

58. Leveraging knowledge sharing and innovation culture into SMEs

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Leveraging knowledge sharing and innovation culture into SMEs sustainable competitive advantage

Knowledge sharing and innovation culture

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Abstract

Purpose – This study aimed to examine and explain the role of knowledge sharing in shaping innovation culture to improve business performance and build sustainable competitive advantage. Most empirical research tended to be conducted in large companies, and there are limited studies on this topic in the SME sector. Thus, the study needs to re-examine whether the theories developed to understand large companies apply to SMEs.

Design/methodology/approach – This quantitative study involved 259 respondents from a 59 sampling frame consisting of three levels of management of export SMEs in the Bali province of Indonesia. The questionnaire used to gather the data used a semantic differential scale, and the data were analyzed using SmartPLS software.

Findings – The results showed that knowledge sharing significantly influenced innovation culture, business performance and sustainable competitive advantage. Theoretically, this research provides insight into the body of knowledge in innovation culture and business performance as a mediator variable.

Research limitations/implications – Cross-sectional design limits the authors from drawing definitive generalizations, and self-reported measures used in the study increase the chances of bias.

Practical implications – The study's findings could motivate managers and practitioners to place emphasis on knowledge sharing and innovation culture in the SME sector.

Originality/value – The role of knowledge sharing has been focused on large companies in several countries. However, research examining the role of knowledge sharing in building an innovation culture is still rare in the SME sector, particularly in Indonesian SMEs. Therefore, research on this topic is needed because Indonesia has not only a different culture but also different business practices.

Keywords Knowledge sharing, Innovation culture, Business performance, Sustainable competitive advantage, SMEs

Paper type Research paper

1. Introduction

Small medium enterprises (SMEs) is a sector that needs significant attention in the Industrial Revolution 4.0 era. It has a sustainable competitive advantage in increasing growth opportunities and optimizing profits, therefore contributing to the country's GDP (Anwar *et al.*, 2018). Previous studies indicated that the inability of SMEs to manage resources has increased the failure of this enterprise, both in developed and developing countries.

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This phenomenon is not only the primary concern of managers and public policymakers but also includes academics (Singh and Verma, 2019).

The sustainable competitive advantage plays a crucial role in the long-term resilience and success of SMEs (Anwar *et al.*, 2018). Organizations also continue to focus on identifying different product strategies, building core competencies related to service delivery, employing skilled personnel and accumulating intellectual property (Eidizadeh *et al.*, 2017). According to Gutierrez-Martinez and Duhamel (2019), the sustainable competitive advantage determined by the four transversal dimensions include leadership orientation, organizational culture, team-based structure, human resources and control management systems. Other research identified that sustainable competitive advantage was influenced by learning organization (Mahmoud *et al.*, 2016), human resource capabilities (Khandekar and Sharma, 2005; Petrova *et al.*, 2020), intellectual capital and innovation (Chahal and Bakshi, 2015), creativity and effective solution (Bari *et al.*, 2019), entrepreneurial competency (Zainol and Al Mamun, 2018), innovation culture (Wolf *et al.*, 2011) and knowledge management (Bashir and Farooq, 2019). Therefore, the synergy between knowledge management and innovation business model shaped the sustainable competitive advantage (Malhotra, 2001).

One of the management dimensions required in creating a competitive advantage is knowledge sharing (Magnier-Watanabe and Senoo, 2009). This is the primary key of organizational learning, innovation (Ahmad, 2018) and functions as a crucial driver in creating values for business excellence and performance (Aboramadan *et al.*, 2019; Exposito and Sanchis-Ilopis, 2018), especially for SMEs (Jordao *et al.*, 2019). Most of these empirical research studies were conducted in large companies, with limited topic in SME sector. Also, it has restricted resources, such as labour, finance and small number of customers and market (Saunila, 2016). In the innovation context, the studies also focused on large firms, while the patterns in small enterprise had widely been neglected (Singh *et al.*, 2017). Therefore, there is a need to re-examine whether the theories developed for understanding large companies were also applicable to SMEs. Therefore, the competitive advantage in the SMEs needs to be investigated (Sergeeva and Andreeva, 2016).

The issue of competitive advantage of a business entity was examined around the world. But, it has been investigated using various variables representing the concept of competitive advantage, which was not explained comprehensively. This study attempts to address the following four gaps and offer a substantial share to the theory of sustainable competitive advantage literature. First, besides many contributions of similar research, there is a significant gap, that is, no research adopted a single conceptual framework to achieve sustainable competitive advantage in business organizations (Gutierrez-Martinez and Duhamel, 2019). Other studies found that the innovation culture, mostly in SMEs, was too fragmented and needs consolidating (Bashir and Farooq, 2019; Wolf *et al.*, 2011). This research is the first to build a comprehensive framework.

Second, the research on innovation culture in SMEs is still limited; however, it needs to improve in performance and have a sustainable competitive advantage (Ahmad and Alaskari, 2014; Dabic *et al.*, 2019; Kafetzopoulos *et al.*, 2019). The aim of innovation culture in the SME context is to develop and understand the intentions, build supporting infrastructure, promote behaviour to influence market and value orientation and understand the environment to implement innovation (Hanifah *et al.*, 2019b). Several theories and empirical studies of innovation culture were focused on large companies or organizations, such as those conducted in Greece (Chatzoglou and Chatzoudes, 2018; Kafetzopoulos *et al.*, 2019), Spain (Exposito and Sanchis-Ilopis, 2018), Brazil–Portugal (Teixeira *et al.*, 2019) and Malaysia (Hanifah *et al.*, 2019a, b). The findings showed that in countries where SMEs are actively implementing innovation culture, their business performance has improved. Although the results of these empirical studies have been successfully applied elsewhere, it has not been proven in Indonesia. Further investigation is

needed in this country, because it has a different culture, with various business practices. This survey is the first to examine the innovation culture of the SME sector in Indonesia.

Third, sustainable competitive advantage is crucial for the success and long-term survival of SMEs (Anwar *et al.*, 2018). Therefore, organizations that have a high level of innovation culture had succeeded in developing and maintaining competitive advantage (Chatzoglou and Chatzoudes, 2018; Soetjipto *et al.*, 2018). However, the relationship between the innovation culture and competitive advantage has not been rigorously examined. Fourth, the sustainable competitive advantage associated with innovation knowledge and culture is still rare; therefore, it is worth researching in developing countries (Sajjad *et al.*, 2018; Singh and Verma, 2019). The issue of sustainability is related to various realities in developing countries (Orazalin *et al.*, 2019). Meanwhile, each company has significant opportunities to differentiate personal sustainability. This means that competitive advantage shows a higher self-image than competitors (Gutierrez-Martinez and Duhamel, 2019).

