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Enhancing the Competitiveness of Malaysian SMES Through Technological Capability: A Perspective

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Abstract: Global business environment that is constantly changing has given new challenges and opportunities for SMEs. The demand of competitive environment caused the firm to respond, formulate strategies and develop capabilities. Technological capability is the ability of organizational and individual resources which include firm knowledge, skills and experience to design and produce new innovative products, improve competitive advantage, thus achieve desired result. Understanding technological capability can help firms assess their weaknesses and strengths in order to plan for innovative technology strategies. The definitions, importance, parameters of technological capability and also background of Malaysian SMEs are determined based on review of journal study as well as reports from Department of Statistics Malaysia (DOS) and from Small and Medium Corporation Malaysia (SMECorp). This study aims to identify the relevancy of technological capability approach in order to enhance competitive advantage for Malaysian SMEs. All the definitions, categories and determinants of technological capability for SMEs must be developed because this will lead to the development of an instrument to measure technological capability for SMEs in Malaysia. The reviews indicate that certain level of technological capability in SMEs brings additional positive effects such as act as a strategic tool to compete with others, produce innovative product, growth in the innovation process, respond to the market changes, increase firm performance and improve the awareness of technological capability's role and its importance.

Key words: Competitiveness, small and medium enterprises, technological capability, new challenges, opportunities

INTRODUCTION

Currently, the occurrence of global business environment that is constantly changing has given new challenges and opportunities for SMEs. The important roles of SMEs are stimulating innovation and developing the national economy under the Tenth Malaysia Plan and the New Economic Model. SMEs are also the major contributor in Malaysia's total establishment which is 97.3%.

Competitive strategies gave a great positive impact on firm performance (Ortega, 2009). Performance can be improved when existing resources correspond to the competitive strategies of the firms. A firm can have a competitive advantage in their industry by using the technological capabilities as an important strategic resource. Moreover, the demand of competitive environment caused the firm to respond, formulate strategies and develop capabilities in accordance with the competitive environment (Chew *et al*., 2008).

In low technology-based industries, top managers view that it is very important to obtain and maintain competitive advantages by using technology capability. Usually medium-low-tech company are less invested in their own technological capability (Reichert and Zawislak, 2014). In developing countries, technological capability has become the focus of interest from counts academia, business managers and also government officials because of its important role in the competitive advantage of the country, industry and firms (Jin and Von, 2008).

Therefore, this study is based on the literature review on how Malaysian SMEs can enhance its competitiveness through technological capability approach. All the information about the definitions, importance of technological capability and background of the Malaysian SMEs were obtained based on reviews from journal articles, as well as reports from the Department of Statistics Malaysia (DOS) and Small and Medium Corporation Malaysia (SMECorp).

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Literature review

SMEs in Malaysia and its challenges: The main drivers of the Malaysian economy that have been recognized are Small and Medium Enterprises (SMEs). Consequently, SMEs contribute the amount of total involvement of SMEs in Malaysia is 97.3% which is 645.136. From the year 2012, the performance of SMEs in Malaysian GDP has been reported to show an increase of 0.5% and expanded to 33.1%. SMEs comprises of six sectors which are agriculture, import duties, mining and quarrying, manufacturing, services and construction. Construction, services and manufacturing sectors are three main contributors that give the most positive impact on the SMEs GDP growth.

Other than that, SMEs also act as a source of large-scale company to excel in the future because they have the source of innovation that can enhance export opportunities (Abdullah and Zain, 2011). Much efforts have been put forward by the government to enhance the SMEs performance. For example, a total of 190 programmes with an amount of RM3.7 billion has been invested by the Malaysian Government to develop SME's capabilities and competitiveness (Choo and Salleh, 2010). The government had set up various programmes in line with the objectives to support the development of SMEs through various ministries and agencies that are categorized into 'financial assistance' and 'business support service's such as the Ministry of Human Resources (MOHR). One of the major programmes under MOHR is the National Dual Training System (NTDS) which is implemented by Department of Skills Development (DSD) in order to provide training to the workers or school dropouts, thus support the demand of workforce in SMEs. NTDS aims to train and produce a lot of certified trainees.

