Effect of Process Innovation and Market Innovation on Financial Performance with Moderating Role of Disruptive Technology

Hari Muharam¹, Fredi Andria², Eneng Tita Tosida³

¹Ilmu Manajemen Sekolah Pascasarjana, Universitas Pakuan – Indonesia, E-mail: hari.muharam@unpak.ac.id

²Management Department, Universitas Pakuan – Indonesia, E-mail: <u>fredi.andria@unpak.ac.id</u>

³Computer Science, Universitas Pakuan – Indonesia, E-mail: enengtitatosida@unpak.ac.id

Article History: Submitted: 03.10.2019 Revised: 25.12.2019 Accepted: 10.01.2020

ABSTRACT

This study examined the relationship between process innovation, market innovation and firm financial performance of Indonesian pharmaceutical firms. This study also intended to investigate the moderating role of disruptive technology on the relationship of process innovation and market innovation with Indonesian pharmaceutical firms' financial performance. To investigate the proposed relationship, this study collected the data from managers of pharmaceutical firms in Indonesia by using survey questionnaire. PLS statistical software was employed to analyse the data. The result of this study highlighted that there is a positive relationship between process innovation, market innovation and financial performance of firms. While, results indicated that disruptive technology moderate the relationship of process innovation with financial performance, but it has no moderating role on the relationship of market innovation with

financial performance. The results of this study contribute to the body of knowledge by adding to the existing literatures in the domain of innovation capabilities and financial performance. Moreover, the findings of the study have shown that innovation capabilities are capable of influencing the performance of firms.

Key words: process innovation, market innovation, PLS statistical software.

Correspondance:

Hari Muharam

Ilmu Manajemen Sekolah Pascasarjana, Universitas Pakuan

Indonesia

E-mail: hari.muharam@unpak.ac.id

DOI: 10.5530/srp.2020.1.29

© Advanced Scientific Research. All rights reserved

INTRODUCTION

In the recent years, pharmaceutical organizations remained exceedingly successful in the transformation of scientific knowledge into fruitful produces (Henry & Lexchin, 2002). Worldwide, about 1,220 organizations were entered in the market and contribute significantly with regard to the public health that has increased life probability about two months per annum (Munos, 2009). On the other hand, some of the components are proving to be fatal for this rate of entry that include capital necessities, long lasting time of development, low chances of success, scarcity of innovative ideas, strict legislation and pricing competition (Wang, Lin, & Huang, 2010). In the literature, researchers have concluded that R&D costs are considerably increasing with the time particularly with respect to the pharmaceutical sector (Mastroeni, Tait, & Rosiello, 2013) that ultimately results in the health-care expenditures. The phenomenon of increasing cost has become bone of contention for both governing bodies as well as patients (Yousefi et al., 2016). Illustratively, in the context of "Organization for Economic Co-operation and Development" countries, average 15.4 per cent of the total health budget is spent on the medicines that are much higher in the states with low-income (Henry & Lexchin, 2002). In the context of Indonesia, enhancing costs of pharmaceutical permit strategy makers to support local products that bear low-price. Though, pharmaceutical industry is developing quickly with the decreased share of local producers.

Prior studies shows the evidence that new product expansion enhance market share of manufacturers and improve health economies by substituting medicines with high cost and less efficiency. Alternatively, developing new products in pharmaceutical sector may effectively reduce local medicine costs particularly and may improve

health-care setup generally in increasing by increasing competitive advantage of business (Yang et al., 2012). Hence, product development is beneficial for businesses as well as governments. In the past decade, Indonesian government has applied various reforms in the pharmaceutical sector with the purpose of cost effectiveness and enhancing share of native pharmaceutical business, termed as generic substitution, in the worldwide emerging market (Yousefi et al., 2016). These reforms include restriction on import and helpful rules for local manufacturing. Nevertheless, Indonesian pharmaceutical firm are often hampered by various challenges such as, low level of innovativeness, inadequate capacity to adhere to standards and certifications, limitation towards access to finances, and minimal technology adoptions. Pharmaceutical firm in the global arena showed a mixed performance, with many countries wavering and continuing to recover slowly out from the 2008 and 2009 financial crisis, whereas development and growth of pharmaceutical firm in other part of the world were mainly in line with their respective domestic economy's development and progress. On the long-term development of pharmaceutical SMEs, the international community continued to discuss on affecting factors on a number of areas, in order to alleviate the constraints to pharmaceutical industry growth and to promote longsustainability which include internationalization to promote greater regionalization, technology adoption and raising awareness for greater Intellectual Property (IP) adoption, as well as, having business continuity plans.

Owing to the importance of pharmaceutical SMEs in the development of the nation's economy, the performance of firms has constantly become a centre of interest among the researchers, academicians, universities, entrepreneurs,

investors, trade organizations, and government agencies. Performance of Indonesian pharmaceutical firm is crucial for firm's survival and that, it is equally critical to the overall economy on the whole. Based on findings of Tambunan (2007), failure rates of Indonesian small and medium firms are about three (3) times as compared to 18 other countries, such as Australia. Therefore, it is critical for Indonesian firms, to reduce vulnerability of global economic shocks and manoeuvre to enhance firm's performance in order to remain afloat and survive. There were numerous previous researchers investigating factors contributing to manufacturing firms' performance, such as, (Hashim, Wafa, & Sulaiman, 2001; Khalique et al., 2011; Ramayah et al., 2004; Salikin, Ab Wahab, & Muhammad, 2014; Syler et al., 2006). These studies draw attention to, firms' various competitive advantage, which is an important factor of performance for pharmaceutical firms. Researchers may not have treated innovativeness in much detailed therefore this research is aimed to investigate effects of innovative capacity and disruptive technology on its relationship on pharmaceutical financial performance. Most of businesses are failed due to the lack of innovation, or innovative capacity, as well as, lack of technology adoption and or disruptive technology aiding on overall firm's performance. Indonesian pharmaceutical sector historically have long roots in Iran. Indonesia has around 210 pharmaceutical manufacturing, and manufacture 70 per cent of the Indonesian registered pharmaceutical market.