This study aims to explore the role of knowledge sharing in building innovation culture to improve business performance and sustainable competitive advantage (Amoako, 2019), particularly in the SME sector in Indonesia. In the SME context, innovation culture is still considered as not crucial, as no benefits have been shown through empirical validation (Abdul-Halim *et al.*, 2018). Besides, most studies on innovation culture have been focusing on employees and large companies. Only a few analyses have examined how small companies become essential players in the global market (Chang *et al.*, 2017). Therefore, this is one of the first studies that examine business performance antecedent, relating to sustainable competitive advantage. Based on social exchange theory (Blau, 1964; Emerson, 1976) and perspective of knowledge sharing (Chatzoglou and Chatzoudes, 2018; Iqbal *et al.*, 2019), this topic is important in understanding the dynamic scenarios and provides a better analysis in explaining sustainable competitiveness in Indonesian SMEs. This study uses intellectual capital as a mediator between knowledge sharing and sustainable competitive advantage. Also, business performance serves as a mediator of intellectual capital and sustainable competitive advantage.

Section 2 discusses the literature review and formulation of hypotheses development. Section 3 discusses research methodology, and then data analysis and findings in Section 4. In Section 5, this paper presents the conclusion. The last section has to do with limitations and suggestions for future research.

2. Literature review and hypothesis development

2.1 Sustainable competitive advantage

Sustainable competitive advantage is the most popular concept in the strategic management field. It explains factors influencing performances across companies (Sigalas and Papadakis, 2018). It occurs when other companies do not replicate the benefits of competitive advantage. Organizations focus on identifying different product strategies, building core competencies, employing skilled personnel and accumulating intellectual property to achieve performance in competitive markets (Bhat and Darzi, 2018). According to Amoako (2019), sustainable competitive advantage is achieved through the role of leadership and the effectiveness of implementing strategies that affect the organization's environmental activities. Gutierrez-Martinez and Duhamel (2019) discovered that the four transversal dimensions, such as leadership orientation, organizational culture, team-based structure, human resources and control management systems, are the main factors for building a competitive advantage based on sustainability. According to Bari *et al.* (2019), organization needs to make practical innovations to maintain competitive advantage and success.

2.2 Business performance

Business performance is one of the most investigated variables to measure organizational success (Iqbal *et al.*, 2019), particularly on knowledge-based company operations. It also

shows the progress and development of the organization in order to measure the level of effectiveness and efficiency achieved in various fields (Kafetzopoulos *et al.*, 2019). To examine business performance, this study considers the dimensions of product quality, customer satisfaction (Aboramadan *et al.*, 2019), financial performance and new product development (Khandekar and Sharma, 2005) and types of innovation (Exposito and Sanchis-Ilopis, 2018). Also, it is shaped by the maturity and alignment of management processes (Vuks and Sus, 2019) as well as competitiveness (Jordao *et al.*, 2019). This proves that business performance variable is a multidimensional construct; therefore, it needs to be measured comprehensively (Kafetzopoulos *et al.*, 2019).

2.3 Innovation culture

To encourage an organization to have high performance, entrepreneurs need to be more innovative, for example, in the development of human resources (Kelinx *et al.*, 2016) and good leadership (Schell, 2019). In an energetic and fast-moving business environment, the characterization of business operations requires high innovation to create profits and improve performance and productivity (Hanifah *et al.*, 2019b). Improved performance and productivity can be achieved through application of ideas, new discoveries to development of products or new services, managerial strategies, procedures, work methods and technology (Chahal and Bakshi, 2015). Therefore, innovation is an important instrument for adapting to a rapidly changing business environment (Aboramadan *et al.*, 2019) because it is capable of playing an important role to improve organizational performance and maintain its competitive advantage (Bari and Fanchen, 2017). However, the speed and quality of innovation is more important in complex and ever-changing business environments (Wang *et al.*, 2016a, b). Ghaseemzadeh *et al.* (2019) stated that innovation is one of the leading strategies and the critical factor in determining organizational sustainability.

2.4 Knowledge sharing

One of the main processes in knowledge management is sharing and a value-added activity in organizational strategy (Eidizadeh *et al.*, 2017) that should be understood, changed and combined in order to be implemented (Bari *et al.*, 2019). Knowledge sharing among individuals produces new experience (Ahmad, 2018; Masa'deh *et al.*, 2016) that contributes and facilitates synergy, collective learning and creativity (Singh and Verma, 2019; Tassabehji *et al.*, 2019), accelerating innovation (Dahiyat, 2015) as well as the creation of shared values and standards (Singh *et al.*, 2018). The benefits of sharing knowledge are concerned with network expansion, business opportunities and improvement of new processes for products and services development (Steffen *et al.*, 2017). Also, it is more evident when individuals are involved in the collection and donation of knowledge, which results in the synergy between people, therefore increasing creativity, eliminating redundancy and leading to innovation acceleration (Teixeira *et al.*, 2019). According to Bari *et al.* (2020), knowledge sharing is referred to as employees' willingness to share information (in the form of ideas, experiences, facts, processes, formulas) with other individuals in the organization.

2.5 Research hypotheses

A review of 88 scientific articles in the period 1997–2018 found that knowledge sharing shapes innovation culture and business performance (Singh and Verma, 2019). Also, knowledge management builds an innovation orientation in shaping the values of the business model (Wichitsathian and Nakruang, 2019) and competitive advantage (Bashir and Farooq, 2019). Teixeira *et al.* (2019) stated that it has a strong relationship with innovation, while the culture of SMEs is determined by employee knowledge sharing (Arsawan *et al.*, 2020; Wolf *et al.*, 2011).

Bari *et al.* (2016) showed that the practice of sharing knowledge is developed from the interaction and exchange of beneficial intangible assets. Therefore, knowledge sharing has a significant effect on organizational innovation (Berraies, 2019; Boroujerdi *et al.*, 2019; Lin and Chen, 2008). Based on the description, a hypothesis is formulated as follows:

H1. Knowledge sharing has a positive effect on innovation culture.

Knowledge-sharing activities contribute to building competitive advantage (Magnier-Watanabe and Senoo, 2009). Also, knowledge-sharing shapes new information and improves competitive advantage (Connell and Voola, 2013; Lin and Chen, 2008) through several activities, such as sharing experiences, brainstorming ideas and practice (Ayanbode, 2020). Furthermore, knowledge sharing has a positive effect on competitive advantage, because organizations (SMEs) do not achieve competitive advantage – they only prioritize tangible assets without enhancing knowledge sources (Eidizadeh *et al.*, 2017; Soetjipto *et al.*, 2018). The knowledge-based assets are the foundations of success and the basis of sustainable competitive advantage (Bashir and Farooq, 2019). Based on the description, a hypothesis is formulated as follows:

H2. Knowledge sharing has a positive effect on sustainable competitive advantage.

