International Journal of Business and Technopreneurship
Volume 9, No 1, Feb 2019 [79-90]

Innovation Practices and Business Performance among Micro-Sized Enterprises

Dzulkarnain Musa[1*] and Imran Musa[2]

[1]*Department of Commerce, Polytechnic Tuanku Syed Sirajuddin, 02600 Arau, Perlis, Malaysia.*
[2]*Department of Commerce, Polytechnic Sultan Abdul Halim Mu'adzam Shah, 06000 Jitra, Kedah, Malaysia.*

ABSTRACT

Scholars in entrepreneurship studies have found the vital role of innovation practices towards the performance of businesses. Innovation is often associated with an increase in the performance of a business. However, the question arises is what are the types of innovation that can significantly affect business performance. In this regard, the study aims to examine the current position of business performance and innovation practices among micro-sized enterprises. In addition, this quantitative study also seeks to establish the relationship between the three multidimensional constructs of innovation (including product innovation, process innovation and technological innovation) with business performance. The data collection process was carried out through surveys that involved a sample of 127 micro-sized enterprises in Perlis. Descriptive analysis showed that the current situation of business performance and all types of innovation were at a high level of practices. The result from correlation analysis further revealed that product innovation, process innovation, and technological innovation have a significant and positive relationship with the improvement in business performance. It provides knowledge on the importance of the practice of all three types of innovation in business enterprises. The implications and future directions of this study are also discussed.

Keywords: Business Performance, Innovation, Micro-Sized Enterprises.

1. INTRODUCTION

Business performance is a crucial aspect that needs to be seriously focused by the entrepreneurs for the continuity of their company. Positive performance is a clear indication of the achievement of business objectives and ensuring business survival in the future. Nevertheless, today's global world witnessed intense competition due to its uncertainty in the business environment. As a result, business companies including micro-sized in Malaysia are also affected with that dynamic changes where some of them are facing difficulties on the operation and have low business performance. In the context of micro-sized enterprises, various issues regarding business performance have been highlighted in previous studies, including the need for entrepreneurial orientation behaviours (Awang, 2006; Lumpkin, Cogliser & Schneider, 2009; Lumpkin & Dess, 1996; Musa, Abdul Ghani & Ahmad, 2014), entrepreneurial leadership (Ahmad & Abdul Ghani, 2013), entrepreneurial motivation (Jambulingam, Kathuria & Doucette, 2005), competition (Ahmad, Abdul Ghani & Mohd Saad, 2017; Ross, 2014) and others. In addressing the issue, Musa *et al.*, (2014) stated that entrepreneurs should adopt innovative entrepreneurial behaviour in their business operations for better performance.

The government has played a great role in the development of entrepreneurial activities in the business environment. The role is done through a variety of planned programs related to business operations. As one of the smallest states in Malaysia, Perlis is not excluded in the booming of the entrepreneurship programs for the prosperity of their people. This can be

*Corresponding author: *dzulmusa@gmail.com*

referred to the Perlis State Entrepreneurship Development Transformational Planning Blueprint 2016-2020 that has been developed by the State Economic Planning Unit of Perlis. The aims of the blueprint are to boost the development of entrepreneurship and business activities in the state (Unit Perancang Ekonomi Negeri Perlis, n.d). The core of the strategic plans seriously focused on the innovative aspect of behaviours, activities and programs among micro and small-sized entrepreneurs in order to achieve 9% growth of Gross Domestic Product (GDP) by 2020 through entrepreneurship activities. This is due to the innovation that creates competitive advantage and improves organizational growth for business entities (Lumpkin & Dess, 1996).

Previous studies related to entrepreneurial orientation either conducted by empirically or meta-analysis, have found that innovation practices in firms have a bearing on improving business performance. However, most of the studies tend to focus innovation as a unidimensional construct (Ahmad & Abdul Ghani, 2013; Awang, 2006; Covin & Slevin, 1989; Lumpkin & Dess, 1996, 2001; Lumpkin *et al.,* 2009; Miller, 1983; Miller & Friesen, 1978). As a result, it is not clear which type of innovation should be focused on by the enterprises. Based on the discussion above, this study is conducted with two main objectives as follows:

a) To identify the level of innovation practices (including product innovation, process innovation and technological innovation) among micro-sized enterprises.
b) To examine the relationship between innovation practices (including product innovation, process innovation and technological innovation) and business performance among micro-sized enterprises.