This study is aimed to specifically focus and concentrates on, the effects of innovative capacity, mediated by disruptive technology on the business financial performance of the pharmaceutical sector in Indonesian context by, investigating dimensions and measurements adopted in accordance to OECD's Oslo Manual (2005a), which encompasses;- innovations of Products, Processes, Marketing and Organization. This research explores causal effects of innovative capacity, and adoption of disruptive technology, on SMEs performance is crucial and deemed as an important criterion revelation, for the survival, sustainability and successes of SMEs. Theoretically, this research focused on a combination of the "Resource-Based-View" (RBV) and 'Creative Destruction' theories, and that RBV in entrepreneurial perspective found to be relevant, as previous research mostly emphasis on strategic settings, indicating resources as a crucial element to attaining a long term competitive edge and greater performance.

LITERATURE REVIEW

Financial Performance

The word performance is not new, despite the frequency of usage yet, its meaning is relative. In many small business literatures, firms performance has be researched upon by a number of researchers and that most research investigating firms performance with a varied number of variables. Antony and Bhattacharyya (2010) states that, SMEs' performance is seen and viewed as, how firm delivers value to its stakeholders, as well as, their customers. Firm performance may be described as procedure of quantifying activity and action of firm which leads to achievement of its goals and objectives, through satisfying its customers and stakeholders. These achievements are through an efficient and effective

performance of business operation as compared to its competitors (Aminu & Shariff, 2015). Therefore, firm's performance is defined as the measurement of how well its goals and objectives are achieved (Aminu & Shariff, 2015). This study defines SMEs firm performance as the ability of firm to effectively and efficiently exploit available resources to ensure survival, yet fulfil customer satisfaction and contribute towards creation of employment.

As for strategic orientation of firm, Pett and Wolff (2007) pointed out that, the 'resource-based-view' (RBV) is firmly rooted in the strategic choice tradition and argues, very generally that, firm performance is the result of appropriate strategies enacted with the proper resources and capabilities present in the firm. Whereas, Aziz et al. (2014) argues that, entrepreneurial oriented firms seem to perform best in hostile environments. Accordingly, environmental uncertainty pushes management to examine resources and capabilities hence expand the geographic space of markets served or capture greater existing market. Innovation capability is internallyoriented strategies (process improvement) and positively contributed towards firm's overall as well as financial performance. Externally-oriented strategy (management experience with, possession of unique product and competitive advantage) has positive association financial performance. With regard to the strategies for SMEs to compete successfully, (Martins & Rialp, 2011) in their exploratory case studies through qualitative content analysis findings on Swedish hidden champions reported that, smaller size firm react to challenges uniquely and these firms positively influence the innovation performance. Private ownership of these champions equally revealed a positive effect on innovation outcomes. Ibrahim and Shariff (2016) views, strategic orientation as suggested by De Zubielqui, Jones, and Lester (2016), that an improvement of strategic position of the firm is through the analysis and exploitation of environmental information, and taking a future oriented approach when applying firm resources. Their findings suggest a substantial link of strategic orientation and SME firm performance, in terms of profit growth, return on equity and assets. In the same vein, Saul & Berman (2006) highlighted that; firms with technology-based corporate strategies can produce innovation and development. Their findings further reveals that, innovation appears in the context where technological perspective and market understanding integrating and this procedure is easier to take place in the less developed and smaller business that that of more established and larger firms. Despite innovative firms are said to indicate improved performance, yet there are many other challenges these SMEs faced, which results in SMEs' poor performance. Eniola and Ektebang (2014) in his study of SMEs in Africa revealed that some of the challenges are;- (a) Access to financial support due to high criteria and credit rating and collateral requirement, and high interest rate imposed, (b) Inadequate application of essential business management practices, (c) Lack of Marketing skills, (d) Utilization of conventional technology (lack of necessary knowledge on modern technology and it's benefits), and (e) Poor corporate governance. According to (Alenka, 2014) on 'Determinants of SMEs performance' at the 7th international scientific conference, New York, argues that

attitude of owner-manager of firms is an important factor as well, and goes to suggest that, entrepreneurs who are open to ideas and views, are individuals with positive mental strength that has three (3) dimensions;- i) engages in learning, ii) in search of and for novelty, and iii) constantly seeking feed-backs.

