



Innovation and Firm Performance in an Emerging Market: The case of SMEs in Ho Chi Minh City (VietNam)

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ABSTRACT

The paper utilizes a sample of 7,647 SMEs derived from the GSO 2022 survey. The regression model is employed to assess four innovative elements: product/service, organization, manufacturing process, and research and development approach. Among the four components, production innovation does not significantly affect business performance. This can be elucidated by the fact that micro-enterprises constitute 78% of businesses, making production innovation insignificant to their operations. Product, organizational, and R&D innovations significantly impact firm performance. Additionally, the study revealed that the age of company leaders influences organizational effectiveness. As the age of the firm owner increases, business performance enhances. This can enhance the experiential component for business owners who acquire greater business acumen. Likewise, firm leaders possessing advanced educational qualifications enhance the performance of SMEs. Large enterprises typically enhance their performance. Generally, despite SMEs prioritizing R&D innovation, they are constrained by insufficient financial capital and the limitations of small enterprises, which restricts the innovation activities of SMEs.

1. INTRODUCTION

Recently, innovation of enterprises has intensified to sustain competitive advantages in the market. Smaller firms are undeniably more inclined towards innovation due to their less hierarchical operational structures, which afford them greater flexibility for change compared to larger companies. Innovation has significant impact to firms around the globe, in this case, Falahat et al. (2020) has found the role in innovative product and the ability to communicate innovative information to customer, are very important for Small and Medium Enterprise (SME). However, Falahat et al. (2020) present varying views regarding the effects of new product information that might generate competitive advantages for SMEs in developed nations like the U.S.A. and developing countries such as Malaysia. Falahat et al. discovered that the impact of marketing communication capacity on the competitive advantages of Malaysian SMEs was negligible. This can be attributed to Malaysian SMEs prioritizing product innovation over marketing communication initiatives. This may represent a deficiency if the marketing efforts merely showcase the products instead of thoroughly executing the plans.

This paper seeks to assess the association between innovation and the performance of SMEs. The subsequent sections of this work are organized as follows. Section 2 examines the literature review, incorporating relevant concepts, whereas Section 3 delineates research methodology, in which hypothesis development alongside the research model is taken into account. Section 4 delineates the empirical analysis. Section 5 presents the findings and conclusion. The concluding portion addresses managerial implication and recommendations.

2. LITERATURE REVIEW

According to Bayarçelik et al. (2014), innovation for SMEs entails the introduction of novel ideas, products, services, processes, or business models to enhance competitiveness, efficiency, and responsiveness to client demands. Innovation is a crucial element in the growth and sustainability of SMEs, enabling them to remain pertinent in an ever-evolving commercial sector.

To determine whether innovation is successful or not, enterprises usually look at the business performance results afterward. According to Ndesaulwa & Kikula (2016), the performance of SMEs is based on the assessment of level

of efficiency when the goal is achieved. The efficiency of SMEs includes many aspects, including two main groups, such as the market and financial results. Measuring the efficiency of SMEs involves continuous monitoring and supervising the market and financial factors. This is the foundation for enterprises to quickly identify strengths and weaknesses, thereby making quick and smart decisions for corrective actions when necessary. Without measuring performance efficiency, it is difficult to determine the success of business.

Recently, many Vietnamese enterprises have had to constantly think about how to survive and maintain operations, because the competitive market has become fiercer as more and more foreign enterprises have entered the Vietnamese market. It is undeniable that SMEs contribute to the socio-economic development of a country. Typically, SMEs in Vietnam account for over 95% (General Statistics Office 2021). These enterprises have created jobs for many workers in urban and rural areas. However, risks always lurk for SMEs due to weak financial resources and labor potential (Ndesaulwa & Kikula, 2016). Therefore, SMEs always create differences to increase their competitiveness with competitors. One of the most important concerns of SMEs today is how to approach and implement innovation strategies, including product and service innovation to meet customer needs and create trust with potential partners.

Innovation activities encompass not only product and service innovation but also creative business methodologies, processes, and management models. The innovativeness of enterprises refers to the tendency of businesses to endorse new ideas, originality, creativity, and experimentation in the development of new products. According to Ancona & Caldwell (1987), innovation play an important role in prolonging the life of an organization. Innovative activities within an organization can help enhance the problem-solving process, improving productivity of an organization by creating new ideas, solutions, processes and products that are suitable for social trends. For production enterprises, innovation can increase production capacity and employees' productivity. Besides, innovation help enterprise increasing competitive advantages by differentiate products and creating values for customers. For service enterprises, innovation is significant in building competitive advantages and staying ahead of their competitors.

Concepts of innovation

Innovation is a process of implementing new idea or applying new technology to achieve management efficiency, creating competitive advantage in terms of time, costs, and service quality. In economics, innovation is an important factor, helping organizations grow, and increasing productivity and competitiveness (Pittaway et al., 2004).