Theoretically, this study is able to develop an understanding of innovation practices among enterprises by taking into account a comprehensive innovation of product, process and technology. In this regard, the study aims to identify the level of these three innovation practices and its relationship to business performance among micro-sized enterprises in Perlis. This study is important in the government's efforts to develop sustainable and viable businesses in line with today's dynamic business world. The findings of this study will be able to assist enterprises in achieving higher performance for the survival of their businesses.

Further discussions will focus on the literature pertaining to the major constructs of the study, including business performance and the three constructs of innovation; a) product innovation, b) process innovation and c) technological innovation. A detail discussion in the relevant literature can help provide an appropriate research framework of the study. In the methodology of the study, the discussion will cover a number of key elements, including the sampling process, the measurement and reliability of the instrument in collecting the primary data. The next section will discuss the analysis used and the results of the study. Finally, discussions will be made regarding the findings and some suggestions will be presented.

2. LITERATURE REVIEW

2.1 Business Performance

Business performance is one of the key issues that need to be highlighted by stakeholders in a firm, including owners, investors, suppliers and employees (Madrid-Guijarro, Auken & Garcia, 2007). Strong performance is a key objective of every firm, including micro-sized enterprises. According to Madrid-Guijarro *et al*. (2007), a strong performance will enable firms and communities to benefit from resource expenditure, job opportunities and development of wealth. However, low-performing firms are often less competitive and will have financial difficulties (Brigham & Houston, 2003).

Therefore, it is important for firms to regularly check their performance over time due to changes in the uncertain business environment (Najmi, Rigas & Fan, 2005). A factor that improves business performance includes innovative behaviour. This is supported by previous studies that found significant and positive relationships between innovation and business performance such as Lumpkin and Dess (1996), Zahra and Covin (1995), Awang (2006), and Musa *et al*., (2014). The innovation practice among entrepreneurs is the intangible and internal resource of a firm. From the perspective of the Resource Based View (RBV) theory, Barney (1991) acknowledged the firm internal resource as a key factor of the firm's strategy and performance. As a resource of internal strength, all sources including assets, capabilities, rents, and capital should be controlled and used efficiently. This is in line with the effort to maximize the profitability and increase the performance of the firm.

2.2 Innovation and Business Performance

Innovation is the main construct of entrepreneurial orientation behaviour. Most researchers stated that innovation is a necessary component of entrepreneurial behaviour (Drucker, 1985). Innovation is also one of the core elements that contribute to the achievement of high-income target and sustain the financial performance of the companies (Hughes & Morgan, 2007; Miller, 1983). It serves as a solid foundation for long-term organizational performance (Lumpkin & Dess, 1996; Rauch, Wiklund, Lumpkin, & Frese, 2009). Innovation is described as a propensity to support novelty, new ideas, creative processes and experiments that may result in new products, services or processes (Lumpkin & Dess, 1996). Therefore, innovation is said to discourage existing and conventional business practices and technology within organizations (Atuahene-Gima & Ko, 2001).

In the context of entrepreneurial orientation behaviour among firms, most of the studies are concerned with the examinations of innovation and their relationship to the firm's business performance. However, some researchers found that there is no consistent acceptance of innovation practice in improving firm performance. For example, Landstrom, Crijns, Laveren and Smallbone (2008) and Su, Xie and Li (2011) found that the relationship between the two constructs depends on the specific context and newness of the firm. Established firms have shown that innovation is linked to improved business performance while new firms are reversed. Table 1 summarizes findings from past studies on the relationship between innovative behaviour and the firm's business performance.

Table 1 Results from previous studies between innovation and business performance

Authors	N	Constructs of Business Performance	Results
Miller (1983)	50	Sales growth	Significant (+)
Lumpkin & Dess (2001)	321	Sales level	Not significant
Awang (2006)	210	Return on sales	Significant (-)
		Return on asset	Significant (+)
		Return on capital	Not significant
Hughes & Morgan (2007)	211	Product performance	Significant (+)
Baba & Elumalai (2011)	101	Organizational performance	Significant (+)
Kollmann & Stockmann (2014)	228	Firm performance	Not significant
Musa, Abdul Ghani & Ahmad (2014)	104	Net Income	Significant (+)

Based on Table 1, there are different findings found by previous studies regarding the relationship between innovation practice and the firm's business performance. Among those findings were significant positive (such as Miller, 1983; Hughes & Morgan, 2007; Baba & Elumalai, 2011; Musa *et al*., 2014), significant negative (over return on sales such as Amran,

2006) and not significant (such as Covin & Covin, 1990; Lumpkin & Dess, 2001; Kollmann & Stockmann, 2014).

