

Innovation as a Mediator of Knowledge Combination Capability and Firm Performance

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Innovation is inseparable from growth and survival as a vital component of a firm's strategy when it comes to building competitive advantage. There are several reasons for this, such as to implement a more productive manufacturing process, to perform better in the market, to improve customer perceptions and to gain a sustainable competitive advantage. There are four types of innovation: product innovation, process innovation, marketing innovation and organisational innovation. The process of innovation and product innovation in this case acts as a mediator between the ability of a combination of knowledge and performance. The aim of this research was to study the potential of product and process innovation as a mediator in the knowledge combination capability on company performance. The study found that companies need to pay attention to knowledge combination capability, which can contribute to overcoming the lack of resources in MSMEs. The intended knowledge is related to employee knowledge, ideas and information about customer behaviour and organisational needs. This means that the combination of knowledge has a positive effect on process and product innovation.

Key words: *Product innovation, Process innovation, Ability to combine knowledge, Firm performance.*

Introduction

The development of manufacturing micro, small and medium enterprises (MSMEs) in Indonesia is very important because it can create jobs, reduce unemployment and poverty and create a better standard of living for the population. Berry and colleagues (2001) state that the government must concentrate on creating a business environment conducive to the growth of MSMEs, and promote the provision of business development services by the private sector. MSMEs play a role in creating jobs and absorbing workers who are able to mobilise resources. Bank Indonesia's 2016 data on MSMEs show that they have created jobs and are able to absorb almost 97 per cent of Indonesia's workers. Micro-businesses predominantly absorb up to 87 per cent of the workforce, while large businesses can only absorb 3.3 per cent. It is expected that the emergence of MSMEs will be an important driver of domestic economic growth. The increasing number of MSMEs causes increasingly fierce competition, meaning that MSMEs face more severe challenges in being able to expand their businesses and maintain their existence.

Performance is a series of management activities that provide an overview of the extent to which results have been achieved in carrying out their duties and responsibilities in public accountability in the form of successes and deficiencies. Performance can also be a periodic determination of the operational effectiveness of the organisation, parts of the organisation and its employees, based on objectives, standards and predetermined criteria. The performance is the results achieved by an organisation or entity in a certain period, based on a comparison with various standards. Organisations are basically run by humans, so performance appraisal is actually an assessment of human behaviour in carrying out the roles people play in the organisation.

Literature Review

Innovation

Innovation is defined as the ability to apply new ideas or creative solutions to various problems and to take advantage of opportunities (Agustina, 2019). Innovation is inseparable from the firm's strategy for several reasons, such as implementing a more productive manufacturing process, performing better in the market, earning good customer perceptions and, as a result, gaining a sustainable competitive advantage. The OECD Oslo Manual (2005) introduces four types of innovation: product innovation, process innovation, marketing innovation and organisational innovation. Product and process innovation are closely related to the concept of technology development. The aim of innovation is to improve performance (Meng & Brown, 2018). The firm benefits from improved performance through continuous innovation. Innovative capability includes the ability of product and process innovation and refers to the development of new or significantly changed products and processes (Camison

& Lopez, 2012). Innovation is the initial commercialisation of an invention by producing and selling new products, services or processes.

Product Innovation

Product innovation is the introduction of good or new services or significantly improving characteristics or uses, including significant improvements in technical specifications, components and materials, user friendliness or other functional characteristics. Product innovation can utilise new knowledge or technology, or it can be based on the use or combination of existing knowledge or technology. Schumpeter (1934) defines product innovation as the introduction of new goods that are not yet known to consumers or innovation in the quality of new goods. Product innovation means introducing new products/services or providing significant improvements to existing products/services (Polder et al., 2010). For product innovation, the product must be a new product or increase the intended use significantly with its features. For this reason, innovative companies will always update various elements in the firm, such as in products, processes, systems and thinking patterns.