Innovation culture is referred to as shared values, beliefs and assumptions embraced by organizational members that facilitate transformational process (Dabic *et al.*, 2019). Also, it consists of a combination of beliefs, attitudes, values and behaviours of employees that leads to the improved performance of products, services and innovation (Sattayaraksa and Boon-itt, 2016; Saunila *et al.*, 2014). Therefore, companies need to build a shared value system, including the activities that stimulate open communication, opinions and new ideas to achieve sustainable innovation. Furthermore, internal innovation instructions help organizational members to send messages to members that their new ideas are valued. When the innovation culture permeates, employees are free to express their ideas and try new methods in order to contribute to the organizational performance (Ghasemzadeh *et al.*, 2019; Grimsdottir and Edvardsson, 2018). Previous studies found positive effects of innovation culture on business performance (Exposito and Sanchis-llopis, 2018; Kafetzopoulos *et al.*, 2019; Kneipp *et al.*, 2019). Based on the description, a hypothesis is formulated as follows:

H3. Innovation culture has a positive effect on business performance.

Kneipp *et al.* (2019) stated that companies implementing innovative sustainable practices are able to minimize the potential negative impacts. Also, those that implement high-level innovation are able to develop and maintain a competitive advantage (Soetjipto *et al.*, 2018). Therefore, innovation is a crucial factor in the organization's competitive capacity (Chen *et al.*, 2015; Saji and Ellingstad, 2016) through effective use of organizational resources (Bari and Fanchen, 2017). However, the development of competitive advantage means that the organization has resources and capabilities of making products superior to its competitors, and also providing excellent value to customers (Iqbal *et al.*, 2019). Companies that have innovation culture are more flexible, with greater capacity to adapt and respond to changes quickly in periods of instability, and detect new opportunities (Kneipp *et al.*, 2019). Therefore, comprehensive benefits are obtained from the flexibility of an organization and its capacity to react to change appropriately (Anning-Dorson and Nyamekye, 2020; Chatzoglou and Chatzoudes, 2018). Based on the description, a hypothesis is formulated as follows:

H4. Innovation culture has a positive effect on sustainable competitive advantage.

Significant effects of business performance on sustainable competitive advantage have been examined. The study conducted by Soetjipto *et al.* (2018) found a significant relationship between performance and sustainable competitive advantage. Therefore, to build competitive advantage, radical innovation is needed to achieve substantial performance

(Cavaleri and Shabana, 2018). The adaptive leaders and management are required to effectively implement organizational strategies in building business alignment and intelligence maturity for sustainability (Vuks and Sus, 2019). Also, to achieve a competitive advantage, companies should create positive values that are equal to, or more than, competitors' values (Wang, 2019). Organizational internal resources and capabilities (i.e. leadership orientation, culture, human resource-based structures and control management systems) should be integrated to produce a business performance and sustainable competitive advantage (Gutierrez-Martinez and Duhamel, 2019). Based on this description, the hypothesis is formulated as follows:

H5 Business performance has a positive effect on sustainable competitive advantage.

The role of human resources is very strategic in creating business performance and building sustainable competitive advantage through attracting appropriate talent, selecting the best employees, developing and improving skills, motivating innovation and retaining valuable employees (Iqbal *et al.*, 2019; Khandekar and Sharma, 2005; Rustiarini *et al.*, 2019). For this reason, organizations should understand the knowledge that employees have and create adequate mechanisms to form superior human capital. Obtaining the best employees create knowledge sharing, innovation culture and synergize their contributions in building sustainable competitive advantage (Khandekar and Sharma, 2005). Therefore, innovation has a significant effect on competitive advantage (Chahal and Bakshi, 2015; Chatzoglou and Chatzoudes, 2018) and is a critical factor in the organization's competitive capacity (Chen *et al.*, 2015; Saji and Ellingstad, 2016). Based on this, a hypothesis is formulated as follows:

H6 Innovation culture partially mediates the relationship between knowledge sharing and sustainable competitive advantage.

It is further suggested that the relationship between innovation culture and sustainable competitive advantage is partial, because business performance acts as a mediator between them. However, the dimensions of innovation culture (i.e. organizational culture, the product, process management and objectives innovation) provide the basis for creating business performance (Ghasemzadeh *et al.*, 2019), overcoming uncertainty of the external environment (Eidizadeh *et al.*, 2017) and facilitating the development of sustainable competitive advantage (Kafetzopoulos *et al.*, 2019). This is because innovation culture lays the foundation for maintaining business performance (Chatzoglou and Chatzoudes, 2018). Based on this description, a hypothesis is formulated as follows:

H7 Business performance partially mediates the relationship between innovation culture and sustainable competitive advantage.

Therefore, this study examined the relationship between knowledge sharing, culture innovation, business performance and sustainable competitive advantage in both direct and mediation relationships. The research framework is shown in Figure 1.

3. Research methodology

3.1 Data collection and sample demographics

This survey study was conducted at export SMEs in Bali province, Indonesia, as they were carrying out active transactions to the American, European and Middle Eastern markets. Some considerations were underlying the selection of research sites. Firstly, export SMEs are always required to innovate in order to adapt to environmental changes. Secondly, innovation is only done with knowledge and creativity. In this case, export SMEs should be supported by good knowledge management (knowledge sharing) to create a sustainable competitive advantage. Therefore, high innovation potential and dynamic organizational strategies are needed.

