

An Investigation of the Determinants of SMEs' Innovation in Hanoi

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Abstract

Innovation is considered an important premise to create competitiveness and to achieve long-term growth of the company in the ever-changing business environment. Enterprises are constantly improving their innovation and creativity to survive and develop. The issue of innovation is increasingly attracting the attention of researchers, business administrators and policy makers. Small and medium-sized enterprises (SMEs) are essential elements of the economy, and businesses have a responsibility to foster innovation and competition in many economies. To be competitive in such economies, SMEs must successfully support strategic management decisions. The problem can lie at the decision stage depending on the market conditions with many external and internal factors. Perspectives on creating a driving force to promote innovation and to develop the private sector quickly and sustainably, together help build and strengthen a socialist-oriented market economy. Constantly promoting business support, especially SMEs, is one of the key tasks of Hanoi city. This study proposes to investigate how the use of internal and external factors influences the innovation process of SMEs. Therefore, the aim of the study is to comprehensively present the factors affecting innovation. The research is conducted based on the use of theoretical background of enterprise innovation activities with 07 main factors including: (1) Technological capabilities; (2) Innovation culture; (3) Innovation strategy; (4) Management skills; (5) Innovation policy; (6) Collaboration with businesses on innovation; and (7) Access to financial support. On that basis, the author conducts a survey and analysis by quantitative method at SMEs in Hanoi about the current status of innovation activities to provide a practical view of the determinants of innovation for SMEs in Hanoi. The proposed analytical framework with specific groups of factors is suggested for businesses, researchers and state management agencies on enterprises to have further practical studies on this topic as well as consult and make appropriate policies.

Research purpose:

This paper initially investigates both internal and external factors influencing the term “innovation” among SMEs in Hanoi. The research for factors that related to innovation in SMEs in the era of globalization is appropriate in this context as they play an important role in the sustainability development and survival of SMEs in developing countries in general and specifically SMEs in Hanoi city, Vietnam.

Research motivation:

Research on factors affecting innovation in SMEs in Vietnam in general and Hanoi in particular is still rare. Especially in the current period of integration into the market economy and technology 4.0, it is imperative that SMEs, which account for more than 95% of business types in Vietnam, need to innovate to increase their competitive advantage. In addition, this paper also presents the situation of the Government's support for innovation in SMEs to help strategic planners have an overview and develop innovation plans for these businesses in the future.

Research design, approach and method:

This research is conducted based on the use of theoretical foundations on innovation activities of enterprises with 07 main factors. The author conducts a survey and analysis using quantitative method at SMEs in Hanoi with respect to the current state of innovation activities in order to give a realistic view of the decisive factors to SMEs' innovation activities. The proposed analytical framework with specific groups of factors is suggested for businesses, researchers and state management agencies on enterprises to have more in-depth practical studies on the subject and make appropriate policies. This study was conducted based on the primary data and secondary data of SMEs in Hanoi in the period of 2019-2021.

Main findings:

To assess determinants of SMEs' innovation in Hanoi, the enterprise sector empirical study is conducted at the local level with 250 companies. The results lead to the emergence major findings. It can be inferred that the dependent variable is significantly impacted by Technological capabilities, Management skills, Innovation culture, Innovation policy, Innovation strategy, and Access to financial support.

Practical/managerial implications:

From the analysis of determinants to innovation activities at SMEs, this article presents the state's current state of supporting innovation for SMEs and makes suggestions on mechanisms and general preferential policies for policy makers in order to offer preferential and supportive policies to create the most favorable research and development, business investment environment for SMEs in Hanoi.

Keywords: innovation, SMEs, Hanoi, Vietnam, technological capabilities, culture, strategy, management skills, policy, collaboration, financial support.

1. INTRODUCTION

The issue of innovation is increasingly being assessed as having a positive impact, making an important contribution to the business results of businesses globally in general and SMEs in particular. In fact, innovation creates the foundation for increasing competitive advantage for SMEs (Bayarçelik et al., 2014). At the same time, implementing innovation can maximize the potential of businesses through reducing production costs, increasing efficiency and working results (Hervas-Oliver et al., 2014). In addition, for labor relations in the organization, innovation in the enterprise also improves employee satisfaction. A number of scholars around the world have given different arguments about what innovation is, and what criteria can constitute an innovation (Lu et al., 2020; Foreman-Peck, 2013; Expósito et al., 2019; Hanifah et al., 2019; etc.). Derive from a system and policy perspective, Ionca and Razvan (2010) consider innovation to be a process that begins with an invention, proceeds to the development of the invention, and leads to the introduction of a product, new process or service to market. Besides, Steeger and Hoffman (2016) argue that innovation is the application of an idea or behavior. They also assume that whether a system, policy, program, device, process, product or service is new to the organization. Evidence shows that there are many studies related to evaluating the relationship between innovation, innovation activities and business performance of enterprises (González-Varona et al., 2021). It can be seen that from the lessons learned about the need for innovation in enterprises, the key to creating competitive advantages lies within the capabilities of enterprises. Support businesses, especially SMEs in identifying, adapting, and applying to the change of business environment for competitors (Henttonen and Lehtimäki, 2017). By building a strong position in the market, firms gain a competitive advantage and earn good business results. Therefore, innovation plays an extremely crucial role in the development of companies, in which the type of SMEs in developing countries as Vietnam.

In the current context, the issue of Small and Medium Enterprises (SMES) has received a lot of attention in the development stages of the economy by researchers in making strategies for sustainable development, innovation activities for SMEs (Ionca and Razvan, 2010; Foreman-Peck, 2013; Expósito et al., 2019; Hanifah et al., 2019). In reality, based on the research of these scholars, SMEs in developing countries are one of the effective means of poverty alleviation by creating jobs and improving the qualifications of workers. Indeed, SMEs are the dominant type of enterprise in developing countries. Besides, SMEs are enterprises operating in a highly competitive market in specific fields and industries and this type of business is the best suited to the development aspirations of many countries (Henttonen and Lehtimäki, 2017).

Although, it can be seen that from the specific statistics, SMEs have formed the basis of most developed and developing countries. Dabic et al. (2019) observed that many SMEs are unable to maximize their potential due to a number of factors such as inability to access long-term and short-term capital, or a short-term understanding of the market. Moreover, the adjustment of the type of business is reluctant. For instance, becoming a partnership or limited liability company and the lack of optimal management methods changes the management method, making the work implementation process risky (Lu et al., 2020). Therefore, SMEs are still playing an important role in driving the growth and development of developing countries' economies.