Innovation Capabilities

Roberts, Baker, and Walker (2005), word innovation has its origin in the Latin word known as 'innovare', suggest to mean, being new, to take something new, dealing prevailing things in innovative ways, or responding differently to the variations. Vujičić, Baranenko, and Prljić (2013) wrote that, innovation is also part development and part adaptation. Cônsoli and Takahashi (2017) relate, innovations are organizational adoptions of ideas that are new to a firm or an industry. Burgelman and Maidique (1988) asserts that, innovation results from processes involving aspects of the relationship between, the availability of technologies, the entrepreneurial capabilities of organization, and the characteristics of the market. Typically, these processes are initiated by business in response to the identification of programs of action that no longer satisfy performance criteria. Motwani et al. (1999) wrote that, this situation gives rise to a search for alternatives that meet performance objectives, followed by an evaluation of these alternatives in light of product or process needs. In addition, Hamel (2003) states that actual innovation is dependent upon the acknowledgment that a firm have potential to revise and transform prevailing concepts or variables.

Research by Li and Mitchell (2009) concluded, by agreeing on the competitive dynamics of knowledgeable Chinese worker spread-out as a representation towards stimulation of radical innovations by small businesses within the developing economies. On the other hand, Oke (2007) stated that, small businesses in the United Kingdom and in other parts of more developed economies are inclined to concentrate more on leveraging return-oninvestment (ROI), therefore support's incremental innovations than radical innovations. These findings are further supported by Uddin (2006) research on innovation diffusion in Bangladesh, which is said, to lead towards sustained small business growth globally. Strong universal consideration for innovations and technology leadership therefore validates further the economic worth of small business's innovations.

As explained by Garcia-Morales, Lloréns-Montes, and Verdu-Jover (2007), most of the activities associated with product innovation witnessed at the initial stage of business life cycle where a number of designs are initiated and tried prior to the established products. Except the particular time frame, the product ranges a stage of dominant design. Thereafter, the ratio of product innovation reduces as mind-sets are influenced by the the dominant design, and the associated significance of procedure innovation developed across the industry attempt to discover the additional cost-effective methods to manufacture a suitable product for market. With the passing time of product life, the opportunity of procedure innovation declines because the optimum integration has been attained by the product. Firm's innovativeness increases as a result of, external environmental change, and that, these competitive environment changes will have an effect on firm's market orientation and that, results indicates' that, measure of firm performances are positively associated with firm's innovativeness and market orientation (Evanschitzky, Wangenheim, & Woisetschläger, 2011). Lööf and Heshmati (2006) found that, European SMEs generally do not have a specific department meant for innovation or a proper innovation procedure. Alongside with corporate culture, specific department for innovation or formal process, review of existing products and coupled with large employee size, tend to significantly affect innovation. Their study also revealed that, two (2) of the main reasons obstructing innovation are, due to shortage of funds and time coupled with, poor support from the government institution of innovation within the SMEs.

In literature, innovation competence is regarded as the superior level of general ability in which business has the capability to shape and transform varying competences. Saunila, Ukko, and Rantanen (2014) argues in their study about the high level innovative competence and suggest that businesses having possessing these competences can integrate the core capabilities and resources of the business to empower development efficiently. In the current competitive corporate culture, a continuous pace of development is required with a strong rate of success. The extent of business and managerial concern has enlarged the importance of integration between standard elements that include productivity, excellence, consumer responsiveness, rapidity and innovation components (Klingenberg et al., 2013). Innovation is the solution for the rapid increasing competitive environment by enhancing general capacities regarding effectiveness, quickness, excellence and flexibility (Bon & Mustafa, 2013). Moreover, innovation results in the understanding of current and future standings of business (Perdomo-Ortiz, Gonzalez-Benito, & Galende, 2009). Businesses having greater capabilities of innovation are more able to produce and offer product in market with the superior quality and reduced costs as compare their counterparts. Additionally, businesses implement their innovative abilities to form products in more improved manners results in the customer gratification and satisfaction (Sadikoglu & Zehir, 2010). These set of capabilities produce more dynamic and reasonable strategic place (Zeng, Phan, & Matsui, 2015). It pays more focus on the daily operations management that develop innovation and change in the business. Traditionally, requirement of monitoring mainstream capabilities frequently considered that hamper the development of positive innovation (Al-Refaie, Ghnaimat, & Ko, 2011). Mainstream activities including assembling and supporting are continuously the way to present achievement in the procedures of business that form consistency, productivity and effectiveness in cash flow generation (Vecchi & Brennan, 2009). Operations are "programming" mainstream business units to undertake timetables, formalize constructions, and not to think innovatively (Ritala & Almpanopoulou, 2017). Therefore, innovation plays the role of driving force with regard to the randomness, long-term vision and assurance to attain performance (Ardestani & Amirzadeh, 2014).

The varying and ambiguous situation of the innovation need appropriate information and knowledge to develop new procedures, products and operations that ultimately will attain future success. In the literature, it is concluded that companies having innovative abilities possess vision and practice and they are required to integrate abilities with business creativeness, aptitude and idea management (Lawson & Samson, 2001). Furthermore, effective administration and implementation of technology results in the strong organizational structure, supportive environment and culture (Cormican & O'Sullivan, 2004). Innovative firms implement these elements to integrate and monitor their new stream and mainstream activities with appropriate ways. A business that has more controlled innovation competence will reap more innovative and successful performance (Lee et al., 2010). In the similar way, research highlights positive association of advancement execution with upgraded firm execution. Practically, it is witnessed that innovative firms produce more premium and quality products as compare to their competitors that have less innovative abilities (Miranda Silva et al., 2014). Illustratively, Akio Morita, the entrepreneur of Sony, acknowledge that innovate capacity of business is the foundation for the business prosperity (Anium, 2014).