Awang (2006) examined three constructs of business performance including return on sales, return on assets and return on capital, found mixed results based on each of the constructs. The unparalleled empirical findings have supported research findings conducted through meta-analysis by Rauch *et al*. (2009) and Saeed, Yousafzai and Engelen (2014). As Kollmann and Stockmann (2014) point out, previous findings suggested that irregular relationships are due to specific contexts respondents or industries.

Innovation requires deviations from firms of existing practices, business models and technologies beyond existing conditions (Salomo, Talke & Strecker, 2008). Innovation practices include research or engineering efforts aimed at creating new technologies, new products or processes (Lukas & Ferrell, 2000, Renko, Carsrud & Brannback, 2009). Micro-sized entrepreneurs also have the opportunity to grow and reach global markets through innovation. Therefore, it can be concluded that basically, innovation means a process to see something new and involve creative original ideas. These processes can help provide the needs and solutions to the future. The solution is expected to be generated through dynamic processes and technologies, and new products and services.

Innovation leads to steady growth and great progress of a firm. However, Hadjimanolis (2000) found major obstacles that could reduce progress in the development of innovation activities within the organization, especially in research and development (R&D) expenditure. This is a challenge for micro and small-sized firms that need to aggressively seek alternative funding such as external venture capital funds or grants provided by the government to support innovation. However, this innovation process can lead to anxiety when all expenses have been funded but the process does not generate returns (Lassen, Gertsen & Riis, 2006).

While some empirical evidence suggests that most companies focusing on innovation can improve operating margin and sales performance at a better rate (Hughes & Morgan, 2007; Lumpkin & Dess, 2001), however, it fails to provide detailed focus on innovative behaviour within the firm. Previous studies do not see innovation in various dimensions but tend to develop through single or unidimensional construct (such as Amran; 2006; Baba & Elumalai, 2011; Musa *et al*., 2014; Koolmann & Stockmann, 2014; Lumpkin & Dess, 2001). In line with the efforts to improve business performance, the need to understand and manage multidimensional innovative behaviours can be regarded as a catalyst in extending the survival of a business firm (Li, Huang & Tsai, 2008). Hence, the selection of appropriate dimensions of innovation activities is crucial in order to achieve the missions and objectives of a business. Therefore, this study focuses on three major innovation constructs involving product innovation, process innovation, and technological innovation.

2.2.1 Product Innovation

Product innovation has been defined by the Organisation for Economic Co-operation and Development [(OECD), 2005] as goods or services that are new or significantly improved. While Schumpeter (1994) explained it as a production of a new product or a new combination or use of resources. However, different definitions of innovation do not differentiate the level seen on the content of innovation. Previous studies divided product innovation into two approaches, either in the form of incremental (Kim, Kumar & Kumar, 2012) or radical (Sundbo, Sorensen & Fuglsang, 2013). As stated by Norman and Verganti (2012), incremental innovation was defined as the improvements of product within a certain time-frame of solutions. Danneels (2002) added that it involves in the development of an existing product in the market with the objective to tailor the customization of product offerings.

On the other hand, radical innovation is drastically changing products beyond common practice and general standards (Danneels, 2002). As mentioned by Garcia and Calantone (2002), radical innovation leads to the cessation of existing products to something new.

Product innovation has been cited by previous studies as a key factor for the sustainability and profitability of the firm. Scholars found the existence of a positive correlation between product innovation and business performance. This is evidenced in the findings of empirical studies by Lily Julienti and Hartini (2012) in the manufacturing sector in Malaysia. Their study found an increase in the performance of innovative products, especially in the electrical and electronic industries due to the creation of many new products driven by innovation.

Therefore, the relationship between product innovation and business performance can be hypothesized as follow:

H1: There is a significant and positive correlation between product innovation and business performance.