The definition of Malaysian SME is based on two criterias) the business total sales turnover or revenue in a year) the number of full-time employees. SMEs in Malaysia generally defined as manufacturing sector which is sales turnover not exceeding RM 50 million OR full-time employees not exceeding 200. While for services and other services, sales turnover not exceeding RM 20 million OR full-time employees not exceed 75.

Despite the importance of SMEs and the existence of government support from the various ministries and agencies, most literature indicated that SMEs are still having a lot of challenges that hinder their development. It is reported that SMEs had been facing many challenges such as low productivity improvement, low access to finance, lack of human capital and lack of technology adoption (Hasnan *et al*., 2014). As a result, SMEs are still unable to compete globally. Product is very important for SMEs to generate income. Each product must have the standard and quality that meets consumer needs. Most of the products produced are still did not meet the standards and qualities that were set by the international market. This problem had led SMEs to face difficulties to compete with larger firms (Zain *et al*., 2012). Next, it is very important to have sufficient capital to start a business. SMEs usually have a problem in gaining the capital, particularly at the start-up stage. With high-capital, the capability to produce high quality products and meet the standards set by the international market is greater (Aris, 2007). Moreover, lack of human capital is also another challenge faced by SMEs. This is because of Malaysia have more business partners that are usually less experienced, workers with skill in management are low and the productivity of the workers are also low. This is because, hiring skilled and professional workers may incur higher costs (Zain *et al*., 2012). Lastly, the use of technology in SMEs is essential to enhance the management of their enterprise. SME owners who have good knowledge about the technology thus are able to increase the sales of their products. However, there are still many SMEs which do not use technology to improve their management. The use of technology is capable of promoting a product on the local, regional and international (Ng, 2012).

MATERIALS AND METHODS

The definition of technological capability: The evolution and development of technological capability is associated with the input and transformation of capital, human resources, equipment and information (Vertova, 2001). According to Voudouris *et al*. (2012) internal technological capability refers to the skills, knowledge and experience that are necessary in order to initiate and manage changes in technology that is used by the firm in Greek manufacturing industries. Next, in China high tech firms, technological capability is referred as the ability to increase knowledge about the physical world in a unique way as well as convert this knowledge into the design and instructions for creating new products or processes (Wang *et al*., 2006). Technological capability can also be known as the knowledge of the firm and the capacity of organizational and individual resources which includes humanware, technoware, organware and inforware (Jiang, 2000; Yan *et al*., 2008) defined technological capability as the firm's ability to choose, to improve the technology absorption, the development to introduce new technology and new technology creation. Furthermore, in Spanish biotechnology firms, technological capability is defined as the ability of generic knowledge-intensive to jointly

mobilize technical and scientific resources in order to successfully develop different products and processes that are innovative and productive (Garcia and Navas, 2007). Other than that, technological capability is as a knowledge based and work as a different scientific techniques available to the firm such as cables, generators and lighting in electrical and electronic industry (Haeussler *et al*., 2012; Zawislak *et al*., 2012) defined technological capability in Brazil low and medium-low-technology industries as the firm's ability to carry out a set of activities that enable the knowledge development of new technologies, thus achieves positive economic results.

While in UK aerospace industry, technological capability is defined as an innovation of technology and awareness for the needs of future technology (Reed and Walsh, 2002). Moreover, technological capability is defined as the ability to identify and exploit the technological opportunities to produce new products or noticeable improvement and successfully commercialize the products (Petti and Zhang, 2011). In Spain information and communications technology industry, technological capability can also be known as the ability to create new products or processes, handle facilities efficiently and any related technical function or activity that is conducted within the firm (Ortega, 2009).