Along with the explosion in the number of SMEs in Vietnam today, SMEs have made an important contribution to the restructuring of industries by creating jobs, attracting laborers from the agricultural sector, participate in investment in niche markets, promote production and business development (Le, 2021). On average, each year (in the period 2017-2018), the SME sector attracts the most workers with 8.69 million employees (accounting for 60.9% of the total employment of the entire enterprise sector in the economy (Hong Son, 2021). In the two-year period 2018-2019, the number of newly established SMEs also created nearly 2.3 million new jobs for employees. However, an overall assessment of the SME sector has shown that despite the wide range of support modalities offered by the government. SMEs in Vietnam are not operating as efficiently as they should and leading to many SMEs being dissolved (Le, 2021). It can be seen that the main reason for this apparent inefficiency of SMEs in Vietnam is the lack of competition of domestic SMEs when compared with similar counterparts in developed and emerging economies. Many support methods and innovative ideas have been proposed to improve the quality and competitiveness of SMEs (Olmos-Peñuela et al., 2017; Nguyen et al., 2021). Prominent among these is innovation policy that has attracted the attention of researchers and the business community (Adam and Alarifi, 2021). In fact, innovation problems in SMEs can appear in many different forms through the constitutive factors that the authors in this study propose in the framework of the research and analysis of the results. Indeed, innovation in SMEs is a prerequisite for a dynamic and competitive economy (Espósito et al., 2019). Therefore, this paper initially investigates the factors influencing the term "innovation" among SMEs in Hanoi through internal and external factor. The research for factors that related to innovation in SMEs in the era of globalization is appropriate in this context as an important factor for sustainability and survival of SMEs of developing countries in general and SMEs in Hanoi city, Vietnam.

2. LITERATURE REVIEW

According to global innovation index 2020, Vietnam ranks first in the top 3 groups of middle-income economies (Dutta et al., 2020). In a number of studies on SMEs's innovation, scholars have studied this issue for various types of enterprises and large corporations (Jegade et al., 2012; Steeger and Hoffman, 2016; Scuotto et al., 2021). However, for SMEs in Vietnam and especially for SMEs in Hanoi, there is not much research on the known elements of innovation.

2.1. The context of SME in Hanoi, Vietnam

In Vietnam, SMEs are evaluated according to the criteria of capital, labor resources and product revenue (Nguyen et al., 2021). According to the stipulation of Decree No. 56/2009/ND-CP of Vietnam in August 2009, micro enterprises are enterprises with fewer than 10 employees, small enterprises with 10 to less than 200 employees and capital of 20 billion VND or less, and small enterprises with capital of 20 billion VND or less, while medium-sized enterprises have from 200 to 300 employees with capital of 20 to 100 billion VND. From 200 to 300 people is the number of employees of SMEs in Vietnam. Currently, a total of 95% of enterprises registered to operate in Vietnam operate under this type of business. Therefore, their contribution to total output and job creation is significant. If large enterprises often set up bases in the economic centers of the country, SMEs are present in all localities and are important contributors to budget revenue, output and revenue generation for local jobs (Vuong, 2018). SMEs account for a large proportion of all businesses in a country, region and worldwide. With the ability to use over 50% of the total number of social workers today and create a large number of jobs up to 65% for workers globally (Nguyen and Nguyen, 2020; Nguyen et al., 2021). SMEs often take advantage of local workers to use, thereby solving many human resource problems for state agencies (Foreman-Peck, 2013). However, SMEs in Vietnam have limited capital size and often do not have access to large capital sources from investment banks (Nguyen et al., 2020). This causes limitations in equipment innovation and job development promotion for these enterprises. In the period of 2020 - 2021, Vietnam's economy is affected to a certain extent by the Covid 19 epidemic, especially for SMEs (Hong Son, 2021). SMEs face difficulties because foreign experts cannot work in Vietnam. Large numbers of domestic SMEs are also unable to go abroad to conduct planned trade activities. Many SMEs have been interrupted, suspended, or even stopped operating due to the epidemic situation and are on the verge of bankruptcy due to a sudden drop in demand, leading to a decrease in revenue as well as facing the risks of debt collection, insolvency (Nguyen et al., 2020; Nguyen and Nguyen, 2020). In fact, the Covid 19 pandemic that broke out in different parts of the world has had a great impact on health and economy in terms of trade, investment and tourism (Adam and Alarifi, 2021). In Vietnam, the implementation of social distancing limits all outside activities (Trang, 2021). Among them, SMEs are the most vulnerable to

the impacts of Covid 19. The specific characteristics of SMEs compared with large enterprises certainly make it difficult for SMEs to respond to this crisis such as lack of human resources and limited management capacity (procedures, techniques and tools), limited capital and lack of management knowledge (Indriastuti and Fuad, 2020). Moreover, according to Eggers (2020), the smaller the enterprise, the more vulnerable it is to internal and external events of environmental and social factors. Therefore, SMEs need to change their business management thinking by innovative activities. It is supposed to continue to maintain the viability of SMEs. The transformation of business models powered by digital technology and innovation activities in general has been documented in the literature as one of the strategies used to respond to the disruptive changes in the environment (Priyono et al., 2020). Especially for technologies that assist companies in identifying new ways of doing business and staying active (Eggers, 2020; Lu et al., 2020). For this reason, innovation activities are seen as an appropriate response to the disruptive changes caused by the Covid 19 pandemic.

Specifically, according to statistics, by November 2020, about 15,000 SMEs have completed dissolution procedures, an increase of only 3.1% compared to the same period in 2019, but the number of SMEs having to suspend operations and the number of enterprises leaving the market has reached 44,000 enterprises, an increase of 60% over the same period in 2019 (Le, 2021). Thus, on average, each month in Vietnam, more than 5,000 SMEs have had to leave the market. This is a record high number ever and entails many consequences, affecting jobs and incomes of tens of millions of people. The necessary issue is the innovation of SMEs in the appropriate direction to adapt to the general situation of the country. Being aware of the importance of innovation in Vietnam's SMEs, the Ministry of Planning and Investment has announced many programs to support enterprises in innovation such as establishing innovation networks, provides a free conversion platform for small businesses, startups.

According to the Director of the Hanoi Business Support Center (Hanoi Department of Planning and Investment) Le Van Quan reported that in the first 4 months of 2021, Hanoi has granted business registration certificates to 8,680 newly established enterprises with a registered capital of 94,931.9 billion VND and an increase of 12% in the number of enterprises over the same period in 2020 (Le, 2021). Number of operating enterprises return was 4,660 units, an increase of 97% over the same period in 2020. The authorities also carried out dissolution procedures for 1,145 enterprises, an increase of 42% over the same period last year. In addition, there were 5,931 enterprises registered to temporarily suspend operations and increased 17% over the same period in 2020. Thus, the total number of enterprises registered to operate in Hanoi as of April 2021 is 311,240 units,

of which SMEs account for 97%. In addition, SMEs in Hanoi always strive to ensure the quality of products and services to meet customer requirements, while increasing productivity and operational efficiency (Vuong, 2018). There are many factors affecting the process of increasing productivity and quality, in which there is a decisive role of innovation such as technological capabilities, innovation in product design, production process, management... (Ionnica and Razvan, 2010; Espósito et al., 2019; Dutta et al., 2020; etc.). Hanoi's leadership board on business management has affirmed its role as a leading center for science, technology and innovation in Vietnam with many innovative solutions to support SMEs (Nguyen et al., 2020).

