

Innovation Capability and Sustainable Performance Through Knowledge Management in Small and Medium-sized Enterprises

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Knowledge management (KM) across organizations is based on the realization that integrating knowledge or more broadly intellectual capital (IC) both inside and outside the enterprise helps enhance the innovation capability (INC) and sustainable performance (SUP) of enterprises. The purpose of this study is to examine the effects of internal intellectual capital (IIC), external intellectual capital (EIC), and social capital (SOC) on INC and SUP through KM in SMEs. The survey questionnaire was sent to managers working in Vietnamese SMEs. SPSS and AMOS software were used for data analysis. The results indicate that IIC, EIC, and SOC have positive impacts on the INC and SUP of SMEs through KM activities. These findings hope to be useful for scholars and especially SME owners to understand more thoroughly the relationships between IC, SOC, and KM, as well as the influence of these relationships on INC and SUP, while providing new insight and useful suggestions for owners of SMEs in acquiring and exploiting knowledge from outside to fill knowledge gaps within the enterprise.

Keywords: knowledge management, innovation capability, and sustainable performance

INTRODUCTION

In recent years, knowledge or more broadly IC is considered an asset and is the backbone of an organization (Serrat, 2017). According to Alfandi & Bataineh (2023), the most effective strategy for the existence and sustainable development of an organization is KM activities. This is because KM helps enterprises work more efficiently and operate better, and more importantly, it is knowledge-based (Alnoor, 2020). Within this framework, IC plays a key role in efforts to improve enterprise performance (Hesniati & Erlen, 2021). At the same time, it represents a valuable intangible asset and how it can help enhance INC of enterprise (Santoro et al., 2020).

In the context of large enterprises, effective KM positively influences organizational competitiveness and innovation leading to improved organizational performance (OP) (Torabia & El-Den, 2017). However, KM in SMEs is still a new research area (Kurniawati et al., 2019; Durst et al., 2022). In particular, KM that combines both knowledge inside and outside the enterprise has not yet been discovered (Durst et al., 2022). Is this viewpoint appropriate and correct in the context of SMEs? Although KM is a particularly important factor for businesses of all sizes. However, most previous studies have focused on large businesses but forget that SMEs have a major need to acquire and exploit their knowledge base (Hutchinson & Quintas,

2008). While KM across organizations is based on the realization that enterprises use knowledge sources inside and outside the enterprise to generate IC for INC improvement, as well as enterprise efficiency (Santoro et al., 2018). Tacit knowledge acquired from relevant external partners is essential sources of knowledge to improve performance (Barkat et al., 2018). Therefore, open innovation is considered a new approach to integrating knowledge sources inside and outside the enterprise to improve products and processes, as well as make KM activities more effective (Bigliardi et al., 2020). On the other hand, the recent COVID-19 pandemic has had a very negative impact on the existence and development of SMEs. In this situation, SOC brings great benefits to SMEs (Sarwar et al., 2021). This is because SOC has a positive influence on competitive advantage, as well as organizational SUP (Zhang et al., 2019b). However, regarding the basic components of IC, SOC has been rarely mentioned in previous studies (Asiaei & Jusoh, 2015). Specifically, there is a lack of studies investigating the indirect effects of SOC in SMEs, therefore more experimental studies on this effect are needed (Sarwar et al., 2021). One of them is the SOC which creates the foundation for cooperation and collaboration among individuals, it is essential to carry out innovative activities, and SOC is a major contributor to OP (Daud & Yusoff, 2011). According to Amarathunga & Wijethunga (2022), the concept of SOC is effectively applied by SMEs of developed economies. However, in developing countries, there is less interest in this concept (Nishantha et al., 2011), and Vietnam is no exception. Besides, in the context of SMEs in developing countries, there is little research examining the influence of SOC on their success (Amarathunga & Wijethunga, 2022). Regarding SMEs, according to Durst & Edvardsson (2012), research on KM in SMEs is not highly appreciated by reputable journals, plus the publishing pressure of scholars, so it is difficult to attract scholars interested in this topic.

Although previous studies have analyzed KM activities and highlighted the effectiveness of applying KM in large enterprises (Durst & Edvardsson, 2012). However, in the context of SMEs, both its theoretical framework and practical effect are still very restrained (Hung et al., 2011; Ngha & Wong, 2020). In particular, previous studies that are relevant to SMEs in developing countries, the concepts of KM, innovation, and OP rarely appear together in the same model (Kurniawati et al., 2019). Besides, there is also a new research trend related to corporate social responsibility and its relationship with variables such as OP and competitive dominance in SMEs (Albort-Morant et al., 2018). Alraja et al. (2022) argue that all organizations invest in technology improvement to apply lasting green practices. Within this framework, changing input materials, improving processes, innovating technology, and minimizing harmful impacts on the environment have become primary care for organizations (Seuring & Gold, 2013). KM is closely related to performance but there is little research focusing on KM and its impact on SUP (Demir et al., 2021). From the above observations, the purpose of this study is to examine the effects of IC and SOC on INC, as well as SUP through KM in SMEs in Vietnam. Three specific objectives are discussed: (1) the relationships between IIC, EIC, and SOC with KM activities; (2) the relationships between KM activities and INC, as well as SUP; and (3) the relationship between INC and SUP. At the same time, consider the relationship between KM and SUP with the intermediary role of INC.

The remaining content of this paper includes: Section 2 - Literature review, hypotheses and conceptual model; Section 3 - Methodology; Section 4 - Data analysis and results; Section 5 - Discussion of research results; and Section 6 - Conclusion.

LITERATURE REVIEW, HYPOTHESES AND CONCEPTUAL MODEL

Literature Review

Definition of Intellectual Capital

IC is an intellectual resource that is synthesized, captured, and applied to generate organizational prosperity (Qurashi et al., 2020). IC is defined as the synthesis of intangible resources, organizational structure and culture, and relationships with various partners that can enable enhance organizational capability and performance (Mubarik et al., 2021). IC includes many different components, and many documents show their positive relationship with improving organizational INC (Javed et al., 2023). The concept of IC is interpreted differently by researchers from various backgrounds. However, the three most common components of IC in most previous studies include: human capital (HC), structural capital (SC),

and relational capital (RC) (Mubarik et al., 2021). For context, IIC includes employee knowledge (HC) and culture within the enterprise (SC), and is the foundation of innovation (Akram et al., 2011). Specifically, the most important dimension of IC is HC because employee capability is reflected through the enterprise performance (Obeidat et al., 2017). HC is a particularly important factor in an organization because the development and performance that an organization can achieve depends entirely on the capability of the employees within that organization (Jayanti & Romli, 2023); and SC includes “all non-human knowledge repositories” within the organization (Inkinen, 2015). It refers to the collective know-how, the processes embedded in daily work, and is owned by the enterprise. The main purpose of SC is to support the transformation of HC to IC (Edvinsson & Sullivan, 1996). In addition, EIC is RC, it refers to all of an enterprise’s relationships with innovation resources outside the enterprise such as customers, suppliers, competitors, universities, and other cooperation partners (Chen et al., 2015). RC is a form of open innovation. Through RC, organizations can expand their learning networks and gain new methods from the experiences of others to carry out tasks. In this way, organizations become more innovative (Ju et al., 2006).