Bayercelik et al. (2014) state that the factors influencing SME innovation are finance, firm size, technological capability, consumer preferences, economy, culture, management expertise, learning ability, market orientation and competitive advantage. Kemayel (2015) conducted a study on SMEs in Lebanon, which found that building relationships with customers, suppliers, competitors and banks was the most important success factor for SMEs.

Process Innovation

The innovation process involves the application of new or significantly improved production methods. This includes significant changes in techniques, equipment and/or software. Process innovation can be aimed at reducing unit production or shipping costs, improving quality or producing new products. Production methods involve techniques, equipment and software used to produce goods or services. Schumpeter (1934) states that the process of innovation involves the introduction of new production methods, goods that have not been tested by experience in the branch of the factory concerned or new ways of handling commodities commercially. Process innovation means significantly improving production and logistics methods or introducing significant improvements in supporting activities such as purchasing, accounting, maintenance and computing (Polder et al., 2010). The OECD (2005) defines process innovation as the implementation of new or significantly improved production or delivery methods. Companies introduce process innovations to produce innovative products (Adner & Levinthal, 2001).



Process innovations include bringing significant improvements in equipment, technology and software from production or delivery methods. The firm brings new techniques to the production process and shipping methods to create efficiencies. New methods are ways of producing, distributing or managing that have never been used before. Polder and colleagues (2010) show that process innovation brings new techniques and inputs to production systems to improve the quality of components and materials.

Knowledge Combination Capability

Knowledge combination capability and innovation can improve firm performance. A combination of knowledge is needed for the successful performance of innovative technological organisations where innovation is very important and becomes the key to creating competitive advantage. Companies must realise that having adequate knowledge will be very beneficial for the development of the firm. One of the keys to a firm's success is to combine the knowledge of firm leaders and thus disseminate and introduce the knowledge combination capability to members of the firm to support the development of innovations, resulting in better entrepreneurship.

Knowledge combination capability can help companies design efficient processes to benefit and meet planned goals in the firm, because it involves various sources of knowledge and ideas that can complement and combine to reduce uncertainty, risk and costs. Smith and colleagues (2005) and Carmeli and Azeroul (2009) measure knowledge combination capability that comprises employees collaborating, combining and exchanging ideas between themselves to find out and solve problems and create opportunities; sharing their ideas generate get new ideas; sharing their experiences to carry out new work or initiatives more effectively; and learning to share their ideas and knowledge to find solutions to problems encountered. Knowledge combination capability is similar to the ability to absorb, which is defined as a series of organisational routines and strategic processes by which companies acquire, assimilate, change and apply their knowledge (Zahra & George, 2002).

The knowledge combination is considered to be the ability to continuously combine knowledge intensively in the technology industry (Schumpeter, 1934). Smith and colleagues (2005) state that the knowledge combination refers to the ability of individuals to absorb and combine information that has been exchanged. The ability to combine knowledge primarily concerns the capacity of individuals to absorb and integrate information exchange. For this reason, it is important to build the ability to combine knowledge into work units to improve performance and to allow them to better overcome challenges, neutralise threats and seize opportunities (Carmeli & Azeroul, 2009).

Knowledge combination capability generated through the exchange of knowledge between individuals and work teams is a process that allows the transfer of knowledge to the organisation and that can be applied to develop new products and processes (Camelo-Ordaz et al., 2011; Rhee et al., 2010). The ability to combine knowledge can be an effective way to succeed in developing organisations. Knowledge combination capability related to the development of innovation allows ideas to encourage and support sustainable growth in organisations (Jimenez et al., 2016). It can thus be concluded that the knowledge combination capability is the ability of individuals to absorb and integrate information exchange in organisations. Companies need to pay attention to the extent to which knowledge combination capability can contribute to overcoming a lack of resources in MSMEs.

Firm Performance

Companies can achieve competitive advantage if they can create more value from their competition (Kihoro & Karanja, 2015). Performance has many aspects, such as finance, environment and organisation (Schoenherr et al., 2014). Gunday and colleagues (2011) state that the performance of small and medium-sized enterprises (SMEs) can help generate business profit and sales growth rate, increase market share and customer satisfaction, generate employee satisfaction, and improve product quality and productivity. According to Najib and colleagues (2011), business performance is generated by sales volume, understanding of the market and profitability. Brockman and colleagues (2012) state that performance can be measured using indicators of sales growth, calculating the market, net profit, return on investment and return on equity. Firm performance is the ability of organisations to achieve goals by using resources efficiently and effectively. Good performance is revenue that is managed for several years.