According to Damanpour et al. (2009), innovation has many forms. For example, organizational innovation – technological innovation are two popular groups in

management and development researches. Many researchers focus on the general difference between the enterprise's technological and administrative system, in which the management and technological systems mainly create changes in the enterprise's operational and management system. According to Damanpour & Evan (1984), technological innovation refer to “the implementation of new idea for product or service or applying new elements into manufacturing process or service activities”.

Organizational innovation

Organizational innovation is a process of restructuring, improving, or changing the enterprises' organizational operation and management which help fostering creativity, increasing performance and improving adaptability to a constantly changing business environment (Baláz, Jeck, & Balog, 2023). Innovative organization will create competitive advantages and satisfy customers. Unlike innovative technology, the definition of organizational innovation is described by many different concepts. Typically, Azar & Ciabuschi (2017) state that organizational innovation as ‘the creation and implementation of a new method, procedure, structure or management technique for modern technology and aimed to improve the goals of organization’. Meanwhile, Damanpour & Evan (1984) also said that “administrative innovation” is an innovation that occurs in the social system of an organization (e.g., new rules, roles, procedures, and structures). Hamel (2006) also introduces a terminology “management innovation”, describing it as “a distinct departure from traditional management principles, processes, and practices, or a deviation from conventional organizational forms that significantly changes the way managerial work is performed.”

For organizational innovation, this is a process that innovative activities are often implied through restructuring or renovating the structure of an organization, or a company, with the goal of improving productivity, enhancing performance, creating adaptability for business environment (Damanpour & Evan, 1984). In this case, innovation specifically includes reconstructing organizational system, reorganizing human resources, or changing how different departments operate to optimize and improve employee's benefits. However, this innovation is also associated with the adoption of new technologies within the enterprise to optimize working procedures and provide high-quality services to customers. Organizational change does not exempt cultural modification of an organization, which help to improve working environment for employees and create a share vision environment for business development (Azar & Ciabuschi, 2017).

Technological innovation

Technological innovation is a form of equipment upgrade, which supports for the improvement or new product

development, involving 3 main factors in production (Rosenbusch et al., 2011). Technological innovation relies on 3 main elements within an organization, including technological, organizational, and environmental factor (Alraja et al., 2022). Technological factors in SMEs are expressed both internally and externally, such as the company’s IT infrastructure, or external relationship infrastructure. Meanwhile, the organizational factor, mentioned above, includes management supports, company size, and the innovative intensity of IT system. According to Teece (2010), to gain profits from technological innovation, enterprises have to apply new organizational structures, new management methods, and new business models which are equally – if not more – important to the success of the enterprises.

Product innovation

Innovation is described as “the introduction of processes, new products or services, or advancement bases on science knowledge or new technology and/or organizational secret formular” (Ndesaulwa & Kikula, 2016). Innovation is the occurrence of the first idea about a new product or process while innovative actions bring it to the real world. There are many different forms of innovation in business, depending on whether it is about new product, service, or production.

According to Ancona & Caldwell (1987), product innovation is a process of creating or improving products or services to meet the market’s demands or to provide new value for customers. Innovative products are an important part in company development strategy which helps the company maintain and enhance competitive advantages in the business environment. Product innovation can be implemented through those activities: (i) Developing new product: this is the process of creating a completely new product or service that the company has never produced or offered before. It may include developing groundbreaking innovations or expanding the existing product line. (ii) Product improvement: Innovation can also include improving, upgrading, or optimizing current products or services. This product improvement can involve quality features, performance, design, or other elements to make products more appealing to customers. (iii) New version development: Sometimes, creating a new version of product or service can be considered a form of product innovation. This may include changing in sizes, colors, features, or added value to attract new customer segment or increase current customers’ experience. (iv) Creative design: transforming the product through creative design is a significant part of product innovation. This might involve redesigning packaging, logos, user interfaces, or different designed elements to make the product more unique and attractive.

Research and development (R&D)

Conducting Research and Development (R&D) in enterprise is a process of creating and applying new

knowledge to develop products, services or process as well as optimizing the existing performance (Novkovic, 2015). R&D focuses on generating added value through creativity and research. To achieve R&D breakthrough, companies often invest enormous number of resources to discover significant new ideas. This contributes to shape innovative strategies. Previous researches have showed that companies that enter the market, often have certain allocations for R&D targets (Manu & Sriram, 1996). However, in recent years, R&D activities have gained more attention and widely adopted by companies to drive innovation in both organizational structures and market strategies. Several authors have categorized strategic choices available for companies to face changes in technological environment. Investing in R&D involves the companies’ efforts to innovate when the companies prioritize technology advancement. Each company has a unique strategy when budgeting for R&D, these strategies can be classified as: “aggressive”, “defensive”, “dependent”, “traditional”, and “opportunistic” (Manu & Sriram, 1996).

In summary, based on the philosophy of corporate innovation, the authors agree that innovation is essential, not only for businesses but also for policymakers who create opportunities for business growth (Damanpour et al., 2009). Innovation enables companies to keep up with the technological and managerial knowledge, industrial competition, and expectation of stakeholders. The application of innovation serves as strategic tool for organizations and companies to adapt and change to gain favorable conditions for companies’ goals, especially in the competitive environment, insufficiency of resources, and increasing customer demands for higher – quality product and better services (Li, Zhou, & Si, 2010).