Based on a strategic perspective, IC helps to implement KM strategy, which is used to create and use knowledge for enterprise development (Paoloni et al., 2020). Qurashi et al. (2020) showed that IC has a positive effect on OP through the intermediary role of organizational innovation.

Definition of Social Capital

Since SOC is a contemporary concept, it has generated many different definitions, evaluated in different stages of research, and generated many important concepts that make use of the theoretical and applied literature (Amarathunga & Wijethunga, 2022). According to Inkpen & Tsang (2005), SOC is the synthesis of resources attached to networks of relationships between organizations and individuals. SOC consists of a network of relationships between groups of people with similar goals who cooperate together to gain those goals effectively. Similarly, SOC consists of a network of relationships between different groups of people who cooperate together in groups to gain joint goals effectively (Wang, 2023). On the other hand, SOC are social links between managers of one organization or enterprise and managers in other organizations or enterprises, including organizations are the relevant external cooperation partners, financial or non-financial institutions, and Government organizations or State agencies (Zhang et al., 2019a). It is formed based on management constraints and is one of the factors contributing to the development of enterprise IC resources (Sheng et al., 2011). The theory has shown two aspects of SOC including: business relations (BUR) and political relations (POR) (Krammer & Jimenez, 2020). In which, BUR is considered as managing social relationships with managers of other organizations; and POR are relationships with leaders in government agencies. These relationships are important motivators for enterprises to access scarce resources from external partners and valuable information from the Government that is related to survival and development of the enterprise (Shu et al., 2012). According to Amarathunga & Wijethunga (2022), when investigating the effect of SOC on the development of SMEs, many studies have shown that SMEs are greatly affected by their SOC. Also, Julsrud (2023) argues that SOC can supplement and enrich a more solid view of sustainability research. Indeed, in the sustainable development literature, SOC has been shown to be essential for building resilience, managing scarce resources, promoting entrepreneurship, and improving people’s health (Aldrich & Meyer, 2015).

Although there are different definitions and aspects of SOC are considered. However, previous studies have extensively studied the two main binding aspects for the development of SOC, namely: business relations and political relations as the premise of other factors, such as OP (Wu, 2011), INC (Krammer & Jimenez, 2020), and absorptive capacity (Kotabe et al., 2017), are all relevant aspects of this study.

Definition of Knowledge Management

KM practices include a series of effective activities such as acquiring, disseminating, and applying knowledge to improve productivity, as well as OP (Azyabi, 2018). Similarly, KM is a systematic approach to improving OP, through the following three activities: knowledge acquisition (KAC), knowledge sharing (KSH), and knowledge application (KAP) (Augier & Teece, 2009). KM-related activities include employee capabilities, enterprise INC, IT infrastructure, as well as the organizational structure to generate, store,

apply, and share information and knowledge among all of the members (Omerzel, 2010). However, many studies have emphasized that the following three activities: KAC, KSH, and KAP form the KM process in most definitions of KM, by incorporating storage and KAP together (Alfandi & Bataineh, 2023).

Omerzel (2010) showed that KM contributes significantly to the performance of SMEs and that their good KM has a positive impact on the success of SMEs. According to Hussain et al. (2019), KM has a positive effect on INC, thereby leading to competitive advantage. In other words, an enterprise's ability to manage knowledge is paramount in value creation (Martelo et al., 2013). There is a consensus that IC serves as a strategic management toolkit which is related to KM activities because managers or enterprise owners can use it to enhance OP (Paoloni et al., 2020).

Innovation Capability

INC is a competitive advantage for enterprises in creating value through leveraging IC (Javed et al., 2023). INC is a unique ability to gain competitive advantage in today's context. It enables organizations to meet the ever-changing customer needs by providing products and services according to their needs (Le et al., 2020). Besides, INC represents an enterprise's ability to introduce new knowledge and technology, leading to the creation of new and more environmentally friendly products and services (Wonglimpiyarat, 2010). According to Subramaniam & Youndt (2005), an organization's INC is significantly influenced by its IC. This is consistent with the view of Alvino et al. (2020) said that an organization's INC depends entirely on its IC.

Open Innovation

Open innovation is innovation that is based on knowledge sources acquired from inside and outside the organization (Chiaroni et al., 2011). Therefore, both knowledge and ideas acquired from outside the organization, as well as available capabilities within the organization, are also important for open innovation processes (Brunswick & Vanhaverbeke, 2015). Open innovation is characterized by internal and external, and through KSH, enterprises can achieve more success than with closed innovation because it involves exploiting knowledge acquired externally (Lyu et al., 2020).

Open innovation provides resources for an enterprise to create value through interactions between customers and enterprises to co-build product and service experiences, and it becomes important to enable capabilities for organizations in competitive markets (Janteng & Tan, 2017). Some notable empirical evidence shows that IC is particularly related to innovation performance (Wang & Chen, 2013). In particular, by unlocking intellectual capacity through RC (EIC) and SOC (i.e., open innovation) (Hussinki et al., 2017).

Sustainable Performance

Sustainability involves keeping the natural environment is not destroyed for present and future generations, and reducing the negative effect of enterprises on public health, social welfare, and economic growth, as well as implementing green innovation activities (Shabana, 2023). Sustainability refers to achieving long-term prosperity and involves all three of the following dimensions simultaneously: ecological, social, and economic (Alfandi, 2020). This is a comprehensive approach and is applicable in all sectors and for all sustainable development drivers of enterprises (Alfandi & Bataineh, 2023). With this approach, enterprises still achieve financial profits while still complying with ecological and social conditions (Cohen & Winn, 2007).

Organizational sustainability is a particularly important issue for all types of enterprises because it minimizes risk and ensures the organization's existence and stable development in a constantly changing market context (Carayannis et al., 2015). According to Alraja et al. (2022), the unique solution to achieve SUP is to adopt sustainable green practices. The most accepted view on SUP is that of Elkington (1994), who considered SUP in three dimensions: economic performance (ECP), social performance (SOP), and environmental performance (ENP) (Syahidun & Nurhayati, 2023; Alfandi & Bataineh, 2023). In particular, According to Alfandi & Bataineh (2023), ECP is an organization's ability to reduce costs related to energy consumption, waste treatment, and fines due to environmental incidents, etc.; SOP is an organization's

ability to improve the welfare, and health and safety of the community, risks to the public, the occupational health and safety of its employees, and the satisfaction of customers and other relevant partners; and ENP is an organization's ability to reduce emissions, energy consumption, hazardous materials, and comply with environmental standards (Alfandi & Bataineh, 2023).

Small and Medium-sized Enterprise

SMEs are enterprises that are small in size in terms of capital, labor or revenue. In the world, there is no unified definition of SMEs across countries. To facilitate data collection, this study is relied on the criterion of employee amount in an enterprise (Burgess et al., 2009). In Vietnam, micro, small, and medium enterprises are the abbreviation for SMEs. In particular, micro enterprises have no more than 10 employees, small enterprises have no more than 50 employees (trade, services) or no more than 100 people (other fields), and medium enterprises have no more than 100 employees (trade, services) or no more than 200 employees (other fields).