2.2. The role of innovation in SMEs

Innovation is usually expected in a positive direction. Indeed, according to Rumanti et al. (2016), innovation can be considered as a process in which enterprises, or in this study, SMEs identify an existing problem in the enterprise and come up with a solution way of finding out how to solve that problem. From this argument, many scholars around the world have made supportive and positive statements about innovation in SMEs (Lu et al., 2020; Foreman-Peck, 2013; Expósito et al., 2019; Hanifah et al., 2019; Adam and Alarifi, 2021). For instance, research by Calvo (2006) has shown that innovation increases the performance of the financial system, the firm's management skills and increases the survival rate among SMEs. Align with the argument of Calvo, Steeger and Hoffmann (2016), Henttonen and Lehtimäki (2017) provide concrete evidence on how to develop management, the larger profit margins that SMEs in innovation is obtained. From the above perspective, it can be seen that innovation can boost sales growth and internal management efficiency. In terms of business, innovation helps businesses significantly reduce production costs because profits are obtained by increasing labor efficiency (Jegade et al., 2012). On the other hand, with a closer look at innovation, it can be argued that innovation is the core element of quality improvement in SMEs (Fernández-Serrano and Romero, 2013; Rumanti et al., 2016). In other words, innovation affects operational aspects through changes in the performance of a small firm (Hervas-Oliver et al., 2014).

The impact of the COVID-19 pandemic is different and more dramatic than the traditional pandemics faced by businesses in the past (Eggers, 2020; Lu et al., 2020; Indriastuti and Fuad, 2020). In the context of research in Hanoi, changes are driven by innovation by businesses (Hong Son, 2021). Under these conditions,

managers are more focused on how to save businesses from bankruptcy than on creating a sustainable competitive advantage. Adjustment to this external stimulus needs to be ongoing, and not just a plan of action (Indriastuti and Fuad, 2020). In order to carry out innovative activities, SME managers may lack the knowledge to deal with the economic impacts of the pandemic (Eggers, 2020). Therefore, innovation activity is necessary to understand new consumption patterns, new supply-demand relationships, and how to approach them with knowledge mining tools, technology products or services which digital to invest in and how to use it (Nguyen et al., 2020). Therefore, research on the factors affecting innovation activities can provide SMEs with the necessary knowledge to face such a crisis (Adam and Alarifi, 2021). An overview of the strategies adopted by SMEs and the unique challenges they face in different sectors and regions in Hanoi, Vietnam, that can better equip them to grow develop a standard approach to dealing with this pandemic.

Furthermore, in the view of Expósito et al. (2019), innovation is said to be a multifaceted phenomenon with various benefits for SME performance. This also depends on the type of innovation introduced and developed by the company. It is possible to demonstrate that innovation in a product or production process can positively affect a company's competitive advantage in the marketplace, as well as increase labor productivity (Rumanti et al. 2016). Besides, innovation in implementation process and innovation in the organization can play an important role in improving the quality of products and services of enterprises. As a result of implementing new forms of management to improve quality in certain departments or throughout the company (Hanifah et al., 2019; Dutta et al., 2020). Therefore, innovation creates many positive conditions for the competitive advantage of SMEs (Foreman-Peck, 2013). Some of the fundamental benefits of innovation in business include the economy of learning, economies of scale and scope, as well as the ability to set quality standards and improve performance and growth in product sales and employees. However, in reality, SMEs are facing challenges to innovate, such as lack of innovation strategy, insufficient management skills, lack of technology skills, as well as lack of policies to support innovation, lack of accessibility, cooperation with other enterprises and many other problems (Henttonen and Lehtimäki, 2017).

The innovation capacity of SMEs is mainly measured on the basis of innovation capacity in research,

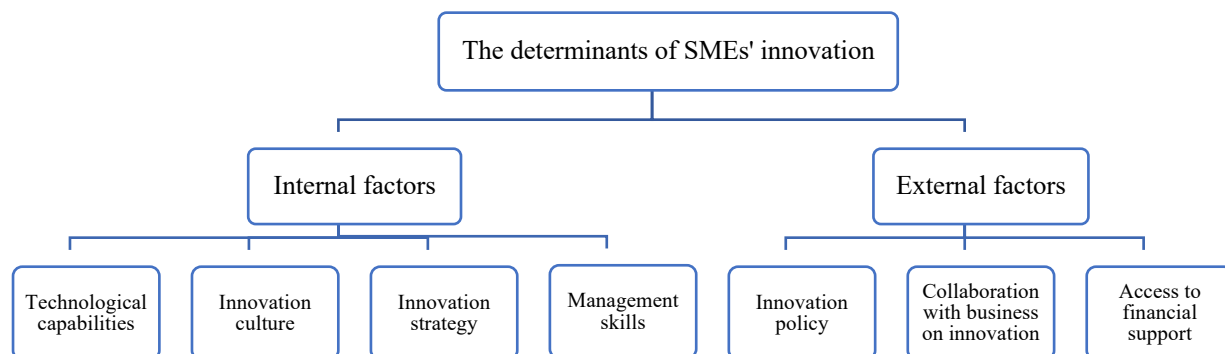


Figure 1. The theoretical framework of the determinants of SMEs' innovation (adapted from Dotun, 2015; Bayarçelik et al., 2014; Henttonenn and Lehtimäki, 2017; González-Varona et al., 2021)

development and technological advancement, cultural innovation (Dotun, 2015). Dotun (2015) and Bayarçelik et al. (2014) argue that the internal influencing factors of enterprises related to innovation include the training and experience level of the manager, and the skill of the manager. Besides, according to scholar Scuotto et al. (2017) when summarizing the theoretical basis of innovation and the influencing factors have pointed out the groups of factors affecting the innovation capacity of SMEs, including internal influencing factors which are common attributes of the company; corporate-level strategic and operational controls; organizational, cultural and leadership factors; functional strategy and resource factors.

The group of external factors are factors affecting the environment for SMEs to innovate. Romijn and Calvo (2006), Lu et al. (2020), and González-Varona et al. (2021) point out external factors including the closeness of linkages with members in the value chain, development cooperation between enterprises and stakeholders, institutional support. Accordingly, Nguyen and Nguyen (2020) also argue that the factors affecting innovation from the outside are linkage relationships, relationships with expert associations and policies to support innovation. In summary, external factors affecting innovation include institutional factors, linkage factors and accessibility to financial support from SMEs.

When implementing this study, the authors selected the main factors affecting SMEs's innovation in the case of Hanoi, Vietnam (Figure 1).

2.3. Internal factors of of SMEs' innovation

Technological capabilities

The enterprise's ability to innovate technology is driving a progressive digitalisation. Thereby, encouraging innovation and increasing SME access to technology (Dutta et al., 2020). It explains why organizations will have to evolve and access technological innovation to enable the flexibility and response to the rapid changes needed to create new value propositions for customers and transform operating models (González-Varona et al., 2021). Indeed, the development and innovation of digital technologies, combined with the capabilities and resources of enterprises, can create fundamental changes, especially for SMEs in creating and capture value (Hervas-Oliver et al., 2014). Positive changes in terms of technological innovation to innovation strategy as well as business strategy make future competition unpredictable. With the use of digital technology, businesses can improve their updates, so they can adjust their business processes and operations incredibly quickly (Lu et al., 2020). Therefore, it is important to understand that the innovation process of SMEs is caused by external stimuli and occurs in a limited time. Businesses must have a certain level of agility to enable them to build relevant capabilities to take advantage of opportunities arising from technological innovation (Scuotto et al., 2021). Thus,

for environmental changes and in emergencies such as the outbreak of the Covid 19 pandemic, businesses can withstand the pressure of change.