Damanpour et al. (2009) identified different forms of innovation and examined the combined effects of these innovations on organizational performance. According to the authors, understanding the impacts helps businesses maintain and improve their efficiency, leading to increased product processes and higher-quality products. Furthermore, Damanpour et al. (2009) also agreed that studying the origin of these innovation provides insights in how innovation occurs in R&D activities. This is the foundation to assess the relationship between different types of innovation and business performance.

Firm performance

Business performance is an indicator used to measure the level of success a company achieves in meeting its business objectives. It reflects the efficiency and effectiveness of business activities and company management. Performance measurement is based on several indicators which are divided into two main groups: financial and market performance (Binh, Duong, Tien, & Swainson, 2021). Financial performance includes Return on Investment (ROI), Return on Equity (ROE), profit, profit margin, and

labor growth. For instance, Boso et al. (2013) used profit as a metric to examine business performance, while Binh & Tien (2019) relied on ROE as an indicator of financial performance. Market performance is measure by revenue, revenue growth, and market performance. Boso et al. (2013) used revenue to evaluate market performance, whereas Binh & Tien (2019) assessed growth rate as a measure of market success. However, in this study, business performance will be evaluated based on the revenue achieved by the company within the year.

3. RESEARCH METHODOLOGY

Previous studies and research model

Based on the previous research, this study focuses on 4 groups of innovations: (i) product innovation; (ii) organizational model innovation; (iii) production innovation; (iv) Research & Development (R&D) innovation.

The relationship between product innovation and business performance: Innovation plays an important role in supporting business to survive and thrive in the business environment. Ancona & Caldwell (1987) discovered that companies’ approach to innovation will lead to business outcome. Similarly, Ndesaulwa & Kikula (2016) have a study with SEMs’ innovative product, and the result has confirmed that SMEs do not hesitate to invest in innovative product, because the results have shown encouragement in business performance. This hypothesis will be explained in the research model.

The relationship between organizational model innovation and business performance: Although, the operational structure of SMEs is not as complex as that of large enterprises, an efficient organizational model is essential for strategic business planning and resource balance. Baláž et al. (2023) conducted a study to show that it is critical to innovate organization. When compared to larger enterprises, SMEs implement structural changes more dynamically and adapt more quickly. Theo Teece (2010), implementing organizational innovation model helps SMEs

utilize resources effectively and enter the market more quickly.

The relationship between production innovation and business performance: production innovation depends on the manufacturing activities of companies. The larger the companies are, the more interests they have in production innovation. Rosenbusch et al. (2011) studied and concluded that manufacturing companies often invest significantly in production innovation and have shown feasible results and effective approach to improving business performance. This perspective will also be incorporated into the research model of this study.

The relationship between R&D innovation and Business Performance: to survive in the competitive market, companies do not hesitate to invest significantly in R&D. According to Manu & Sriram (1996), companies will gain new idea from R&D activities which help to develop new products with more competitive features. Similarly, Novkovic (2015) also believed that as product lifecycles shorten, conducting R&D helps business identify necessary product modification or develop entirely new products to maintain market positioning. This perspective emphasized the important roles of R&D to companies and this viewpoint will be incorporated into the research model of this study.

The discussion on relationship between business innovation and performance demonstrates a common understanding among previous researchers that product innovation, organizational model innovation, production innovation, and R&D innovation strengthen business performance. Those perspectives will be incorporated into the proposed research model, ass illustrated in Figure 1.

Proposition of research model

Based on the previous scholarly discussion about SMEs innovation, this study will conduct 4 criteria: (i) product innovation; (ii) organizational model innovation; (iii) production innovation; (iv) Research and Development (R&D) Implementation. The selection of these four criteria is grounded in prior studies, as reference in Table 1.

Table 1: Innovation and Business Performance

Innovation and Performance	Measurement	Author
Product Innovation	Creating new products through new product development, product improvement, new version development, and creative design	(Ancona & Caldwell, 1987); (Ndesaulwa & Kikula, 2016)
Organizational Model Innovation/ Improvement	Innovation through restructuring the organizational model	(Baláž et al., 2023); (Teece, 2010)
Production Innovation/ Improvement	Implemented through technological innovation supporting product improvement.	(Rosenbusch et al., 2011)
Research and Development Implementation (R&D)	Generating ideas and applying creativity to product and service development, and operational optimization. Businesses invest resources to drive breakthroughs in discovering new ideas for innovation.	(Manu & Sriram, 1996); (Novkovic, 2015)