Hypotheses

The Influence of IIC on KAC

KAC is one of the core functions of organizational learning, which will promote organizational development through the knowledge absorption process (Nodari et al., 2016). In SMEs, knowledge acquisition and dissemination contribute significantly to the process of creating new knowledge. In this way contributes to alleviating their resource shortage. In particular, employee intelligence (HC) represents the organization's personal knowledge base that significantly affects their absorptive capacity (Valentim et al., 2015). Besides, Edvinsson & Sullivan (1996) pointed out that the infrastructure that encourages employees within an organization to create and leverage their knowledge is SC. For this reason, enterprises with good SC will give their employees the opportunity to learn, make mistakes and self-correct when performing their duties, thereby contributing significantly to the development of enterprise (Roos et al. al. (2001). These resources help enterprises develop new markets, increase productivity, enhance their image, and maintain competitive advantage (Yusliza et al., 2019). From there, the statement of hypothesis H1 is:

H1: *IIC has a positive influence on KAC*

The Influence of IIC on KSH

Today, enterprises rely heavily on the knowledge assets they own in the form of employees of the organization. HC's educational level, skills, and experience serve as a competitive advantage if it is exploited and applied in the daily activities of an organization (Afsheen et al., 2015). Therefore, knowledge is not only shared and transferred within the organization but also embedded in the organization's routine (Llopis & Foss, 2016). Through facilitated interaction and communication and by using Nonaka's (1994) knowledge creation spiral model, new knowledge will be created. it suggests that new knowledge created in an organization depends on the quality of its human resources (Roos et al., 2001). From there, the statement of hypothesis H2 is:

H2: *IIC has a positive influence on KSH*

The Influence of IIC on KAP

Knowledge assets are located in the database, knowledge bases, file cabinets, and in the heads of all employees and are distributed within the organization. Knowledge application can enhance creative activities (Byukusenge et al., 2016). KM creates value by converting HC into organizational intellectual assets (Liu et al., 2005). When enterprises apply KM practices, KAP, KSH, and competitive advantage will increase. Creating and exploring knowledge, distributing and transferring knowledge consistently, and researching and applying that knowledge to achieve organizational goals are all functions of the KM process (Alfandi & Bataineh, 2023). KAP is directly related to OP. (Aliyu, 2015). From there, the statement of hypothesis H3 is:

H3: IIC has a positive influence on KAP

The Influence of EIC on KAC

An organization's competitive advantage depends on the knowledge acquired from partners outside the organization through a process of continuous learning (Ju et al., 2006). Therefore, both intellectual properties developed internally, as well as knowledge and technology acquired and exploited externally, all these activities help the progress of the organization (Lima & Santos, 2018). The ability to discover and use external knowledge effectively are two of the important functions for enterprises interested in achieving innovative results and higher benefits (Cohen & Levinthal, 1990). In addition, organizational relationships, business networks, and connections with stakeholders play an important role in KAC and scarce resources (Zhang et al., 2019a). According to Muscio (2007), the aggregate of HC's capabilities, experience, and intelligence demonstrates the organization's individual knowledge base, which has a positive influence on the overall ability to acquire external knowledge. From there, the statement of hypothesis H4 is:

H4: EIC has a positive influence on KAC

The Influence of EIC on KSH

Laursen & Salter (2006) have shown that, collaborating with various external organizations to use EIC resources to improve innovation performance. According to Widjojo et al. (2019), exchanging and integrating external resources for innovation is a sustainable development strategy for SMEs. Hence, enterprises should orient or design their business models in an open direction to improve INC. Indeed, more and more researches recognize that enterprises connecting with customers and with their more active participation have created a source of competence for enterprises (Chuang & Lin, 2015). Besides, knowledge exchange is an essential tool to maintain lasting relationships with external partners (Tonial et al., 2019). From there, the statement of hypothesis H5 is:

H5: EIC has a positive influence on KSH

The Influence of EIC on KAP

The rapidly changing environment and advances in science and technology are promoting enterprises to mainly use knowledge outside the organization to improve INC, as well as OP (Zhu et al., 2011). Relationships with customers, suppliers, competitors, and partners in collaborative ventures have significant potential for knowledge transfer, a potential that is rarely fully utilized (Yip et al., 2012). Relationships with stakeholders contribute significantly to the sustainable prosperity of the organization (Yusliza et al., 2019). Externally acquired knowledge can fill the organization's knowledge store and be used for value creation purposes. KAP is about putting knowledge into practice through creating more innovative products and services (Alkhazali et al., 2017), and ultimately improving OP (Ali et al., 2022). From there, the statement of hypothesis H6 is:

H6: EIC has a positive influence on KAP

The Influence of SOC on KAC

SOC is an important tool for SMEs because it can help SMEs improve their INC (Amarathunga & Wijethunga, 2022). SOC provides potential resources that can be accessed and acquired from the networks of ties formed and developed between different groups of people in society for common goals (Wang, 2023). SOC is formed by managers through personal connections, it builds relationships and networks based on a policy of giving and receiving (Sheng et al., 2011). Sarwar et al. (2021) argued that SOC management brings unprecedented benefits to organizations, especially SMEs that are facing the challenges of scale and limited resources. Through these relationships, managers can expand their business operations, seize new opportunities, and approach new knowledge and technology, etc. To be more precise, aspects of SOC have a positive impact on KAC (Grandinetti, 2016). From there, the statement of hypothesis H7 is:

H7: *SOC has a positive influence on KAC*

The Influence of SOC on KSH

Sharing is often a product and expression of SOC and can help build or maintain that SOC (Julsrud, 2023). In SMEs, information and knowledge sharing is done through network links (Uzzi, 1997). According to Julsrud (2023), communities with well-developed social networks are better positioned to spread information about events and sharing opportunities, facilitate network-based learning, and build standards for promoting sharing activities. Indeed, Kim & Shim (2018) showed that SOC positively affects the KSH process. From there, the statement of hypothesis H8 is:

H8: *SOC has a positive influence on KSH*

The Influence of SOC on KAP

In organizations, innovation capability can be improved through SOC (Agostini & Nosella, 2017). An organization's success depends on the different sources of knowledge that its employees can acquire through social relationships. These knowledge sources are only useful if they are combined, transformed, and transferred to all employees during the KAP process (Alejandro et al., 2011). According to Singh & Rao (2016), KAP refers to the process that focuses on using practical knowledge to perform certain tasks, specifically, KAP is the use of knowledge to create competitive advantage through improving INC and enhancing OP. From there, the statement of hypothesis H9 is:

