

Human Capital Psychology, Learning Capability and Innovative Performance of Small Medium Enterprises

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Abstract: Small Medium Enterprises (SMEs) are the backbone of the economy and account for the majority of businesses worldwide. SMEs and are also important contributors to job creation. Increasing SMEs competitiveness in IR 4.0 emerging markets such as Malaysia is essential for the country's economic growth, and SMEs competitiveness can be attained through innovation. According to Dynamic Capabilities Theory (DCT), the competitiveness of SMEs is determined by the development and redevelopment of resources, as well as the ability to deal with rapid changes in the environment.

Purpose:The purpose of this study was to investigate the relationships of Human Capital (HC) and SMEs innovative performance (IP), as well as the mediation effect of Learning Capability (LC) on the relationship between HC and IP.

Design/methodology/approach: The study employed survey method utilizing structured questionnaire distributed selected SMEs. A total of 250 responses were analyzed using Structural Equation Modelling-Partial Least Square (SEM-PLS) statistical tools.

Findings:The study discovered a significant positive relationship between HC and LC, and LC mediates the relationship between HC and SMEs innovative performance.

Research limitation:First, this study is limited by its use of perceptual data. Therefore, managers may be unable to identify many examples of practical managerial actions based on the study results. Second, the study single dimension of intellectual capital and dynamic capabilities. Therefore, a potential extension of this study could employ a longitudinal study design to empirically confirm causality and assess multiple dimensions of intellectual capital and dynamic capabilities.

Practical implication: The findings demonstrate the benefits of fostering innovation while highlighting the importance of LC in the exploitation of HC. Results can be used by management and policy makers towards improving competitive advantage of SMEs.

Originality/value:The study clarifies the role of HC for learning capability developments. The relationship between HC, LC and innovative performance is explained using the Dynamic Capability Theory (DCT) is t a preliminary effort to broaden the concepts appeal in new geographical boundaries and empirical context, thus making an original contribution to the SMEs industry and strategic management literature.

Keywords: *Human Capital, Learning Capability, SMEs, Innovative Performance*

1. Introduction

SMEs are believed to contribute significantly to the growth and development of the nation's economy and the nation's industrial base. Yahaya et al. (2018) contend that SMEs, which account for approximately 90% of all businesses and 65% of all jobs in Malaysia, constitute the backbone of the nation's economy. It is critical to lessen reliance on the global economy directly.

The Malaysian government has implemented programmes through various industries and related agencies to entice the public to participate in the field of Small and Medium Enterprises (SMEs). Consistent community involvement will benefit the country's economy by raising the standard of living, creating job opportunities, implementing social responsibility, and strengthening the SME sector. According to Salim et al. (2019) one of the challenges and issues that must be addressed, in addition to the government's measures and efforts with various initiatives to help the SME sector grow, is innovation. SMEs can achieve competitiveness through innovation (Genc et al. (2019). Furthermore, living in Industry 4.0 necessitates a shift from a manufacturing-based to a knowledge-based economy that fosters creative and IP in a fast-paced setting this development aligns with the Malaysian government's goal of creating a National Corporate Innovation Index in 2013 to raise public awareness of the benefits of investing in innovation. This indicator is available to businesses including SMEs to promote innovation and subsequently accelerate the country's transition to a knowledge-based economy.

The Global Innovation Index is an influential rating of countries based on a wide range of economic indicators that is compiled annually by a consortium led by INSEAD Business School. Malaysia's level of IP can be determined using the Global Innovation Index Rankings. According to the Global Competitiveness Index (GCI), Malaysia's competitiveness has fallen during the past five years, dropping from position 18 to rank 23, and its score has decreased from 42.7 to 41.9, (The Global Innovation Index, 2017; 2018; 2019; 2020; 2021). SMEs IP and GCI innovation scoring must be continually improved in order to preserve business competitiveness and continuity in a dynamic environment (Dutta et al., 2019). Malaysia's ability to compete has not increased in the last four years, but it's still on par with other ASEAN nations. SMEs are facing difficult challenges to maintain their competitiveness as a result of the knowledge economy's rapid global evolution and increased competition(Maldonado-Guzmán et al., 2019)