Innovation Capabilities and Firm financial performance

A large number of empirical studies testing the influence of IC on business performance have reported that IC enhances firm performance. As stated by Bhattacharya and Bloch (2004) that innovation is the key foundation of competitive edge that results in the higher performance of business. The conclusion is in line with the findings of the business innovative studies conducted to examine the association of innovation and firm performance (Wuyts, Dutta, & Stremersch, 2004). Innovations perform as a 'coping mechanism' for cultural variations and ambiguity (Love, Roper, & Du, 2009). Business possessing greater innovative competences supports their partners in developing innovative products for dealing with the market variations. Consequently, it leads towards better and higher performance. In the literature, positive and direct association of innovation and business performance have been found (Plambeck & Taylor, 2005). Element of innovation is being categorized as "product innovation, process innovation, marketing innovation organizational innovation" and further breakdown based on the above definitions.

Process Innovation

In their research, Shu et al. (2012) stated that, process innovation relates with the improvement in or generation of tools and the expansion of operations. Murray, Gao, and Kotabe (2011) agreed that, technological innovation, ability, methods, operations and process that is applied in the procedure of converting or to transform inputs into outputs. With regard to the manufacturing operations, process innovation may be termed as, improved or new methods, devices, techniques, and information in creation of a product (Lichtenthaler, 2016). Matitz and Chaerki (2018) specified process innovation as, the application of a new or significant developed manufacturing or distribution process that involved important variations in the tools, equipment or applications. Moreover, process innovation has the purpose to of reducing unit cost of production or delivery, enhancing quality, or to generate upgraded products. It also involves significantly developed methods of creation and delivering of services and variations in the applicable software's applied in services-cantered businesses in the methods involved in the service delivery.

Marketing Innovation

As explained by Y. Chen (2006), for the purpose of fulfilling buying preference of customers, therefore market innovation is about market option and market mix. Firms have to continuously be engaged in market innovation due to "state-of-the-art marketing tools", such as the internet that facilitate business to approach possible customers across the globe instantly. Likewise, Naidoo (2010) asserts that, market innovation has a key contribution in satisfying needs of the market and at the same time, answering to market chances. Therefore, market innovation acknowledged fulfilling the purchasers' demand and gratification (Sok, O'Cass, & Sok, 2013). Research by Rozdolskaya, Ledovskaya, and Afanasiev (2013) further concludes that, market innovation is positively associated with the sales growth of a business. Similarly, according to Halpern (2010), market innovation will enhance sales by enhancing product demand that ultimately will reap higher profits. This view is supported by Otero-Neira, Tapio Lindman, and Fernández (2009), by concluding that market innovation influenced positively financial performance of business.

Disruptive Technology As moderator

Firms that are technology oriented appear to have the will and ability to acquire and exploit better technologies for superior performance (Persaud & Azhar, 2012). Similarly, Q. Chen et al. (2019) stressed that the performance of firms can be enhanced through adaptive capability by enhancing their technological capacity. Chishakwe and Smith (2012) in their study revealed that, managers or owners of SMEs in the developing countries are in-fact aware about the up-to-date technologies that they can utilize along with its potential benefits. The Internet is one of the technologies being utilized over traditional methods and utilization of these technologies is cheap, fast, and efficient that reduces the overall costs of business operation, which in turn increases profitability. As explained by Singh and Hanafi (2019), DT is often valued by, generally for its most critical performance significance or value. Over time, the perceived performance mix of the technology begins to shift and change, when the primary basic features or functionality threshold is reached. As a start, DT emerges out as an inferior product serving a specific market. However, upon maturity and along with the changes in its perceived performance mix, these technologies start to over-perform the leading technology by appealing to the mainstream market.

Roy and Islam (2017) study through review of literatures that reveals basic limitations to successful disruptive innovation begins largely from several inhibiting factors; lack of ability to unlearn outdate mental models, a successful business model or leading design, organization climate of avoiding risk, poor management of innovation process, poor follow-up and follow-trough capability and failure to develop compulsory internal or external infrastructure. The above statement is further supported by Wan, Williamson, and Yin (2015), as they asserts' that

firms seeking to develop disruptive innovations has to be receptive to consumers' context and be highly skilled at translating cues into 'job-to-be-done' product objectives. Foreign MNC should be open to opportunities, collaborate with SMEs in order to meet the demands of resource-constrained consumers in the bottom of the pyramid. Higher automation of manufacturing process or access to such capability through partnership cuts production cost drastically. Internal R&D coupled with the capability of exploiting existing technology in a new context is important to the development of disruptive innovations. Established firms are often ignorant against the potentials of disruptive technology due to its initial

inferiority and low perceived performance mix. Established firms often assume that these technologies can only serve a specific need and market, and that most of their customers may not value its use. SMEs that are technology oriented hence adopting newer technologies and or complementing existing technologies to further enhance business operations will realized that, these technologies positively affect the overall business operation, in turn positively contributes to firm's performance. Evolution of technology enhances effectiveness and efficient performance, enhances quality of products and or services offerings, resulting better firm performance.

Research Framework and Hypotheses

This section presents proposed research framework of the study.

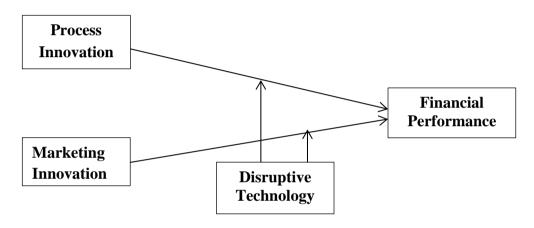


Figure 1: Proposed research framework

 H_1 : Process innovation has a significant association with financial performance of pharmaceutical firms in Indonesia.