Knowledge sharing and innovation culture

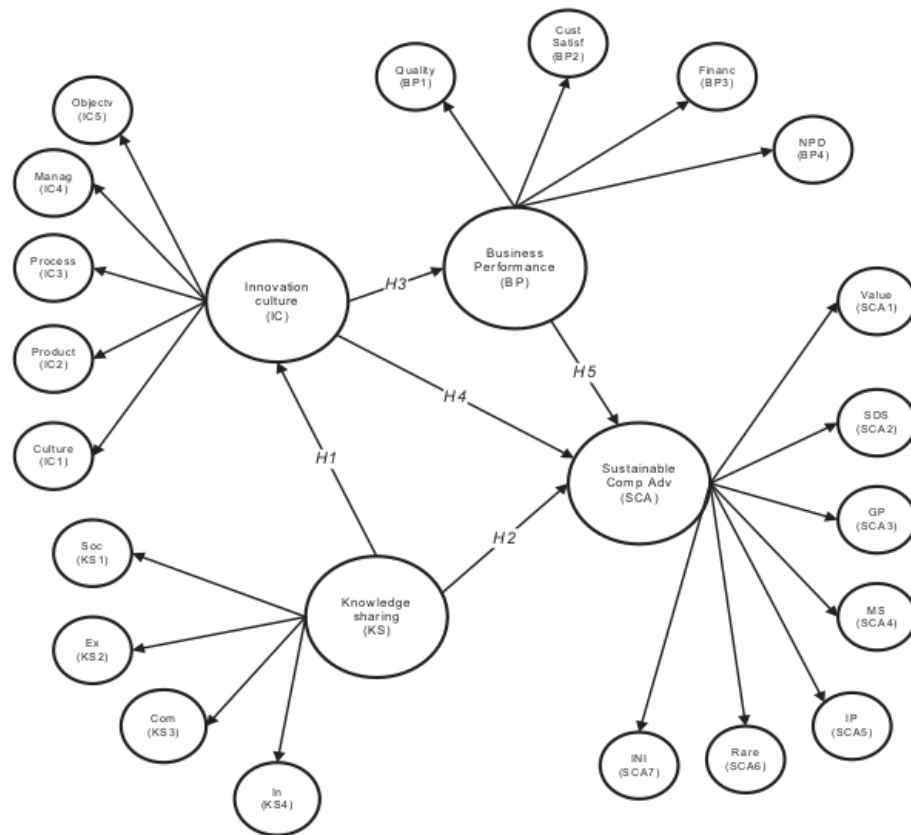


Figure 1.
Research framework

The sample included 69 export SMEs divided into six business sectors, namely, fashion designers and manufacturers, furniture and home decor, spa, aromatic and specialty products, accessories and jewelry and services. Using the formula proposed by Krejcie and Morgan (1970), a total of 59 SMEs as a sampling frame was derived. This selection was carried out using random sampling (lottery method). The population and sample are presented in Table 1.

From the 59 SMEs, five respondents were recruited from each for filling out the research questionnaire. The total number of the participants was 295, which included managers from three levels, namely, low (supervisors), middle (assistants) and top (export-SME). Their selection was triggered by the assumption that they possess organizational strategy and run and make policies related to performance, sustainability, and competitive advantage. The demographic profile of the respondents is presented in Table 2. The questionnaire was distributed through two methods, namely, through a mail survey and through manually submitting when visiting the SMEs. The filling out time of questionnaire was seven months, from March to October 2019.

In the mail survey, questionnaires were sent via email and the participants were reminded once a week to fill the questionnaire naturally. The cover letter also guaranteed that the respondents' answers will be only used for research purposes and confidentiality would be maintained. While distributing questionnaires directly and achieving high response rates, self-managed surveys were used in a drop-off and pick-up approach, with the help of research assistants, namely, students. For this purpose, meetings were arranged with SME, either with general or human resources managers, to seek consent for participation in the study and have

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No	SMEs export specialized (1)	Population (2)	Percentage of population (3)	(x) Samples (4)	Samples (5)	Respondents (6)
1	Fashion designer and manufacturer	26	0.377	22.240	22	110
2	Furniture and home decor	22	0.319	18.820	19	95
3	Spa and aromatic product	1	0.014	0.826	1	5
4	Specialties product	9	0.130	7.670	8	40
5	Accessories and jewellery	4	0.058	3.422	3	15
6	Service	7	0.102	6.018	6	30
	Total	69	1.000	59.00	59	295

Table 1.
Population and samples

Criteria	Percentage
<i>Gender</i>	
Male	67.12
Female	32.88
<i>Age</i>	
21–30	17.97
31–40	41.69
41–50	27.46
51–60	12.88
<i>Education level</i>	
Bachelor	91.53
Master	7.79
Doctoral	0.68
<i>Experience in export</i>	
5 years or less	22.03
6–10 years	54.92
10 years or more	23.05
<i>Level of management</i>	
Lower management	15.25
Middle management	72.89
Top management	11.86

Table 2.
Participant demographic factors

them fill out ¹⁷ questionnaire. To maintain anonymity, respondents were not required to write their names. To comply with the university's ethical standards, a cover letter was attached to the questionnaire, explaining the objectives of the research, emphasizing that participation in the survey was purely voluntary and stating that the data would only be analyzed on an aggregate basis for scientific purposes. To test the validity and reliability, the questionnaires were distributed to the first 30 respondents with the help of SPSS 25.0

3.2 Measures

All measures were adopted and modified from previous studies. All constructs were ³ designed using a self-assessment report with a semantic differential scale approach of 1–7 (1: strongly

disagree to 7: strongly agree). The questionnaire was developed using simple and easily understood language for the research objectives to be achieved. To measure knowledge sharing, the SECI model was used which consists of socialization, externalization, combination and internalization, adopted from Ayanbode (2020), Berraies (2019), Boroujerdi *et al.* (2019), Julpisit (2019), Magnier-Watanabe and Senoo (2009) and Steffen *et al.* (2017).

The measurement of the innovation culture used five dimensions, namely, organizational culture, product, process, management and objectives innovation (Dabic *et al.*, 2019; Exposito and Sanchis-Ilopis, 2018; Ghasemzadeh *et al.*, 2019; Hanifah *et al.*, 2019a, b; Sattayaraksa and Boon-itt, 2016; Soetjipto *et al.*, 2018). Business performance was measured by four dimensions, namely, product quality, customer satisfaction, financial performance and new product development (Aboramadan *et al.*, 2019; Anwar *et al.*, 2018; Charoenrat and Harvie, 2017; Dabic *et al.*, 2019; Exposito and Sanchis-Ilopis, 2018; Khandekar and Sharma, 2005; Kneipp *et al.*, 2019; Sigalas and Papadakis, 2018; Vuks and Sus, 2019; Zainol and Al Mamun, 2018).

The sustainable competitive advantage used seven dimensions, namely, innovation practices, service delivery systems, growth and performance, market share (Singh and Verma, 2019; Soetjipto *et al.*, 2018; Zainol and Al Mamun, 2018), value, rareness and imperfectly non-imitable (Anwar *et al.*, 2018; Bhat and Darzi, 2018; Sigalas and Papadakis, 2018). In measuring these dimensions, modified and elaborated measurements were adopted to best suit the research topic (see Table 3).

Variables	Dimensions	Source
Knowledge sharing (KS)	Socialization (KS1) Externalization (KS2) Combination (KS3) Internalization (KS4)	Ayanbode (2020), Berraies (2019), Boroujerdi <i>et al.</i> (2019), Julpisit (2019), Magnier-Watanabe and Senoo (2009), Steffen <i>et al.</i> (2017)
Innovation culture (IC)	Organizational culture (IC1) Innovation product (IC2) Innovation process (IC3) Innovation management (IC4) Innovation objective (IC5)	Dabic <i>et al.</i> (2019), Exposito and Sanchis-Ilopis (2018), Ghasemzadeh <i>et al.</i> (2019), Hanifah <i>et al.</i> (2019b, 2019a), Sattayaraksa and Boon-itt (2016), Soetjipto <i>et al.</i> (2018)
Business performance (BP)	Product quality (BP1) Customer satisfaction (BP2) Financial performance (BP3) New product development (BP4)	Aboramadan <i>et al.</i> (2019), Anwar <i>et al.</i> (2018), Dabic <i>et al.</i> (2019), Exposito and Sanchis-Ilopis (2018), Khandekar and Sharma (2005), Kneipp <i>et al.</i> (2019), Sigalas and Papadakis (2018), Vuks and Sus (2019), Zainol and Al Mamun (2018)
Sustainable competitive advantage (SCA)	Value (SCA1) Service delivery systems (SCA2) Growth and performance (SCA3) Market share (SCA4) Innovation practices (SCA5) Rareness (SCA6) Imperfectly non-imitable (SCA7)	Anwar <i>et al.</i> (2018), Bhat and Darzi (2018), Sigalas and Papadakis (2018), Singh and Verma (2019), Soetjipto <i>et al.</i> (2018), Zainol and Al Mamun (2018)

Source(s): researcher elaboration (2020)

Table 3.
Dimensions and variables source

4. Data analysis and findings

The data were analyzed using PLS-3.0 software with a second-order approach, starting from evaluation of the measurement model, which was aimed at determining the validity and reliability of the dimensions' indicators used and subsequently testing the inner model through the resampling bootstrapping process.