Research purposes

The aim of this research was to study the potential of product and process innovation as a mediator in the knowledge combination capability on company performance. This research is expected to be a reference and resource for future researchers wishing to conduct research related to the development and management of MSMEs.

Method

In this study, the literature was obtained from articles published online. To search for literature, the keywords used were *innovation products*, *innovation processes*, *knowledge combination capabilities* and *firm performance*. Articles have been reviewed based on keywords, analysed and developed based on these variables to build hypotheses.

Results and Findings

Knowledge Combination Capability, Product and Process Innovation

Knowledge combination capability is defined as a combination of routines in the organisation and the firm's strategic processes involved in changing, assimilating and applying knowledge (Zahra & George, 2002). Knowledge management is the firm's ability to innovate depending on the management, maintenance and creation of knowledge (Smith et al., 2005).

In developing new products, knowledge combination capability consists of the exchange of knowledge between individuals and work groups; this will result in the transfer of knowledge within the organisation in relation to the development of innovation (Camelo et al., 2011; Rhee et al., 2010). The combination of knowledge will lead to a large variety of innovative products. By combining employee knowledge, organisations can access more information, ideas and understanding of different behaviours from various customers and become aware of different organisational needs, to improve the ability to innovate with the development of better and more successful products (Collin & Smith, 2006),

Camelo-Ordaz and colleagues (2011) state that the relationship between knowledge and innovation performance is an important element in optimising innovation performance. This positive relationship between knowledge performance and innovation means that human resources contribute to the creation of knowledge needed by employees by sharing information for innovation. Shu and colleagues (2012) took samples from 270 industrial companies, empirically showing that the combination of knowledge has a positive influence on process innovation.

Karbasivar and Skandari (2016) state that knowledge combination significantly influences Product innovation. Knowledge combination capability has a positive effect on product and process innovation (Jiménez & Fuentes, 2012). Henderson and Clark (1990) state that a firm's ability to innovate is linked to the ability of managers to incorporate knowledge into the firm.

Product and Process Innovation, and Firm Performance

Rosli and Sidek (2013), Surroca and colleagues (2010), and Pett and Wolff (2009) state that product and process innovation has a significant influence on performance. Damanpour and colleagues (2009) state that innovation has a positive effect on firm performance, so companies innovate to benefit from the achievement of better performance. Saunila and colleagues (2013) and Nybakk (2012) illustrate the correlation between innovation and SME performance. Rosli and Sidek (2013), evaluating the impact of innovation on firm performance using 284 samples of food and beverage SMEs, textiles and clothing and the

wood sub-industry, found that product and process innovations had a significant effect on firm performance. They also revealed the importance of process innovation and product innovation, which empirically contributed to the performance of SMEs to be more innovative. Small and medium businesses will have good performance if they always innovate in areas such as products, processes and marketing (Ratnawati et al., 2018).

Abdilahi and colleagues (2017) conducted a study in Hargeisa using 378 samples of small and medium enterprises, finding that product innovation significantly affected performance. Camison and Lopez (2012) found a significant relationship of the influence of the ability of the innovation process on firm performance mediated by the ability of product innovation. Baki and Ar (2011), emphasise that product and process innovation has a significant positive influence on firm performance. Hajar (2015), examining the relationship between innovation and the performance of small and medium-sized wood furniture manufacturing companies in Indonesia found that innovation has a positive effect on firm performance.

Conclusion

Knowledge combination capability is the ability of individuals to absorb and integrate information exchanged within the organisation. Companies need to pay attention to knowledge combination capability, which can contribute to overcoming the lack of resources in MSMEs. Collin and Smith (2006) state that product innovation will be better and more successful if the firm is able to combine the knowledge possessed by individuals in the organisation. The intended knowledge is related to employee knowledge, ideas and information about customer behaviour and organisational needs. This means that the combination of knowledge has a positive effect on process and product innovation.