According to ThanhNhon et al. (2020) and Hsu & Wang (2012) performance is anticipated to be influenced by the relationship between firm strategy and the external environment, particularly the dynamic environment. Managers must adopt competitive strategies that best reflect the external dynamic environment's conditions in order to maximise performance. As a result, a firm's strategy must include using its resources, particularly HC, to grasp market possibilities. HC management must link to Dynamic Capabilities (DC) as it has become a crucial component for businesses' growth, survival, and competitiveness in this difficult and dynamic commercial environment (Ali et al., 2020; Bleadly et al., 2018; Hernández-Linares et al., 2021). DC provide a link between performance and firm's resources, particularly those that are intangible, are more likely to support the firm's ability to maintain superior performance, or the newly emerging dynamic environment discourse (L. C. Hsu & Wang, 2012). HC, configuration capabilities, integration capabilities, and strategic partnerships capabilities are the four subcomponents of DC (Lobova et al., 2020; Singh & Rao, 2016). Despite the abundance of research on HC, few studies have examined how LC mediate the effects of HC on IP (Zhou et al., 2019). The influence of intellectual capital on corporate success in today's knowledge economy demonstrates that investments in intangible resources are becoming more important than those in tangible resources (Gashenko et al., 2020; Kianto et al., 2017).In terms of small and medium-sized businesses, the Malaysian economy's shift necessitates that these businesses have more resiliency in the face of obstacles despite a lack of financial and non-financial resources. SME managers and staff must effectively and efficiently utilise internal knowledge that is built in them in order to continue success because their small size and limited funding prevent them from investing heavily in external resources. (Desouza and Awazu, 2006; Muda et al., 2016) Prior studies revealed that human capital is a primary determinant of SMEs performance than structural capital and relational capital (Daou et al., 2013; Muda et al., 2016). HC resources is a prerequisite for innovation. In addition, designing and implementing learning mechanisms to acquire requisite new knowledge for innovation is very crucial responsibility to the firms (Thanh Nhon et al., 2020). The contribution of SMEs is significant in

Malaysia in terms of GDP, employment and even exports. However, currently SMEs have been confronted with many issues and challenges such as access to financing, lack of human capital, infrastructure, innovation and technology, legal and regulations and access to marketing. However, in this study we are only focusing on the relationship of HC on IP mediated by LC because organizational learning is considered a requirement for innovation, thus businesses that want to innovate must develop and nurture a set of HC and LC (Amarakoon et al., 2018). Hence, the purpose of the study is to identify the relationship between HC, LC and IP in SMEs.

2. Literature Review

2.1 SMEs Innovative Performance

In today's highly competitive global environment, SMEs need to make product and process innovations in order to outperform the competition and satisfy global customers (Genc et al., 2019). Additionally, businesses today must contend with heightened global rivalry, swift shifts in consumer demand, and constantly evolving technology. Innovative ideas along with efficient and effective implementation of such concepts are necessary for a successful firm (Abdul Halim et al., 2015). These creative concepts and their effective application will result in the desired inventive performance. In order to support innovative theories, tests, and creative processes that make it simpler for businesses to realize new products, services, or technological advancements, researchers adhere to concepts that encourage innovation (Leitner, 2014). Recognizing the importance of IP among Malaysian SMEs, SMEs are encouraged to develop new products and services that will ultimately enhance their IP. Mainly, by developing new products and services, SMEs can achieve a strong and competitive position in the market. In fact, IP is an important aspect that allows SMEs to increase their flexibility and competitive position (Mabula et al., 2020). SMEs with greater innovation have higher growth rates, productivity and profitability compared to their less innovative counterparts (Saunila, 2016)

