ASEAN Journal of Management & Innovation
Vol. 7. No. 2, 108 - 120

DOI: 10.14456/ajmi.2020.18
ajmi.stamford.edu
Received: September 29, 2020
Revised: October 11, 2020
Accepted: November 11, 2020

Organizational Creativity, Innovation, and Firm Success: An Empirical Study of the Thai Electronic and Electrical Appliance Sector

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Abstract
This study attempts to investigate the relationships between organizational creativity and innovation and firm success via the impact of innovation ideas enhancement, modern management technological focus, and dynamic business strategy capability on valuable practice development, new process improvement, and proactive operational competency. A survey questionnaire was used to collect data and distributed to 159 managing directors or partners of firms in the Thai electronic and electrical appliance sector. To test the hypotheses, the study relied on an Ordinary Least Squares (OLS) regression analysis. The results indicate a strong dependence as innovation ideas enhancement, modern management technological focus, and dynamic business strategy capability have a significant positive effect on valuable practice development, new process improvement, and proactive operational competency, which all impact firm success. Organizational creativity and innovation are vital for successful transformation and value creation and the diffusion of innovation. This research can help managers in the electronic and electrical appliance sector improve the innovativeness of their firms.

Keywords: Organizational Creativity and Innovation, Firm Success, Valuable Practice Development, New Process Improvement, Proactive Operational Competency

1. Introduction

In today's fiercely competitive environment, businesses need to keep re-inventing themselves and adapt to changing external parameters (Damanpour & Aravind, 2012). Consistently attaining a high-performance level requires firms to be flexible and prepared for changes. Moreover, companies must be alert and diligent so that they can manage strategic organizational innovation effectively ((Wong & Chin, 2007; Nalau & Handmer, 2015). Organizational creativity and innovation can be defined as the ability of a firm to adopt new systems, processes, and policies by acquiring new skills and working behavior (Skalik, 2016). Most innovation is incremental ('do it better') rather than incremental ('do it differently'). It also frequently involves open innovation as firms (including competitors) in search of innovative solutions collaborate and mutually benefit from their respective capabilities, notwithstanding the fact that issues of unwanted technology transfer may arise. This is especially the case when huge amounts of R&D funds are needed (Floyd & Lane, 2000).

Creativity and innovation, vital to the successful performance of any organization in ordinary times, are even more critical in today's extremely volatile climate. The current Covid-19-induced economic and sanitary crisis has indeed emphasized the necessity of running innovative businesses (Jiang & Wen, 2020). More than ever, organizations need to search for new ideas and come up with innovative products, services, or processes to succeed but, in some cases, just to simply survive. Innovation, however, is not just an important survival tool, it is also a source of lasting and effective competitive advantage (Dananpour, Scanchez, & Chin , 2018). It can significantly improve a firm's existing competitive advantage (Battisti & Stoneman, 2010). This includes both management and technical innovation (Tsai & Yang, 2013). Organizational creativity and innovation are not limited to large international conglomerates. Even though their access to new ideas is often limited by a lack of resources, small and medium enterprises (SMEs) also need to be innovative as their capacity to generate new ideas can greatly impact their sustainability (Lacity & Willcocks, 2014; Matinaro & Liu, 2017).

Organizational creativity and innovation demand a high level of managerial response (Matinaro and Liu, 2017). As a useful tool for long-term growth, innovation generally involves new management practices, a new organization across functions, and new corporate strategies (Zhou & Wu, 2010). However, organizational creativity and innovation remain significant challenges for many executives (Varadarajan, 2009, Lii & Kuo, 2016). One of the main reasons is that the creation of an effective innovative organization involves ambiguous managerial characteristics. Moreover, organizations must adapt to an environment that is more complicated than ever before as the speed of innovation has increased in the last decades, shortening the life cycle of products and increasing the need for rapid changes within companies. This paper explores some of these issues in light of the Thai electronic and electrical appliance industry, a highly competitive sector in need of constant adaptation in the face of rapid changes and therefore a fitting model for this research study. This sector is particularly useful for understanding how innovative technology can help to create a competitive advantage and increase the effectiveness of an organization. For one, it is one of the fastest growing industries in Thailand. For another, with more players entering the field, it is becoming ever more competitive, hence the need for constant innovation and for products whose features and performance meet customer needs. Because of its extensive supply chain network, it also involves companies of all sizes.