Innovation provides many opportunities for SMEs to develop further to face challenges. An innovative mindset helps companies to expand their search for customer desires and needs because of their openness to new concepts and creativity. Rosli and Sidek (2013), and Ratnawati and colleagues (2018) have proven empirically that process and product innovations contribute to the performance of small and medium-sized businesses, making them more innovative, and thus improving their performance. There is thus a potential positive influence between process and product innovation on MSME performance.

REFERENCES

- Abdilahi, M. H, Abdikarim, A. H, & Muhumed, M. M. (2017). The impact of innovation on small and medium enterprises performance: empirical evidence from Hargeisa, Somaliland, *International Journal of Academic Research in Business and Social Sciences* Vol. 7, 8.
- Adner, R., & Levinthal, D. (2001). Demand heterogeneity and technology evolution: Implications for product and process innovation. *Management Science*, 47(5), 611-628.
- Baki B, & Ilker M. Ar. (2011). Antecedents and performance impacts of product versus process innovation. *European Journal of Innovation Management*, Vol. 14 No. 2, pp. 172-206
- Bayarçelik, E.B., Tasel, F. and Apak, S., (2014). A research on determining innovation factors for SMEs. *Procedia-Social and Behavioral Sciences*, 150, pp.202-211.
- Berry Albert, Rodriguez E, & Sandee H. (2001). Small and medium enterprise dynamics in Indonesia, *Bulletin of Indonesian Economic Studies*, Vol. 37, No. 3, 363–384
- Brockman, K.B., Jones, A.M. and Becherer, C.R. (2012). Customer orientation and performance in smallfirms: examining the moderating influence of risk-taking, innovativeness and opportunity. *Journal of Small Business Management*, Vol. 50 No. 3, pp. 429-446.
- Camelo, O.C, Garcia CJ, Sausa GE danValle C.R (2011), The influence of human resources management on knowledge sharing and innovation and spine the mediating role of affective commitment. *The international journal of human resources management*, Vol 22 No. 7, pp.1442-1463.
- Camison Cesar, & Ana Villar Lopez. (2012). Organizational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of Business Research*, 67(1), 2891–2902.
- Carmeli, A. and Azeroual, B. (2009), How relational capital and knowledge combination capability enhance the performance of work units in a high technology. *Strategic Entrepreneurship Journal*, Vol. 3 No. 1, pp. 85-103.
- Collins, C, and Smith, K (2006) Knowledge exchange and combination: the role of human resources practice in the performance of high technology firm. *Academic of Management Journal*, Vol. 49 No.3, pp. 544-560.



Damanpour, F., Walker, R. and Avellaneda, C. (2009). Combinative effects of innovation types and organizational performance: a longitudinal study of service organizations. *Journal of Management Studies*, Vol. 46 No. 4, pp. 650-675.

Gunday Gurhan, Ulusoya Gunduz, Kilic Kemal, & Lutfihak Alpkhan, (2011). Effects of innovation types on firm performance, *International Journal of Production Economics*, 133, pp. 662-676, 2011.

Hajar Ibnu. (2015). The Effect of Business Strategy on Innovation and Firm Performance in Small industrial Sector. *The International Journal of Engineering and Science (IJES)*, 4(2), 1-09.

Henderson RM, Clark KB. 1990. Generational innovation: the reconfiguration of existing systems and the failure of established firms. *Administrative Sciences Quarterly*, 35, 9–30.

Jimenez Ruiz J. M, & Maria del Mar F, (2012). Knowledge combination, innovation, organizational performance in technology firms. *Industrial Management & Data Systems* Vol. 113 No. 4, 2013 pp. 523-540.

Jiménez Ruiz J. M, Maria del Mar F, Matilde R. A. (2016). Knowledge combination capability and innovation: The effects of gender diversity on top management teams in technology-based firms. *Journal Business Ethics*, 135:503–515.