2.3 Learning Capabilities

The firm's larger knowledge-based perspective emphasises the significance of new knowledge resources as necessary building elements for organisational innovation (Grant, 1996; Leiponen, 2006; Nonaka, 1994). Innovation is a process of knowledge transformation and integration since the degree of innovation reflects the extent of knowledge incorporated therein (Mahoney, 1995). The learning literature has developed along two themes based on the external and internal sources of teach (Sok et al., 2013). A broad and general search for knowledge serves as the foundation for externally-focused learning, which entails the pursuit of knowledge not already present within the company and enables businesses to adapt to sudden changes (Eisenhardt & Martin, 2000; Teece et al., 1997). Internally-focused learning, on the other hand, focuses on creating and integrating information within the company and is based on a localised and in-depth search for knowledge in certain fields of knowledge that enable less diversified, more certain outcomes in environments that are generally stable (Eisenhardt & Martin, 2000). Innovation can be facilitated by both internally and externally focused learning (Weerawardena, O'Cass, & Julian, 2006; Sinkula et al., 1997). Understanding that LC are built rather than bought in the market (Kaur & Mehta, 2017) and as a result become embedded in a firm (Teece et al., 2009), means LC rely on an extensive learning process. For those within such a firm, learning from experience, but not experience alone, leads to building a stock of knowledge that itself needs to develop if it is to remain dynamic (Verreynne et al., 2016). However, capabilities must change to keep pace with environmental progress if they are to remain dynamic, or else they will become redundant and rusty owing to disuse (Helfat et al., 2007). HC involve coordination, learning, and strategic competitive response activities that include new creatively and innovatively derived routines and resources (Verreynne et al., 2016). For this reason, Teece et al. (1997) concluded that the LC of firms allow a better integration and adaptation of firms to their external environment. Similarly, Eisenhardt and Martin (2000) consider that LC can be regarded as an essential factor to obtain better results in product innovation (Maldonado-Guzmán et al., 2019).

2.2 Human Capital

According to Bontis (1999), HC is recognized as a basic and critical component of intellectual capital owned by employees. HC includes several elements, first; educational competencies such as professional skills and knowledge level. Second; attitudes such as motivation, leadership and behavioral patterns. Third; intellectual

agility such as innovativeness, creativity, flexibility and adaptability (Serenko&Bontis, 2013; (Khalique et al., 2015) If an intellectual worker does not serve or does not activate his knowledge and skills, the value of HC cannot be converted to market value (Ong & Chen, 2013). Therefore, firms need to help employees to assess their competence through continuous investment in employee training and education programs (Bontis, 1998)A study from Khalique et al., (2015), proves that increasing employee training can lead to higher productivity and increase creativity. HC is considered not only knowledge and skills that are very important for employees, but also the commitment of each individual and factors such as motivation and job satisfaction. (Bontis, 1998)states that HC is important for any firm as a source of creativity, innovation, and strategic renewal. Employee creativity allows them to use their knowledge and skills to innovate continuously (Chenhall, 2005) emphasized that intellectual agility enables employees to change practices and think of innovative solutions to problems. However, HC needs to be managed because the skill of managing HC is a source of innovative creation, strategic renewal and economic growth (Cabrita&Bontis, 2008). The management skills intended in this context must be combined with the elements of relationships and the internal structure of the firm, to create sustainable value (Cabrita&Bontis, 2008). The importance of HC cannot be disputed because it has been proven to be the most important aspect of intellectual capital (Boekestein, 2006; Choudhury, 2010; Cohen &Kaimenakis, 2007; Durst, 2008; Jardón&Martos, 2009). Management literature has identified high-skilled HC as a crucial dimension of innovation processes at the firm level (Fonseca et al., 2019). Previous research findings show that intellectual capital has a positive effect on firm performance (Chen et al. 2005; Namvar et al. 2010; Hsu & Wang 2012; Khalique et al. 2015; Lee & Lin 2018). Researchers have also stressed the role of HC in explaining how firms successfully translate innovation inputs into innovation outputs (e.g., Faems and Subramanian, 2013).SMEs are highly dependent on HC over other capital because it has a direct impact on SME innovation productivity. Compared to large firms, SMEs are more profitable in terms of HC because they allow more interaction, promote a friendly atmosphere, and encourage creativity and collaboration among employees (Ngha, 2009).

