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NÂNG CAO NĂNG LỰC ĐỔI MỚI SÁNG TẠO CỦA DOANH NGHIỆP F&B VIỆT NAM THÔNG QUA HIỆU ỨNG LAN TỎA CÔNG NGHỆ

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Tóm tắt

Trong bối cảnh chuyển đổi số và hội nhập kinh tế, doanh nghiệp thực phẩm và đồ uống (F&B) Việt Nam đứng trước cơ hội và thách thức nâng cao năng lực đổi mới. Khi đầu tư trực tiếp nước ngoài (FDI) và thương mại quốc tế gia tăng, doanh nghiệp trong nước ngày càng hưởng lợi từ hiệu ứng lan tỏa công nghệ. Nghiên cứu này sử dụng phương pháp nghiên cứu tình huống để xem xét sâu cách thức lan tỏa công nghệ ảnh hưởng đến hiệu quả đổi mới của các doanh nghiệp F&B. Kết quả cho thấy, dù lan tỏa công nghệ tạo ra cơ hội lớn, hiệu quả thực tế bị hạn chế bởi năng lực hấp thụ còn yếu, đặc biệt về nguồn nhân lực và đầu tư cho nghiên cứu & phát triển. Do đó, các doanh nghiệp F&B cần tăng cường cơ chế học hỏi nội bộ và mạng lưới hợp tác để tận dụng hiệu quả các lợi ích từ bên ngoài. Cuối cùng, nghiên cứu đề xuất các hàm ý chính sách nhằm thúc đẩy đổi mới bền vững và nâng cao năng lực cạnh tranh toàn cầu cho ngành.

Từ khóa: hiệu ứng lan tỏa công nghệ, năng lực đổi mới sáng tạo, doanh nghiệp F&B Việt Nam, chuyển đổi số, hội nhập kinh tế

ENHANCING THE INNOVATION CAPACITY OF VIETNAMESE F&B ENTERPRISES THROUGH THE TECHNOLOGY SPILLOVER EFFECT

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Abstract

In the context of digital transformation and thorough economic integration, Vietnamese food and beverage (F&B) enterprises face opportunities and challenges in enhancing their innovation capacity. As foreign direct investment (FDI), international trade, and participation in global value chains deepen, domestic firms increasingly benefit from the technology spillover effect, which transfers advanced technologies, managerial knowledge, and innovative practices from one firm, industry, or country to another. This study employs a case study method to provide an in-depth examination of F&B enterprises, thereby providing insights into how technology spillovers influence innovation performance. The findings indicate that while spillovers create significant opportunities for upgrading innovation, their effectiveness is constrained by limited absorptive capacity, particularly in human resources, research and development investment, and institutional support. Therefore, Vietnamese F&B enterprises must strengthen internal learning mechanisms and collaborative networks to capture these external benefits effectively. Finally, the report proposes several policy implications to foster sustainable innovation and improve the global competitiveness of Vietnam's F&B industry.

Keywords: technology spillover effect, innovation capacity, Vietnamese F&B enterprises, digital transformation, economic integration

1. Introduction

As a key sector of the domestic economy, Vietnamese food and beverage (F&B) enterprises have been experiencing rapid growth due to rising consumer demand, urbanization, and integration into global value chains (GSO, 2024). In digital transformation and thorough economic integration, these enterprises are increasingly exposed to advanced technologies and innovative practices from foreign direct investment (FDI) and international trade (HOANG et al., 2021). Technology spillover effects, from labor mobility, supplier–buyer linkages, and knowledge transfer, can potentially enhance domestic firms' innovation capacity.

However, despite these opportunities, Vietnamese F&B enterprises face challenges related to limited absorptive capacity, including insufficient R&D investment, a lack of skilled human resources, and underdeveloped institutional support. Therefore, understanding the mechanisms and impacts of technology spillovers is critical for designing effective strategies and policies to strengthen innovation performance and global competitiveness in Vietnam's F&B sector.

2. Literature Review

2.1. Innovation Capacity

Qian and Li define innovation capacity as firm's ability to innovate continuously ahead of its competitors (Qian and Li, 2003) and also could be simultaneously understood as a continuous improvement of capabilities and resources that an enterprise possesses in order to investigate and utilize opportunities for developing new products and services to meet market needs and create new markets (Szeto, 2000).