The change in the ability to update technical technology in the context of innovation has caused the innovation strategies and business strategies of enterprises to also change over the past five years (Gurbaxani and Dunkle, 2019). Although digital innovation is no longer dependent on big companies, SMEs are dominating development (Scuotto et al., 2021). But the lack of strong grounding in SMEs in their approach to technological innovation manifests in their limited specialization and presents a clear disadvantage for developing digital capabilities (Espósito et al., 2019). Currently, studies to respond to this challenge of SME capabilities are scarce, the number of studies on SME technological innovation is not focus on capabilities but mainly on processes. (Gurbaxani and Dunkle, 2019; González-Varona, 2020; Dutta et al., 2020).

Access to new digital technology has the potential to develop new products and services, improve existing ones, and relationships with customers (Ionica and Razvan, 2010). Since then, it has raised the level of enterprises when they have the ability to develop new ways of doing business, change vision and strategy, organizational structure, processes, capabilities and culture (Hanifah et al., 2019). Therefore, the technological capabilities of the enterprise are related to the reinvention of the operating processes of the enterprise, enhancing the advantage of the enterprise in the markets and industries in which it operates.

It can be said that technological capability in innovation of SMEs is an approach, learning, and application process that aims to improve an entity by making significant changes to its attributes through the combination and innovation of information technology, computing, communication and connectivity (Vial, 2019). However, it is true that new technological capabilities are available to all SMEs in the market, but their simple adoption or use does not guarantee that they are a source of competitive advantage but depends on how to combine digital technology with organizational innovation capabilities (Hanifah et al., 2019).

Thus, the first hypothesis can be formulated: "Hypothesis 1 - Technological capabilities facilitate the growth of innovation in SMEs"

Innovation culture

The culture of innovation has been defined and argued in many different ways. An enterprise is considered to have a deep and solid company culture when it provides widely shared values, rules and standards internally, helping to shape the behavior of employees. Activities to ensure that everyone in the organization is on the same page to achieve the long-term goals of the business (Direction, 2020; Hanifah et al., 2019; Espósito et al., 2019; Olmos-Peñuela et al., 2017). On the other hand, Direction (2020) argues that innovation culture is a multidimensional thought that includes

innovation decisions, infrastructure supporting innovation, market orientation and favorable environment for innovation strategy. In Herzog and Leker's (2010) analysis of multidimensional innovation strategies, innovation culture is identified as a particularly important part of corporate culture that includes various aspects related to fundamental values to shared. This new culture within the organization will be shared across standards and practices to support innovation. More specifically, Jegede et al. (2012) argue that innovation culture is an invisible strategic resource and is evaluated according to four aspects including technological innovation orientation, training orientation, willingness to accept risks and future market orientation. In terms of employees, sharing and listening, beliefs and core values will create favorable conditions for the innovation culture of enterprises (Rumanti et al., 2016; Fernández-Serrano and Romeo, 2013; Lu, 2020).

For SMEs, the organizational culture that affects employees is extremely powerful because it forms the habit of enterprises to promote innovation processes due to the uncertain nature, unpredictable and fraught with innovation (Nguyen and Nguyen, 2020). In this sense, SMEs balance the conflicting dynamics that can arise when promoting innovation activities. Therefore, SMEs need to add a system of employee incentives by generously rewarding the introduction and adoption of new ideas, to signal that a culture of innovation is desirable within the organization. On the other hand, businesses need to accept that innovative employee behavior can create barriers to established rules and habits (Olmos-Peñuela et al., 2017). If businesses have a strong organizational culture and want to be conducive to innovation, they must be flexible enough to deal with potential conflicts that may arise. At the same time, businesses must also prioritize balancing a reward system and willingness to take risks with the provision that challenges to existing standards will not be perceived as erroneous or disciplinary (Lu et al., 2020).

Therefore, SMEs need to encourage employees to contribute new ideas and share knowledge, while accepting mistakes and changing internal habits to demonstrate a culture of high innovation and seriousness (Ionica and Razvan, 2010; Steeger and Hoffmann, 2016). Indeed, the organizational culture or work environment encourages innovation in employees, helps them cope with challenges and takes risks, and supports personal growth. All of the above factors are very important prerequisites for innovation (Scuotto et al., 2017). Thus, taking risks is always one of the prerequisites for a culture of innovation and must involve the participation of employees, creativity and sharing of responsibility (Direction, 2020). For the study of cultural innovation and its influence in SMEs, it can be based on the activity of identifying eight elements of organizational innovation culture: (1) statements about the innovative mission and vision; (2) avoid overlapping decentralization to attract and retain

talented people who can create a strong innovation revolution in enterprises to unify a democratic and equal organizational culture; (3) types of secure innovation environments that allow for discreet innovation; (4) development cooperation of different enterprises; (5) flexibility in employee assessment; (6) learning, sharing and teaching between internal business units and stakeholders can be an effective way to promote collaborative innovation; (7) incentive plans based on effective and representative workgroups can foster a culture of innovation; and (8) managerial skills are needed to encourage innovation and habitual experimentation (Bayarçelik et al., 2014; Hanifah et al., 2019).

Above all, we consider the second hypothesis: "Hypothesis 2 - SMEs implementing an innovation culture will create a premise for the process of promoting innovation".

Innovation strategy

Innovation strategies will be formed and adopted when there is an intermediary who is an employee in the organization (Henttonen and lehtimaki, 2017). In addition, the strategy outlines different aspects and how these aspects affect innovation. Furthermore, strategy includes four aspects: (1) organizational strategy; (2) innovation strategy; (3) the vision and goals of the organization; (4) decision-making strategy. Therefore, the innovation strategy of the enterprise needs to be elevated to reflect the organizational culture and link the shared vision and goals of the organization (Hervas-Oliver et al., 2014). It is important that all employees in the enterprise have a strategic understanding of the business so that they can support and innovate to achieve common goals (Bayarçelik et al., 2014).

A number of specific studies on innovation strategy in organizations have shown that defining a clear innovation strategy requires seeing an important influence on innovation capacity. From there, showing that the link between vision, strategy and innovation is essential for effective innovation management (Bayarçelik et al., 2014). With the above point of view, Dabic et al. (2019) show that the strategy in determining the allocation of resources, products, processes and systems helps businesses adapt to the uncertainty of the business environment. Innovation success requires a clear vision and emphasis on strategic direction that drives innovation. Dutta (2015) explains that an innovation strategy consists of a detailed action plan that accomplishes innovation goals (Bayarçelik et al., 2014) and it is an important element for success innovation. A well-planned innovation strategy should be integrated with the business strategy to ensure that both strategies share a common vision and mission (Adam and Alarifi, 2021). Since then, according to Nguyen et al., (2020), innovation strategy including strategic combination, strategic communication and commitment from senior leadership is an important factor affecting innovation

efficiency. Thus, it can be concluded that strategy positively affects innovation.