Theoretical Framework and Hypotheses Development

Numerous theories have been developed which prompted researchers globally to realize the importance of HC in improving firm performance. The resource-based view (RBV) theory by Wernerfelt (1984), states that the tangible and intangible resources owned by the firm are heterogeneous, unique, and immovable. Supporting this view, Nadeem et al. (2017) found a significant positive relationship between firm performance and HC. Therefore, it is considered the main essence of the resource-based view (Nadeem et al., 2017). Therefore, several theories that identify the exclusive nature of HC and its components in improving strategic management and firm performance have been established. One of them is the theory of organizational learning (organizational learning) which recognizes the continuous learning process in the firm which will bring innovation in products and processes (Njuguna 2009). Additionally, DCV was introduced as an alternative approach to overcome some of the weaknesses of RBV (Galvin, Rice & Liao, 2014). The DCV theory appears as two functions, namely the extension and reaction to the inability of the RBV that interprets the development and redevelopment of resources and the ability to deal with rapid changes in the environment. DCV, therefore, can be considered as a source of competitive advantage (Teece, Pisano &Shuen, 1997). DCV theory overcomes the limitations of the idea that sustainable competitive advantage is based on the acquisition of valuable, rare, inimitable, and non-substitutable (VRIN) resources. DCV is responsible for allowing firms to integrate, configure, monitor and reorganize their resources and capabilities to adapt to dynamic environmental changes. Thus, DCV is a process that allows firms to realign strategies and resources to achieve sustainable competitive advantage and high performance in a dynamic environment. Although there are past studies that discuss the idea of DCV, but to further advance this theory requires a collective effort from researchers to illustrate the concepts related to the theory and how to connect them with empirical practice in the firm (Bleady et al. 2018). In a nutshell, this study is related to firm resource management that requires an understanding of DCV theory to interact in a dynamic environment. Therefore, the theory of DCV is relevant in this study that link HC to the HC of SMEs through dynamic environment.

2.3 The relationship between HC and the innovative performance of SMEs

The relationship between a firm's HC and IP has been empirically studied in numerous studies. As a measure of employee competency and creativity that enables them to see business opportunities, provide new knowledge, and address issues, HC contributes value to a firm (Inkinen, 2015). Instead of owning its own HC, a business leases the knowledge, abilities, and experience of its staff. The hiring procedures and training programmes used by a firm have an impact on its human resource (Gilbert et al., 2017). The utilisation and development of HC by an employer determines its economic value. Most significant intangible resource for a firm's performance, according to academics, especially in cutting-edge industries like SMEs (Thanh Nhon et al., 2020). Although Subramaniam and Youndt (2005) did not observe a direct relationship between HC and IP, Del Canto and Gonzalez (1999) proved that HC, measured through the level of qualification and experience of a team of scientists and technicians, has a positive influence on IP. Additionally, Medina et al. (2011), Halim et al., (2014) and Delgado (2015) achieved similar results, demonstrating that HC plays an important role in improving various aspects of IP. Firms that employ skilled workers and experienced managers will produce new product development performance as only HC can bring the skills and abilities of workers to a high level (Y. H. Hsu & Fang, 2009). These studies highlight that the ability of employees to innovate, in part, needs to be supported and complemented by social interaction between them (Medina et al., 2011). Close and informal interaction intra-firms will create a dynamic environment for information and knowledge sharing, this further contribute to innovative solutions and new products development (Delgado, 2011). Although most studies have focused on large firms and less on SMEs in the context of HC, studies have proven that SMEs have certain characteristics and capabilities that allow them to develop personal competence of their members, and the uppermost innovativeness. Thus far, HC assets have been found to produce a positive effect on IP in Malaysian SMEs (Bakar and Ahmad, 2010; Agostini et al., 2017). With this, we develop the first hypothesis:

H1: Human capital positively influences innovation performance of SMEs

The relationship between human capital and the learning capabilities

HC is intrinsically knowledge-based (Inkinen, 2015). The knowledge, skills, and abilities held and utilised by the employees or members of an firm are referred to as its HC (Youndt et al., 2004). Existing research has produced sufficient data to demonstrate that a firm's capacity for learning, integration, and reconfiguration is heavily dependent on the presence of knowledgeable, skilled, and experienced personnel, considering the personal aspect of knowledge resources (Hussinki et al., 2017). Experienced Employees are better able to recognize changes, allocate resources wisely, and choose the best course of action, leading to more accurate outcome prediction. Consequently, businesses are better able to adjust to changes in the business environment (Eriksson, 2014; Thanh Nhon et al., 2020). Therefore, one's knowledge, motivation, skills, experiences, and probabilistic judgments are influenced by one's capabilities (Singh & Rao, 2016). Therefore, HC supports the growth of LC. According to Nieves and Haller (2014), employees' knowledge and abilities support capacity for learning and reconfiguration as well as resource replenishment.