2.2.2 Process Innovation

Process innovation is one types of innovation practices in the organization. It concentrates on internal activities within an organization. As stated by OECD (2005), process innovation is a form of innovation other than product innovation. Baer and Frese (2003) defined process innovation as deliberate and new organizational attempts to change production and service processes. It involves the implementation of an improved production or delivery method from the existing sets. In addition, innovation encompasses the conduct of market research for innovative market-product strategy and target-end products. It could be targeted to be a product design or new promotion and advertising strategy (Grinstein, 2008). In addition, innovation can also be done in administrative affairs by identifying and practising new leadership models (Chen, Tjosvold, & Liu, 2006; Sany Sanuri & Rushami Zien, 2010). This contributes to new control techniques, management systems and organizational structures (Selvarajan *et al*., 2007).

Previous studies found the correlation between process innovation and performance of the organization. It was proved by Suriati (2014) in her study to the 234 companies which are listed in the Federation of Malaysian Manufacturers (FMM). Her study resulted in a significant and positive relationship between the process innovation, innovation outcome and performance of the firm. As a result, this process innovation is designed to create customers as well as new markets for firms (Kuratko, 2009).

Therefore, the relationship between process innovation and business performance can be hypothesized as follow:

H2: There is a significant and positive correlation between process innovation and business performance.

2.2.3 Technological Innovation

Technological innovation is demonstrated through innovative practices that emphasize product/market development with significant attention to industry and technological expertise (Maidique & Patch, 1982). This type of innovation focuses specifically on technology and how to embody it successfully in products, services and processes (Mentz, 1999). Technology might be seen as a core element for technological innovation and associated with related activities such as research, design, development, and manufacturing. Mentz (1999) added that technological innovation also includes invention, realization, and implementation.

There are several benefits through the practice of technological innovation by a firm. Apart from improving business performance, research findings have shown that the practice of technological innovation also can enhance the reputation of the firm (Hoflinger, Nagel & Sandner, 2018). However, failure in technological innovation can lead to anxiety when all expenses have been funded but expected outcome was not obtained (Lassen, Gertsen & Riis, 2006). A wise entrepreneur should be able to study and correct the inherent weaknesses and thus make the innovation successful (Van, Allard, Lemmink & Ouwersloot, 2004). Hence, the practice of technological innovation brings positive elements into the firm.

Therefore, the relationship between technological innovation and business performance can be hypothesized as follow: *H3: There is a significant and positive correlation between technological innovation and business performance.*

2.3 Conceptual Framework

As discussed in the literature, the proposed relationship between three innovation constructs which is product innovation, process innovation and technological innovation with business performance can be summarized in the conceptual framework as shown in Figure 1.

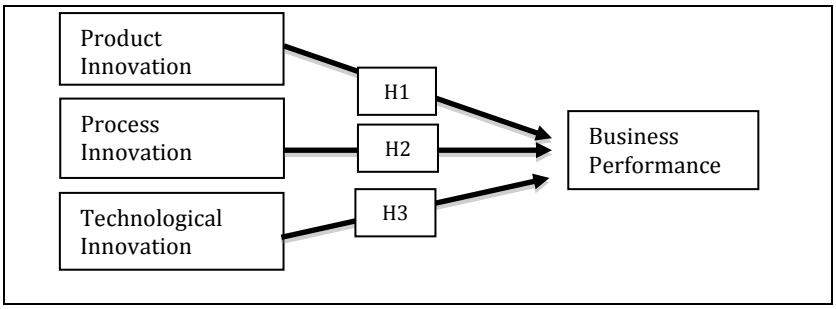

Figure 1. Conceptual Framework.

As stated in the figure above, there are three hypotheses involved in the study. The hypothesis involves the relationship between product innovation, process innovation and technological innovation to business performance.

3. METHODS

3.1 Sampling Process

A total number of 16,429 populations of micro-sized enterprises in the state of Perlis were derived from *Unit Perancang Ekonomi Negeri Perlis* (UPEN Perlis, n.d.). This list of entrepreneurs was grouped by towns and business operation. Based on Krejcie and Morgan (1970), a total number of 375 samples were chosen and distributed using a stratified random sampling technique with the group of major towns including Kangar (p=5,500, s=125), Arau (p=4,380, s=100), Kuala Perlis (p=3,929, s=90) and Padang Besar (p=2,620, s=60).