 H_2 : Marketing innovation has a significant association with financial performance of pharmaceutical firms in Indonesia.

 H_3 : Disruptive technology has significant moderating effect on the relationship of innovative capabilities with financial performance of pharmaceutical firms in Indonesia.

METHODOLOGY

Bryman (2004) states that, research design refer to the outline of data gathering and examination. Whereas, Sekaran and Bougie (2010) described that research design is a method of gathering and analysing data to arrive at a solution. The approach adopted in this research is cross-sectional and applies the quantitative approach that is based on deductive reasoning. Equally, this study applied a survey research method. As pointed out by Fisher Jr and Stenner (2011), a survey technique is adopted when a study is aimed at making assessment of opinions, emotional state, and opinion about a given condition by collecting primary data from respondents. The survey method permits researcher to gather quantitative data for

analysis of descriptive, as well as, inferential statistics. The variables used in this study were measured through established instruments drawn and adopted with adaptation made, from the literature and previous studies. Likert-scale is used in order to avoid poor and low response rate from the managers of pharmaceutical firms in Indonesia.

ANALYSIS AND DISCUSSION

The data was analysed by using SMART-PLS statistical software. For the checking of "reliability and validity" measurement model was used and structure model was used to test the hypotheses of the study.

Assessment of Measurement Model

Measurement Model assessment was conducted in this study to assess the validity and internal consistency among the collected data. In this study, the result of the reliability shows that all the variables are reliable with the Cronbach alpha for Process Innovation = 0.801, Marketing Innovation = 0.811, Disruptive Technology = 0.757 and financial performance = 0.845. The summary of the result of the alpha, CR and AVE is provided in Table 1 and Table 2.

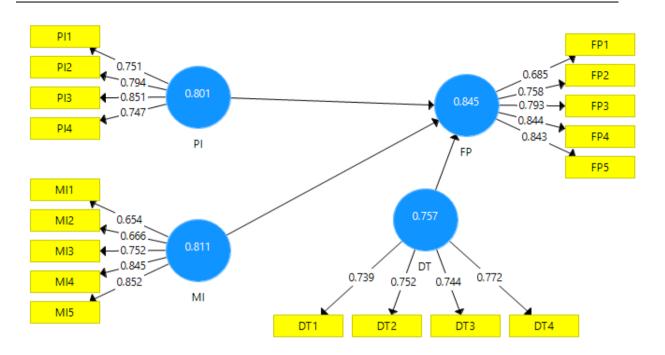


Figure 2. Measurement Model Assessment

Table 1: Values of alpha, CR and AVE

Sr#	Constructs	alpha	CR	AVE
1	DT	0.757	0.839	0.565
2	FP	0.845	0.890	0.619
3	MI	0.811	0.870	0.576
4	PI	0.801	0.866	0.619

Table 2 presents that the "square root of AVE" for the investigation of Validity of constructs.

Table 2: Discriminant Validity

Sr#	Constructs	1	2	3	4	
1	DT	0.752				
2	FP	0.608	0.787			
3	MI	0.708	0.677	0.759		
4	PI	0.513	0.685	0.564	0.787	

Structural Model

This study employed SEM through PLS for the test of hypotheses. The results of structure model are given in Table 3 and Table 4.

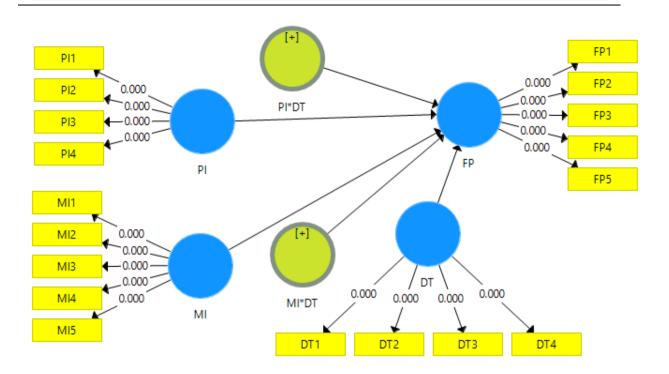


Figure 3. Structural Model Assessment

Table 3. Structural Model Assessment (Direct Results)

	(β)	(STDEV)	T Statistics	P Values
PI -> FP	0.395	0.057	6.885	0.000
MI -> FP	0.352	0.081	4.366	0.000

The firm aim of this study was to investigate the effect of process innovation and market innovation on financial performance of pharmaceutical firms in Indonesia. In the process of data analysis, this study found that process innovation has significant and positive effect on financial performance of organizations in Indonesia. H1 was accepted on basis of analysis because p-value 0.000 was lower than the standard value 0.05. Additionally, the

results of analysis illustrated that marketing innovation also has positively affect pharmaceutical firms' financial performance. H2 also accepted and supported by analysis because p-value was 0.000 that illustrated H2 was accepted at 1% level of significance. Findings of current study are in-line with the findings of (Kalkan, Bozkurt, & Arman, 2014).