4.1 Outer model measurement

This study used three methods for reliability measurement, namely, convergent, discriminant and composite validity for each indicator in measuring research variables. The convergent method was used to measure the validity of the indicator and expressed by the value of the outer loading factor. For the early stages of developing a measurement scale, referred to as exploratory study, the loading factor value 0.50–0.60 was still considered sufficient. In this research, the outer loading value of each indicator was between 0.539 and 0.993, meeting the convergent validity requirement (see Table 4). According to the criteria, the HTMT ratio should be less than 0.90 for the formation of the discriminant validity model (Hair et al., 2013, 2016). Table 5 confirmed that all the HTMT ratios were less than 0.90.

The second step was to test discriminant validity of an indicator in a variable, comparing the square root coefficient of variance extracted (\sqrt{AVE}) from each latent factor with the correlation coefficient between others in the model. The recommended AVE value was above 0.50.

The AVE value for knowledge sharing was 0.819, which was greater than the correlation coefficient between other variables, namely, 0.773, 0.661 and 0.748. The AVE value for innovation culture was (0.931) greater than the correlation coefficient between other variables, namely, 0.857 and 0.747. The AVE value for business performance was (0.896) greater than the correlation coefficient between other variables (0.660). This showed that the indicators representing the dimensions of variables in this study had good discriminant validity (Fornell and Larcker, 1981). The third step used composite reliability to measure the value between indicators of the variable. The results were reliable when the value of the composite reliability and Cronbach's alpha was >0.70 (Chin, 1998) (see Table 6).

Table 4. AVE, \sqrt{AVE} and correlation of latent variables

Variables	AVE	\sqrt{AVE}	KS	Coefficient of correlation*		
				IC	BP	SCA
Knowledge sharing	0.672	0.819	1.000			
Innovation culture	0.867	0.931	0.773	1.000		
Business performance	0.803	0.896	0.661	0.857	1.000	
Sustainable CA	0.871	0.933	0.748	0.747	0.660	1.000

Note(s): *KS = knowledge sharing, IC = innovation culture, BP = business performance, SCA = sustainable competitive advantage

Table 5. Heterotrait-monotrait ratio (HTMT)

Constructs	KS	IC	BP
Knowledge sharing			
Innovation culture	0.803		
Business performance	0.784	0.832	
Sustainable CA	0.748	0.800	0.879

Note(s): *KS = knowledge sharing, IC = innovation culture, BP = business performance, SCA = sustainable competitive advantage

Second-order constructs	Items*	Cronbach's alpha	Rho_A	Composite reliability	Average variance extracted (AVE)
Knowledge sharing	KS		1.000		
Second order scale type; reflective-reflective	KS1	0.823	0.870	0.871	0.538
	KS2	0.873	0.877	0.914	0.728
	KS3	0.834	0.855	0.889	0.669
	KS4	0.889	0.893	0.924	0.755
Innovation culture	IC		1.000		
Second-order scale type; reflective-reflective	IC1	0.919	0.919	0.949	0.860
	IC2	0.931	0.939	0.956	0.878
	IC3	0.979	0.980	0.986	0.960
	IC4	0.892	0.911	0.932	0.821
	IC5	0.896	1.016	0.930	0.817
Business performance	BP		1.000		
Second-order scale type; reflective-reflective	BP1	0.972	0.972	0.982	0.947
	BP2	0.856	0.887	0.911	0.773
	BP3	0.741	0.896	0.809	0.587
	BP4	0.947	0.948	0.966	0.904
Sustainable competitive advantage	SCA		1.000		
Second-order scale type; reflective-reflective	SCA1	0.699	0.725	0.868	0.766
	SCA2	0.934	0.934	0.968	0.938
	SCA3	0.781	0.789	0.901	0.820
	SCA4	0.886	0.887	0.946	0.898
	SCA5	0.849	0.853	0.930	0.869
	SCA6	0.877	0.880	0.942	0.890
	SCA7	0.953	0.960	0.969	0.913

Note(s): *KS = knowledge sharing, IC = innovation culture, BP = business performance, SCA = sustainable competitive advantage

Table 6. Instrument reliability test

The results of the calculation of composite reliability ranged from 0.809 to 0.986 (>0.70), indicating that the dimensions of the variable were reliable. Also, the Cronbach's alpha values ranged from 0.699 to 0.979 (>0.70), meaning that the dimensions and indicators were reliable and were declared free from the problem of random error (MacKenzie *et al.*, 2011; Singleton and Straits, 2010).

4.2 Inner model measurement

After the outer model was tested, the next step was to examine the inner model using three approaches, first, by evaluating the feasibility of the model by observing the results of the R^2 analysis; second, by testing the model holistically using the predict relevance method (Stone, 1974); and, finally, by calculating the goodness of fit (GoF). Q^2 and GoF calculations used the R -square coefficient (R^2). R^2 showed the strength of relationships/information between exogenous and endogenous variables. The R^2 value of 0.67 was classified as a robust, 0.33 as a moderate and 0.19 as a weak model (Chin, 1998).

As shown in Table 7, the R^2 value of innovation culture was 0.661, business performance was 0.735 and sustainable competitive advantage was 0.753. Meanwhile, according to Chin (1998), the R^2 value showed that the model was robust, because it was greater than 0.67. The average value of 0.716 means that the model of the relationship between constructs was explained by 71.6%, while the remaining 28.4% was expressed by other external factors. The distribution of the adjusted R^2 value was smaller than that of the normal R^2 value, meaning that a change or expansion of the research model by including other latent variables was still possible (Hair *et al.*, 2014).