Business Performance	Measuring the success of the business by two factors: market performance (revenue, revenue growth, market share) and financial performance (ROA, ROE, profit).	(Binh et al., 2021), Boso et al. (2013)
Gender of owners/directors/managers	The measurement of the linear relationship between gender and business performance remains debated and varies across previous studies.	(Binh et al., 2022); (Kuzey et al., 2022)
Age of owners/directors/managers	Measuring the relationship between business owner and the technical efficiency of companies, However, the results lack sufficient evidence to confirm a correlation.	(Mujeyi, Siziba, Sadomba, & Mutambara, 2016)(Mujeyi et al., 2016)
Educational level of owners/directors/managers	Measuring the impact of business owners’ education levels on business startup strategies. The results show that higher managerial education levels positively influence business expansion and entrepreneurial growth.	(Otrachshenko et al., 2022)
Firm Size	Firm size is determined by the number of employees within the company. Measuring firm size helps assess the level of innovation by the size of business to conduct sustainable growth strategies.	(Ferrerias-Méndez et al., 2021)

Based on the public research findings, the proposed research model is illustrated in Figure 1. The relationship between these four categories and business performance has been proved in the previous section. To evaluate the relationship between the four criteria and business performance, this study will apply a quantitative research approach using regression analysis. The measurement value of the four innovation categories and business performance will be further elaborated in the following section.

Based on the proposed research model; together with the four main innovation categories, the study also includes several control variables: gender of business owner, age of business, educational background of business owner and number of employees in the business. The inclusion of these control variables is based on previous research and summaries in Table 1.

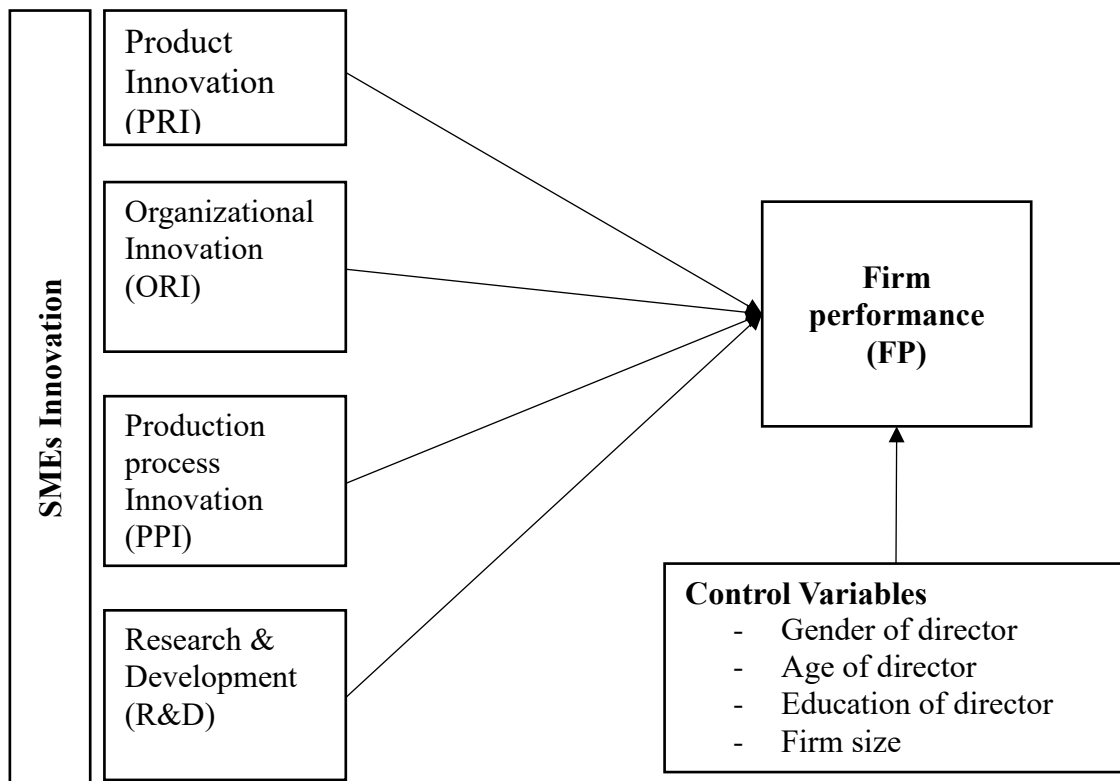


Figure 1: Proposed Research Model

Data collection

The data used for this research comes from a business survey conducted by the Ho Chi Minh City Statistics Office, based on the system and survey framework designed by the General Statistics Office (GSO) of Vietnam. The subjects surveyed include businesses, cooperatives, and subsidiary units of enterprises. Specifically, the surveyed businesses operate across all industries as classified under Vietnam’s economic sector system.

The survey questionnaire follows a standardized format developed by the GSO and was sent to the Ho Chi Minh City Statistics Office. This survey was conducted in 2022. According to the original dataset from the General Statistics Office, Ho Chi Minh City had 156,625 surveyed businesses, among which 7,788 businesses were selected for analysis. In terms of firm size, SMEs accounted for a considerable proportion of 98.2%, equivalent to 7,647 enterprises. These SMEs will be used in this paper to analyze innovation in SMEs.