3.2 Measurement

This survey was aimed at collecting quantitative data. The developed instruments consist of questionnaires. Questionnaires were adapted from previous studies, including Grinstein (2008), Lumpkin and Dess (1996), Mentz (1999), Schumpeter (1994) and Wang (2007). Constructs and the number of items involved are business performance (5 items), product innovation (5 items),

process innovation (5 items) and technological innovation (6 items). The measurement of the main constructs involved an ordinal scale with the use of Likert-Scale 5-points while the respondent profile items involved a nominal scale of close-ended questions.

3.3 Reliability of the Instrument

A pilot study was conducted on 30 selected respondents in a limited area. In order to avoid contamination problems, respondents of the pilot study will not be used again in the actual study. The purpose of this pilot study is to test the suitability of the study design, usability, and effectiveness of each item in the research instrument. Referring to Cronbach's alpha analysis in reliability testing, the alpha value obtained for business performance demonstrates a high level of reliability (α = 0.799) while three constructs of innovation were at a moderate level (product innovation, α= 0.613; process innovation, α= 0.719; technological innovation, α= 0.670). However, one item from each product innovation and technological innovation has to be deleted into the final amount of 4 and 5 items respectively. As suggested by Sekaran and Bougie (2010), all the final items in these four constructs can be used for data collection purposes when the alpha value exceeds 0.6. However, some minor structural changes to the items were done in order to improve the instrument.

4. DATA ANALYSIS AND RESULTS

4.1 Profile of Respondents

A total of 127 micro-sized enterprises responded to the study and the collected data is used for further analysis. Some of the features found in the respondent's profile include gender of respondents and demographics of the company, namely the type of ownership, location of operation, age of business and type of business involved. Profile of the respondents was shown in Table 2.

Table 2 Profile of Respondents

Characteristics	Categories	Frequency	Percentage
Gender of respondents	Male	64	50.4
	Female	63	49.6
Type of ownership	Sole-Proprietorship	65	51.2
	Partnership	38	29.9
	Private Limited	24	18.9
Location of operation	Kangar	38	29.9
	Arau	38	29.9
	Kuala Perlis	27	21.3
	Padang Besar	24	18.9
Age of business	Below 1 year	31	24.4
	1-4 years	77	60.6
	Above 4 years	19	15.0
Type of business	Retailing	69	54.3
	Agricultures	31	24.4
	Manufacturing	27	21.3

Among the characteristics of respondents in Table 2, there is one item that involves individual basis which is the gender of the respondent. The analysis revealed that the proportion of respondents involved was 50.4% male (64) and 49.6% female (63). The other four items involved are firms' basis covering the type of ownership, the location of operation, the age of business and type of business. Characteristics for the type of ownership indicate that the sole

proprietorship includes 51.2% of respondents, 29.9% of partnerships and 18.9% of private limited companies. Next, the location of operation involves four major towns in Perlis namely Kangar (29.9%), Arau (29.9%), Kuala Perlis (21.3%) and Padang Besar (18.9%). For business age, the majority of respondents were 1 to 4 years (60.6%), followed by under 1 year (24.4%) and above 4 years (15%). Finally, the type of business involves which are retailing (54.3%), agriculture (24.4%) and manufacturing (21.3%).

4.2 Results of Descriptive and Correlation Analysis

The following table shows the results of the analysis of descriptive and correlation from the three constructs of innovation that are examined in relation to business performance.

Table 3 Descriptive statistics and correlation analysis

Constructs	Mean (M)	Std. Deviation	PFC	PDI	PCI	THI
PFC - Business Performance	4.23	.615	1.000			
PDI - Product Innovation	3.76	.473	.685**	1.000		
PCI - Process Innovation	4.23	.529	.654**	.574**	1.000	
THI - Technological Innovation	4.20	.388	.430**	.440**	.563**	1.000

*Note: All items were used of Likert-scale 5–points. ** Correlation is significant at the 0.01 level (2-tailed).*

From the descriptive analysis in Table 3, it was found that all the constructs studied have an average mean value of 4. The results were shown through the mean value of business performance (M=4.23), process innovation (M=4.23), technological innovation (M=4.20) and product innovation (M=3.76). The relationship between the constructs was studied using correlation analysis. The analysis shows that the relationships between the three innovation constructs with business performance were significant and positively related. The results found a high level of significant relationships, namely product innovation (r=.685) and process innovation (r=.654) on business performance. Whereas, the relationship between technological innovation and business performance is also significant but at a moderate level (r=.430).