H9: *SOC has a positive influence on KAP*

The Influence of KAC on INC

KM can help SMEs obtain better skilled and talented human resources (Burcharth et al., 2014), as well as more internal and external KAC with the help of IT (Huang et al., 2014). Organizations should combine both internally developed and externally acquired new knowledge to improve INC (new products, services, and processes), as well as OP (productivity, quality, etc.), it is because IC is the foundation for an organization to create added value and excel development (Hesniati & Erlen, 2021). Non-competing external partners (universities, research institutes, consultants, etc.) can help SMEs to be more innovative (Ahn et al., 2015). Besides, effective network capability of SMEs can help them significantly enhance their INC (Sarwar et al., 2021). On the other hand, knowledge is acquired or absorbed outside the organization has a strong correlation with INC (Messa & Testa, 2004). From there, the statement of hypothesis H10 is:

H10: *KAC has a positive influence on INC*

The Influence of KAC on SUP

IC and SOC are considered essential intangible resources for organizations to achieve sustainable competitive advantage. Among them, EIC and SOC are important components that increase an enterprise's IC through knowledge acquisition or absorption activities. Knowledge can be exploited and acquired within an enterprise through different approaches to gain competitive advantage through IC (Yusliza et al., 2019). According to Lu et al. (2021), IC of an enterprise is an invisible internal power that helps create dynamic capabilities that every enterprise must take advantage of them for the goal of enhancing INC and SUP. According to Nawaz et al. (2014), improving competitive advantage, enhancing INC, and maintaining SUP are the results of the KAC process. From there, the statement of hypothesis H11 is:

H11: *KAC has a positive influence on SUP*

The Influence of KSH on INC

KSH is one of the important functions of organizational learning (Heisig et al., 2016). New knowledge is created through the KSH process (Zhang et al., 2009). Innovation and creative activities can be stimulated

by IC and KSH (Shujahat et al., 2019). Therefore, KSH is considered a valuable input for innovation (Li et al., 2019). KSH can successfully promote an innovation project, this is because KSH creates opportunities to solve problems and improve problem-solving efficiency (Lin, 2007). Many studies have shown that convenient KSH can generate new ideas, thereby increasing employees' intrinsic motivation and ultimately increasing innovation efficiency (Heffner & Sharif, 2008). On the other hand, according to Ologbo et al. (2015), INC is significantly influenced by KSH. From there, the statement of hypothesis H12 is:

H12: KSH has a positive influence on INC

The Influence of KSH on SUP

Knowledge can be transferred, shared, developed, and improved as the intellectual property of an organization (Wiig, 1997). Besides, internal and external factors can have impacts on enterprises' sustainable development initiatives (Alfandi & Bataineh, 2023). According to Shahzad et al. (2020), the sustainable development of an enterprise depends on its capacity to absorb and share knowledge. Specifically, INC, OP, and the quality of decisions made within the organization can be increased through knowledge sharing and dissemination among parties (Rafique et al., 2018). Indeed, in an organization, OP depends heavily on knowledge sharing and transfer activities (Heisig et al., 2016). Tacit and explicit knowledge is shared between different partners, facilitating the improvement of SUP (Kordab et al., 2020). From there, the statement of hypothesis H13 is:

H13: KSH has a positive influence on SUP

The Influence of KAP on INC

INC brings enterprises the potential to create new resources so they can differentiate themselves from competitors (Hertog et al., 2010). Hussain et al. (2019) argued that the combination of KM activities can help SMEs achieve higher levels of innovation. Therefore, INC is the output of the KM process (Hogan et al., 2011). In particular, KAP is associated with the processes of storing, retrieving, applying, and sharing (Daud & Yusoff, 2011). It is an important process to gain competitive advantage (Ode et al., 2017). The reason is that, when KAP takes place, new knowledge that is combined and synthesized becomes useful for creating products, processes, or services that have value (Daud & Yusoff, 2011). From there, the statement of hypothesis H14 is:

H14: KAP has a positive influence on INC

The Influence of KAP on SUP

According to the knowledge-based view, the basis for achieving competitive advantage is KAP (Ode et al., 2017). Organizational knowledge-based resources are important factors that help organizations survive and operate more effectively (Kim & Gong, 2009), thereby improving OP (Liao & Wu, 2009). These resources serve as sustainable competitive advantages if they are used to implement value creation strategies (Egbetokun, 2015). According to Abeysekera (2021), acquired knowledge enables enterprises to achieve sustainable competitive advantage through the application of knowledge into practice appropriately. Thus, knowledge, if used and leveraged properly, can drive organizations to become more competitive, more innovative, and more sustainable (Alawneh et al., 2009). From there, the statement of hypothesis H15 is:

H15: KAP has a positive influence on SUP

The Influence of INC on SUP

Developing and organizing new distinctive capabilities and innovation is the cause of SUP (Comin et al., 2019). Andrew & Sirkin (2006) argued that OP (financial or non-financial performance) can only be achieved through innovation and the successful management of innovations. In strategic management, the

sustainable development performance of enterprises is related to their ability to manage innovations to be able to adapt to the complexity and constant change of the environment (Sadikuglu & Zahir, 2010). In the context of SMEs, efficiency and sustainable development goals can only be achieved through innovation with the support of appropriate technologies and processes (Alraja et al., 2022). In addition, product, process, and technological innovation along with eco-innovation tend to reduce costs and negative impacts on the environment, while improving product quality and product or service delivery and maintain SUP (Asni & Agustia, 2021). This shows that an organization's capacity becomes a prerequisite for achieving higher SUP (Jardon & Martos, 2012). From there, the statement of hypothesis H16 is:

H16: *INC has a positive influence on SUP*

The Influence of Enterprise Size and Enterprise Age on SUP

Enterprise size (ENS) and enterprise age (ENA) have a positive influence on enterprise survival (Park et al., 2010). Indeed, ENA represents the organizational experience and capacity, it helps enterprises to develop more efficiently (Sørensen & Stuart, 2000). In addition, ENS has a positive influence on innovation and OP because large enterprises often allocate more resources to invest in innovation. Furthermore, ENS is often considered as a control variable in efficiency-related studies (Kimberly & Evanisko, 1981). Additionally, OP is also affected by ENA (Rosenbusch et al., 2011). From there, the statement of hypotheses H17 and H18 are:

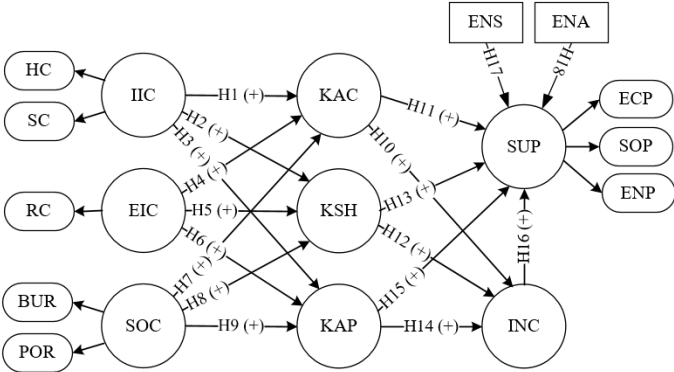
H17: *There is a difference in SUP according to ENS*

H18: *There is a difference in SUP according to ENA*

Conceptual Model

According to the above hypotheses, the conceptual model presented in Figure 1 was proposed.