H2: Learning capability positively influence innovation performance

The relationship between learning capability and the innovative performance of SMEs

In this context, learning is the process of improving the effectiveness and efficiency of business processes through practise and review. Learning capability helps businesses create new products by enabling them to explore new knowledge, avoid committing the same errors twice, and learn from prior mistakes (Obeidat et al., 2018). According to some researchers, a firm can improve performance by acquiring fresh information, ideas, and skills through external cooperative alliances. Additionally, research shows that a learning orientation enhances one's capacity for innovation (Lee & Falahat, 2019). According to Lin and Wu (2014), a firm should change, acquire, or get rid of resources to change its business orientation through internal and external learning. Training, knowledge database upkeep, and information exchange programmes can all promote internal learning. Additionally, a firm can improve its capacity for external learning by anticipating industry information and participating in learning seminars or communities. Firms may be able to acquire external knowledge, but it is difficult to assimilate and apply this knowledge internally. Therefore, Tseng, Chang Pai, & Hung (2011) have

suggested that LC can improve the IP of businesses because firms that have a level of HC knowledge can assimilate the acquired external knowledge. Firms need to obtain external knowledge and to develop LC and further develop innovative magnitude and firm performance. Many firms acquire external knowledge through different means, including mergers and acquisitions and strategic alliances, especially in the intensive research and development (R&D) sector where technological innovation is focused (Jeon, Hong, Ohm, & Yang, 2015). Therefore, the next hypothesis is:

H3: Learning capability positively influence innovation performance

The relationship between human capital, learning capability and the innovative performance of SMEs

The model of LC is a paradigm that has the potential to explain the new resources as a catalyst for firm performance, thus enabling the reconfiguration of firm resources and strong defenses to deal with the environmental change (Teece et al., 1997; Wu, 2010; Thanh Nhon et al., 2020). Therefore, LC represents a high-level activity that allows firm's management to understand and seize opportunities thus, navigate threats through the combination of restructuring the firm's assets for addressing the change of customer needs to maintain and strengthen evolutionary vitality, which benefits the firm's long-term performance (Teece, 2007; Koentjoro&Gunawan, 2020). However, Teece et al., (2009) stated that the essence of efficiency and capability is rooted in the firm's processes and management, formed by the position of assets such as knowledge assets that are difficult to trade, intellectual property, relational assets, and technological assets. Similarly, Nickerson and Silverman (2003) stated that the integration of HC management practice is the main weapon for competitiveness to achieve the IP of SMEs.

Han & Li (2015) found that knowledge integration capabilities have a positive effect on firm performance through their studies in the automobile and computer industries. The results show the contribution of LC to performance improvement. Furthermore, various theoretical researchers state that HC that has characteristics such as valuable, irreplaceable, and difficult to imitate can be reconfigured to implement value-added strategies that have never been implemented by competing firms and are also difficult to replicate (Barney, 1986; Dierickx and Cool, 1989; Wenerfelt, 1984), which determines the excellent performance (Barney, 1991). Therefore, numerous studies have been carried out to prove this analogy by empirically investigating the role of LC in mediating the relationship between HC and firm performance (Lin and Wu, 2014), entrepreneurial resources and early-stage performance (Wu, J., 2007) as well as firm resources and the firm's technological enterprise performance (Wu, F., Yenyurt, S., Kim, D., & Cavusgil, S. T., 2006). The firm's knowledge must be shared so that it will potentially induce the dynamic internal processes, thus drive innovative creation of the SMEs (Flatten, Engelen, Zahra, & Brettel, 2011). This process is believed to be achieved through the LC process. Therefore, the mediating role played by LC can leverage the HC for innovative development of firms (Cassol et al., 2016). Therefore, this study examines the relationship of LC as a mediator between the HC and SMEs IP in a dynamic business environment. Hence, it is observed that firms are more likely to innovate their HC strategically, developing it through the LC process. Therefore, this study proposes the following hypothesis:

H4: Human capital is positively related to the innovative performance of SMEs through the learning capability.

Figure 1: The research framework



3. Methodology

The purpose of the study is to identify the relationship of HC on SMEs IP performance through LC as mediator. SMEs companies were identified using Malaysian External Trade Development Corporation (MARTRADE)

websites. Questionnaires were sent to the identified SMEs' owners/managers using the Google survey form through mail approach. Data was analyzed using Structural Equation Modelling-Partial Least Square (PLS) statistical tools.