In the context of research on innovation strategies in SME in Vietnam, many businesses are still not aware of the importance of innovation factors to their development. Many businesses do not have or have not built an innovation strategy of their own (Nguyen and Nguyen, 2020). There are many reasons, first of which is that enterprises think that technological innovation needs investment and is expensive. In addition, many businesses only offer a trend-following innovation strategy without investing knowledge in it (Direction, 2020). Enterprises have not yet realized the need for innovation is the second reason. There are also other reasons such as the manufacturing industry mainly follows traditional methods, so the demand for technology application is not much (Le, 2021). In addition, some other enterprises are still small in scale, so there is no orientation on building innovation strategies. Because there is no orientation and no specific strategy and innovation roadmap, the implementation of innovation in SMEs in Vietnam has not yet been planned and the specific roadmap has not been strictly implemented (Nguyen et al., 2020).

Base on these facts, we come up with the third hypothesis: "Hypothesis 3 - innovation strategy positively affects the innovation of SMEs".

Management skills

The skill or management style of managers and leaders is one of the most important characteristics in an organization that helps predict how the adoption of innovation will bring measurable value to the business. In fact, managers tend to be facilitators of innovative thinking, fostering open and collaborative thinking (Verbano and Crema, 2016). Specifically, unit or mid-level managers are well suited to communicate and reinforce innovation goals for employees in the enterprise because they are the ones who directly work with the workers on a daily basis and have a clear understanding of the workers' consciousness in the enterprise (Didonet et al., 2020). Thus, with their skills, managers can facilitate and promote business through innovative activities in enterprises, especially SMEs when the role of middle managers is realized manifest and assert more clearly.

Besides the contributions of middle managers, senior management plays an essential role in creating innovation in enterprises. They have the technical skills to provide the right environment in which to build innovation, and to make decisions that enhance creativity and successfully apply innovative knowledge (Lavrynenko et al., 2018; Bello-Pintado and Bianchi, 2020). Furthermore, senior management by their experience often shows a keen awareness of workers' needs to assess and provide motivation. This is considered as a source of encouragement and morale of employees to innovate and solve the risks and limitations that will be encountered (Didonet et al., 2020). With specialized assessment skills, managers support employees to address their needs for rights,

improve personal qualities, achieve achievements, and enhance human values (Ryan and Tipu, 2013). Indeed, through many studies, scholars have shown that top management plays an important role in the organizational performance of enterprises (Lavrynenko et al., 2018; Bello-Pintado and Bianchi, 2020; Verbano and Crema, 2016). Other researchers believe that top management skills play an important role in influencing innovation activities in enterprises (Ryan and Tipu, 2013; Scuotto et al., 2017). According to Verbano and Crema (2016), the support and understanding from managers plays an important role in promoting the innovation process in enterprises, thereby allowing enterprises to create the ability to adapt to new challenges, rapid changes and self-protection against an ever-changing environment.

As a result, the following hypothesis can be formulated: "Hypothesis 4 - Management skills and leadership support have an impact in accelerating the innovation process in SMEs"

2.4. External factors of SMEs' innovation

Innovation policy

According to Lu et al. (2020), favorable development support policies and government project financing positively influence SME innovation outcomes. The importance of innovation for development is increasingly recognized by policy makers and leaders around the world and in Vietnam. Therefore, a series of policies related to encouraging and supporting innovation activities are issued, which is an effective and timely tool to maintain the development of enterprises. In developing countries in general and Vietnam in particular, the increasing number of new policies to support businesses shows the urgency as well as the recognition of national leaders for the importance of promoting technology transfer and innovation in SMEs (Foreman-Peck, 2013).

The Science and Technology Development Strategy for the 2011-2020 period has affirmed that Vietnam is determined to consider science and technology as the foundation for the country's sustainable development. Support policies for science and technology activities are clearly stated in the Law on Science and Technology 2013 and Decree No. 87/2014/ND-CP, on September 22, 2014, from the Government: "Regulation Decision on attracting individuals in science and technology activities who are overseas Vietnamese and foreign experts to participate in science and technology activities in Vietnam", Decision No. 844/2016/QĐ-TTg, on May 18, 2016, from the Prime Minister: "On the approval of the project to support the national innovation startup ecosystem until 2020". Specifically, in the 5-year period (2016-2021), with the efforts of the Party and Government, Vietnam has been achieving many positive results in innovation. In 2019, Vietnam ranked 42nd out of 131 countries and economies in the 2020 global innovation index ranking of the World Intellectual Property Organization (WIPO) (improved from 59th place in 2016). This is the third year in a row

that Vietnam has risen in rank and the 42nd position is also the highest position achieved by Vietnam so far (Dutta et al., 2020). In the period of 2020-2021, the Government has urgently issued many policies to support enterprises and focus on small and medium enterprises. In which, there are some basic packages such as: Support package of 250,000 billion VND in credit support; 62,000 billion VND for social security; 16,000 billion VND to support businesses to pay wages to employees (Le, 2021).

Analyzing the investigation in the context of Hanoi, with the goal of turning Hanoi into a start-up and innovation hub. According to Le (2021) and Vuong (2018), the first solution is to focus on building and perfecting institutions; develop mechanisms and policies specific to the capital in promoting the application and transfer of technologies, mastering new technologies and supporting innovation activities of enterprises. The second solution is to develop scientific and technological potential. Along with that, promote technology transfer and application to improve productivity, quality and competitiveness for the capital's economy. Strengthening scientific research and technological development activities to serve the socio-economic development of Hanoi (Nguyen and Nguyen, 2020). The final solution is to develop the science and technology market; innovation startup ecosystem, strengthen links, cooperation and integration. In particular, focus on building "Hanoi Initiative Network" to consult and solve important issues raised in the process of socio-economic development of Hanoi (Hong Son, 2021).

To ensure that policies to support SMEs are transparent and continuous, the Hanoi People's Committee has issued Decision No. 5742/QĐ-UBND dated December 29, 2020 approving the Project "Supporting small and medium-sized enterprises" in Hanoi city in the period of 2021-2025". In addition, effectively implementing the tasks of the Innovation Support Scheme in the area for the period of 2019 - 2025 and the Project of Supporting SMEs in the area for the period of 2021 - 2025.

Accordingly, the following hypothesis can be suggested: "Hypothesis 5 - Innovation policy is a necessary and meaningful source of support for SMEs's innovation".

Collaboration with business on innovation

External determinants related to development cooperation with firms have received a great deal of attention in the innovation literature (Dotun, 2015). In fact, innovation cooperation is one of the indispensable elements of innovation (Espósito et al., 2019). External partners or businesses may include suppliers, customers, and universities and research centers that have created data and knowledge sources that help businesses find innovative ideas (Olmos-Peñuela et al., 2017; Sánchez-González and Herrera, 2010). The innovation process often has to be one of finding results from multiple data sources and necessitating external strategic partners (Lu et al., 2020). Therefore,

it can be seen that the cooperation agreements are usually made between two or more independent companies and these are the times when they cooperate in certain business activities.