**FIGURE 1
CONCEPTUAL MODEL AND HYPOTHESES**



METHODOLOGY

Measurement Scales of Concepts

Based on the scales in previous studies, the scales of the concepts in this study are shown in Table 1.

TABLE 1
SCALES OF THE CONCEPTS

Scales		Number of variables	Inherited studies
IIC	HC	4	Khalique et al. (2018)
	SC	6	
EIC	RC	4	
SOC	BUR	3	Zhang et al. (2019a)
	POR	3	
KM	KAC	3	Balasubramanian et al. (2020)
	KSH	3	
	KAP	4	
INC	INC	6	Calantone et al. (2002)
SUP	ECP	5	Zhu et al. (2008)
	SOP	5	Paulraj (2011)
	ENP	5	Laosirihongthong et al. (2013)

To make sure of the scales' validity, a qualitative study has been conducted by talking directly with two directors, three deputy directors, three department heads, two deputy departments, who are working at SMEs in Ho Chi Minh City, Vietnam. Then, to suit the research context, the wording was edited. A 5-point Likert scale was used in this study.

Data Collection Method

The questionnaires were sent to managers (including: director or deputy director and department head or deputy department head) who have been working at SMEs based on convenience and regardless of the field of activity as (1) the purpose of this study is to analyze the role of KM related to external knowledge absorption and knowledge dissemination within the enterprise, i.e., focusing on the employees' knowledge absorption capability (Cohen & Levinthal, 1990). Therefore, the survey respondents should focus on SMEs that are more interested in innovation issues (Muscio, 2007). Besides, in the current situation (post-COVID-19) forcing SMEs must innovate to operate sustainably (Winarsih et al., 2021). Therefore, it can be affirmed that SMEs are existing and developing in this situation, more or less interested in innovation; and (2) the concepts of INC and SUP in this study are considered from the perspective of enterprises. Therefore, each SME is a unit of analysis and the sample unit is a manager who directly runs or understands the activities of their enterprise.

Approximately 3 months of data collection, 260 questionnaires were collected back. Among them, the valid questionnaires were 238, reaching a rate of 91.54%. SPSS and AMOS software were used to evaluate the reliability of the scales, CFA and SEM analysis to test the hypotheses. With the research goal is to test and confirm theory. Therefore, CB-SEM is a suitable method (Hair et al. (2011). Besides, the CFA stage of CB-SEM allows all latent constructs to covary mutually and thereby permits the quantitative assessment of both convergent and discriminant validity for each construct (Hair et al. al., 2014).

DATA ANALYSIS RESULTS

Description of the Research Sample

Detailed descriptive information of the 238 valid respondents is presented in Table 2.

TABLE 2
DESCRIPTIVE STATISTICAL RESULTS

Sample information	Frequency	Percent	Sample information	Frequency	Percent
Position			Respondent's age		
Director/deputy director	46	19.3	From 18 to 25	12	5.0
Manager/deputy manager	192	80.7	From 26 to 35	105	44.1
Degree			From 36 to 45	89	37.4
College	53	22.3	From 46 to 55	31	13.0
Graduate	171	71.8	Over 55	1	0.4
Postgraduate	14	5.9	Enterprise size (number of people)		
Enterprise age (number of years)			Less than 10	28	11.8
From 1 to 5	40	11.5	From 10 to 49	117	49.2
From 6 to 10	143	41.2	From 50 to 99	62	26.1
From 11 to 15	114	32.9	From 100 to 149	22	9.2
Over 15	50	14.4	From 150 to 200	9	3.7

Evaluate the Reliability of the Scales

The results of Cronbach's Alpha test are summarized in Table 3.

TABLE 3
ALPHA COEFFICIENTS OF THE VARIABLES

No.	Scales	Observed variables	Cronbach's Alpha
1	HC	HC1, HC2, HC3, HC4	0.943
2	SC	SC1, SC2, SC3, SC4	0.912
3	RC	RC1, RC2, RC3, RC4	0.788
4	BUR	BUR1, BUR2, BUR3	0.716
5	POR	POR1, POR2, POR3	0.857
6	KAC	KAC1, KAC2, KAC3	0.816
7	KSH	KSH1, KSH2, KSH3	0.855
8	KAP	KAP1, KAP2, KAP3	0.892
9	INC	INC1, INC2, INC3, INC4, INC5	0.855
10	ECP	ECP1, ECP2, ECP3	0.822
11	SOP	SOP1, SOP2, SOP3	0.806
12	ENP	ENP2, ENP3, ENP4, ENP5	0.874

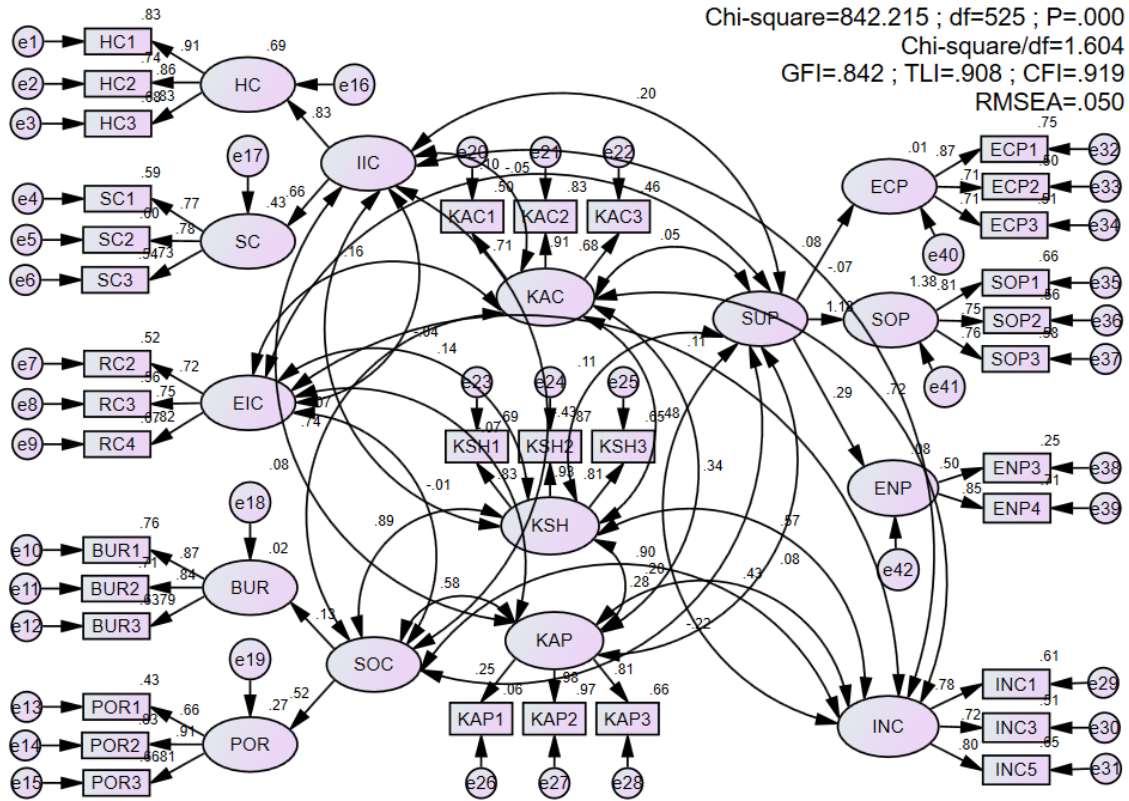
After testing the reliability of 12 scales with 43 observed variables. The results show that the ENP1 variable was eliminated. Besides, alpha coefficients of all scales are greater than 0.7 and corrected item-total correlation coefficients are all greater than 0.3, so all scales are reliable (Hair et al., 2010). The remaining 42 variables continue to be used for the following analyses: CFA, SEM, and Bootstrap.