3.1 Variable Measurement

Table 1: Variable Measurement

Variables	Source	Measurement	Number of items
Human capital	Cassol et al. (2016)	7 point Likert scales 1= Strongly disagree 7= Strongly agree	14 items
Learning capabilities	Singh & Rao (2016)		4 items
SMEs innovative performance	Zhang et al. (2018)		3 items

Table 1 shows the measurement for all the variables. The measurement for IP as a dependent variable has been adopted and modifies to meet the needs of this research (Singh & Rao, 2016). The independent variable of HC was measured based on HC management and practices which were adapted from Cassol et al., (2016). Learning capabilities and integration capabilities are measured based on the SMEs capabilities to enhance IP (Zhang et al., 2018). All variables are measured with the seven-point Likert scale ranging from “strongly disagree” to “strongly agree.” Prior to sending out the survey, pre-test was conducted. Four academicians reviewed the questionnaire with regards to its structure, content, and wording. Following this it was tested with three SMEs owners who reviewed it for ambiguities in terms, meanings, and other potential issues

Data Collections

Figure 2: Small and Medium Enterprises definition in Malaysia

Sales turnover	Manufacturing	Services and other sectors
Micro	Sales turnover is less than RM300,000 OR full time employees is less than 5	Sales turnover is less than RM300,000 OR full time employees is less than 5
Small	Sales turnover from RM300,000 to less than RM15m OR full-time employees from 5 to less than 75	Sales turnover from RM300,000 to less than RM3m OR full-time employees from 5 to less than 30
Medium	Sales turnover from RM15 million to not exceeding RM50m OR full-time employees from 75 to not exceeding 200	Sales turnover from RM3 million to not exceeding RM20m OR full-time employees from 30 to not exceeding 75

Effective from 1st January 2014, the new definition of SME is used where the qualifying threshold for annual turnover and number of employees has been revised in all sectors to adapt with the current economy situation (SMECORP, 2013), as depicted in Table . The SME firms selected as a sample are small and medium size firms registered under SME Corporation Malaysia. Micro-sized businesses were not included in this study due to their inherently small size, lack of formal structures or business structures, and the fact that

they typically engage in limited trading activities like product sales and other small-scale trading with no in-house innovation. The SME sector was chosen because it is the main contributor to GDP (Waseem Barkat and Loo-See Beh, 2018; Department of Statistics Malaysia 2017). The analysis units of this study are the Chief Executive Officer, Accountant, Managing Director, General Manager, Owner, Manager, Assistant Manager. The selection of these respondents is based on their knowledge and exposure to the firm's resources and strategies. In this study, 826 questionnaires have been distributed to SMEs between the time periods February to July 2022. The valid and usable questionnaire were 250 in total yielding 29% response rate. The population consisted of SME firms in Malaysia and the sample of studies was SME firms in small and medium enterprises only. The population for this study totalled 213,395 covering small and medium sizes. Based on Cohen, Manion and Morrison's (2001) schedule the sample size for this study is $N=247$ where 95% confidence and 5% error. Targeted random sampling was selected in this study for the states of Selangor, Kuala Lumpur and Johor. The selection of the states involved is based on the 2011 census where Selangor, Kuala Lumpur and Johor are the three highest states. These three states account for more than one-third of the total number of SMEs (<https://smecorp.gov.my/>). SME sampling data is taken from the Malaysian External Trade Development Corporation (MATRADE) (<https://www.matrade.gov.my>). This study uses a quantitative method. SME companies were identified using Malaysian External Trade Development Corporation (MATRADE) websites. Questionnaires were sent to the identified owners/managers using the Google survey form through mail approach. Two weeks after the questionnaire had been sent a reminder was sent, with telephone calls then being undertaken to raise the valid response rate. In this study, an online survey has been used to collect data and a total of 250 usable surveys were collected from the SMEs owners in Malaysia. All received questionnaire has been reviewed to ensure that the data collected could be analyzed.