According to the study of Prajogo et al, the innovation capacity is determined by technology management and R&D management. They also argued that the effect of the capacity for innovation is regulated through stimulus factors, which include knowledge management, people management, creativity management, and leadership. Moreover, the innovation capacity directly affects the innovation performance (Prajogo and Ahmed, 2006).

At the level of small and medium enterprises, the model of Kirner et al emphasizes technological and scientific knowledge, and formal R&D efforts are the leading indicators of a firm's technological progressiveness (Kirner et al., 2009). In addition, the innovation capacity of manufacturing enterprises and service firms is not similar (Forsman, 2011). Therefore, improving the innovation capacity of firms depends on various factors. When the continuous supply of innovation resources and the accumulation of innovation knowledge are crucial, the enterprise should utilize the interaction between the two factors within an inter-organizational network.

At the level of large-scale enterprises, internal technological environment, idea generation, technology acquisition, and Exploration are three indicators that determine innovation capacity. Also related to technology, such as in SMEs, technology strategy is considered a significant predictor of innovative capacity. These firms have strategic plans where technology strategies are focused and aligned with business plans. Furthermore, large-scale firms have the necessary skills to adopt high-technology, advanced technical know-how, and research capabilities (Koc and Ceylan, 2007).

2.2. Technology Spillover Effect

Spillover effects refer to the phenomenon where the effects of a treatment extend to the control group, impacting their response despite not receiving the treatment directly. This can occur through interactions between the treatment and control groups or shared environmental changes, and foreign direct investment also has a large and significant spillover effect (Zhao et al., 2024). Some sectors, such as wood, paper, chemicals, and nonmetal minerals, which are primarily capital-intensive, benefit from positive FDI spillover effects, whereas others, such as food and textiles, which are labor-intensive principally, do not (Sugiharti et al., 2022).

Technology spillover refers to the unintentional technological benefits to firms that come from other firms' research and development efforts without the costs being shared (Sun and Fan, 2017). There are two main channels for technology spillover. First is brought by FDI when MNCs take advantage of their technological and capital advantages in the home country for enterprises in the host country, promoting knowledge and technology spillover. International import trade can also bring about international spillovers of technological and knowledge information (Liu and Guo, 2019; Sugiharti et al., 2022).

2.2.1 Vertical technology spillover effect

Vertical spillovers happen between MNEs and local enterprises across industries. Vertical technology spillovers may occur through both backward linkages (from buyer to supplier) and forward linkages (from supplier to buyer) when backward linkages create technology spillovers

through several mechanisms and forward linkages may induce technology spillovers through various channels (Jude, 2016; Le and Pomfret, 2011).

Regarding the backward linkage, MNEs transfer technology directly to the local suppliers through training or technical assistance to increase the quality of supplier products. Higher requirements for product quality and on-time delivery set by MNEs force local suppliers to enhance their production process and technology (Le and Pomfret, 2011). Backward spillovers have an important deliberate component, as foreign firms are directly interested in buying high-quality inputs at low prices. Therefore, backward spillovers could be considered an informal direct knowledge transfer (Jude, 2016; Kohpaiboon, A, 2009).

In the forward linkage, domestic firms would benefit from intermediate goods and machinery supplies from MNEs that provide better quality products and lower costs. Moreover, foreign enterprises may also support domestic firms through training in sales techniques and the supply of sales equipment, treating technology externalities. Otherwise, FDI in the infrastructure and business services would directly enhance its customers' productivity (Kohpaiboon, A, 2009; Le and Pomfret, 2011). However, the complex nature of inputs supplied by foreign producers may cause domestic firms difficulties integrating them into the production process (Jude, 2016).

If firms cannot completely internalise the benefits of upgrading their suppliers, they indirectly allow other domestic firms in downstream sectors to benefit from higher-quality inputs. Labour turnover can also be a channel of technology spillovers when domestic firms hire workers trained in multinational s(Jude, 2016). Foreign firms partnering with domestic firms may provide access to higher technology and knowledge to apply and adapt advanced technology, but not to support total technological transfers. Hence, a domestic company might not utilize the vertical technology spillovers (Sugiharti et al., 2022).

2.2.2. Horizontal technology spillover effect

Horizontal spillovers refer to knowledge spillovers within an industry because of the presence of multinational enterprises. There are different relative intensities of spillover channels within the industry: (i) competition, (ii) demonstration, and labour mobility (Jude, 2016; Le and Pomfret, 2011).