CFA, SEM, and Bootstrap Analysis

Confirmatory Factor Analysis (CFA)

The suitability of the scale model is based on the following conditions: (1) $CMIN/df < 2$, $GFI \geq 0.8$, $TLI \geq 0.9$, $CFI \geq 0.9$, $RMSEA \leq 0.08$, $p < 0.05$; and (2) Standardized Loading Estimates ≥ 0.5 and $CR \geq 0.7$, $AVE \geq 0.5$, $MSV < AVE$ (Baumgartner & Homburg, 1996; Hair et al., 2010). The CFA results (presented in Figure 2) show that the current model fits the research data.

**FIGURE 2
SCALE MODEL**



The results of measuring reliability, convergence, and discrimination (presented in Table 4) show that the CR values of all variables > 0.7. Thus, CR of these scales is good and accepted. Besides, the AVE values of all scales > 0.5. Thus, the measurement scales of the variables ensure convergence. On the other hand, the square root of AVE is larger than the correlations between latent variables and the MSV value is smaller than AVE. Therefore, distinctiveness is guaranteed (Hair et al., 2010).

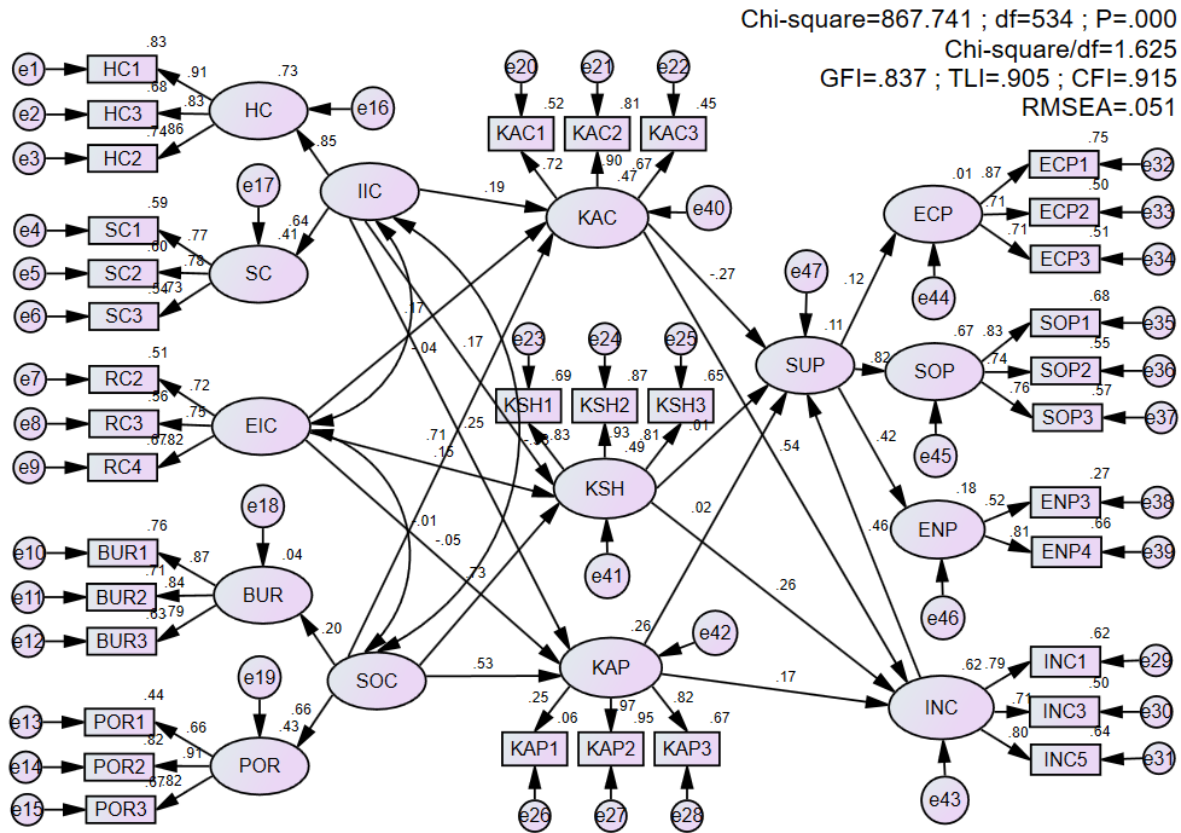
**TABLE 4
RELIABILITY, CONVERGENCE, AND DISCRIMINANT MEASUREMENT RESULTS**

	CR	AVE	MSV	MaxR(H)	INC	SOC	EIC	KAC	KSH	KAP	SUP	IIC
INC	0.886	0.721	0.020	0.893	0.849							
SOC	0.788	0.650	0.426	0.801	0.006	0.806						
EIC	0.800	0.584	0.071	0.887	0.054	0.135	0.764					
KAC	0.908	0.767	0.634	0.909	0.029	0.500	0.081	0.876				
KSH	0.838	0.636	0.292	0.879	-0.087	0.540	0.043	0.381	0.798			
KAP	0.782	0.563	0.307	0.883	0.091	0.455	0.016	0.520	0.291	0.750		
SUP	0.755	0.515	0.007	0.816	-0.012	-0.057	0.066	-0.081	-0.048	0.002	0.718	
IIC	0.783	0.649	0.634	0.872	0.141	0.653	0.267	0.796	0.488	0.554	0.008	0.806

Structural Equation Modeling (SEM)

The results of SEM analysis (presented in Figure 3) show that the current model fits the research data.

FIGURE 3
STANDARDIZED SEM MODEL



Standardized Regression Weights are summarized in Table 5.