Table 4. Structural Model Assessment (Moderation)

	(β)	(STDEV)	T Statistics	P Values
PI*DT -> FP	0.163	0.081	1.992	0.008
MI*DT -> FP	0.102	0.063	1.608	0.108

This study also aimed to investigate the moderation effect of disruptive technology on the relationship of process innovation and market innovation with financial performance of pharmaceutical firms in Indonesia. In statistical analysis, this study found that disruptive technology significantly moderate the relationship of process innovation with financial performance. However, disruptive technology has no moderating role on the relationship of market innovation with pharmaceutical firms' financial performance.

CONCLUSION

In concluding to this study, three research hypotheses were formulated for the accomplishment of the objectives

in this study. Specifically, objective one aimed at determining the relationship between process innovation, market innovation and financial performance of firms. The second objective aims to examine the moderating role of disruptive technology on the relationship of process innovation and market innovation with Indonesian pharmaceutical firms' financial performance. The result of hypotheses H1 and H2 highlighted that there is a positive relationship between process innovation, market innovation and financial performance of firms. While, hypothesis H3 indicated that disruptive technology moderate the relationship of process innovation with financial performance but it has no moderating role on the relationship of market innovation with financial

performance. Thus, it is concluded that the higher the contribution of firms to innovation, the more its level of financial performance is achieved. This research has contributed to the theoretical perspective in several ways: firstly, the research has been able to reveal the relationship between process innovation, market innovation and firm performance in the context of Malaysia. It has specifically highlighted that process innovation and market innovation are positively related to firm financial performance. Secondly, the study is also significant by revealing a positive moderating role on the relationship between process innovation and firm financial performance. In addition, the study has been able to contribute to the entire body of knowledge by adding to the existing literatures in the domain of innovation capabilities and financial performance. The result of the study has shown that innovation capabilities are capable of influencing the performance of firms.

REFERNCES

- Al-Refaie, A., Ghnaimat, O., & Ko, J.-H. (2011). The effects of quality management practices on customer satisfaction and innovation: a perspective from Jordan. *International Journal of Productivity and Quality Management*, 8(4), 398-415.
- Alenka, S. (2014). Determinants of SME performance: The impact of entrepreneurial Openness and Goals.
 Paper presented at the Economic and Social Development, 7th International Scientific Conference, New York City.
- 3. Aminu, I. M., & Shariff, M. N. M. (2015). Determinants of smes performance in Nigeria: A pilot study. *Mediterranean Journal of Social Sciences*, 6(1), 156.
- 4. Anjum, Z. (2014). Startup capitals: Discovering the global hotspots of innovation: Random House India.
- 5. Antony, J. P., & Bhattacharyya, S. (2010). Measuring organizational performance and organizational excellence of SMEs–Part 2: an empirical study on SMEs in India. *Measuring Business Excellence, 14*(3), 42-52.
- Ardestani, A., & Amirzadeh, Y. (2014). The impact of total quality management practices on innovation performance and organizational performance. *Indian Journal of Fundamental and applied life* sciences, 4(4), 2050-2057.
- 7. Aziz, R. A., Mahmood, R., Tajudin, A., & Abdullah, M. H. (2014). The relationship between entrepreneurial orientation and business performance of SMEs in Malaysia. *International Journal of Management Excellence, 2*(3), 221-226.
- 8. Bhattacharya, M., & Bloch, H. (2004). Determinants of innovation. *Small business economics, 22*(2), 155-162.
- 9. Bon, A. T., & Mustafa, E. M. (2013). Impact of total quality management on innovation in service organizations: Literature review and new conceptual framework. *Procedia Engineering*, *53*, 516-529.
- 10. Bryman, A. (2004). Qualitative research on leadership: A critical but appreciative review. *The leadership quarterly*, 15(6), 729-769.

- Burgelman, R., & Maidique, M. (1988). Strategic Management of Technology and Innovation– Homewood. *Illinois: Irwin*.
- 12. Chen, Q., Wang, J.-A., Ou, R., Sun, J., & Chang, L.-C. (2019). Disruptive technologies and career transition strategies of middle-skilled workers. *Career Development International*.
- 13. Chen, Y. (2006). Marketing innovation. *Journal of Economics & Management Strategy*, *15*(1), 101-123.
- Chishakwe, D. B., & Smith, W. (2012). An analysis of the impact of disruptive technology on the success of small and medium enterprises (SMEs) in a developing nation. A case of King Williams Town, South Africa. *African Journal of Business Management*, 6(36), 10050-10060.
- 15. Cônsoli, M. A., & Takahashi, S. (2017). INNOVATION AND COMPETITIVE ADVANTAGE: STRATEGIC FACTORS THAT DRIVE THE COMPANY HABILITY TO APROPRIATE INOVATION RENTS.
- 16. Cormican, K., & O'Sullivan, D. (2004). Auditing best practice for effective product innovation management. *Technovation*, *24*(10), 819-829.
- De Zubielqui, G. C., Jones, J., & Lester, L. (2016). Knowledge inflows from market-and science-based actors, absorptive capacity, innovation and performance—a study of SMEs. *International Journal of Innovation Management*, 20(06), 1650055.
- 18. Eniola, A. A., & Ektebang, H. (2014). SME firms performance in Nigeria: Competitive advantage and its impact. *International Journal of Research Studies in Management*, *3*(2), 75-86.
- Evanschitzky, H., Wangenheim, F. V., & Woisetschläger, D. M. (2011). Service & solution innovation: Overview and research agenda. *Industrial Marketing Management*, 40(5), 657.
- 20. Fisher Jr, W. P., & Stenner, A. J. (2011). Integrating qualitative and quantitative research approaches via the phenomenological method. *International Journal of Multiple Research Approaches*, *5*(1), 89-103.
- 21. Garcia-Morales, V. J., Lloréns-Montes, F. J., & Verdu-Jover, A. J. (2007). Influence of personal mastery on organizational performance through organizational learning and innovation in large firms and SMEs. *Technovation*, *27*(9), 547-568.
- 22. Halpern, N. (2010). Marketing innovation: Sources, capabilities and consequences at airports in Europe's peripheral areas. *Journal of Air Transport Management*, *16*(2), 52-58.
- 23. Hamel, G. (2003). Innovation as a deep capability. *Leader to Leader*, *27*(Winter), 19-24.
- Hashim, M. K., Wafa, S. A., & Sulaiman, M. (2001). Testing environment as the moderator between business strategy-performance relationship: A Study of Malaysian SMEs. *Journal of University of Malaysia*.
- 25. Henry, D., & Lexchin, J. (2002). The pharmaceutical industry as a medicines provider. *The Lancet, 360*(9345), 1590-1595.
- 26. Ibrahim, M. A., & Shariff, M. N. M. (2016). Mediating role of access to finance on the relationship between strategic orientation attributes