After understanding that the R^2 test passed with good value, the next step was to examine using Q square predictive relevance (Q^2). This was to measure how good the observations

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produced by the model are. The Q^2 had values ranging from 0 to 1, and the closer they were to 1, the better was the predictive ability of the model (Stone, 1974). The Q^2 value was calculated using the following formula:

$$Q^2 = 1 - [(1 - R^2y1) (1 - R^2y2) (1 - R^2y3)]$$

$$Q^2 = 1 - [(1 - 0.661) (1 - 0.735) (1 - 0.753)]$$

$$Q^2 = 1 - [(0.339) (0.265) (0.247)]$$

$$Q^2 = 1 - 0.022189$$

$$Q^2 = 0.977811 \text{ (} Q^2 \text{ very good predictive relevance)}$$

Q^2 calculation produced a value of 0.9778, which means that the model represented an excellent observation, therefore explaining 97.78% of the relationship between the variables. In comparison, the remaining 2.22% was a factor of error or others not included in the research model. After Q^2 testing was carried out, the next step was to validate the overall model by testing the GoF criteria, with the measurement and the structural type.

$$\text{GoF} = \sqrt{\text{com} \times R^2}$$

$$\text{GoF} = \sqrt{0.683 \times 0.716}$$

$$\text{GoF} = \sqrt{0.489028}$$

$$\text{GoF} = 0.699305$$

GoF calculation produced a value of 0.699305, close to 1, indicating that the research model was a very fit predictive model. This suggested that the overall measurement accuracy of the model was outstanding. This was based on the criteria set for the value of GoF, 0.10 (small), 0.25 (moderate) and 0.36 (large). A value of 0.699305 indicated that the research model was categorized as having large GoF.

The next step was to test the effect size (f^2) aimed to obtain more detailed information about the amount of variance in the dependent and independent variables in a structural equation model. The criteria for the effect size (f^2) were as follows: 0.02–0.15 (weak), 0.15–0.35 (medium) and >0.35 (strong) (Cohen *et al.*, 1998). When $f^2 = 0.02$, the research model was classified as weak; when $f^2 = 0.15$, it was moderate; when $f^2 = 0.35$ or above, it showed strong effect (Chin, 2010).

The results analysis in Table 8 showed a mean of 0.163, which means that there was an indication that a mediation relationship pattern was formed in this study. Furthermore,

Variables	R^2	R^2 adjusted
Innovation culture	0.661	0.659
Business performance	0.735	0.734
Sustainable competitive advantage	0.753	0.749
Average	0.716	0.714

Table 7.
 R^2 and R^2 adjusted

Construct*	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	p values
KS → SCA	0.211	0.208	0.104	1.810	0.071
IC → SCA	0.115	0.133	0.087	1.181	0.238
Average	0.163				

Table 8.
Cohen effect size
analysis

Note(s): *KS = knowledge sharing, IC = innovation culture, BP = business performance, SCA = sustainable competitive advantage

Figure 1 presented that the highest dimension that reflected the knowledge-sharing variable was the externalization (X.2), with a coefficient value of 0.952, which should be given due attention because it significantly contributed to the source of competitive advantage (Magnier-Watanabe and Senoo, 2009). The highest dimension that reflected the innovation culture was organizational culture (Y1.1) with a coefficient value of 0.976, meaning that it was an essential predictor in building an innovation culture (Aboramadan *et al.*, 2019). The highest dimension that reflected business performance was the new product development (Y2.4) with a coefficient value of 0.975, meaning that it was essential in building competitive advantage (Lin and Chen, 2008). The highest dimension that reflected the sustainable competitive advantage variable was the innovative practices (Y3.5) with a value of 0.934, which means that it was critical in building superior performance (Kneipp *et al.*, 2019).

4.3 Testing research hypotheses

After the outer and inner model tests were completed, the next important step was examining the hypothesis which was carried out through two stages, namely, testing the direct and indirect effects of the exogenous and endogenous variable. In the output path coefficient, as shown in Table 8, the direct relationship between variables was presented in the original sample.

Table 9 presented the information about the analysis of the direct relationship between research variables. The path coefficient of the direct relationship between knowledge sharing and innovation culture was 34.000 > 1.96, which means that it was significant, and hypothesis 1 was accepted. These results were consistent with the survey conducted by Iqbal *et al.* (2019), which found that knowledge sharing played a crucial role in building innovation (Boroujerdi *et al.*, 2019). Meanwhile, organizations that absorbed, changed and applied new idea quickly and competitively (Ghasemzadeh *et al.*, 2019) were found to promote the process of sharing knowledge more successfully in innovation (Berraies, 2019; Boroujerdi *et al.*, 2019; Singh and Verma, 2019). In the business context, SMEs should build a cultural structure that recognizes and encourages learning, creativity, employee motivation, ambition for the openness of knowledge and collaboration (Grimsdottir and Edvardsson, 2018). These results contradicted that of the survey carried out by Teixeira *et al.* (2019) and Susanty *et al.* (2019), which found that knowledge sharing did not contribute significantly to innovation.

The coefficient of the relationship of knowledge sharing with sustainable competitive advantage was 10.969 > 1.96, which means that it was significant; therefore, hypothesis 2 was accepted. This finding was consistent with the study conducted by Connell and Voola (2013), which found that knowledge sharing was a source of competitive advantage because it had a significant effect on competitive advantage (Lin and Chen, 2008). Another study conducted by Magnier-Watanabe and Senoo (2009) examined the knowledge-sharing dimension (SECI activities) as a source of competitive advantage, assuming that the idea provided unique, inimitable and powerful intangible assets (Eidizadeh *et al.*, 2017).

Construct*	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ((O/STDEV))	p values	Decision
KS → IC	0.813	0.820	0.024	34.000	0.000	Supported
KS → SCA	0.781	0.804	0.071	10.969	0.000	Supported
IC → BP	0.857	0.860	0.022	38.768	0.000	Supported
IC → SCA	0.368	0.371	0.099	3.704	0.000	Supported
BP → SCA	0.459	0.446	0.096	4.778	0.000	Supported

Note(s): *KS = knowledge sharing, IC = innovation culture, BP = business performance, SCA = sustainable competitive advantage

Table 9. Path coefficients

The coefficient of the relationship between innovation culture and business performance was $38.768 > 1.96$, which means that it was significant; therefore, [hypothesis 3](#) was accepted. Consequently, innovation culture had a significant positive relationship with business performance. This suggested that to achieve superior performance, innovation culture should not be underestimated. Furthermore, a study conducted by [Sayyadi \(2019\)](#) found that creating ideas and sharing new knowledge increase creativity and efficiency and help achieve the intended targets ([Hanifah et al., 2019a, b](#)). Furthermore, they increase organizational innovation and motivate employees to solve problems, leading to increased performance. [Hanifah et al. \(2019a, b\)](#) found that innovation culture enabled SMEs to react in an attempt to secure their competitive position in the challenging markets. Also, [Kafetzopoulos et al. \(2019\)](#) found that it was a key variable for achieving business performance ([Dabic et al., 2019](#)) because it supported and built sustainable innovation culture ([Anning-Dorson, 2018; Kneipp et al., 2019](#)). A study conducted by [Aboramadan et al. \(2019\)](#) found that technological and market innovation had a significant effect on performance.