TABLE 5
STANDARDIZED REGRESSION WEIGHTS

Hypotheses	Parameter	Estimate	Lower	Upper	P	Result
H1	KAC <--- IIC	.191	.023	.572	.033	Accepted
H2	KSH <--- IIC	.174	.015	.443	.027	Accepted
H3	KAP <--- IIC	.253	.092	.579	.002	Accepted
H4	KAC <--- EIC	.169	.041	.369	.019	Accepted
H5	KSH <--- EIC	.149	.014	.302	.035	Accepted
H6	KAP <--- EIC	-.053	-.216	.091	.399	Rejected
H7	KAC <--- SOC	.708	.529	.957	.008	Accepted
H8	KSH <--- SOC	.726	.581	.888	.006	Accepted
H9	KAP <--- SOC	.528	.274	.751	.009	Accepted
H10	INC <--- KAC	.545	.360	.740	.009	Accepted
H11	SUP <--- KAC	-.266	-.917	.202	.142	Rejected
H12	INC <--- KSH	.260	.064	.432	.012	Accepted
H13	SUP <--- KSH	.005	-.300	.246	.891	Rejected

Hypotheses	Parameter	Estimate	Lower	Upper	P	Result
H14	INC <--- KAP	.171	.054	.344	.009	Accepted
H15	SUP <--- KAP	.022	-.298	.191	.945	Rejected
H16	SUP <--- INC	.460	.020	.943	.040	Accepted

Examining the relationship between KM and SUP with the mediating role of INC. The results of Bootstrap testing with 95% reliability level (summarized in Table 6) show that the Sig. value of KAC, KSH, and KAP are 0.026, 0.025, and 0.016 respectively, all less than 0.05 (5% significance level), so there is no direct affect from KM on SUP. Thus, there is an intermediate relationship from KM (including KAC, KSH, and KAP) to SUP.

TABLE 6
STANDARDIZED INDIRECT EFFECTS SIGNIFICANCE

	EIC	IIC	SOC	KAP	KSH	KAC	INC	SUP
KAP	...	...	...	...	...	...	...	...
KSH	...	...	...	...	...	...	...	...
KAC	...	...	...	...	...	...	...	...
INC	.046	.002	.005	...	...	...	...	...
SUP	.657	.110	.182	.016	.025	.026	...	...

ANOVA Test

Post-Hoc Test Between Two Variables ENS and SUP

Post-Hoc test results between ENS and SUP are summarized in Table 7.

TABLE 7
POST HOC TESTS MULTIPLE COMPARISONS

Multiple Comparisons						
Dependent Variable: SUP						
LSD						
(I) ENS	(J) ENS	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 10 people	From 10 - 49 people	.25937*	.11969	.031	.0236	.4952
	From 50 - 99 people	.23289	.13060	.076	-.0244	.4902
	From 100 - 149 people	.21949	.14890	.142	-.0739	.5129
	From 150 - 200 people	.06771	.20147	.737	-.3292	.4647
From 10 - 49 people	Under 10 people	-.25937*	.11969	.031	-.4952	-.0236
	From 50 - 99 people	-.02649	.08663	.760	-.1972	.1442
	From 100 - 149 people	-.03988	.11234	.723	-.2612	.1815
	From 150 - 200 people	-.19167	.17618	.278	-.5388	.1555
From 50 - 99 people	Under 10 people	-.23289	.13060	.076	-.4902	.0244
	From 10 - 49 people	.02649	.08663	.760	-.1442	.1972
	From 100 - 149 people	-.01339	.12389	.914	-.2575	.2307
	From 150 - 200 people	-.16518	.18377	.370	-.5272	.1969
From 100 - 149 people	Under 10 people	-.21949	.14890	.142	-.5129	.0739
	From 10 - 49 people	.03988	.11234	.723	-.1815	.2612

	From 50 - 99 people	.01339	.12389	.914	-.2307	.2575
	From 150 - 200 people	-.15179	.19720	.442	-.5403	.2367
From 150 - 200 people	Under 10 people	-.06771	.20147	.737	-.4647	.3292
	From 10 - 49 people	.19167	.17618	.278	-.1555	.5388
	From 50 - 99 people	.16518	.18377	.370	-.1969	.5272
	From 100 - 149 people	.15179	.19720	.442	-.2367	.5403

*. The mean difference is significant at the 0.05 level.

From the results of Table 7, it shows that there is a statistically significant difference between the two groups of enterprises with a size of under 10 people and from 10-49 people (Sig.=0.031 < 0.05). This proves that the SUP of the group of enterprises with under 10 people is significantly greater than the group of enterprises with 10-49 people.

Post-Hoc Test Between Two Variables ENA and SUP

Post-Hoc test results between ENA and SUP are summarized in Table 8.

**TABLE 8
POST HOC TESTS MULTIPLE COMPARISONS**

Multiple Comparisons						
Dependent Variable: SUP						
LSD						
(I) ENA	(J) ENA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
From 1 - 5 years	From 6 - 10 years	.25926	.13340	.053	-.0036	.5221
	From 11 - 15 years	.31040*	.12173	.011	.0706	.5502
	Over 15 years	.24825*	.11487	.032	.0219	.4746
From 6 - 10 years	From 1 - 5 years	-.25926	.13340	.053	-.5221	.0036
	From 11 - 15 years	.05114	.10762	.635	-.1609	.2632
	Over 15 years	-.01101	.09979	.912	-.2076	.1856
From 11 - 15 years	From 1 - 5 years	-.31040*	.12173	.011	-.5502	-.0706
	From 6 - 10 years	-.05114	.10762	.635	-.2632	.1609
	Over 15 years	-.06214	.08355	.458	-.2267	.1025
Over 15 years	From 1 - 5 years	-.24825*	.11487	.032	-.4746	-.0219
	From 6 - 10 years	.01101	.09979	.912	-.1856	.2076
	From 11 - 15 years	.06214	.08355	.458	-.1025	.2267

*. The mean difference is significant at the 0.05 level.

From the results of Table 8, it shows that there is a statistically significant difference (Sig. < 0.05) in the ENA between the following groups: from 1-5 years and from 11-15 years, and from 1-5 years and over 15 years. In particular, the Mean Difference (I-J) value of the group from 1-5 years and 11-15 years is the highest, proving that the SUP of the group from 1-5 years is significantly greater than the group from 11-15 years.

In summary: with 95% reliability, the four rejected hypotheses include: H6, H11, H13, and H15 (presented in Table 5). Accepted hypotheses include: IIC has a positive influence on KAC (H1); IIC has a positive influence on KSH (H2); IIC has a positive influence on KAP (H3); EIC has a positive influence on KAC (H4); EIC has a positive influence on KSH (H5); SOC has a positive influence on KAC (H7); SOC

has a positive influence on KSH (H8); SOC has a positive influence on KAP (H9); KAC has a positive influence on INC (H10); KSH has a positive influence on INC (H12); KAP has a positive influence on INC (H14); and INC has a positive influence on SUP (H16). Besides, INC plays a full intermediary role in the relationship between KM (including KAC, KSH, and KAP) and SUP. On the other hand, there is a difference in SUP according to ENS (H17); there is a difference in SUP according to ENA (H18).

DISCUSSION

Previous studies have shown that KM helps improve enterprises' ability to solve problems, adapt to changes, and maintain competitive advantage. KM is not only an independent management activity but also an important tool to leverage the influence of business orientation on INC and SUP which perhaps should also be managed (Alfandi & Bataineh, 2023). Therefore, appropriate KM will help enterprises improve productivity and maintain sustainable competitive advantage (Wang et al., 2016). Through RC and SOC, new and valuable knowledge can be absorbed from relevant external partners (Janteng & Tan, 2017). This new and valuable knowledge creates a useful source of IC for the organization. Besides, Cohen & Levinthal (1990) and Hsu & Sabherwal (2012) have shown that IC has a positive influence on KM. Therefore, KM is both a result of IC, and a premise for dynamic capabilities, and is also an important intermediary between IC and the dynamic capabilities (Singh & Rao, 2016). A discussion of these findings will be presented in detail below.