The survey information is summarized as follows:

(i) Information related to enterprises, including business type and industry; (ii) Information on employees and labor income; (iii) Firm performance indicators, including business results (sales/revenue), inventory, investment capital, and new energy sources; (iv) Information related to technology adoption in business operations; (v) Information related to firm innovation activities. Regarding the specific characteristics of surveyed enterprises in Ho Chi Minh City, the selected enterprises will be detailed in the following section. The GSO conducted the survey and selected enterprises based on the following criteria: (i) non-state enterprises with 50 to 99 employees: 50% sample selection; (ii) non-state enterprises with 10 to 49 employees: 10% sample selection; (iii) non-state enterprises with fewer than 10 employees: 5% sample selection. This classification does not correspond to the standard categorization of micro, small, and medium enterprises (SMEs) but is instead the sampling method used by the GSO for survey selection.

As mentioned, the research data is quantitative, so descriptive statistical analysis will be applied. However, to assess the impact of innovation on firm performance, a regression equation will be employed. The regression equation is used to measure the impact of innovation in SMEs on firm performance. Based on the proposed model, the general regression equation is formulated as shown in Equation (1). The equation is as follows:

$$FP = b_0 + b_1*PRI + b_2*ORP + b_3*PPI + b_4*R\&D + b_5*Age + b_6*Gen + b_7*Edu + b_8*FIS \quad (1)$$

FP: The dependent variable, representing firm performance. The value is measured based on annual revenue of the business, expressed in million VND, and transformed into logarithmic form.

Independent Variables:

PRI: Product Innovation

ORP: Organizational Innovation

PPI: Production process innovation

R&D: R&D approach

Age: Age of owners/directors/managers.

Gen: Gender of owners/directors/managers (1 = male; 0 = female)

Edu: Educational level of owners/directors/managers

FIS: Firm size

Other control variables: Based on previous researches, the regression model employs control variables as follows.

Gender of owners/directors/managers (Gen): several studies has suggested that gender may impact business performance. For example, in innovative research of SMEs in Vietnam, Binh et al. (2022) consider the role of female business owner in the quantitative model. Unfortunately, the research has found the insignificant role of women in SMEs business performance. However, Kuzey et al. (2022) found contrasting result that female leadership encourages business performance with higher substantial result.

Age of owners/directors/managers (Age): Several researches suggest that age might impact on business performance. Notably Mujeyi et al. (2016) found a linear relationship between the age of business owner and technical efficiency. According to their findings, the higher the age of owners, the lower the technical efficiency is. This implies that the younger the owner ages are, the more positive technical efficiency of a business.

Educational level of owners/directors/managers (Edu): According to Otrachshenko et al. (2022), the educational business owner determines business strategies which affect business performance. Otrachshenko et al. (2022) point out that business owners with higher educational levels tend to implement business strategies in business expansion.

Firm size (FIS): is defined as number of employees within a business. In some cases, labor size is categorized into group (micro-enterprises, small enterprises, and medium enterprise). Ferreras-Méndez et al. (2021) uses employees’ group as a measure of enterprise size to evaluate level of business model innovation. However, Ferreras-Méndez et al. (2021) are lack of evidence to conclude that the size of business impacts on new product development results.

It must be said that innovation plays an important role in corporate strategies (Damanpour et al., 2009) and is a main component for competitive advantages. Many authors have studied innovation and pointed out that innovation impacts positively to business performance (Tsai & Tsai, 2010). Smaller enterprises tend to be more flexible, innovative and restructure faster than larger companies (Xie et al., 2013). According to Rosenbusch et al. (2011), although small companies often face limited resources, they are frequently successful innovators. Smaller structures, more flexible and along with business mindset of the founders and

managers encourages innovative activities at SMEs which can be benefit in multiple ways.. Baláz et al. (2023) argues that innovation is a chance for start-up business gains special interest by temporarily establishing monopoly position and consider constantly innovative activities as a main source for long-term business success. Since SMEs are more agile than their counterparts, they can react more quickly and achieve desirable outcome faster. The introduction of innovative products, services, processes, or business models by SMEs – targeting niche markets – in an additional opportunity for them to stand out from competitors.

The roles of SMEs have become important to countries around the world, because of their significant contribution to the development of a nation. For example, in Vietnam, there are several research relate to the innovation of SMEs. Notably, Le, et al. (2023) consider in their recent study that innovation at SMEs is defined as product improvement, new product introduction, and new technology introduction. The rates of innovation depend on the sizes and conditions of the enterprise; therefore, the results of innovation will also be variable by firm sizes.

4. EMPIRICAL ANALYSIS

The study includes 7.788 enterprises analyzed in this research. Descriptive statistical results show that 67% of business owners are male, while 33% are female. This finding confirms the role of women in recent years, as they not only take care of family responsibilities but also actively participant in business and social activities. Regarding educational background, 81% of business owners have college degrees, while 5% have postgraduate qualification (master’s or doctorate). As a result, business owners have advantages in critical thinking and creativity, allowing them to apply personal knowledge into business operation effectively.