MNCs can increase market competition, forcing domestic firms to improve resource utilization or introduce new products and technology to hold their market share. Higher market competition would lead to productivity gains, which is called the competition effect (Le and Pomfret, 2011; Sugiharti et al., 2022). Foreign firms can have a demonstration effect, a chance for local firms to learn by themselves and become familiar with superior technologies, marketing, and managerial practices used in foreign affiliates (Kohpaiboon, A, 2009). Local firms might only need to observe and imitate product innovations or adapt forms of organisation to local conditions (Le and Pomfret, 2011). Demonstration effects are positive and help boost the domestic firms' production and efficiency (Sugiharti et al., 2022). Experienced personnel (skilled workers) may successfully learn and apply foreign technology in local firms (Sugiharti et al., 2022). Another driver of the horizontal

technology spillover effect is labour mobility. Labour turnover may spread technology from FDI firms as workers trained or employed move to domestic enterprises or start their own businesses. This driver is especially important for intensely competitive sectors or where human capital formation is costly (Kohpaiboon, A, 2009; Le and Pomfret, 2011).

However, the absorptive capacity of domestic enterprises would determine the efficiency of the technology spillover effect. Adoptive or absorptive capacity represents a firm's ability to comprehend and implement novel technologies. The interaction of horizontal spillover and absorptive capacity can be recognized as a "technology adoption channel" because technology spillover can both encourage and discourage efficiency and productivity in industries (Blomström and Sjöholm, 1999; Sugiharti et al., 2022). A significant knowledge gap between domestic and FDI firms may also explain the inability to imitate advanced knowledge and increase productivity. Primarily high-technology firms would benefit from FDI because of their high technological absorption capability whereas medium-tech firms increase productivity through the demonstration effect and the technology adoption channel although they are not as efficient as high-tech firm; low-tech firms, which primarily employ unskilled workers, would suffer from significant inefficiency due to the poor absorptive capacity (Sugiharti et al., 2022)

2.3. Global Innovation Index (GII)

Beginning in 2007, the Global Innovation Index (GII) has been calculated and co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO) to help developing economies keep up with technology by showing the comprehensive innovation performance of countries (Oturakci, 2023). The index is considered as a useful tool that develops processes that help to review the past, present and forecast future in order to measure national competitiveness and guide countries in increasing levels of welfare through determining innovation policies by explaining the relationship between the factors that a country will focus on to increase its innovation capacity (Huang and Yu, 2022; Oturakci, 2023).

The overall GII score is calculated as the average of two sub-indices: "Innovation Input Sub-Index" and "Innovation Output Sub-Index". Innovation Input Sub-Index captures parameters of the national economy that facilitate innovative activities, and Innovation Output Sub-Index reveals the result of innovative activities within that economy (Huang and Yu, 2022).

3. Methodology

3.1. Case study method

This study employed the qualitative case study method to conduct an in-depth analysis of a complex, real-world issue (Yin, 2017). The study employs a comparative multiple-case study design, with two cases purposively selected: Nestlé in India and Starbucks in China. These cases were chosen as they are exemplary cases, clearly illustrating the two core mechanisms of the technology spillover effect: vertical spillovers (Nestlé) and horizontal spillovers (Starbucks) in the context of emerging markets with notable similarities to Vietnam. By conducting an in-depth analysis of the successes and challenges from these cases, this research will build a benchmark

analytical framework to reflect upon and derive relevant implications for the Vietnamese F&B industry. The primary data source for this research is publicly available secondary data, including corporate reports, government policies, academic articles, and industry analyses. The data will be analyzed using the qualitative content analysis method. Findings from each case will be mapped against the theoretical framework, followed by a cross-case analysis to synthesize common patterns and lessons learned.

3.2. Case study of Vertical Technology Spillover Effect

3.2.1. Nestlé background

Founded in 1866 by Henri Nestlé, Nestlé is now the world's largest F&B company, operating across approximately 197 countries and offering an extensive portfolio of over 2000 brands (Singh and Alazmi, 2019). By adapting and customizing products to meet customers' demand, the company is accepted and well-received globally, easily becoming every household's must-have item (Sia et al., 2022). During operation, Nestlé emphasizes innovation, sustainability, and creating shared value as key pillars of its business strategy (Nestlé, 2024a).