The path coefficient of the direct relationship between innovation culture and sustainable competitive advantage was $3.704 > 1.96$, which means that it was significant, and [hypothesis 4](#) was thus accepted. These results were in line with previous research ([Grimsdottir and Edvardsson, 2018; Lin and Chen, 2008](#)), which found that SMEs benefitted from innovation to create new products, prototypes and processes and to enhance competitive advantage. This finding showed that export SMEs inevitably have to be creative and innovative to survive and gain a competitive advantage in the global market ([Eidizadeh et al., 2017; Singh and Verma, 2019](#)). However, in today's dynamic and changing environment, innovation culture is the key to gaining competitive advantage, achieving high performance and surviving in the global economy. The path coefficient of the direct relationship between business performance and sustainable competitive advantage was $4.778 > 1.96$, which means that it was significant, and [hypothesis 5](#) was accepted. Therefore, business performance is an essential predictor for creating sustainable competitive advantage. These results were in consistence with the research conducted by [Cavaleri and Shabana \(2018\)](#), which found that building a competitive advantage was carried out through innovation. The improvement in the organizational performance was obtained through the exploitation of internal and external capabilities, as well as the creation of ambitious strategies to achieve diversification during turbulence periods ([Lin et al., 2020](#)).

The results of research output with the SmartPLS software are presented in [Figure 2](#).

After obtaining the results of a direct relationship between variables, the next step was to determine the position of the mediating factors indirectly (see [Table 10](#)). In this research model, there were two paths of mediation that were tested, namely, the innovation culture and business performance. Following [Hair et al. \(2014\)](#), the method used was by examining the value of $VAF < 0.20$, which means that there was no mediation, while $0.20-0.80$ indicated

Link*	Mediator*	Independent variable-mediator	Mediator-dependent variable	Direct	Indirect	Total effect	VAF (%)	Decision
KS-SCA	IC	0.813	0.368	0.781	0.635	1.003	0.633	Partial mediation
IC-SCA	BP	0.857	0.459	0.368	0.393	0.761	0.517	Partial mediation

Table 10. Testing of mediation effects

Note(s): *KS = knowledge sharing, IC = innovation culture, BP = business performance, SCA = sustainable competitive advantage
VAF: Variance accounted for

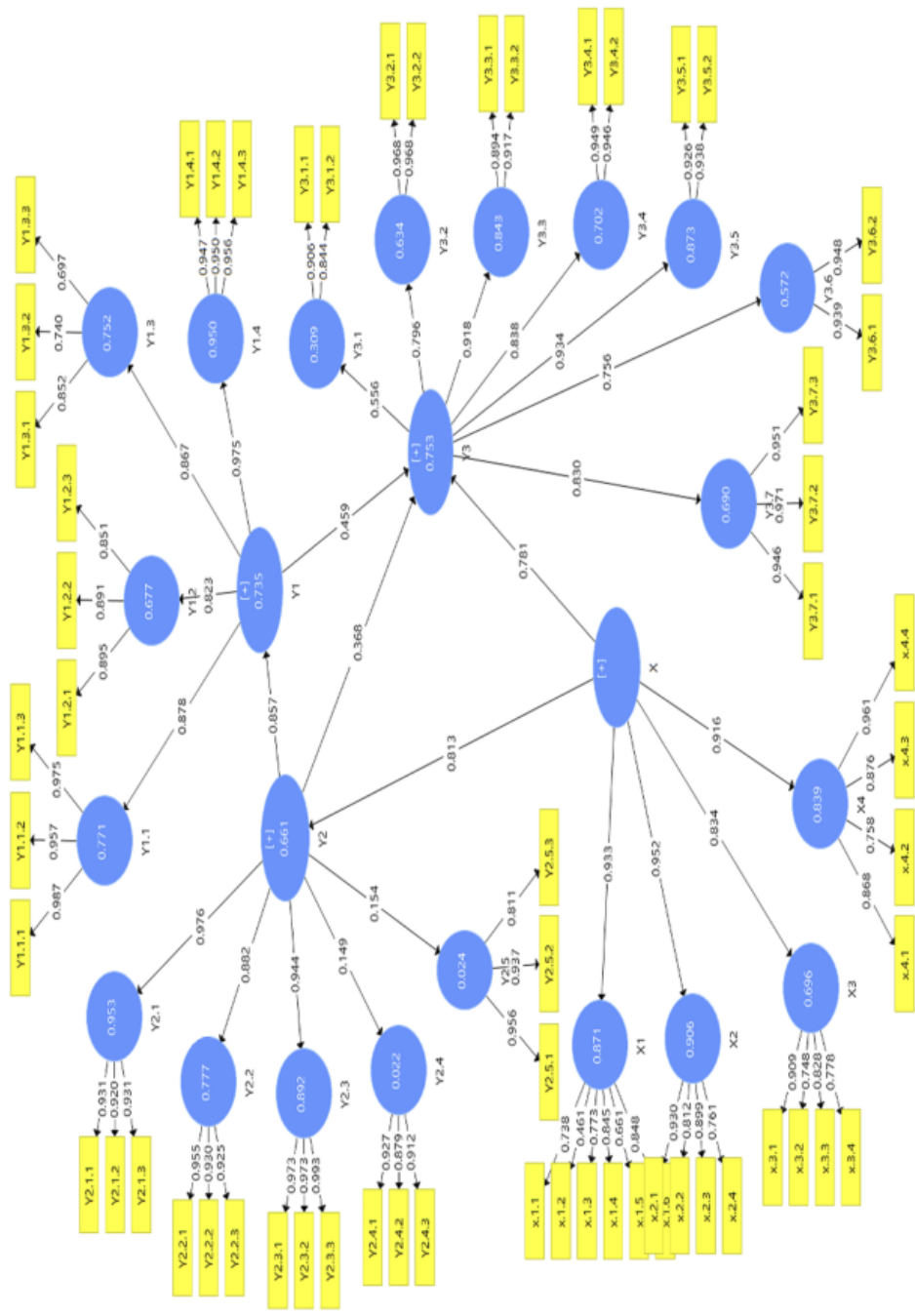


Figure 2. SmartPLS second-order analysis

partial and VAF value > 0.80 means full. Table 8 showed the results of the mediation variable test. To examine the effects of mediation in the research model, the non-parametric bootstrapping was used. To assess the role of mediation, the mediating variable should absorb some direct effects of the independent factors from the dependent. Finally, to assess mediation, the value of the variance accounted for (VAF) was calculated to obtain the size of the indirect and the total links. When the VAF was greater than 80%, then it should be argued as full mediation; between 20 and 80%, it was partial; and below 20%, it means that there was no mediating effect (Hair *et al.*, 2014). Because there were two mediation channels tested in this study, it was concluded that innovation culture partially mediated the relationship between KS and SCA, where the VAF value was equal to 63.30%, indicating that hypothesis 6 was accepted. At the same time, business performance also served as a partial mediation relationship between innovation culture and sustainable competitive advantage, with a VAF value of 51.66%, which means hypothesis 7 was accepted.