More specifically, since organizational creativity and innovation have been found to be associated with (i) innovation ideas enhancement, (ii) modern management technological focus, and (iii) dynamic business strategy capability (Panayides, 2006), this study seeks to investigate their relationships with firm success. In addition, it aims to assess the mediating effect of three mediators on these three dimensions with which they are hypothesized to be positively associated. The three mediators include: valuable practice development, new process improvement, and proactive operational competency. To attain these objectives the following research questions have been developed:

1. How do the three constructs causing mediation with (a) innovation ideas enhancement, (b) modern management technological focus, and (c) dynamic business strategy capability relate to them?
2. How do innovation ideas enhancement, modern management technological focus, and dynamic business strategy capability affect firm success?

2. Literature Review and Hypotheses Development

The two theoretical foundations of this research are the diffusion of innovation theory and the dynamic capability theory. Both are briefly discussed next. Key operational concepts are then considered.

- The Diffusion of Innovation Theory

The diffusion of innovation theory (DOI) was developed by Rogers in 1962. As a social science theory, it seeks to explain how over time a new idea, behavior, or product gains momentum and spreads through a specific social system and how, as a result of the diffusion, people adopt them (Valente & Rogers, 1995). Diffusion here refers to the process by which an innovation is communicated through certain channels over time among the members of a social system (Robertson, Swan, & Newell, 1996; Peres, 2010). The theory is premised on the assumption that if an organization is to rapidly have innovation adoption, it must thoroughly understand the needs of consumers before it is capable of offering the appropriate products or services in a form similar to or departing from that previously used by consumers (Feller, Finnegan, & Nilsson, 2011). The key to adoption is that people must perceive the innovation as new (Rogers, 2003). Subsequent researchers have found that adoption does not happen simultaneously in a social system (e.g. Denis et al., 2002; Greenhalgh et al., 2004; McCullen, 2013) and that early adopting people have characteristics that are different from people that adapt innovation later (Hochbaum, 2011).

- The Dynamic Capabilities Theory

The concept of dynamic capability first emerged in 1997 (Teece, Pisano, & Shuen, 1997). It relates to a firm's ability to integrate, create, and reconfigure internal and external abilities to respond quickly to changing environments (Teece, Pisano, & Shuen, 1997). The term 'capability' is often used in the plural as a way to emphasize that the timely reaction to external changes requires a combination of various capabilities. Dynamic capabilities are distinct from operational capabilities, which relate to the current operations of an organization (Helfat, 2007). By contrast, a dynamic capability is the capacity of an organization to purposefully extend or modify its resource base (Teece, 2007; Douma & Schreuder, 2013). It is a tool to propel the capabilities of a firm to develop in ways that bring about a competitive advantage in the long term. Zhou and Li (2010) argue that to do just that, firms must adapt, integrate, and reconfigure their resources and abilities continuously in reaction to the changing environments. Some competencies, however, need time to be developed. Managerial strategies can also play a crucial role in the improvement of new capabilities. While the theory remains helpful when dealing with how to respond to changing business environments, it has been criticized for failing to describe exactly how to respond (Qaiyum & Wang, 2018) and for the difficulty identifying or operationalizing the capabilities (Lawson, 2001).

- Firm Success

Firm success is the dependent variable in this research. It has been defined in many different ways that reflect the various perspectives from which it can be viewed. Some definitions may, for example, emphasize the firm's shared values, while others may stress the contribution to the community or the well-being of employees. For the purpose of this research paper, it refers to a firm's overall performance and ability to achieve the organizational goals efficiently and effectively (Cantne & Joel, 2011). Focusing on the role of process innovativeness in the development of environmental innovativeness capability, Rodriguez and Wiengarten (2017) suggested that organizational success relates to the innovativeness capabilities of the firm and its innovation resources, i.e., internal and external R&D, and the acquisition of machinery, hardware, software, patents, etc. The resource-based view of the firm (RBV), one of the most important areas of research content in the last

decades (Galbreath (2004), prescribes that competitive advantage stems from resources that are valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, 1991). Such resources include managerial ability, customer relationships, brand reputation (Parung & Bititci, 2006). A firm's access to resources and its ability to mobilize and combine them in specific ways determine its competence in a given product or service.

- Organizational Creativity and Innovation

Organizational creativity can be defined as a firm's capability to change concepts and knowledge towards continually creating processes and systems that are useful for the organization and its interests (Battisti & Stoneman, 2010). It consists of innovation in organizational activity management, whether internal or external activities, and includes technical considerations and equipment used for operation (Panayides, 2006). It is the ability of a firm to adopt new systems, processes, and policies (Skalik, 2016). It is about bringing new concepts to the company whether in the forms of products, services, production processes or operations systems (Chung & Gibbons, 1997). Organizational creativity is a critical factor for survival and for maintaining a lasting and effective competitive advantage. It is a re-adjustment of the business model in order to produce improvementd in the value to customers and growth for the company (Hurley & Hult, 1998). An innovative organization makes updates and changes its mental processes to create new things that are different and useful (Lacity & Willcodks, 2014; Weerawardena & Mavondo, 2011; Zhou & Wu, 2010). This involves changes in the structure and processes of the organization and a focus on new approaches for managing the organization as well as new strategies (Armbruster et al., 2008; Battisti & Stoneman, 2010). A firm's capability for change depends on the experience, expertise, and customer requirements information (Goretzki & Messner, 2016). It involves (i) re-adjusting the business model, (ii) finding new innovation gaps, and (iii) improving the level of satisfaction of customer needs (Tsai & Yang, 2018).