- and SMEs performance in Nigeria. *International Journal of Business and Society*, 17(3).
- Kalkan, A., Bozkurt, Ö. Ç., & Arman, M. (2014). The impacts of intellectual capital, innovation and organizational strategy on firm performance. *Procedia-Social and Behavioral Sciences*, 150, 700-707.
- 28. Khalique, M., Isa, A. H. B. M., Shaari, N., Abdul, J., & Ageel, A. (2011). Challenges faced by the small and medium enterprises (SMEs) in Malaysia: An intellectual capital perspective. *International Journal of current research*, *3*(6), 398.
- 29. Klingenberg, B., Timberlake, R., Geurts, T. G., & Brown, R. J. (2013). The relationship of operational innovation and financial performance—A critical perspective. *International Journal of Production Economics*, 142(2), 317-323.
- 30. Lawson, B., & Samson, D. (2001). Developing innovation capability in organisations: a dynamic capabilities approach. *International journal of innovation management*, *5*(03), 377-400.
- Lee, V. H., Ooi, K. B., Tan, B. I., & Chong, A. Y. L. (2010). A structural analysis of the relationship between TQM practices and product innovation. Asian Journal of Technology Innovation, 18(1), 73-96.
- 32. Li, X., & Mitchell, R. K. (2009). The pace and stability of small enterprise innovation in highly dynamic economies: A China-based template. *Journal of Small Business Management*, 47(3), 370-397.
- 33. Lichtenthaler, U. (2016). Five steps to transforming innovation processes: continually adjusting to new environments. *Journal of Business Strategy*, *37*(5), 39-45
- 34. Lööf, H., & Heshmati, A. (2006). On the relationship between innovation and performance: A sensitivity analysis. *Economics of Innovation and New Technology*, 15(4-5), 317-344.
- 35. Love, J. H., Roper, S., & Du, J. (2009). Innovation, ownership and profitability. *International Journal of Industrial Organization*, *27*(3), 424-434.
- 36. Martins, I., & Rialp, A. (2011). Entrepreneurial Orientation, Environmental Hostility and SMEs Profitability: A Contingency Approach. Environmental Hostility and SMEs Profitability: A Contingency Approach (September 2, 2011).
- 37. Mastroeni, M., Tait, J., & Rosiello, A. (2013). Regional innovation policies in a globally connected environment. *Science and Public Policy*, 40(1), 8-16.
- Matitz, Q. R. S., & Chaerki, K. F. (2018). Process philosophy's potential contributions to innovation process research within organization studies. *Innovation & Management Review*, 15(4), 386-393.
- 39. Miranda Silva, G., J. Gomes, P., Filipe Lages, L., & Lopes Pereira, Z. (2014). The role of TQM in strategic product innovation: an empirical assessment. *International journal of operations & production management, 34*(10), 1307-1337.
- Motwani, J., Dandridge, T., Jiang, J., & Soderquist, K. (1999). Managing innovation in French small and medium-sized enterprises. *Journal of Small Business Management*, 37(2), 106.