Regarding the age of business managers or directors, the 38- 47 age group has the highest proportion, accounting

for 41.8%. This group consists of experienced leaders with a certain level of maturity in business management and operations, while also being dynamic and possessing the potential for major breakthroughs in business. The next group, 18- 37 years old, makes up 23.9% and is considered the youngest group. These individuals typically exhibit entrepreneurial thinking, dynamism, and innovation in business organizations. In summary, business leaders aged 18–47 account for 65%, indicating a strong presence of both youthful and experienced leadership in enterprises.

Regarding the firm size that measured by labor criteria, enterprises with fewer than 10 employees accounts for 78%. According to Decree 39/2018/ND-CP, enterprises with less than 10 employees are considered micro-enterprises. This shows that the micro-enterprises make up a significant proportion of the sample. Enterprises with 10 to fewer than 100 employees account for 19%. However, enterprises with more than 200 employees account only for 2% (equivalent to 141 enterprise), which are classified as large enterprises. As a result, the SMEs account for 98% of the sample. The following sections focus on micro-enterprises, small enterprises and medium enterprises. The total enterprises after deducting large enterprises are 7.,647 SMEs (after eliminating the enterprises with more than 200 employees). This group will be used to analyze innovation and its impact on SME performance.

Enterprises engaging in Product Innovation/Improvement

In table 2, with the micro-enterprises with <10 employees, only 7.89% engage in product improvement/innovation. Similarly, among small enterprises with 10 - <100 employees, 16.42% participated in product improvement/innovation. On the other hand, for medium enterprises with 100 - <200 employees, 30.65% conduct product improvement/innovation. These figures provide an important message: larger enterprises tend to invest more in product innovation and improvement.

Table 2: Product Improvement/Innovation Information

Product Innovation	Firm size			Total
	< 10 employees	10 - < 100 employees	100 - <200 employees	
Not Implementing Innovation	5,600	1,206	86	6,892
	81.25%	17.50%	1.25%	100.00%
	92.11%	83.58%	69.35%	90.13%
Implementing Innovation	480	237	38	755
	63.58%	31.39%	5.03%	100%
	7.89%	16.42%	30.65%	9.87%
Total	6,080	1,443	124	7,647
	79.51%	18.87%	1.62%	100%
	100%	100%	100%	100%

Source: General Statistics Office

Organizational Innovation/Improvement

In table 3, with the micro-enterprises with <10 employees, only 7.44% engage in organizational innovation. Similarly, among small enterprises with 10 - <100 employees, 17.82% participate in organizational innovation.

On the other hand, for medium enterprises with 100 - <200 employees, 37.78% conduct organizational innovation. These figures provide an important message: larger enterprise tend to invest more in organizational innovation and improvement.

Table 3: Organizational innovation

Organizational Innovation	Firm size			Total
	< 10 employees	10 - < 100 employees	100 - <200 employees	
Not Implementing Innovation	5,600	1,199	90	6,889
	81.29%	17.40%	1.31%	100.00%
	92.56%	82.18%	65.22%	90.09%
Implementing Innovation	450	260	48	758
	59.37%	34.30%	6.33%	100%
	7.44%	17.82%	34.78%	9.91%
Total	6,050	1,459	138	7,647
	79.12%	19.08%	1.80%	100%
	100%	100%	100%	100%

Source: General Statistics Office

Production Process Innovation/Improvement

The statistical results in Table 4 provide an overview of business process innovation activities among enterprises. Production process innovation typically involves adopting new machinery, equipment, and modern technological systems. With the micro-enterprises with <10 employees, only 5.38% engage in production process improvement/innovation. Similarly, among small enterprises

with 10 - <100 employees, 14.84% participate in the production process improvement/innovation. On the other hand, for medium enterprises with 100 - <200 employees, 21.82% conduct production process improvement/innovation. These figures provide an important message: larger enterprise tend to invest more in business process innovation and improvement.

Table 4: Production Process Innovation/Improvement

Production process Innovation	Firm size			Total
	< 10 employees	10 - < 100 employees	100 - <200 employees	
Not Implementing Innovation	5,799	1,199	86	7,084
	81.86%	16.93%	1.21%	100.00%
	94.62%	85.16%	78.18%	92.64%
Implementing Innovation	330	209	24	563
	58.61%	37.12%	4.26%	100%
	5.38%	14.84%	21.82%	7.36%
Total	6,129	1,408	110	7,647
	80.15%	18.41%	1.44%	100%
	100%	100%	100%	100%

Source: General Statistics Office

Research & Development (R&D) Implementation

The result in table 5 indicates that approximately 2.71% of enterprises are interested in R&D activities. The larger the enterprises are, the more they engage in R&D activities. With the micro-enterprises with <10 employees, only 1.97% engage in R&D implementation. Similarly,

among small enterprises with 10 - <100 employees, 5.16% participate in business R&D implementation. On the other hand, for medium enterprises with 100 - <200 employees, 11.40% conduct R&D. These figures provide an important message: larger enterprises tend to invest more in R&D approach. However, R&D activities among SMEs are low

due to the limited resources and financial capacity which restraint SMEs to invest substantially in R&D activities.