Karbasivar A & Skandari H. A, (2016). Studying the relationship between the knowledge combination, innovation and organizational performance in Salamat insurance organization, *International journal of humanities and cultural studies*. Volume 2 Issue 4 p.1810-1824

Kemayel Lina (2015). Success factors of Lebanese SMEs: an Empirical Study, *Procedia-Social and Behavioral Sciences*, 195, pp. 1123-1128.

Kihoro, J.M., & Karanja, K. (2015). Strategic options for creating competitive advantage for youth enterprises in Kenya: A survey of youth enterprises in Murang'a County. *International Journal of Education and Research*, 3(10), 445–456.

Meng Xianhai & Andrew Brown, (2018). Innovation in construction firms of different sizes: drivers and strategies. *Engineering, Construction and Architectural Management*

Najib, M., & Kiminami, A. (2011). Innovation, cooperation and business performance: Some evidence from Indonesian small food processing cluster. *Journal of Agribusiness in Developing and Emerging Economies*, 1(1), 75–96.



Nybakk, E. (2012). Learning orientation, innovativeness and financial performance in traditional manufacturing firms: A higher-order structural equation model. *International Journal of Innovation Management*, 16(5), 28.

OECD. (2005). *European Union Oslo manual: Guidelines for collecting and interpreting innovation data*.

Pett, T.L., & Wolff, A. (2009). SME opportunity for growth or profit: What is the role of product and process improvement? *International Journal of Entrepreneurial Venturing*, 1(1), 5–21.

Polder, M., Leeuwen, G.V., Mohnen, P., & Raymond, W. (2010). Product, process and organizational innovation: drivers, complementarity and productivity effects. UNU-MERIT, Maastricht Economic and Social Research and Training Centre on Innovation and Technology.

Ratnawati, Budi E. S, F. Danardana Murwani, & Hari Wahyono, (2018). The Role of SMEs' Innovation and Learning Orientation in Mediating the Effect of CSR Programme on SMEs' Performance and Competitive Advantage. *Global Business Review*, 19(3S), 21S–38S.

Rhee, J., Taekyung, P. and Hyung, L. (2010). Drivers of innovativeness and performance for innovative SMEs in South Korea: mediation of learning orientation. *Technovation*, Vol. 30 No. 1, pp. 65-75.

Rosli, M., & Sidek, S. (2013). The impact of innovation on the performance of small and medium manufacturing enterprises: Evidence from Malaysia. *Journal of Innovation Management in Small & Medium Enterprise*, 5(2), 1–16.

Saunila, M., Pekkola, M., & Ukko, J. 2013. The relationship between innovation capability and performance: The moderating effect of measurement. *International Journal of Productivity and Performance Management*, 63(2), 234–249.

Schoenherr, T., Modi, S.B., Talluri, S. and Hult, T.M. (2014), Antecedents and performance outcomes of strategic environmental sourcing: an investigation of resource-based process and contingency effects. *Journal of Business Logistics*, Vol. 35 No. 3, pp. 172-190.

Schumpeter JA. (1934). *The Theory of Economic Development*. Harvard University Press: Cambridge, MA.

Shu, C., Page, A.L., Gao, S. and Jiang, X. (2012). Managerial ties and firm innovation: is knowledge creation a missing link? *Journal of Product Innovation Management*, Vol. 29 No. 1, pp. 125-143.



Smith, K., Collins, C. and Clark, K. (2005), Existing knowledge, knowledge creation capability and the rate of new product introduction in high technology firms. *Academy of Management Journal*, Vol. 48 No. 2, pp. 346-357.

Surroca. J, Tribo, J.A., & Waddock, S. (2010). Corporate responsibility and financial performance: the role of intangible resources. *Strategic Management Journal*, 31(5), 463–490.

Zahra, S. and George, G. (2002), “Absorptive capacity: a review, reconceptualization, and extension”. *Academy of Management Review*, Vol. 27 No. 2, pp. 185-203.