5. Conclusion

Amidst a rapid change in the Industrial Revolution 4.0, the role of SME sector in solving social and environmental problems was manifested through innovation and competition, being sensitive to change, knowledge mining and valuing intellectual capital (Nakruang *et al.*, 2020). The SMEs also developed through innovation, creation and knowledge sharing to create new products, services and meet changing customer needs to maintain a sustainable competitive advantage (Berraies, 2019).

SMEs that were unable to learn, manage knowledge according to changing situations and innovate did not have the ability to survive (Wichitsathian and Nakruang, 2019). This encouraged SMEs to build a system of mutually beneficial values and trust to create cohesion and support mechanisms (Vesna *et al.*, 2019), building healthy interactions and sharing of intangible assets (Bari *et al.*, 2016). They were also able to change business strategies by integrating knowledge in order to remain competitive in the dynamic market, as well as to build a research and development network in strengthening the performance of sustainable innovation (Julpisit, 2019; Zhang, 2019). The ability to apply knowledge management was the most relevant in gaining a sustainable competitive advantage (Arsawan *et al.*, 2018; Bashir and Farooq, 2019). Optimizing knowledge sharing was expected to create and strengthen problem-solving strategies, which ultimately promote their innovation culture.

5.1 Academic implication

This research has contributed to four domains, namely, offering knowledge and conceptualization of new models, which were more comprehensive, providing a clear and systematic understanding of the variables' relationship (Gutierrez-Martinez and Duhamel, 2019). Therefore, sustainable competitive advantage testing was performed with new variables, models, analytical tools and different research methodologies. More specifically, this study has introduced a second-order approach to all research variables that were evaluated indirectly through the assessment of sub-factors. Also, this study offered a reliable and valid model that provides empirical evidence of supporting the notion that knowledge sharing, innovation culture, business performance and sustainable competitive advantage were measured through their respective dimensions. This research has also answered the second gap that innovation culture is critical, particularly in SMEs. Generally, this enterprise has reactive, flexible and risky organizations; however, it has more innovative than larger companies. This indicated that SME managers have innovated to compete with established larger companies successfully. These innovations should be in line with organizational change management (Mitra *et al.*, 2019) because innovation is a source of creativity and practical solutions in maintaining competitive advantage (Arsawan *et al.*, 2020; Bari *et al.*, 2019).

These results proved to answer the third gap, stating that competitive advantages were associated with knowledge and innovation culture, especially in developing countries (Singh and Verma, 2019). It was concluded that sustainable competitive advantage played a vital role in the long-term survival and success of SMEs (Anwar *et al.*, 2018). This indicated that SMEs in Indonesia have a high level of innovation culture to successfully develop and maintain competitive advantage (Soetjipto *et al.*, 2018). Fourth, sustainable competitive advantage deserves to be examined in the context of developing countries (Sajjad *et al.*, 2018), as evidenced by considering their determinants, as well as export SMEs in Indonesia facing challenges of global market. This also indicated an important issue that sustainability is worth being performed by developing countries (Orazalin *et al.*, 2019). Moreover, companies have substantial opportunities to differentiate through sustainability. This means that competitive advantage showed a higher self-image than competitors.

This research also contributed to the literature on innovation culture as a mediator in the relationship of knowledge sharing and business performance. A fair idea sharing produced innovation culture that strengthens the business performance. Organizations should understand the knowledge of employees (Bari *et al.*, 2019), gather and able to synergize their contributions in building sustainable competitive advantage (Khandekar and Sharma, 2005). These results changed the point of view of Barney (2001) regarding the competitive advantage and resource-based view. They also explained that the firms building their strategies on pathway-dependent, ambiguous, socially involved and intangible causes outperformed those that make theirs only on tangible assets. Therefore, the role of sharing knowledge as an intangible asset in shaping innovation was the foundation in building sustainable competitive advantage. Also, business performance as a mediator between innovation culture and sustainable competitive advantage. The dimensions of innovation culture (i.e. culture, product, process, management and objective) provided the basis for creating business performance and sustainable competitive advantage. The culture of innovation was a fundamental element and a source of sustainable competitive advantage, and it was relevantly used to maintain SME's performance (Iqbal *et al.*, 2019).

The 2019 Global Competitiveness Index report showed that individuals or institutions originating from Indonesia have weak internal drivers, especially in business dynamism (11th pillar) and innovation capabilities (12th pillar). This statistical report also showed that Indonesia ranks 74th out of 141 countries. The research and development activity ranking was also still low, at 83rd. This figure means that Indonesia did not yet have sufficient capacity to innovate (WEF, 2019).

5.2 Managerial implications

From a managerial point of view, this research provided a grid for practitioners to understand better what they should develop to optimize the role of knowledge sharing and innovation culture in SMEs. In this case, following the results of this study, analytical skills should be developed to enhance knowledge-sharing interactions at all managerial levels and building an organizational culture which supports this process (Vesna *et al.*, 2019). In particular, managers should realize that knowledge sharing not only signifies its ownership but also makes great efforts to develop metacognitive strategies in adopting, disseminating and creating new idea. Reflecting on the social exchange theory (Blau, 1964), employees that received awards are expected to pay back with high behaviour and motivation in providing support to the organization (Shaheen *et al.*, 2019). For this reason, knowledge-sharing culture was strengthened to increase innovative behaviour (Arsawan *et al.*, 2020).

Knowledge-sharing culture was also built to manage intellectual capital for each employee to develop in skills, fostering collective intelligence as the driver of innovation and professional development (Ayanbode, 2020), and also building trust among employees to

prevent knowledge-hiding behaviour (Bari *et al.*, 2020). However, it was crucial to focus on the right innovation strategy in developing policy designs from a multidimensional approach (Exposito and Sanchis-Ilopis, 2018). Also, developing managerial skills contributes to business performance and its sustainability in terms of human resource management, marketing, sales, production and logistics (Popescu *et al.*, 2020). Finally, to anticipate a dynamic business environment, organizations should implement change management, organizational renewal, direction and restructure in response to the demands of changing stakeholders (Mitra *et al.*, 2019).

6. Research limitations and future research

The limitations encountered were as follows. First, this was a behavioural study which involved data collection and conducted only on export SMEs, which produced results that were inconsistent with other contexts. Therefore, these findings require further validation. Secondly, this study used a self-report instrument to collect data from the variables. Subsequently, this was used for the appropriate measurement of psychological ownership and variables; therefore, it was the best data collecting method, since only the informants were cognisant of their knowledge. However, this approach was not free from the effects of bias. Third, the implementation of the resulting framework required a considerable amount of time. However, before this process, applied studies need to be conducted.

In the future research, behavioural factor is recommended to investigate the relationship between knowledge sharing and innovation culture, and it should be conducted longitudinally using more variables. Comparative study also needs to be undertaken to compare SMEs and other sectors, such as education, banking and information technology. Also, the SMEs maintaining a sustainable competitive advantage are capable of experiencing expansion and attaining international level. Therefore, the research on the opportunities of linking competitive advantage and internationalization is an interesting study, in addition to using control variables, such as firm size, age and the ownership type.

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