Data Analysis

The structural equation modelling technique was a second-generation multivariate data analysis method selected to test the research model, and partial least square (PLS) using SmartPLS (Ringle et al., 2020) was employed as the statistical tool to examine the measurement and structural model. The assessment on the research model was firstly tested on the measurement model (validity and reliability of the measures) and secondly, the evaluations were done on the structural model (testing the hypothesized relationships) (Hair et al., 2012)

4. Findings and Discussion

Measurement Model

The reliability and validity of the model were assessed by the measurement model of PLS-SEM path modelling. As can be seen from Table 2, the reliability analysis has been achieved for all reflective constructs as represented by Composite Reliability (CR), which is above the threshold of 0.70 for all variables. The Average Variance Extracted (AVE) that represents the convergent validity of reflective constructs is also achieved. AVE is above the threshold of 0.50 and thus indicates that each of these constructs explains more than 50% of the variance of its indicators (Hair et al., 2014). Table 2 summarizes the results and shows that the 3 constructs are valid measure for the respective construct. According to Hair et al. (2014), indicators with loading that below 0.7 can be kept when the minimum of AVE result of 0.5 is achieved but within a threshold of 0.5 to 0.7. The indicators of MI11, MI12, and MI13 have lower loading than 0.7 can be kept when the minimum of AVE result of 0.5 is achieved (Hair et al., 2017). Items MI14 (-0.196) and PI1 (0.24) with low loading are dropped. A low but significant loading of 0.50 and below suggests that one should consider deleting the indicator, unless there is strong support for its inclusion on the grounds of measurement theory (Hair et al., 2014). After deletion, IP construct only have two items left. Based on Hair et al. (2013), PLS-SEM can handle reflective and formative measurement models as well as only one-single item in a construct. Hence, two items in IP after deletion of one item is acceptable.

Table 2: Measurement Model

Construct	Items	Loadings	AVE	CR
Learning Capability	KP1	0.930	0.855	0.959

	KP2	0.929		
	KP3	0.942		
	KP4	0.897		
Human Capital	MI10	0.641	0.531	0.936
	MI11	0.681		
	MI12	0.695		
	MI13	0.591		
	MI2	0.680		
	MI3	0.758		
	MI4	0.718		
	MI5	0.866		
	MI6	0.735		
	MI7	0.789		
	MI8	0.800		
	MI9	0.816		
	MI1	0.940		
Innovation Performance	PI2	0.967		
	PI3	0.654	0.910	0.953

Note: * All the loadings which exceed recommended value of 0.7 (Hair et al., 2017) are retained. Items (MI14, PI1) with low loading are dropped

The discriminant validity of the constructs of this study was assessed using the heterotrait-monotrait (HTMT) technique. The HTMT is defined as the mean value of the item correlations across constructs relative to the (geometric) mean of the average correlations for the items measuring the same construct. Discriminant validity problems are present when HTMT values are high. Henseler et al. (2015) propose a threshold value of 0.90 for structural models with constructs that are conceptually very similar, for instance cognitive satisfaction, affective satisfaction and loyalty. The discriminant validity assessment using HTMT techniques as suggested by Henseler et al. (2015) was conducted as per Table 3 which specifies that all the values were less than the HTMT.85 value of 0.85 (Goodboy & Kline, 2017) or HTMT.90 value of 0.90 (Gold et al., 2001), thus specifies that discriminant validity has been met (Gold et al., 2001; Henseler et al., 2015).

Table 3: HTMT Criterion (Discriminant Validity)

	Human Capital	Innovation Performance	Learning Capability
Human Capital			
Innovation Performance	0.355		
Learning Capability	0.830	0.434	

The variance inflation factor (VIF) measures the collinearity among the indicators. The result as per in Table 4 on the VIF values of each construct indicates that the score of VIF is below the recommended threshold value of 5 (Sarstedt et al., 2014) and there were no collinearity issues in this model.