Besides, by emphasizing the dynamic nature of the company's technical development, technological capabilities are defined as the company's ability to make choices, increase the absorption, technological development and the creation of new technology (Peng *et al*., 2007). At the national level, technological capability can be known as the accumulation of an individual's effort and business strategies that have to select, operate, understand, adapt, install, improve, sustain and develop technology (Sobanke *et al*., 2013). Finally, technological capability can be understood as the ability of organizational and individual resources which include firm knowledge, skills and experience to design and produce new innovative products or processes, improve competitive advantage, thus achieve desired result.

The importance of technological capability: In high-tech industries, firm's technological capability play role as the strategic resource that enable those industries gain competitive advantage (Ortega, 2009). Sobanke *et al*. (2013) describe the importance of technological capability at two levels which are; at firm and national level. At the firm level, technological capability causes an increase in productivity and facilitates innovation. While at the national level, technological capability enhances its competitive advantage, increase productivity and drives economic growth.

Apart from that, great technological capabilities can also help a firm to obtain continuous of economic returns for a long time (Jiang, 2000). In addition, technological capability can be renewable by using a key role of technological forecasting and development such as adapting, integrating and reconfiguring the resources, external and internal firm's skills and functional competencies (Banerjee, 2012). The accumulation of such technological capabilities concerns the development of deeper forms of knowledge that is essential to maximize effectiveness of any technology investment (Zhou and Wu, 2010).

Based on industry reports in developing countries, there are some innovations among micro, small and medium enterprises which prove the existence of some level of capabilities (Sobanke *et al*., 2013). At the firm level, technological capability facilitates innovation and contributes to increase productivity (Ortega, 2009). Those firms with excellent technological capabilities can be more innovative thus serve at a higher level by reacting to the changing market revolution, producing innovative products that have higher differentiation compared to other competitors, ensuring higher efficiency during the innovation process and achieve higher profit (Ortega, 2009; Shu and Ming, 2007). Technological capabilities can also improve quality of a product and as a way to achieve higher quality processes in an organization, thus increase satisfaction from the customer (Akroush, 2012).

Indeed, the importance of technological capability has been well accepted with nowadays business environment that is increasingly demanding and competitive (Jin *et al*., 2000). Lastly, recognition of the technological capability and its level is one of the key activities in helping firms to assess the weaknesses and strengths of the firm, plan for innovative technology strategies and improve the competitive advantage (Son, 2014). Therefore, more value will be created by the firm if they understand the role and the importance of technological capability such as achieve higher profit than other competitors within their industry.

The parameters of technological capability: There are different parameters that have been used by the previous researchers in order to measure the level of technological capability. The technological capability assessment is important because it can helps the technology to be improved, point out the best level in technological capability and analyze the strengths and weaknesess of a firm (Jin *et al*., 2000). The author has issued some parameters for measuring technological capability that has been used by five previous studies that have been

conducted in four developed countries such as Korea, US, Greece and Spain. Lee *et al.* (2001) measure the technological capability in the technological start-up companies in Korea by using number of patents, quality control, financial resources and entrepreneur capability. Schoenecker and Swanson (2002) apply number of patents, R and D expenditures and innovation capability as the parameters to measure firm technological capability in the chemical, electronics and pharmaceuticals industry in United State.

Garcia and Navas (2007) used only one capability which is innovation capability in order to measure technological capability in biotechnology industry, Spain. In Greece, Voudouris *et al.* (2012) attempt to measure technological capability using production capability, technology formation capability, R and D capability and networking capability in the manufacturing SMEs industry. Karagouni *et al.* (2013) used only production capability in order to measure technological capability in low-technology sector.