5. DISCUSSIONS AND FUTURE DIRECTIONS

In examining the level of innovation practices amongst the entrepreneurs, it is found that the process innovation is in the top position. This suggests that the entrepreneurs involved focusing more on work processes including their production and sales activities. Next is followed by the practice of technological innovation and lastly product innovation. The practice of technological innovation provides guidance on entrepreneurial concerns over new ideas and information and the use of technology in their operations. On the other hand, product innovation provides entrepreneurs with product renewal, encompassing the characteristics, quality, packaging and added value of the product.

The results of the study on the relationship between the three types of innovation and business performance have shown a significant correlation with the positive direction of these three hypotheses. This provides guidance on the importance of product innovation, process innovation and technological innovation practices in business and its relevance to firm performance. In this case, product innovation has the highest relationship with business performance. Hence, entrepreneurs need to constantly reform the products offered to their customers. The updated product is able to attract new customers and retain existing clients of the firm. Current trends also need to be monitored so that products are environmentally friendly and provide the best benefits to customers.

Findings from this study provide enlightenment to related parties such as entrepreneurs and entrepreneurial agencies in focusing on innovative-oriented constructs towards improving business performance. The three constructs of innovation need to be practised by entrepreneurs in providing excellent product or services to their customers. While entrepreneurial agencies need to focus on raising awareness among entrepreneurs on the importance of innovative practices in order to ensure the continuity of their businesses. They need to have a program to disseminate information on the steps and actions that must be done so that the entrepreneurs are knowledgeable about the matter. For future direction, further study should be conducted to extend the research areas and focus on context-specific industry. In addition, performance constructs such as business growth and return on investment should be used as a measure in accordance with the nature of the innovation itself which takes a long time for the public to accept it.

In conclusion, the progress of a country in terms of the economy can be indicated by the extent of the various innovations undertaken among their business firms. Therefore, entrepreneurs should not be tired of practising any form of business innovation either by invention, extension, duplication or synthesis. As a result, positive benefits will be obtained by their business in the future. Sustainable businesses can be enjoyed when entrepreneurs constantly emphasize on reforming their business operations, including on products, processes and technologies used in their firms.

REFERENCES

Ahmad, S., & Abdul Ghani, A. (2013). Orientasi keusahawanan dan prestasi perniagaan: Pengaruh penyederhana gaya kepimpinan transformasi. *Jurnal Pengurusan. 37*, 115-123.

Ahmad, S., Abdul Ghani, A. & Mohd Saad, R. (2017). Pengaruh Persekitaran Luaran ke atas Prestasi Perniagaan PKS. *Sains Humanika, 9*(1), 1-7.

Atuahene-Gima, K. & Ko, A. (2001). An empirical investigation of the effect of market orientation and entrepreneurship orientation alignment on product innovation. *Organization Science, 12*(1), 54-74.

Awang, A. (2006). *Orientasi keusahawanan firma dan prestasi perusahaan kecil dan sederhana (PKS) Bumiputera: Kajian impak penyederhana beberapa faktor persekitaran yang ditanggap* (Unpublished PhD thesis). Universiti Sains Malaysia, Pulau Pinang.

Baba, R. & Elumalai, S. (2011). *Entrepreneurial orientation of SMEs in Labuan and its effects on performance.* FEB Working Paper Series No. 1113. Kota Samarahan, Universiti Malaysia Sarawak.

Baer, M., & Frese, M. (2003). Innovation is not enough: climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior, 24*(1), 45-68.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*, 99-120.

Brigham, E. F. & Houston, J. F. (2003). *Fundamental of Financial Management.* (8th. Eds). United State of America: South Western.

Chen, G., Tjosvold, D. & Liu, C. (2006). Cooperative goals, leader people and productivity values: Their contribution to top management teams in China. *The Journal of Management Studies, 43*(5), 1177.

