess economic and financial performance in the context of sustainable food business practices in Vietnam.

Table 3. Exploratory Factor Analysis EFA for Independent Variables

	GO	ES	OI	FW
GO2	.866			
GO4	.853			
GO3	.829			
GO1	.808			
ES1		.810		
ES2		.800		
ES4		.774		
ES3		.623		
OI1			.851	
OI3			.846	

OI2			.735	
FW1				.837
FW3				.801
FW2				.797
KMO = 0.847; Sig of Bartlett's Test = 0.001; Eigenvalues = 1.198; Total Variance Explained = 70.275%				

After that, EFA was conducted on the four independent factors: Green Supply Chain Optimization (GO), Energy Saving (ES), Organic Ingredients (OI), and Food Waste Separation (FW)—using principal components extraction with varimax rotation. All measurement items loaded strongly onto their corresponding constructs, with factor loadings exceeding the threshold of 0.50, confirming discriminant validity. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.847, indicating that the data were appropriate for factor analysis. In addition, Bartlett's Test of Sphericity was statistically significant (Sig. = 0.001), suggesting that the correlations between items were sufficiently large for EFA. The Eigenvalue was 1.198 (> 1), and the Total Variance Explained was 70.275%, reflecting a good level of shared variance among the constructs. These results demonstrate the reliability and structural validity of the measurement model for the independent variables in the context of sustainable food business practices in Vietnam.

Regression Analysis and Hypothesis Conclusion

Model 1 tested the impact of firm-level control variables—firm size, firm location, firm age, and KOLs/KOCs—on the economic performance (EP) of food businesses in Vietnam. The results demonstrate that this model explains 13.5% of the variance in EP ($R^2 = 0.135$; Adjusted $R^2 = 0.119$), and the model is statistically significant ($F = 8.301$, $p < 0.001$). Among the variables, firm size ($\beta = 0.890$, $p < 0.001$) and firm location ($\beta = 0.737$, $p < 0.001$) show significant and positive effects, thereby supporting hypotheses H9a and H10a. This finding aligns with Ji et al. (2024) and Lee et al. (2024), who observed that larger and centrally located firms have better access to markets, infrastructure, and capital, thus enhancing their economic efficiency. Conversely, firm age ($\beta = 0.168$) and the use of KOLs/KOCs ($\beta = -0.163$) do not exert significant impacts, thus not supporting hypotheses H11a and H12a. This result may suggest that legacy and media influence, while important, are not sufficient drivers of economic performance in isolation without concurrent sustainable practices.

Table 4. Scale Reliability Result

	Model 1	Model 2	Model 3	Model 4
Dependent variable	EP	EP	FP	FP
Variables	β (Standardized)	β (Standardized)	β (Standardized)	β (Standardized)
Firm size	.890***	.116	.953***	.211
Firm location	.737***	.312*	.682***	.286*
Firm age	.168	.184	.018	.034
KOLs/KOCs	-.163	-.120	-.113	-.081
OI		.012**		.141**
ES		.386*		.160*
FW		.154**		.239***
GO		.311*		.432**
R^2	.135	.600	.141	.644
Adjusted R^2	.119	.584	.125	.630
R^2 change	.135	.464	.141	.503
F	8.301	38.980	8.726	47.021
N	217	217	217	217

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

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Model 2 incorporated four sustainable practices—organic ingredient usage (OI), energy saving (ES), food waste separation (FW), and green supply chain optimization (GO)—into the regression on economic performance. The inclusion of these variables led to a substantial improvement in explanatory power ($R^2 = 0.600$; Adjusted $R^2 = 0.584$; $\Delta R^2 = 0.464$), indicating that eco-friendly practices significantly enhance a firm's economic performance. All four practices had statistically significant effects: OI ($\beta = 0.012$, $p < 0.01$), ES ($\beta = 0.386$, $p < 0.05$), FW ($\beta = 0.154$, $p < 0.01$), and GO ($\beta = 0.311$, $p < 0.05$), thereby providing empirical support for hypotheses H1 to H4. These findings corroborate prior studies such as Nguyen (2024), Duong et al. (2024), and Chiadamrong et al. (2024), which highlight that eco-practices not only enhance operational efficiency but also improve branding, consumer trust, and market access. Furthermore, the diminishing significance of firm size and location in this model implies that sustainable strategies may act as mediators, compensating for structural disadvantages and leveling the playing field for entrepreneur in Vietnam.

Model 3 assesses the effects of control variables on financial performance (FP). The model accounts for 14.1% of the variance in FP ($R^2 = 0.141$; Adjusted $R^2 = 0.125$), and is statistically significant ($F = 8.726$, $p < 0.001$). Firm size ($\beta = 0.953$, $p < 0.001$) and firm location ($\beta = 0.682$, $p < 0.001$) again emerged as strong predictors, supporting hypotheses H9b and H10b. These results confirm the findings from previous literature (e.g., Ji et al., 2024; Ahmad et al., 2024), which suggest that resource-endowed, larger, and better-located firms are more financially resilient and capable of leveraging economies of scale. However, firm age ($\beta = 0.018$) and KOLs/KOCs ($\beta = -0.113$) did not show significant effects on FP, thereby failing to support hypotheses H11b and H12b in this model. This may suggest that legacy and influencer strategies alone do not directly translate into improved profitability unless integrated with broader sustainability and operational frameworks.