Nestlé began operating in India in 1912 as a company that imported and sold products in the Indian market. Then, 49 years later, Nestlé opened their first factory at Moga, Punjab, to educate farmers in many aspects, such as increasing the productivity of milk, improving farming methods, and helping with the procurement of bank loans (KPMG, 2024; Nestlé, 2024b).

3.2.2. India before Nestlé entered

Before the presence of Nestlé, India mainly depended on milk imports, while the export revenue was low (IUF Dairy Division, 2006). Besides that, India suffers from a shortage of superb storage facilities, with more than 30% of produce from fields being lost post-harvesting, and a lack of cold chain infrastructure. It is stated that India was short of 10 million tons of facilities at that time (Mike Stones, 2009).

3.2.3. The vertical technology spill-over process

Regarding backward linkage, Nestlé's entry into the Indian market was accompanied by establishing the Milk District Model in Moga. This model aims to promote fairness for farmers while ensuring rigorous quality control through daily milk testing. To enhance efficiency, the company collected milk 2 times a day to reduce the storage cost and developed a cold chain to ensure milk quality during transit. Moreover, Nestlé ensured uniform storage conditions and the required milk quality during its value chain (Nestlé, 2024c). By that innovative model, the Indian farmer successfully increases their productivity and income by reducing cost and minimizing loss of milk, finally increasing their living standards (Harvard Business School, 2005).

Regarding the forward linkages, through Nestlé's R&D Centre, the company transfers the technological know-how, including production processes, product formulations, and innovation. Moreover, Nestlé also set up the Regional Accelerator to bring the products closer to the local market (Nestlé, 2024d).

At the same time, Nestlé strengthened input-output linkages and established a supplier development division dedicated to building a reliable and high-quality local supply base by collaborating with the domestic producers, such as those manufacturing dry cereals for infants, which successfully helped local suppliers integrate into the global value chain. After multiple rounds of quality assessments, India emerged as a principal production hub for this category (Nestlé, 2019).

In addition, Nestle provides technical assistance to the Indian market. The company facilitated the farmer's access to modern technologies such as on-farm milk chilling units and rapid food safety testing systems for raw materials, ensuring compliance with international quality standards. Moreover, Nestlé supported suppliers' manufacturing by guiding quality management systems following HACCP certificates, complemented by regular audits to identify and address weaknesses in the production process, which was upgraded to produce corn flakes that met strict microbiological limits (Meeta Punjabi, 2015; Nestlé, 2024e).

3.3. Case study of Horizontal Technology Spillover effect

3.3.1. Starbucks background

Founded in 1971 in Seattle, Washington, USA, Starbucks is one of the world's most recognized coffeehouse brands (Starbucks, 2025). From only a single coffee store, the company has spread into a global network of over 23,000 outlets across 84 countries worldwide (Statista, 2025). Starbucks has successfully localized its business model in diverse markets, from the United States to China, Europe, and Vietnam, while maintaining a consistent global brand identity.

While Starbucks may not be the most innovative in technology, its global FDI expansion has still created significant horizontal spillover effects in the F&B sector. By setting new standards in coffeehouse design, customer experience, service quality, and brand management, Starbucks has become a model that local coffee shops and F&B businesses worldwide seek to emulate. The presence of Starbucks in the market has pushed domestic players to upgrade their operations and adopt new business practices.

3.3.2. China F&B industry before Starbucks entered

Before Starbucks entered the Chinese market in 1999, the domestic coffee market was still mainly limited to instant coffee products, and the notion of coffee as part of a modern lifestyle or social culture was almost nonexistent (Harbeck, 2019). Local F&B outlets at that time mainly focused on tea, milk tea, and light meals, offering little resemblance to Western-style coffeehouses with espresso-based beverages and dedicated social spaces.