Covin, J. & Covin, T. (1990). Competitive aggressiveness, environmental context, and small firm performance. *Entrepreneurship: Theory & Practice, 14*, 35-50.

Covin, J. & Slevin, D. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, *10,* 75-87.

Danneels, E. (2002). The dynamics of product innovation and firm competences. *Journal of Strategic Management, 23*, 1095-1121.

Drucker, P. (1985). *Innovation and entrepreneurship.* New York, NY: Harper Business.

Garcia, R. & Calantone, R. (2002). A critical look at technological innovation typology and innovativeness. *The Journal of Product Innovation Management*, *19*, 110-132.

Grinstein, A. (2008). "The effect of market orientation and its components on innovation consequences: A meta-analysis". *Journal of the Academy of Marketing Science, 36*(2), 166-173.

Hadjimanolis, A. (2000). "A resource-based view of innovativeness in small firms". *Technology Analysis & Strategic Management, 12*(2), 263-281.

Hoflinger, P. J., Nagel, C., & Sandner, P. (2018). Reputation for technological innovation: Does it actually cohere with innovative activity? *Journal of Innovation & Knowledge, 3*(1), 26-39.

Hughes, M. & Morgan, R. E. (2007). Deconstructing the relationship between entrepreneurial orientation and business performance at the embryonic stage of firm growth. *Industrial Marketing Management, 36*(5), 651-661.

Jambulingam, T., Kathuria, R. & Doucette, W. (2005). Entrepreneurial orientation as a basis for classification within a service industry: The case of retail pharmacy industry. *Journal of Operations Management, 23*(1), 23-42.

Kim, D.Y., Kumar, V. & Kumar, U. (2012). Relationship between Quality Management Practices and Innovation. *Journal of Operations Management*, *30*, 295-315.

Kollmann, T. & Stockmann, C. (2014). Filling the Entrepreneurial Orientation–Performance Gap: The Mediating Effects of Exploratory and Exploitative Innovations. *Entrepreneurship: Theory and Practice. 38*(5), 1001-1026.

Krejcie, R. V. & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*, 607-610.

Kuratko, D. (2009). *Introduction to entrepreneurship* (8th ed.). Singapore: South-Western Cengage Learning.

Landstrom, H., Crijns, H., Laveren, E. & Smallbone, D. (2008). *Entrepreneurship, sustainable growth and performance: Frontiers in European entrepreneurship research.* Cheltenham, UK: Edward Elgar Publishing.

Lassen, A., Gertsen, F. & Riis, J. (2006). The nexus of corporate entrepreneurship and radical innovation. *Corporate Entrepreneurship and Radical Innovation, 15*(4), 359-372.

Li, Y., Huang, J., & Tsai, M. (2008). Entrepreneurial orientation and firm performance: The role of knowledge creation process. *Industrial Marketing Management, 38*(4). Accessed from *http://www.kyu.edu.tw/teacpage/ teacpage97/9.*

Lily Julienti, A. B. & Hartini, A. (2012). A Study of Product Innovation Performance: Identifying the Most Innovative Industry in Malaysian Manufacturing Sector. Paper presented at *The 3rd International Conference on Technology and Operations Management - "Sustaining* Competitiveness through Green Technology Management", on July 4-6, 2012, Bandung, Indonesia.

Lukas, B. & Ferrell, O. (2000). The effect of market orientation on product innovation. *Journal of the Academy of Marketing Sciences, 28,* 239-247.

Lumpkin, G. & Dess, G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *The Academy of Management Review, 21*(1), 135-172.

Lumpkin, G. & Dess, G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing, 16*, 429-451.

Lumpkin, G., Cogliser, C. C. & Schneider, D. R. (2009). Understanding and measuring autonomy: An entrepreneurial orientation perspective. *Entrepreneurship: Theory & Practice*, 47-69.

Madrid-Guijarro, A., Auken, H. V., & Garcia, D. (2007). An analysis of factors impacting performance of Spanish manufacturing firms. *Journal of Business and Entrepreneurship, 20*(4), 369-386.

Maidique, M. & Patch, P. (1982). "Corporate strategy and technological policy". In M. Tushman., & W. Moore, *Readings in the management of innovation* (pp. 273-285). Marshfield, MA: Pitman.