Hypotheses 1, 2, and 3 show that IIC includes HC (skills, intelligence, and capacity of employees) and SC (information support infrastructure, integrated management system to serve customers, and the structures, systems, and procedures available in the organization) have a positive influence on KM (including KAC, KSH, and KAP) in SMEs. Indeed, most previous studies confirm that IIC is viewed positively among SMEs. These findings support previous studies by Kurdabadisalehi et al. (2010) and Elda et al. (2020) acknowledge that IIC has a positive influence on KM. Therein, they have added that, there is an essential relationship between HC and KM. In addition, the results of this study are also consistent with the research results of Shahpasand (2013) and Golafshani & Malayeri (2018).

Hypotheses 4 and 5 show that EIC has a positive influence on KAC and KSH. This means that RC (good relationships with customers, complete database of suppliers, and business reputation) is closely related to KAC and KSH. RC is an important asset for enterprises with limited resources (Paoloni & Modaffari, 2022). In particular, SMEs rely on RC to enhance their internal innovation capabilities (Durst et al., 2022). Al-Jabri & Al-Busaidi (2018) have shown that knowledge transfer from outside the organization enhances internal learning because when external knowledge is acquired, it is often new and unknown to employees. This will provide opportunities for developing new competencies as part of the learning process. Therefore, collaboration between organizations can facilitate KSH and interactive learning, thereby realizing innovation (Pérez-Luño et al., 2011).

Hypotheses 7, 8, and 9 show that SOC has a positive influence on KAC, KSH, and KAP. In particular, SOC includes the following two dimensions: BUR (including the relationships of business leaders with leaders of other organizations such as customers, suppliers, and other organizations in the same industry) and POR (including personal relationships and networks between enterprise leaders and leaders at various levels of government and public institutions). SOC is a key concept for understanding collaborative advantage in the pursuit of value creation (Alves & Edvardsson, 2019) and is the foundation of innovation (Subramaniam & Youndt, 2005). Martínez-Cañas et al. (2012) recognized that KAC plays a full intermediary role in the relationship between SOC and INC. Besides, Huang & Li (2009) also found that the dissemination of knowledge throughout the organization enables further innovation development and plays an intermediary role between SOC and technical and administrative innovation. Additionally, Dabić et al. (2018) emphasize the importance of SOC in generating innovation.

Hypotheses 10, 12, and 14 show that both KAC, KSH, and KAP have a positive influence on INC in SMEs. These findings are consistent with the results of Tan & Nasurdin (2010), as well as those of Medina & Rufin (2009) who confirmed a positive and significant relationship between effective KM (including KAC, KSH, and KAP) and innovation. Similarly, Price et al. (2013) and Valdez-Juárez et al. (2016) also

pointed out that KM activities support innovation in SMEs. Obeidat et al. (2016) demonstrated in an empirical study that knowledge acquisition, sharing, and application have a significant influence on organizational innovation. Therefore, enterprises manage both knowledge (explicit and tacit) and IC which can enable them to create the necessary capabilities to be more competitive in the market (Alfaro-Ramos & Ferreras-Méndez, 2022). That is why researchers and practitioners pay great attention to these activities and strive for effective KM (Yang et al., 2018).

Hypothesis 16 shows that INC has a positive influence on SUP. In which, innovation means novelty, new things being done or old things being done in new ways to increase performance in terms of sales, profits, and market share (Abdilahi et al., 2017). Innovation transforms capabilities to deliver improvements in products, processes, and services, helping organizations achieve sustainable competitive advantage (Danneels, 2002). Yu et al. (2022) said that IC and KM are powerful tools to promote innovation in organizations, and INC is considered the main cause of SUP in business. Besides, according to Cabrilo & Dahms (2018), the successful and sustainable innovation process depends on IC and KM, because according to the resource-based view theory, organizational innovation depends on the internal capabilities of enterprises, such as employee knowledge, abilities, and skills, as well as proper management of knowledge and IC resources (Cabrilo & Dahms, 2018).

In addition, the results of this study also show that INC plays a full intermediary role in the relationship between KM (including KAC, KSH, and KAP) and SUP. This result supports the study result of Byukusenge et al. (2016), who argue that innovation has a positive influence on the business performance of SMEs; however, there is no direct effect of KM on business performance. Similarly, research by Byukusenge & Munene (2017) also shows that KM does not have a direct influence on the business performance of SMEs, except through innovation. This implies that, without INC, SMEs may not achieve better SUP. Furthermore, the results of this study also show that enterprise groups with a size of less than 10 people and from 10-49 people have an influence on SUP, and enterprise groups operating from 1-5 years and from 11-15 years have the most influence on SUP.

CONCLUSION

In today's society, knowledge is critical, and KM has become one of the best approaches to ensure the success of any enterprise. In the context of resource-constrained SMEs, effective knowledge asset management is the best way to improve INC and maintain SUP. This is because KM is a series of activities that integrate the necessary strategies, policies, techniques, and procedures and is a comprehensive approach to achieve organizational goals through specific activities such as KAC, KSH, and KAP.

In fact, in order to grow and develop sustainably, most enterprises rely on their strategic resources. However, these resources are not always available in their enterprises. Therefore, it is necessary for them to link and cooperate with external partners who can support them with the necessary resources. This has really promoted enterprises closer together, which forms the foundation of RC and SOC. This study concludes that INC and SUP are positively influenced by intangible resources, specifically IIC, EIC, and SOC through KM activities such as KAC, KSH, and KAP. Besides, KM has a direct impact on INC, and thereby leads to SUP.

This study hopes to fill the gaps in theory related to KM, INC, and SUP through the proposed research model. The study also combines both IIC, EIC, and SOC in the research model. In the context of resource-limited SMEs, this combination further highlights the interaction of value co-creation activities and the principle of open innovation to mobilize necessary resources from partners outside the organization. Specifically, KM plays an intermediary role in transforming IIC, EIC, and SOC into INC and SUP. In practical terms, this study confirms that, in the context of SMEs, knowledge is really important, and combining IIC and EIC creates a good foundation for innovation cooperation. Collaboration with customers, suppliers, and other external partners is a good opportunity for SMEs to fully supplement their capacity. Besides, SOC creates a strong impact on the efficiency of SMEs. Through networks of relationships, SMEs not only obtain capital and grants but also acquire other necessary information and professional knowledge. In addition, to promote sustainability, besides economic benefits, organizations

need to include environmental and social issues in their strategies scope. In particular, it is necessary to focus on green innovation activities, create sustainable ecosystems, and promote sustainable culture.

Some future research directions could be (1) reexamine these scales in a different context, or (2) add other components of the IC besides HC, SC, RC, and SOC, or (3) focus on knowledge-intensive SMEs.

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