3.3.3. The horizontal technology spill-over process

In January 1999, Starbucks entered mainland China and opened its first outlet in Beijing through a licensing agreement with Beijing Mei Da, a local wholesaler. This approach helped the brand overcome bureaucratic barriers, leverage local relationships, and maintain quality control aligned with its standards (Wang, 2023). Since October 2024, Starbucks has operated

approximately 7,500 stores in China, making it known as the largest coffee chain in the country (Statista, 2024). The rapid expansion and dominant market positioning of Starbucks in China did not just occur in isolation; it had a significant impact on the domestic F&B industry of China, and the moves of Luckin Coffee and other domestic coffee shops might exemplify this precisely:

Regarding the competition effect, Luckin Coffee was compelled to develop innovative solutions to compete effectively in response to the pressure of Starbucks' premium branding and service quality. Luckin introduced a "grab-and-go" model, supported by a mobile app for ordering and in-store pickup, which optimized operational efficiency and created differentiation from Starbucks' style. In addition, the company adopted a low-price strategy of only USD 1.4–2.75 per cup, significantly cheaper than Starbucks, leveraging affordability as a crucial competitive advantage (Trefis, 2024).

Regarding the demonstration effect, Thompson and Arsel have conceptualized Starbucks as creating a hegemonic brandscape that forms global norms for coffee consumption (Thompson and Arsel, 2004). The brand has standardized a Western-style coffee model into the industry benchmark in China with cozy interior design, premium menus, and digitized social experiences. In its expansion into the Chinese market, Starbucks was not only present merely as a brand but also as a channel of knowledge diffusion in professional forums and industry events such as the Changning Coffee Culture Festival, launched in Shanghai's Hongqiao Park (Shanghai Hongqiao, 2025). In these events, alongside international brands such as Costa, Arabica, and domestic chains, Starbucks shared expertise, industry trends, and barista skills. This enables local coffee chains to learn and adapt to international standards, enhancing their competitiveness.

Regarding the labour mobility effect, according to CNN Business, Luckin adopted a deliberate talent acquisition strategy from Starbucks, which functioned as a knowledge transfer mechanism. Luckin offered up to three times higher salaries to attract Starbucks' managers and baristas, estimating that nearly one-seventh of Starbucks' workforce in Beijing transitioned to Luckin (He, 2024).

4. Results and Discussion

4.1. Results

4.1.1. Case study of vertical technology spillover effect

4.1.1.1. Benefits

After Nestle invested in India, Nestle's profit increased by 72% (Manish Jain, 2011), and the company also successfully created day-to-day income and increased the standards of living for the local people. Their strategies also upgraded the local production process to meet the global supply chain standard, increasing the supplier's ability in general (Biswas et al., 2014).

In terms of only the supplier development project in India, Nestle managed to secure sources of 12 previously imported raw materials, and established over 70 new Indian suppliers able to meet the global specifications of the company. In addition, the technical assistance to suppliers had

bridged India's skill and quality gaps with other suppliers in the worldwide chain, and after four years, the overall process saved up to 5 million CHF (Biswas et al., 2014; Nestlé, 2019). Upgraded suppliers were integrated into Nestlé's global value chain. They became more competitive in supplying to other multinational enterprises and domestic firms, contributing to broader industrial upgrading and knowledge spillovers (Humphrey, 2007).

4.1.1.2. Drawbacks

However, Nestle's investment also presents some challenges that the Indian market needs to consider. Firstly, the over-dependence on Nestle of the Indian market may lead to a passive reaction to the crisis of SMEs in this country. This problem may lead to a reduction in the diversity of the market, creating a closed value chain where the quality of the products lacks verification and strict control. For example, in 2024, some Nestlé's products include more sugar than reported in baby food products in India while refraining from doing so in primary markets like Europe or the UK (The Times India, 2024).

In addition, Indian F&B enterprises are easily "locked in" to Nestlé's strict technology agreements, which require them to apply the designated process, putting Indian companies at a conditions of falling behind if such technologies become obsolete (Swati Verma, 2020). As a result, vertical technology spill-overs, which typically occur in a two-way relationship between MNCs and their key suppliers in the value chain, are prone to have more limited diffusion across the entire industry (Feinberg and Majumdar, 2001).

With regard to the royalty fee, technology transfer agreements imposed by Nestlé within its value chain can increase the operating costs of enterprises. These obligations, in general, create many barriers, especially for SMEs in India, which are limited in capital and have less absorptive capacity, to increase their innovation capabilities through cooperation (Damodaran and S, 2017).