Mentz, J. C. (1999). *Defining Technological Innovation*. University of Pretoria, South Africa.

Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science, 29*(7), 770-791.

Miller, D. & Friesen, P. (1978). Archetypes of strategy formulation. *Management Science*, 921-933.

Musa, D., Abdul Ghani, A. & Ahmad, S. (2014). Linking Entrepreneurial Orientation and Business Performance: The Examination toward Performance of Cooperatives Firm in Northern Region of Peninsular Malaysia. *International Journal of Business & Technopreneurship, 4*(2), 247-264.

Najmi, M., Rigas, J. & Fan, I. (2005). A framework to review performance measurement systems. *Business Process Management Journal*, *11*(2), 109-122

Norman, D. A. & Verganti, R. (2012). *Incremental and radical innovation: Design research versus technology and meaning change,* March, 18.

OECD (2005). *"The Measurement of Scientific and Technological Activities: Guidelines for Collecting and Interpreting Innovation Data: Oslo Manual"* (3rd Eds). Prepared by the Working Party of National Experts on Scientific and Technology Indicators, OECD, Paris.

Rauch, A., Wiklund, J., Lumpkin, G. & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship: Theory & Practice*, 761-787.

Renko, M., Carsrud, A. & Brannback, M. (2009). The effect of a market orientation, entrepreneurial orientation and technological capability on innovativeness: A study of young biotechnology ventures in the United States and in Scandinavia. *Journal of Small Business Management, 47*(3), 331-369.

Ross, D. G. (2014). Taking a chance: A formal model of how firms use risk in strategic interaction with other firms. *Academy of Management Review, 39*(2), 202-226.

Saeed, S., Yousafzai, S. Y. & Engelen, A. (2014). On Cultural and Macroeconomic Contingencies of the Entrepreneurial Orientation-Performance Relationship. *Entrepreneurship: Theory and Practice, 38*(2), 255-290.

Salomo, S., Talke, K. & Strecker, N. (2008). Innovation Field Orientation and Its Effect on Innovativeness and Firm Performance. *Journal of Product Innovation Management, 25*, 560-576.

Sany Sanuri, M. M. & Rushami Zien, Y. (2010). The influence of top management commitment, process quality management and quality design on new product performance: A case of Malaysian manufacturers. *Total Quality Management & Business Excellence, 21*(3), 291-300.

Schumpeter, J. (1994). *About creative destruction and entrepreneurship.* Stockholm: Ratio.

Selvarajan, T., Ramamoorthy, N., Flood, P., Guthrie, J., MacCurtain, S. & Liu, W. (2007). "The role of human capital philosophy in promoting firm innovativeness and performance: Test of a causal model". *International Journal of Human Resource Management, 18*(8), 1456-1470.

Sekaran, U. & Bougie, R. (2010). *Research methods for business* (5th ed.). West Sussex, United Kingdom: John Wiley & Sons Ltd.

Su, Z., Xie, E. & Li, Y. (2011). Entrepreneurial orientation and firm performance in new ventures and established firms. Journal of Small Business Management, *49*(4), 558-577.

Sundbo, J., Sorensen, F. & Fuglsang, L. (2013). Innovation in the experience sector. *Handbook on the Experience Economy:* 228-238.

Suriati, Z. A. (2014). *Innovation process, innovation outcome and firm's performance in the Malaysian electrical and electronics industry.* (Unpublished PhD. Thesis), Sintok, Universiti Utara Malaysia.

Unit Perancang Ekonomi Negeri Perlis (n.d). *Blueprint Pelan Transformasi Pembangunan Keusahawanan Negeri Perlis 2016-2020.* Accessed on April 4, 2018 from *https://www.perlis.gov.my/.../2-penerbitan?...keusahawanan-negeri*

Van, R., Allard, C., Lemmink, J. & Ouwersloot, H. (2004). "High-technology service innovation success: A decision-making perspective". *Journal of Product Innovation Management, 21*(5), 348-359.

Wang, Z. (2007). Technological Innovation and Market Turbulence: The Dot-com Experience. *Review of Economic Dynamics, 10*(1), 78- 105.

Zahra, S. & Covin, J. (1995). "Contextual influence on the corporate entrepreneurship-performance relationship: A longitudinal analysis". *Journal of Business Venturing, 10*(1), 43-58.