- 41. Munos, B. (2009). Lessons from 60 years of pharmaceutical innovation. *Nature reviews Drug discovery*, *8*(12), 959.
- 42. Murray, J. Y., Gao, G. Y., & Kotabe, M. (2011). Market orientation and performance of export ventures: the process through marketing capabilities and competitive advantages. *Journal of the Academy of Marketing Science*, *39*(2), 252-269.
- 43. Naidoo, V. (2010). Firm survival through a crisis: The influence of market orientation, marketing innovation and business strategy. *Industrial marketing management*, *39*(8), 1311-1320.
- 44. Oke, A. (2007). Innovation types and innovation management practices in service companies. *International Journal of Operations & Production Management*, *27*(6), 564-587.
- Otero-Neira, C., Tapio Lindman, M., & Fernández, M. J. (2009). Innovation and performance in SME furniture industries: An international comparative case study. *Marketing Intelligence & Planning*, 27(2), 216-232
- Perdomo-Ortiz, J., Gonzalez-Benito, J., & Galende, J. (2009). The intervening effect of business innovation capability on the relationship between Total Quality Management and technological innovation. *International Journal of Production Research*, 47(18), 5087-5107.
- 47. Persaud, A., & Azhar, I. (2012). Innovative mobile marketing via smartphones: are consumers ready? *Marketing Intelligence & Planning*, *30*(4), 418-443.
- 48. Pett, T. L., & Wolff, J. A. (2007). SME performance: A case for internal consistency. *Journal of Small Business Strategy*, *18*(1), 1-16.
- 49. Plambeck, E. L., & Taylor, T. A. (2005). Sell the plant? The impact of contract manufacturing on innovation, capacity, and profitability. *Management science*, *51*(1), 133-150.
- Ramayah, T., Sulaiman, M., Jantan, M., & Ching, N. G. (2004). Organizational learning, proprietary technology, and manufacturing performance: A glimpse from the Malaysian manufacturing firms. *International journal of innovation and incubation*, 1(1), 63-90.
- 51. Ritala, P., & Almpanopoulou, A. (2017). In defense of 'eco'in innovation ecosystem. *Technovation*, *60*, 39-
- 52. Roberts, D., Baker, S., & Walker, D. (2005). Can We Learn Together?: Co-Creating with Consumers. International Journal of Market Research, 47(4), 405-426
- 53. Roy, R., & Islam, M. (2017). Nuanced role of relevant prior experience: sales takeoff of disruptive products and product innovation with disrupted technology in industrial robotics *Entrepreneurship, Innovation, and Platforms* (pp. 81-111): Emerald Publishing Limited.
- Rozdolskaya, I., Ledovskaya, M., & Afanasiev, I. (2013). Innovation consulting services within the context of the formation of a new model of marketing innovation. World Applied Sciences Journal, 25(6), 956-960.
- 55. Sadikoglu, E., & Zehir, C. (2010). Investigating the effects of innovation and employee performance on

- the relationship between total quality management practices and firm performance: An empirical study of Turkish firms. *International journal of production economics*, 127(1), 13-26.
- 56. Salikin, N., Ab Wahab, N., & Muhammad, I. (2014). Strengths and weaknesses among Malaysian SMEs: Financial management perspectives. *Procedia-Social and Behavioral Sciences*, *129*, 334-340.
- 57. Saunila, M., Ukko, J., & Rantanen, H. (2014). Does innovation capability really matter for the profitability of SMEs? *Knowledge and Process Management*, *21*(2), 134-142.
- 58. Sekaran, U., & Bougie, R. (2010). Theoretical framework in theoretical framework and hypothesis development. *Research methods for business: A skill building approach, 80.*
- 59. Shu, C., Page, A. L., Gao, S., & Jiang, X. (2012). Managerial ties and firm innovation: is knowledge creation a missing link? *Journal of Product Innovation Management*, 29(1), 125-143.
- Singh, D. S. M., & Hanafi, N. B. (2019). Disruptive Technology and SMEs Performance in Malaysia. INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS AND SOCIAL SCIENCES, 9(12).
- 61. Sok, P., O'Cass, A., & Sok, K. M. (2013). Achieving superior SME performance: Overarching role of marketing, innovation, and learning capabilities. *Australasian Marketing Journal (AMJ)*, 21(3), 161-167
- 62. Syler, R. A., Cegielski, C. G., Oswald, S. L., & Rainer Jr, R. K. (2006). Examining drivers of course performance: An exploratory examination of an introductory CIS applications course. *Decision Sciences Journal of Innovative Education*, 4(1), 51-65.
- 63. Tambunan, T. (2007). Entrepreneurship development: SMES in Indonesia. *Journal of Developmental Entrepreneurship*, *12*(01), 95-118.
- 64. Uddin, M. K. (2006). The role of diffusion of innovations for incremental development in small enterprises. *Technovation*, *26*(2), 274-284.
- 65. Vecchi, A., & Brennan, L. (2009). A cultural perspective on innovation in international manufacturing. *Research in International Business and Finance*, *23*(2), 181-192.
- Vujičić, S., Baranenko, E., & Prljić, S. (2013). Innovations in the function of developing competitiveness and efficiency in the Republic of Serbia. *Journal of Women's Entrepreneurship and Education*, 108-125.
- 67. Wan, F., Williamson, P. J., & Yin, E. (2015). Antecedents and implications of disruptive innovation: Evidence from China. *Technovation*, *39*, 94-104.
- 68. Wang, J., Lin, W., & Huang, Y.-H. (2010). A performance-oriented risk management framework for innovative R&D projects. *Technovation*, *30*(11-12), 601-611.
- 69. Wuyts, S., Dutta, S., & Stremersch, S. (2004). Portfolios of interfirm agreements in technology-intensive markets: Consequences for innovation and profitability. *Journal of marketing*, *68*(2), 88-100.

- Yang, K.-C., Hsieh, T.-C., Li, H., & Yang, C. (2012). Assessing how service quality, airline image and customer value affect the intentions of passengers regarding low cost carriers. *Journal of Air Transport Management*, 20, 52-53.
- 71. Yousefi, V., Yakhchali, S. H., Khanzadi, M., Mehrabanfar, E., & Šaparauskas, J. (2016). Proposing a neural network model to predict time and cost claims in construction projects. *Journal of Civil Engineering and Management*, 22(7), 967-978.
- 72. Zeng, J., Phan, C. A., & Matsui, Y. (2015). The impact of hard and soft quality management on quality and innovation performance: An empirical study. *International journal of production economics, 162,* 216-226.