4.1.2 Case study of horizontal technology spillover effect

4.1.2.1. Benefits

Considering the case of Luckin Coffee, the financial statement of 2024 showed that Luckin's revenue increased by 41%, reaching approximately USD 1.5 billion, while its profit margin improved to 15.3% (Luckin Coffee, 2025). The company also expanded its customer base, with 80 million monthly transacting customers, representing a 36.5% increase compared to the previous year (He, 2024). These figures have proved that the rivalry with Starbucks has led to Luckin's operational efficiency and enhancement of its market expansion. Moreover, the findings indicate that spillover effects have stimulated innovation and rapid growth among domestic brands such as Luckin, Cotti, and HeyTea, as they increasingly adopt advanced marketing strategies, flexible pricing models, and accelerated scaling approaches inspired by multinational competitors.

The demonstration effect promotes service professionalism and coffee as a lifestyle commodity. Industry conferences and professional events have created platforms for learning and integration among domestic coffee chains. Local enterprises can stay updated on consumer trends and technological advancements, enhance barista skills, and adopt modern management practices.

This process enables them to narrow the gap with international brands, strengthen innovation and adaptability, and improve their competitiveness and market positioning in an increasingly globalized coffee industry (Shanghai Hongqiao, 2025).

Specifically, labor mobility was a key accelerator. In the case of Luckin, recruiting experienced labor from Starbucks enabled Luckin to rapidly acquire a workforce proficient in operations, service, and international quality standards, shortening the capability-building process and accelerating system expansion. Consequently, Luckin Coffee has emerged as the largest coffee chain in China, surpassing Starbucks in terms of domestic store count and redefining what a modern F&B business can look like only eight years from its establishment (Weihan, 2025). Moreover, the presence of professionals allowed the company to maintain service quality comparable to Starbucks' despite rapid expansion. By combining this imported human capital with a low-price model, Luckin established an initial competitive advantage, facilitating swift market share acquisition.

4.1.2.2. Drawbacks

However, these competition effects have also inadvertently created barriers to developing smaller firms and diminished market diversity. A notable drawback lies in the asymmetric capacity of firms to adapt. Companies with large chains, advantages in capital, professional supply chain management, and marketing can rapidly capture emerging trends and scale up. By contrast, smaller coffee and traditional brands struggle to survive, leading to a substantial number of small businesses being forced to exit the market. According to Reuters, nearly 3 million F&B enterprises in China ceased operations in 2024 alone, primarily due to their inability to compete on price, location, and customer experience (Reuters, 2025). Moreover, aggressive competition has triggered tremendous price wars and unsustainable price competition models, eroding industry profit margins. F&B outlet expansion in China is forecasted to decline, with a CAGR of only 1.4% during 2023–2027, reflecting market saturation and intensifying competitive pressures (GlobalData, 2023).

Likewise, labor mobility also entails adverse consequences, as high-skilled personnel from domestic enterprises experience a “brain drain” toward larger chains or competing firms. This dynamic generates workforce imbalances within the sector and imposes significant pressure on smaller F&B chains, which, due to limited resources, face challenges in retaining talent and maintaining organizational stability.

Lastly, the demonstration effect is also alleged to have created a model that intensifies competitive pressures and undermines local cultural identities.

4.2. Discussion

The case studies show that vertical and horizontal technology spillovers can tremendously improve the innovation capacity of emerging market firms. Their success, though, relies on the particular structural situation of the host country. In Viet Nam, where SMEs are the mainstream of the F&B industry, with circumstances of scarce resources, weak bargaining power, and increasing competition from giant tech-driven F&B chains, the implications of these spillovers vary in terms of relevance and applicability (B&Company, 2025).

From the Nestle - India case, vertical spillovers have effectively established backward linkages with domestic suppliers, technology and quality standard transfer, and supply chain resilience. The same forces occur in Vietnam. For example, the NESCAFÉ Plan Vietnam has enabled farmers to implement improved agronomic practices, saving them money and increasing productivity while coordinating production by international standards of sustainability (Humanactprize, 2025). This proves that vertical spillovers are most appropriately matched with Vietnamese agro-processing SMEs and upstream enterprises since they address deeply ingrained problems such as disintegrated supply chains, underdeveloped cold chain logistics, and technical skills shortages. With the integration of domestic firms into MNCs' procurement and quality assurance systems, vertical spillovers can accelerate technological upgrading and reduce post-harvest losses, which remain a pressing issue in Viet Nam's F&B sector.