Table 5: Research & Development (R&D) Implementation

R&D implementation	Firm size			Total
	< 10 employees	10 - < 100 employees	100 - <200 employees	
Not Implementing	5,979	1,360	101	7,440
	80.36%	18.28%	1.36%	100.00%
	98.03%	94.84%	88.60%	97.29%
Implementing	120	74	13	207
	57.97%	35.75%	6.28%	100%
	1.97%	5.16%	11.40%	2.71%
Total	6,099	1,434	114	7,647
	79.76%	18.75%	1.49%	100%
	100%	100%	100%	100%

Source: General Statistics Office

Based on research model, regression equation is applied and estimated. The variable names and measurement

values are presented in Table 6. The regression results are shown in table 7.

Table 6: The variable names and measurement values

No	Name	Definition	Measurement
1	LF	Revenue of SMEs converted into log value	Value in million VND
2	PRI	Product Innovation	Dummy variable: 1 = has innovation; 0 = no innovation
3	ORP	Organizational Innovation through restructuring	Dummy variable: 1 = has innovation; 0 = no innovation
4	PPI	Production process innovation	Dummy variable: 1 = has innovation; 0 = no innovation
5	R&D	Innovation through Research & Development (R&D)	Dummy variable: 1 = has innovation; 0 = no innovation
6	Gen	Gender of owners/directors/managers	Dummy variable: 1 = male; 0 = female
7	Age	Age of owners/directors/managers	Continuous variable
8	Edu	Educational level of owners/directors/managers	Ordinal variable
9	FIS	Firm size: Employee numbers	Categorized into groups: (i) Micro-enterprises: <10 employees; (ii) Small enterprises: 10 - <100 employees; (iii) Medium enterprises: 100 - <200 employees

Based on the proposed regression equation, the regression results in table 7 show a value of R = 0.689. The results convey a message that 68.9% of variation in business performance is explained by independent variables: Gender, age of business owner, educational background of business leader, enterprises labor size, product innovation (PRI), organizational innovation (ORI), production process innovation (PPI), and innovation through research and development (R&D).

Estimated regression equation result:
 $FP = 0.267 + 0.021*Gen + 0.107*Age + 0.040*Edu + 2.279*SSize + 4.051*MSize + 0.058*PRI + 0.122*ORI + 0.020*PPI + 0.096*R\&D$

According to the table, all independent variables in regression equations have Variable Inflation Factor (VIF) <10. It can be concluded that no multicollinearity issue happens to any independent variable. As a result, all

independent variables in the model are valid, meaning they do not violate multicollinear assumption and can be used for further discussion.

All the related information about innovation and business performance is stated as follow:

Product Innovation (PRI) has a $P > t = 0,090$, which is smaller than 10% significant level, which confirms that product innovation has a linear relationship with business performance. Since the coefficient for DMSP is positive value (0.058), implementing product innovation in SMEs has positive effect on business performance.

Organizational Innovation (ORI) has a $P > t = 0,003$, which is smaller than 0,01 (1%), so organizational innovation has positive effect on business performance. Since coefficient for DMTC is positive value (1.222), implementing organizational innovation or restructuring activities in SMEs results positively on business performance.

Production Process Innovation (PPI), has a $P > t = 0.660$, which does not reach statistical significance. This means that there is no sufficient evidence to conclude that business process innovation has positive effect on business performance. Thus, this result will not be considered in recommendations for improving business model innovation of SMEs. This could be explained that since most of enterprises’ data in this research are small and micro-

enterprise, meaning their production processes are smaller in scale and more traditional.

Research & Development (R&D) Innovation (FND) has a $P > t = 0.070$, which is smaller than 0.1 (10% significance level). It means R&D innovation has a positive effect on business performance. Since the coefficient for F&D is a positive value (0.096), meaning that when implementing R&D innovation, SMEs gain positive effect in business performance.

From the result above, it can be concluded that except for production process innovation (PPI), all other innovation activities – product innovation (PRI), organizational innovation (ORI), and research & development innovation (R&D) – positively impacts on business performance. To determine the ranking of influence level of different innovation on business performance, we refer to the standardize coefficient values estimated from the regression analysis in table 7. The variables with highest coefficient values have greatest influence. The ranking is as follow: First: Organizational innovation (ORI = 0.029, standardize coefficient/Beta); Second: Product innovation (PRI = 0.014, standardize coefficient); Third: Research & Development Innovation (R&D = 0.012, standardize coefficient).