Table 4: Lateral Collinearity Assessment (VIF)

Construct	Innovation Performance	Information Search (VIF)
Human Capital	2.745	1
Learning Capability	3.055	

Structural Model

The structural equation model was employed using bootstrap indirect effect to analyse the predetermined hypotheses (Hair et al., 2014). As presented in Table 5, the statistical analysis revealed that HC is not positively influence IP ($\beta = 0.067$, $p < 0.262$ and therefore hypotheses 1 is not supported. The empirical data indicated that HC is positively related to LC ($\beta = 0.791$, $p < 0.05$), LC is positively related to IP ($\beta = 0.356$, $p < 0.05$). Hence, the empirical analysis also supported the H2 and H3. On other hand, LC mediated the relationship between HC and IP ($\beta = 0.323$, $p < 0.05$). Thus, H2, H3 and H4 are all supported. On the mediating relationships, although the mediation relationship is significant based on path coefficients (Beta) and their T-statistics (t-value), nevertheless, the hypotheses may only be supported when there is no zero between Lower Limit (LL) and Upper Limit (UL) of the confidence interval, which relies on bootstrapping standard error (Hair et al., 2014). However, as shown in Table 6, there is no zero between any of the confidence intervals of each of the relationships. Hence, hypotheses relationship on the mediating effect of LC on the relationship between HC and IP is therefore supported empirically

Table 5: Hypotheses testing

	Relationship	Std Beta	Std Error	T-Value	P Values	Decision
H ₁	Human Capital → Innovative Performance	0.067	0.104	0.639	0.262	Not Supported
H ₂	Human Capital → Learning Capabilities	0.791	0.019	41.857	0.000	Supported
H ₃	Learning Capabilities → Innovative Performance	0.356	0.097	3.675	0.000	Supported
H ₄	Human Capital → Learning Capabilities → Innovative Performance	0.323	0.041	7.917	0.000	Supported

Note: * $p < 0.005$ = significant

Relationship	Confidence Interval (BC)		Decision
	LL	UL	
Human Capital → Learning Capabilities → Innovation Performance	0.236	0.399	Supported

Table 6: Bootstrapped confidence interval

The findings show that H1 are not supported, while H2, H3 and H4 are all supported. The SMEs IP influence by the component of HC, and LC as mediator. The mediation variable is a valid and powerful means to illustrate

the effects of HC practices on SMEs IP via LC. The study was built on the platform dynamic capabilities perspectives (Helfat et al., 2007). LC involve coordination, learning, and strategic competitive response activities that include new creatively and innovatively derived routines and resources. This reveals that SMEs can function innovatively if HC management and practises are taken care of with appropriate coordinating, learning, and competing strategy-related activities, as well as newly developed, inventive, and creative routines and resources. However, the results are not surprised compared to the previous studies as they also found that LC mediated the relationship between firm knowledge management practice and export performance (Villar et al., 2014), valuable resource-based and performance (Lin and Wu, 2014), as well as entrepreneurial orientation and performance (Wu, 2007). The mediating role played by LC can leverage the intellectual capability for innovative development of firms (Cassol et al., 2016). As such, the study addressed an important knowledge gap of understanding the relationship of HC as a form of knowledge resources could be used as an antecedent of LC and leads to the performance as well. At the same time, the study also reaffirmed the intervening role of the LC perspective between HC and IP.

5. Conclusion

Overall, this study reduces ambiguity regarding the mediating mechanism of LC through which HC improves firm performance. Specifically, these findings provide evidence that LC serve as important mediating mechanisms between HC and IP. By accumulating capital and developing LC to mediate HC, firms can improve their competitive advantage and IP. Therefore, it is crucial to develop LC by creating mechanisms to absorb information and knowledge through iterative business practice. Moreover, developing LC internally via human resources development programs and externally via strategic cooperative alliances is also critical for improving firm competence. The study provides empirical evidence of the relationship between HC, LC, and innovative performance among SMEs in emerging economy. Results of the study indicate HC have significant influence on the SMEs IP. SMEs should continue developing LC to capitalise the knowledge potential. The findings contribute to the line of literature on relationship between intellectual capital, capabilities, and innovation taking DCT as the underlying theory to explain the relationship. The outcome of this study demonstrates the benefits of fostering innovation while highlighting the importance of LC in the exploitation of HC. The management and policymakers can use the findings to promote suitable initiatives towards facilitating SMEs to achieve competitive advantage.

This study is not an exceptional limitation including its use of perceptual data. Furthermore, a single dimension of intellectual capital and dynamic capabilities are used in this study. Therefore, future research should consider qualitative approach such as case study method to explain causality between the variables. The influence of multiple dimensions of intellectual capital and dynamic capabilities to performance are worth to explore in future studies.

6. References

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