In contrast, the Starbucks - China case demonstrates how horizontal spillovers can occur through the competition effect, labor mobility, and demonstration effect. They are more visible in Vietnam's rapidly expanding urban restaurant and café chains. Local players such as Highlands Coffee, Phuc Long, and Katinat have demonstrated good capability to copy global entrants by embracing new service standards, online ordering systems, and shop formats (MasanGroup, 2022). Upgrading of managers has also resulted from talent mobility between local and global brands. Horizontal spillovers are not without hazard, however. As one has seen in China, too much competition and heavy discounting can potentially result in price wars, reduced profitability, and drive smaller firms out of business. The same forces have already emerged in Vietnam, where there is tough competition among coffee chains, which has led to market saturation and worsening margins.

They suggest that Vietnamese firm types decide mostly on the suitability of spillover types. Vertical spillovers for SMEs and upstream suppliers remain the most meaningful channel since they directly address supply chain structural issues and facilitate technology transfer from foreign investors. For large chains and digital-natives, horizontal spillovers are more relevant, unleashing service innovation, brand differentiation, and fast growth in competitive urban markets (Hieu, 2022). Export-oriented agro-food businesses can benefit from a hybrid mode with vertical spillovers in compliance with global buyer standards and horizontal spillovers regarding industry cluster membership and collaborative R&D activities.

However, several barriers continue to undermine the strength of both forms of spillovers (Alessandro Muscio, 2007). They include low absorptive capacity of SMEs, poorly established quality infrastructure and test facilities, fragmented supplier development programs, and low density of the cold chain, especially in the non-metropolitan areas (Son Thi Kim Le, 2025). To be maximally exploited, technology spillovers require complementary policy that extends firm-level innovation capability, enhances buyer-supplier relationships, raises investment in logistics infrastructure, and strengthens collaborative platforms for F&B industry knowledge exchange (World Bank Group, 2020).

In general, horizontal and vertical spillovers are preconditions for innovation in Vietnam's F&B industry. However, the data suggest a stronger priority to vertical spillovers in the short term, particularly for suppliers and SMEs, given their higher sensitivities to current market demands and policy agendas. Horizontal spillovers, while suitable for large chains, need to be carefully managed not to create toxic competition. A sequenced approach, emphasizing vertical spillovers first and exploiting horizontal spillovers as domestic companies become established, will likely propel Viet Nam's innovation potential in the F&B sector.

5. Recommendation

5.1. For Vietnamese Businesses

Vietnamese F&B firms must improve their absorptive capacity by investing in R&D and digitalization to achieve technology spillovers from FDI (Ngoc Minh Nguyen, 2024). The adoption of digital technologies by Vietnamese firms, particularly SMEs, remains uneven, the World Bank noted, which limits their ability to absorb spillover effects (World Bank Group, 2022).

Firms need to focus on vertical spillovers through long-term cooperation agreements with multinational suppliers and distributors, enabling the transfer of expertise on food safety standards, supply chain management, and e-commerce platforms. In addition, firms must seek horizontal spillovers through participation in industry clusters and innovation networks, particularly in emerging fields such as innovative packaging, plant-based foods, and sustainable supply chains. Vietnam Briefing report highlights that Vietnamese consumer trends are shifting to more sustainable and healthy foods, which offers scope for innovation (Mai Chi Tran, 2023).

5.2. For the Vietnamese Government

The government has to focus on creating an innovation ecosystem through providing policy incentives for technology uptake and R&D collaboration between local firms and foreign investors. Vietnam's regulatory environment for innovation is improving, but still trails behind intellectual property rights, funding institutions, and human resource development (Vietnamlaw Magazine, 2024).

Moreover, improving these areas will allow local firms to better integrate into international value chains. Besides, the government must support workforce upskilling in management and digital skills so local talent can absorb and apply the latest technologies by FDI (Eurocham, 2025). Singapore's SkillsFuture or Malaysia's Industry4WRD would serve as a reference model for Vietnam. Vietnam Digital Economy and Society Development Strategy (2025–2030) offers some direction here, but it needs to be more aligned with the F&B industry (Thuy Dung, 2024).

In short, Vietnam should encourage PPPs to develop innovation centers for F&B technologies, including food processing, cold-chain logistics, and green packaging. As they adopt collaboration between academia, industry, and the government, these centers can significantly increase the sector's capacity to absorb global knowledge spillovers and become more competitive in foreign markets.

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