While in developing countries, there are ten authors from different countries and different industries. The countries consist of China, Nigeria, Indonesia, Jordan and Brazil. In China list out the indicators of technological capability on IT firms which consists of service capability, support capability, innovation capability, marketing capability, technological formation capability and production capability. Mei and Nie (2007) measure technological capability in the optoelectronics manufacturing firm by using technology formation capability, marketing capability and network capability. In electrical sector, Yan *et al.* (2008) applied production capability, marketing capability and innovation capability to measured technological capability in electrical equipment manufacturing industry. Marketing capability, innovation capability and entrepreneur capability are used to measure core capability and competitive strategy in construction SMEs (Chew *et al.*, 2008). Lastly in China, Wu *et al.* (2014) presented technological formation capability and financial support as the measurement of technological capability in telecommunication industry.

Where in Nigeria, Sobanke *et al.* (2013) measure technological capability by using production capability, support capability and technological formation capability in the metalworking SMEs. While in manufacturing sectors, Azubuike (2013) apply innovation capability as the instrument to measure technological capability and firm performance in new product development.

In Jordan, Akroush (2012) point out four indicators to measure technological capability in manufacturing industry which are technological formation capability, innovation capability, R and D capability and production capability. Chumaidiyah (2012), stated that technological formation capability and production capability are as the indicators in measuring technological capability in Indonesia telecommunications industry. Next in Brazil, R&D capability and patents count are as the parameters in measuring technological capability in low and low medium technology industry (Reichert and Zawislak, 2014).

RESULTS AND DISCUSSION

In essence, there are the main issues and challenges in SMEs which are the unavailability in productivity, finance, human capital and technology. However, financial issue has been identified as one of the major concerns by the SMEs. Most of SMEs have difficulties in hiring skilled workers, improve productivity and invest in appropriate technology as they need more capital to enhance the effectiveness and efficiency of the company. These challenges affect the SME to compete globally.

The findings from the reviews deepen and broaden our understanding of how technological capability can enhance competitiveness in Malaysian SMEs. There are also a lot of parameters that have been used by the previous researchers in order to measure the level of the technological capability in a firm such as production capability, innovation capability, R and D capability, technological formation capability, networking capability, service capability, support capability and marketing capability. Different countries or different type of industries will select and applied different type of parameters which depends on their resources. Each of the firm's capabilities is so important and cannot be neglected. For this reason, the suitable parameters that can be applied in Malaysian SMEs need to be identify and choose wisely based on the previous models that have been used as an instrument to measure the technological capability. The definitions, parameters and determinants of technological capability for SMEs must be developed. Therefore, this will lead to the development of an instrument to measure technological capability for SMEs in Malaysia.

In the same way, SMEs need also to exploit the existing resources, seize the opportunity, explore new roads, understand the technological capabilities approach so that the competitive advantage can be achieved. Therefore, it is important to improve the performance of SMEs and being able to compete with large companies.

This study indicates that technological capability as the ability of an organizational and individual resources which consist of firm knowledge, skills and experience in order to design and produce new innovative products or

processes, enhance competitive advantage and achieve desired results. Hence, the competitiveness of SMEs can be improved if they are equipped with the appropriate level of the technological capability. This leads to the need of measuring the appropriate level of technological capability among the SMEs.

CONCLUSION

From the above discussion, it is apparent that SMEs are performing low results because of the absence of appropriate level of technological capability. This study concludes that certain level of technological capability performs as the most important role that give additional positive effects to the existing SMEs such as can help to identify the weaknesses and strengths of the firm, enhance competitiveness and ability to improve SMEs performance directly or indirectly. It is also expected that awareness of the role and the importance of technological capabilities can upgrade the firm by produce better management and obtain better information as the input in decision making and value creation. Moreover, firm's technological capability will also enable improvements in a process and product development as well as being innovative. Innovative SMEs will produce more innovative products, growth in innovation processes, improve quality of a product, meet customer satisfaction, respond to the market changes and have a stronger performance than other competitors. This unique combination provides a source of competitive advantage that can be sustained over time. Hence, technological capability of SMEs should be as a research agenda at the national level.

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