Table 7: Estimated regression result

Business Performance (FP)	Coefficient	Beta	Std. Err.	P>t	VIF	1/VIF
Gen	0.019	0.008	0.017	0.213	1.02	0.985
Age	0.107	0.079	0.009	0.000	1.05	0.952
Edu	0.040	0.031	0.008	0.000	1.02	0.981
FIS						
10 - <100 employees (Small size-SSize)	2.279	0.718	0.021	0.000	1.07	0.938
100 - < 200 (Medium: MSize)	4.051	0.400	0.065	0.000	1.03	0.972
PRI	0.058	0.014	0.034	0.090	1.70	0.590
ORI	0.122	0.029	0.041	0.003	2.29	0.437
PPI	0.020	0.004	0.045	0.660	2.28	0.439
R&D	0.096	0.012	0.053	0.070	1.12	0.891
_cons	0.267		0.052	0.000		

Control variables result:

Gender of business owner (Gen) has a $P > t = 0.213$, which is greater than all significance level (1%, 5%,10%). There is not sufficient evidence to confirm relationship between gender of business owner and business performance. This result aligns with (Binh et al., 2022), who also discovered that gender play no role in improving SMEs performance.

Age of business owner (Age) has a $P > t = 0.000$, which reaches the significance level of 1%. It means age has a linear relationship with business performance. Since the coefficient of TUOI is a positive value (0.107), as the age of

business owner increases, business performance improves. This result is similar with the study by Otrachshenko et al. (2022).

Educational level of business owner (Edu) has a $P > t = 0.000$, which reaches the significance level of 1%. Since the coefficient of education is a positive value (0.040 as the educational level of business owner increases, business performance raises.

Firm size (FIS) has $P > t$ values of enterprises with 10-<100 employees (small enterprises) and 100 - <200 (medium enterprise) both reach the significant level of 1% ($P > t = 0.000$) and are positive value. It means that as the firm

size increases, the business performance improves. This result is similar with the study by Otrachshenko et al. (2022).

5. FINDINGS AND CONCLUSION

The results reflect the relationship between innovation and business performance of SMEs. In the relationship between product innovation and business performance, the regression analysis results show a similarity with that of Ancona & Caldwell (1987) and Ndesaulwa & Kikula (2016), meaning that when enterprises increase product innovation and improvement, they become more competitive in the market and business performance is enhanced and maintained.

The study also points out the influence of organizational model innovation to business performance of SMEs. The result is similar to the researches by Baláž et al. (2023) and Teece (2010). It means organizational model innovation streamlines business operations, adapts to business integration, and allows flexibility for companies to build their competitive strategies.

Interestingly, when SMEs engage in R&D innovation, the business performance is improved significantly. This result is similar to the research of Manu & Sriram (1996) and Novkovic (2015), meaning that regardless of firm size, implementing R&D is highly important for business performance. Therefore, to survive enterprises have to invest in R&D.

The results do not find any relationship between production innovation and business performance. This can be explained that because of the firm sizes are small and micro-enterprises, the roles of production in business are not significant, mostly in small scales and traditional methods. Besides it, micro-enterprises are service based business in which the innovation in production do not significantly impact on business performance. The results are different from the research conducted by Rosenbusch et al. (2011).

The results by quantitative regression analysis also provide additional information. Within 4 innovation categories of SMEs, including 9.89% of SMEs focus on product innovation; 9.52% of SMEs focus on organizational model innovation; 7.4% of SMEs focus on production innovation; 2.55% of SMEs focus on R&D innovation. Among those innovation categories, production innovation does not have significant impact on business performance. This can be explained that since micro-enterprises account for 78% of the businesses, production innovation plays no role on their business activities. However, product, organizational model, and R&D innovation positively influence business performance. The ranking of these innovations impacts as follows: organizational model innovation, product innovation, and R&D innovation. Also, the study discovered that the age of business owners impacts business performance. As the age of the business owner increases, the business performance improves. This can contribute to the

experiences factor of business owners who gain more business experience as their ages grow. Similarly, business owners with higher educational background increases business performance of SMEs. Larger business-size enterprises tend to make business performance stronger. In general, even though enterprises focus on implementing R&D innovation, they are restrained by lack of financial capital and small enterprises, which limits the SMEs innovation activities.

6. MANAGERIAL IMPLICATION

The innovation analysis results provide a comprehensive picture of SMEs activities in HCMC. Despite financial limitations, the local government has introduced industrial promotion program to encourage the growth of existing businesses and facilitate the transition of household businesses into formal enterprises. These industrial promotion programs have stimulated several SMEs to adopt and invest in new technology innovations, particularly in investing in new product development, improving service quality, and enhancing production efficiency. Although innovation in the commercial segment is slow, the recent changes in the market have also led to a decline in business performance of several enterprises. To help SMEs improve business performance, some suggestions are given, as follows:

To increase business performance, enterprises need to focus more on R&D activities. SMEs should dedicate an annual budget for R&D activities in production innovation. Otherwise, local government should connect between enterprises and scientific communities to help business owners gain more knowledge of innovation. Enterprises need to study the market carefully, collect data of competitors and their market positioning, and learn customer demands in order to innovate products strategically and creatively. Also, enterprises need to their products are protected under intellectual property law through patent, design, and trademark registrations. Enterprises should continue product innovation, which is an ongoing process that requires long-term commitment. Finally, enterprises should maintain flexibility and readiness to respond effectively to market changes.

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