In fact, a partnership can be understood as a strategic relationship that facilitates SMEs to access the opportunity to work in a large enterprise, as well as retain flexibility and specialization (Lu et al., 2020; Dotun, 2015). In the partnership, companies commit to learn a common understanding and work together towards achieving a better competitive position (Dabic et al., 2019). In addition, SMEs depend on partnerships with stakeholders to innovate. SMEs with the task of improving innovation and bringing higher value to enterprises are considered to be very important (Adam and Alarifi, 2021).

On the other hand, innovation can provide SMEs with a rich source of external knowledge and increase the diversity of information that SMEs have access to (Bayarçelik et al., 2014). Indeed, combining internal knowledge and diverse external knowledge helps SMEs to generate new ideas, thereby promoting innovation and improving innovation performance. Moreover, when cooperating with external partners, SMEs will form a deep knowledge base that helps businesses solve problems more quickly and accurately when facing obstacles in the innovation process (Ionica and Razvan, 2010).

Not only in terms of knowledge, combining with different organizations helps SMEs to have the ability to proactively create and better lead to changes in the external environment. Thus, the deeper the cooperation, the more favorable the innovation activities of SMEs (Flor et al., 2018). Moreover, it is also an opportunity to help SMEs find new markets, which can improve the performance of fundamental innovation (Dabic et al., 2019).

However, contrary to the above positive statements, a number of studies based on large companies in developed countries indicate that cooperation with too many external organizations leads to high costs. This cost may even outweigh the benefits of innovation (Sánchez-González and Herrera, 2010). However, for SMEs in Hanoi and Vietnam, their innovation activities are not as strong and stable as those of large companies in developed countries, and most of them do not reach the same level. Excessive search costs money. In addition, along with the development of communication technology in developing countries like Vietnam, the negative effects of excessive search for external partners have been significantly reduced (Trinh and Thanh, 2017). In general, finding and cooperating with enterprises and external partners on innovation brings great benefits to the innovation of SMEs (Dotun, 2015).

Therefore, the next hypothesis can be proposed: "Hypothesis 6 - Collaboration with business on innovation creates a premise for the development of innovative activities in SMEs in a positive way".

Access to financial support

Financial difficulties have always been a barrier faced by SMEs in developing countries and this is also considered as a major difficulty for SME's stable development. The difficulties faced by SMEs when trying to access financial support from outside can be mentioned as follows: (1) Enterprises lack of experience in management and administration; (2) Lack of collateral; (3) no involvement in production (Thanh et al., 2011; Trinh and Thanh, 2017). These difficulties explain why SMEs face barriers in accessing financial institutions.

On the other hand, SMEs are always hesitant to lend because they are considered to have a higher risk of repaying loans to banks or lenders than larger enterprises (Dutta, 2020). SMEs are often directly supported in the form of financial assistance that is used to purchase assets, invest in technology or implement development plans by addressing issues related to funding shortfalls (Bayarçelik et al., 2014; Kira and He, 2012).

Returning to this external factor, it is possible to understand the desire to have financial related services (access to capital, credit, deposits, payments, etc.) provided and supported by banks, stock markets, and financial institutions are all considered as being able to access financial support (Nguyen et al., 2020). In fact, access to credit helps SMEs to use useful assets to improve labor productivity and invest in innovative activities. Thereby helping the national economy create a driving force to promote growth as well as innovation (Kira and He, 2012). Nevertheless, financial barriers make SMEs one of the most restricted groups in accessing financial support.

External sources of finance for SMEs include equity financing and debt financing. Surveys from other research papers show that companies that use external financing to upgrade are relatively faster in their business at different stages of growth (Peter et al., 2018). Therefore, it can be concluded that external finance is extremely important and greatly affects the activities of SMEs (Hartsenko and Sauga, 2013).

In the context of the study in Vietnam, equity financing has not been provided to SMEs because they are not yet able to meet the equity issuance criteria. Therefore, debt financing is a form of financial support that has been put into use. More precisely, the most common source of financing that SMEs access is loans from commercial banks (Nguyen et al., 2020). The reason is bank credit is less risky and has more capital supply than other credit institutions. However, according to specific statistics, less than 60% of Vietnam's total SMEs receive credit from banks (Thanh et al., 2011). It can be seen that the demand for loans of SMEs is always high. In addition, the commitments of SMEs related to collateral requirements, financial reporting requirements, and management skills requirements also raise many problems (Nguyen et al., 2020).

However, on the more positive side in terms of financial support for SMEs in Hanoi, besides the bank-

enterprise connection program, the Hanoi Investment and Development Fund will support SMEs to access preferential offers and research on granting credit guarantees (Le, 2021). In the future, with the spirit of accompanying businesses, continuing to improve the investment environment and enhancing competitiveness, supporting and developing businesses in the spirit of the Government's direction, Hanoi will focus on implementing Key tasks and main solutions such as: (1) Actively organize surveys, capture, record, synthesize difficulties, problems and proposals of enterprises with many suitable forms to promptly solve resolve and propose competent authorities to settle, not passively, wait for enterprises to reflect before handling; (2) Continue to promote the effective implementation of Hanoi's work plans and programs on supporting businesses in 2021 and the period up to 2025; (3) Remove difficulties and obstacles for enterprises in terms of procedures, focusing on large capital investment projects both inside and outside the budget (Le, 2021; Nguyen et al., 2020; Trinh and Thanh, 2017).

In summary, SMEs face more disadvantages even though bank loans are available to both SMEs and large enterprises. At the same time, credit constraints are very detrimental to SMEs' access to finance, causing certain damages to this type of enterprises (Nguyen et al., 2020). However, with the commitment and support from the Government, the Ministry of Planning and Investment and the leadership of Hanoi city, the coming period will invest and create the most favorable conditions for SMEs in Hanoi to develop comprehensively.

The final hypothesis can be formulated: "Hypothesis 7: Access to financial support is a necessary solution to SMEs's innovation".

3. METHODOLOGY

Data collection method: This study was conducted based on the following sources of data:

Secondary data: some statistical indicators of SMEs, especially in Hanoi in the period 2019-2021 collected from the General Statistics Office of Vietnam, Small and Medium Enterprise Development Fund, Vietnam Report and World Intellectual Property Organization. Besides, the analysis results from a number of related studies are used as a basis for analyzing the factors affecting SMEs' innovation.

Primary data: collected through surveys in SMEs operating in Hanoi, Vietnam. Specifically, the sample size is required to be at least 5 times higher than the number of question items observed (Hair et al., 2006; Hoang and Chu, 2008). In the study, the number of items is 28. Therefore, the minimum number of samples needed is $28 \times 5 = 140$ observations. In order to detect the errors in the answers of the respondents, a sample size of 250 observations was chosen.