Model 4 represents the full model for financial performance, integrating sustainability variables alongside control variables. The model explains 64.4% of the variance in FP ($R^2 = 0.644$; Adjusted $R^2 = 0.630$), demonstrating a substantial increase in explanatory power ($\Delta R^2 = 0.503$). All four sustainability variables significantly contribute to financial performance: GO ($\beta = 0.432$, $p < 0.01$), FW ($\beta = 0.239$, $p < 0.001$), OI ($\beta = 0.141$, $p < 0.01$), and ES ($\beta = 0.160$, $p < 0.05$), thereby supporting hypotheses H5 to H8. These findings are consistent with empirical studies by Le and Nguyen (2024) and Thuan et al. (2024), which suggest that sustainability-oriented businesses experience better access to green financing, cost reduction, improved consumer trust, and stronger investor appeal. Interestingly, the influence of firm size becomes non-significant ($\beta = 0.211$), reinforcing the argument that sustainability practices can serve as equalizers for smaller firms seeking to enhance their financial standing. The diminished role of structural factors indicates a paradigm shift where strategic green practices, rather than firm characteristics alone, drive financial success.

V. CONCLUSIONS

Theoretical Implications

This study offers several important theoretical contributions to the understanding of sustainable food practices within the context of Vietnam's food industry. First, it advances current frameworks by empirically demonstrating the impact of four key sustainability practices—organic ingredient usage, energy saving, food waste separation, and green supply chain optimization—on both economic and financial performance of food businesses (Moruzzi & Sirieix, 2015). By explicitly linking environmental responsibility with measurable business outcomes, the research enhances the theoretical integration between sustainability and firm performance, an area that has often been examined in isolation. Second, the findings underscore that performance improvements derived from sustainable practices are not necessarily tied to structural characteristics such as firm size or location. Rather, the adoption of eco-innovative behaviors emerges as a more critical determinant of business success. This challenges the prevailing view that only large or well-positioned firms benefit from sustainability, suggesting instead that even small and medium-sized enterprises can improve their performance through green initiatives (Wang et al., 2019). Lastly, the study introduces a comprehensive theoretical model that incorporates both internal firm attributes and external sustainable practices, offering a more nuanced approach to evaluating sustainable performance. This model provides a foundation for future research across related sectors, particularly in emerging economies seeking to align environmental goals with economic development (Zahrani, 2022).

Practical Implications

This study provides valuable practical implications for food businesses in Vietnam, especially those seeking to enhance both economic and financial performance through sustainable practices. The findings clearly demonstrate that eco-friendly actions such as reducing energy consumption, separating and managing food waste efficiently, and optimizing green supply chains which can lead to significant improvements in operational efficiency and cost control. Beyond these internal benefits, such practices also play a vital role in strengthening brand image, enhancing customer trust, and increasing consumer loyalty, and those factors are increasingly critical in a market where environmental awareness is rising rapidly. One of the key insights of the study is that even

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modest, low-cost sustainability initiatives such as the use of organic or locally sourced ingredients, reducing plastic packaging, or adopting simple waste monitoring systems which can produce measurable positive impacts, especially for small and medium-sized enterprises that often operate under resource constraints (Moruzzi & Sirieix, 2015). These results challenge the traditional belief that only large companies with financial or structural advantages can compete effectively in the sustainability space. Instead, the study highlights that integrating environmental values directly into daily operations, product sourcing, and customer engagement strategies can help businesses of all sizes build long-term resilience and competitive advantage. In the context of Vietnam's growing participation in global trade and its commitment to environmental standards through free trade agreements and the Sustainable Development Goals (SDGs), food businesses that embrace sustainability are likely to gain increased institutional support, greater market access, and stronger consumer loyalty positioning them not only to thrive locally, but also to expand successfully in regional and global markets.

Limitation and Future Research Directions

Despite its meaningful contributions, this study has several limitations that should be acknowledged. First, the research sample is confined to food businesses in Vietnam, which may limit the generalizability of the findings to other countries with different cultural norms, regulatory frameworks, or levels of sustainability awareness. Future studies could extend this research to a cross-national context to examine whether similar patterns hold in other emerging or developed markets. Second, the use of a quantitative survey design, while offering statistical validity, may not fully capture the motivations, challenges, or contextual dynamics underlying the adoption of sustainable practices. Incorporating qualitative methods such as interviews or case studies in future research could enrich understanding and provide deeper insights into the strategic and operational decisions of food businesses (Kelle, 2006). Third, this study focuses on the direct influence of sustainable practices on performance, without exploring possible mediating or moderating variables. Future research could integrate factors such as environmental orientation, leadership commitment, or technological readiness to better explain how these practices translate into economic and financial outcomes (Al-Ghazali et al., 2022). Finally, this study did not differentiate between types of food businesses (e.g., quick service, casual dining, fine dining) or ownership structures (e.g., independent vs. chain-operated). These variables may significantly affect how sustainability is implemented and its resulting impact. Future research should consider these dimensions to provide more nuanced and context-specific recommendations for sustainable food business strategies in Vietnam.

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