Data was collected in two months, June and July 2021.
The 5-point Likert scale is used for statements of the

4. RESULTS AND DISCUSSION

Table 1. Results of measuring reliability of scale and Exploratory factor analysis

Factor	Cronbach's Alpha (Number of observed variables)	Corrected Item-Total Correlation (Observed variable)	KMO	TVE (%)	The smallest factor loading (Observed variable)
Technological capabilities (TC)	0.906 (4)	0.615 (TC1)	0.862	78.135	0.817 (TC4)
Innovation culture (IC)	0.859 (3)	0.752 (IC3)	0.813	73.286	0.805 (IC2)
Innovation strategy (IT)	0.768 (3)	0.638 (IT2)	0.767	67.153	0.724 (IT3)
Management skills (MS)	0.813 (5)	0.772 (MS4)	0.791	69.046	0.816 (MS5)
Innovation policy (IP)	0.724 (4)	0.614 (IP3)	0.626	75.962	0.735 (IP3)
Collaboration with business on innovation (CB)	0.729 (3)	0.516 (CB2)	0.653	68.124	0.805 (CB1)
Access to financial support (AF)	0.829 (3)	0.627 (AF2)	0.802	71.381	0.729 (AF1)
SMEs' innovation (IN)	0.815 (3)	0.635 (IN2)	0.784	76.025	0.861 (IN2)

Source: Author's own calculation

second part ranging from "1" - Strongly Disagree, "2" - Disagree, "3" - No comments, "4" - Agree, "5" - Strongly agree. The questionnaire was referenced from previous studies including Dotun, 2015; Bayarçelik et al., 2014; Henttonenn and Lehtimäki, 2017; González-Varona et al., 2021. We distributed 250 questionnaires to SMEs in Hanoi via email and got the response rate of 76% (190 votes collected).

Data analysis method: With the use of 5-point Likert scale, the calculation results for the elements are expressed through their mean values. Therefore, the meaning of each level is explained as follows:

Distance value = (maximum value - minimum value) / n = (5-1) / 5 = 0.8

Therefore, mean value of the factors is determined corresponding to the assessed levels, specifically as follows:

1.00 – 1.80: strongly disagree

1.81 – 2.60 : disagree

2.61 - 3.40 : agree

3.41 - 4.20 : strongly agree

4.21 - 5.00 : strongly agree

Regarding analytical techniques, the research team first used Cronbach's alpha coefficient to test the rigor and correlation between observed variables affecting SMEs' innovation. After testing Cronbach's alpha, the research team conducted exploratory factor analysis (EFA) to reduce the number of variables and summarize the underlying set of the data. Finally, multiple regression model was to be used to explain the relationship among the variables.

4.1 Scale reliability and Exploratory factor analysis

Cronbach's Alpha coefficient is used to evaluate the reliability of the scale. Accordingly, the observed variables with the Corrected Item Total Correlation of less than 0.3 will be eliminated (Hoang and Chu, 2008) and the scale will be selected when the Cronbach's Alpha coefficient is greater than 0.6 (Leech et al., 2005). Based on the results of reliability test, the authors found that the scales built in the study have high reliability because all Cronbach's Alpha coefficients are greater than 0.7 (the smallest is 0.724 with the innovation policy factor) and each factor has a correlation coefficient of greater than 0.3 (Table 1). Therefore, 28 observed variables are suitable for exploratory factor analysis.

In term of exploratory factor analysis, the KMO coefficients as presented in table 1 (Kaiser – Meyer – Olkin measure of sampling adequacy) are greater than 0.5 ($0.5 < KMO < 1$), showing that the variables included in the analysis is significant and the analytical model is in agreement with the proposed hypotheses (Hair et al., 2006). Besides, the variable correlation test (Bartlett's Test of Sphericity) has $Sig = 0.000 < 0.05$. The result proved that the hypothesis H0 (variables have no correlation with each other) has been rejected and the variables are correlated with each other (Hoang & Chu, 2008). As a result, the dataset is appropriate for factor analysis. The authors continued to consider total variance explained (TVE) and factor loading. To be suitable for factor analysis, TVE need to be greater than 50% (Gerbing and Anderson, 1998). Moreover, the ideal factor loading is > 0.5 (Hair et al., 2006). As

results shown in Table 1, TVE is greater than 50% and the factor loading is greater than 0.5. After exploratory factor analysis, the observed variables in the scales remained the same.

4.2 Correlation analysis

The analysis results show that the average assessment of SMEs' innovation and all factors in the model are above 3 and the standard deviation of these factors are

4.3 Regression analysis and verification of research hypotheses

The value of adjusted R square is 0.623 (Table 3) indicating that SMEs' innovation in Hanoi can be explained by 62.3% of the independent variables in the model and 37.7% of the variance of dependent variable is influenced by other factors not included in the

Table 2. Correlation matrix and evaluation score for each factor

Variable	Mean	SD	TC	IC	IS	MS	IP	CB	AF	IN
TC	3.842	.648	1	.533**	.509**	.445**	.225**	.356**	.243**	.571**
IC	3.418	.813	.533**	1	.249**	.315**	.142**	.283**	.449**	.327**
IS	3.529	.798	.509**	.249**	1	.421**	.253**	.496**	.159**	.291**
MS	3.627	.871	.445**	.315**	.421**	1	.349**	.164**	.257**	.185**
IP	3.421	.924	.225**	.142**	.253**	.349**	1	.409**	.147**	.235**
CB	3.324	.749	.356**	.283**	.496**	.164**	.409**	1	.117**	.351**
AF	3.548	.965	.243**	.449**	.159**	.257**	.147**	.117**	1	.236**
IN	3.425	.826	.571**	.327**	.291**	.185**	.235**	.351**	.236**	1

Source: Author's own calculation

Notes: ** means significant at 5%

also quite small (< 1). Researched companies agreed that technological capabilities, innovation culture, innovation strategy, management skills, innovation policy, collaboration with business on innovation, access to financial support are determinants of SMEs' innovation. These enterprises rated the highest in technological innovation (Mean = 3.842, SD = 0.648) and lowest in access to collaboration with business on innovation (Mean = 3.324, SD = 0.749) (Table 2).

Table 2 showed correlation coefficients between pairs of variables in the model. Gujarati argued that if the correlation coefficient among independent variables in the regression model exceeds 0.8, it is likely to lead to high multicollinearity in the model (Gujarati, 2004). Then, the sign of the regression coefficients in the model can be changed, leading to research results are incorrect. In general, the correlation coefficients between all pairs of independent variables in the regression model have the absolute value to be less than 0.8. In addition, to quantify the multicollinearity between the independent variables in the variance inflation factor (VIF) regression model was also estimated. The results show VIF coefficients of all variables are less than 10. Therefore, multicollinearity is not a serious problem affecting the results of the model (Gujarati, 2004).

model. The results show that the p-value of the F test = $0.000 < 0.05$, indicating that at least one observed variable in the model influenced the dependent variable (IN) and this model is meaningful enough in predicting the outcome variables. Besides, there are 6 independent variables included in the analysis have regression coefficients with Sig. less than the significance level 5%. Therefore, 6 variables: technological capabilities, innovation culture, innovation strategy, management skills, innovation policy, access to financial support have a positive correlation with the dependent variable. In which, the most correlated variables with SMEs' innovation are: "Technological capabilities" and "Management skills" and "Innovation culture" with standardized regression coefficients respectively 0.421 and 0.348 and 0.216. Values of the standardized coefficient of "Innovation policy", "Innovation strategy" and "Access to financial support" are 0.161, 0.117 and 0.105 respectively. The test results also show that the model does not violate the hypotheses of the regression model on the multicollinearity, the normal distribution of residuals and the variance of variance. However, the p-value (Sig.) of "Collaboration with business on innovation" are over than 0.05, meaning that the factor has no significant impact on SMEs' innovation.

Table 3. Results of regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
	B	Std. Error	Beta			VIF
(Constant)	0.288	0.251		1.325	0.200	
Technological capabilities (TC)	0.423	0.050	0.421	2.073	0.023	1.726
Innovation culture (IC)	0.171	0.060	0.216	2.549	0.000	1.568
Innovation strategy (IT)	0.129	0.069	0.117	1.700	0.000	1.576
Management skills (MS)	0.367	0.082	0.348	4.245	0.015	1.328
Innovation policy (IP)	0.187	0.069	0.161	3.467	0.002	1.899
Collaboration with business on innovation (CB)	0.103	0.026	0.068	3.808	0.379	2.145
Access to financial support (AF)	0.159	0.127	0.105	1.854	0.001	1.171
adjusted R square	0.623					
p-value (F test)	0.000					
Dependent variable: SMEs' innovation (IN)						

Source: Author's own calculation

As discussed above, summary of hypothesis testing results of the research model is presented in Table 4

Table 4: Hypothesis testing results

H1	Technological capabilities facilitate the growth of innovation in SMEs	Accept
H2	SMEs implementing an innovation culture will create a premise for the process of promoting innovation	Accept
H3	Innovation strategy positively affects the innovation of SMEs	Accept
H4	Management skills and leadership support have an impact in accelerating the innovation process in SMEs	Accept
H5	Innovation policy is a necessary and meaningful source of support for SMEs's innovation	Accept
H6	Collaboration with business on innovation creates a premise for the development of innovative activities in SMEs in a positive way	Reject
H7	Access to financial support is a necessary solution to SMEs's innovation	Accept

5. CONCLUSION

To assess determinants of SMEs' innovation in Hanoi, the enterprise sector empirical study is conducted at the local level with 250 companies. The results lead to the emergence major findings:

It can be inferred that the dependent variable is significantly impacted by Technological capabilities-

TC, Management skills- MS Innovation culture- IC, Innovation policy- IP, Innovation strategy- IS and Access to financial support- AF.

TC is considered to be the most important factor. It has been mentioned a lot over the past time (Gurbaxani and Dunkle, 2019; Lu et al., 2020; González-Varona et al., 2021). Applications of technology supports super - fast payment capability, helping to save time lining up and give the ability to personalize from collected data, data sharing and automation support. In order to achieve the goal of promoting SMEs' innovation, technological capabilities need to be paid more attention. If SMEs do not develop technological capabilities, the production process in general is only encapsulated in activities that create little added value, which limits the ability to innovate.

Besides, management skills play an essential part in innovation process. In consistent with prior research, management skills are reflected in the right strategic vision in order to use the strengths to seize opportunities and continuously make decisions to cope with the constant changes and fluctuations of the market (Verbano and Crema, 2016; Lavrynenko et al., 2018; Didonet et al., 2020).

The role of innovation culture is proven to be crucial in SMEs' innovation. Across industries, typical innovation runs into roadblocks: management teams are pulled in multiple directions by the crush of daily work and have little time to devote to new initiatives while employees lapse into old habits after the initial excitement dies down (Rumanti et al., 2016; Espósito et al., 2019; Lu, 2020). Therefore, to promoting innovation, SMEs need to build their culture of

innovation first. Innovation policy also positively supports SMEs' innovation (Vuong, 2018; Le, 2021). The government should spend more attention to the role of innovation and encourage SME to invest in innovative activities.

Lastly, innovation strategy and access to financial support seemed to produce normal effects on the adopters. Managers often focus on large initiatives which certainly produce results and glance small-impact initiatives that are easier to implement. Assessibility of SMEs in Hanoi to financial support also does not create considerable influence.

According to the major findings of the study, the six determinants contributing to SMEs' innovation in Hanoi suggest several implications for policy makers and managers.

For policy makers, supportive innovation policies (IP) towards SMEs' innovation adoption such as transferring and spreading of technology, innovation-related tax incentives or incentives fostering cooperation between industry and science will not only increase the innovation opportunities for SMEs but also have a good impact on the economy. Besides, the Government is recommended to step up the handling of commercial banks to ensure the SMEs' ability to access to financial support (AF) as well as strengthen credit support packages and reduce credit interest rate. These policies will have significant reform steps, facilitating the innovation process of SMEs, improving the corporate governance legal framework to improve SMEs' innovation.

For SMEs' managers, with the development of technology and innovation, managers need strongly promote their staff to adapt to new technology and improve organizational technology capabilities (TC). The period when the economy is negatively affected by the COVID-19 pandemic is also an opportunity for SMEs to retest their tolerance and adaptability to new method of production and business. SMEs need to self-assess the current status of technology, strengths and weaknesses, thereby revising their strategies to improve technology capabilities towards efficiency and sustainability. Besides, innovation strategy (IS) is considered to be important especially in the context of the COVID-19 pandemic outbreak. Many SMEs have faced difficulties, forcing them to narrow down or suspend their business. It is due to the fact that a part of the business community lacks innovation strategies to adapt to environmental changes (Hong Son, 2021; Eggers, 2020). To achieve the dual goals of 2021 when focusing on the effective implementation of both pandemic prevention and economic recovery, it is necessary for SMEs in Hanoi to develop innovation strategies to turn "threats" into "opportunities" and make a successful breakthrough in the post-COVID-19 pandemic. Another issue relating to managers is that management skills (MS), knowledge or understanding about innovation can influence SMEs' innovation adoption process. Managers should start with a restlessness and willingness to consider change. This

willingness to change is often driven by a fearless loyalty to doing the right things for the organization (Didonet et al., 2020). Therefore, it would be recommended that managers may update technological information constantly to keep up with the changing pace of the economy. Moreover, to foster innovation, managers should create innovation culture (IC) in their companies. Open communication systems that facilitate idea exchange, coordination, and collaboration are considered to allow for greater learning in organizations, and contribute to innovation. Despite the author's effort, the research still encounters several limitations that need to be addressed in the future. Firstly, the research model explains only 62.3% of the variance of SMEs' innovation in Hanoi. The author may consider other factors that can affect innovation such as social influences. Secondly, the limitation is related to the sample size of the study. This study only collected 190 out of 250 questionnaires. This is relatively small compared to over 240,000 SMEs in Hanoi. Due to the effect of Covid 19, the survey was conducted online via email, which reduces the number of participants. Therefore, other studies may consider larger sample sizes to increase reliability and representativeness of the population. Thirdly, this study was conducted only in Hanoi city. In future studies, the authors may consider conducting research on a broader range to get a more general view of determinants of SMEs' innovation and have a comparison among localities and units.

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