The following three dimensions are associated with organizational creativity and innovation: innovation ideas enhancement, modern management technological focus, and dynamic business strategy capability. They are discussed next.

(i) Innovative Ideas Enhancement: This dimension refers to a firm's effort to encourage the process of learning, being creative, and focusing on practical applications to get new ideas rolling continuously. Innovative ideas help the organization gain competitive advantages and achieve higher performance levels (Atuahenu-Gima, 2005). The following three hypotheses can be therefore be developed

H1a,b,c: *The greater innovation ideas enhancement, the more likely the organization is to (a) achieve higher valuable practice development, (b) make greater new process improvement, and (c) achieve higher proactive operational competency.*

(ii) Modern Management Technological Focus: Modern management technological focus refers to the creation or adoption of management processes, structures or techniques, and practices that are new to the organization and affect its performance in terms of innovation, productivity, and competitiveness. According to Wu (2010), this technological focus is crucial for sustainability as it provides a competitive advantage in exploiting and exploring new ways of conducting business and brings about new working methods. Hence, the following hypotheses:

H2a,b,c: *The greater the modern management technological focus, the more likely the organization is to (a) achieve higher valuable practice development, (b) make greater new process improvement, and (c) achieve higher proactive operational competency.*

(iii) Dynamic Business Strategy Capability: This dimension can be defined as the ability to set working procedures and directions by integrating operational tactics systematically to improve performance to be more effective. Pollard and Morales (2015) suggest that strategy should be regarded as a set of business plans to be applied consistently to ensure the success of the targeted performance. Based on this dimension, the following hypotheses have been articulated:

H3a,b,c: *The greater the dynamic business strategy capability, the more likely the organization is to (a) achieve higher valuable practice development, (b) make greater new process improvement, and (c) achieve higher proactive operational competency.*

- Mediating the Relationship with Organizational Creativity and Innovation

As shown in Figure 1, three mediators cause mediation with innovation ideas enhancement, modern management technological focus, and dynamic business strategy capability with which they are hypothesized to be positively associated, as also is the case with firm success. They include valuable practice development, new process improvement, and proactive operational competency.

(i) Valuable Practice Development: According to Mishra and Napier (2015), valuable practice development consists in the improvement of operational planning and the use of various techniques and procedures. Development activities must be connected to strategic goals throughout the whole organization, i.e., across boundaries and at all levels (Moradinaftchali, Song, & Wang, 2016). Hence, the following hypothesis:

H4: *The higher valuable practice development, the more likely the organization is to achieve greater firm success.*

(iii) New Process Improvement: The concept of new process improvement refers to the development of procedures, schemes, and operations, and involves using modern technology (Frishammar et al., 2013). Excellence in process development is enhanced by identifying, analyzing, and implementing ways of creating value and performance for stakeholders. The following hypothesis can therefore be formulated:

H5: *The higher new process improvement, the more likely the organization is to achieve greater firm success.*

(iii) Proactive Operational Competency: Golec (2015) defines proactive operational competency as having the ability to research and analyze competitive situation in the present and the future in order to set policies and working directions for a more efficient performance. A firm with proactive activities has an opportunity-seeking orientation and perspective foresight and takes first-mover initiatives (Matinaro & Liu, 2017; Mateljak & Mihanovic, 2016; Lapide, 2011). Based on this mediator, the following hypothesis has been developed:

H6: *The higher proactive operational competency, the more likely the organization is to achieve greater firm success.*

3. Research Methodology

Figure 1 shows the conceptual model of this study, which is based on the three dimensions associated with organizational creativity and the three mediators discussed above.

- Sample Selection and Data Collection Procedure

The sample in this study consists of 675 Thai electronic and electrical appliance businesses drawn from the database of the Department of Business Development Thailand (http://www.dbd.go.th). A survey questionnaire was used to collect data from these firms. The key participants were managing directors and managing partners of some of these firms. The valid mailing consisted of 675 surveys. 159 completed questionnaires were received.

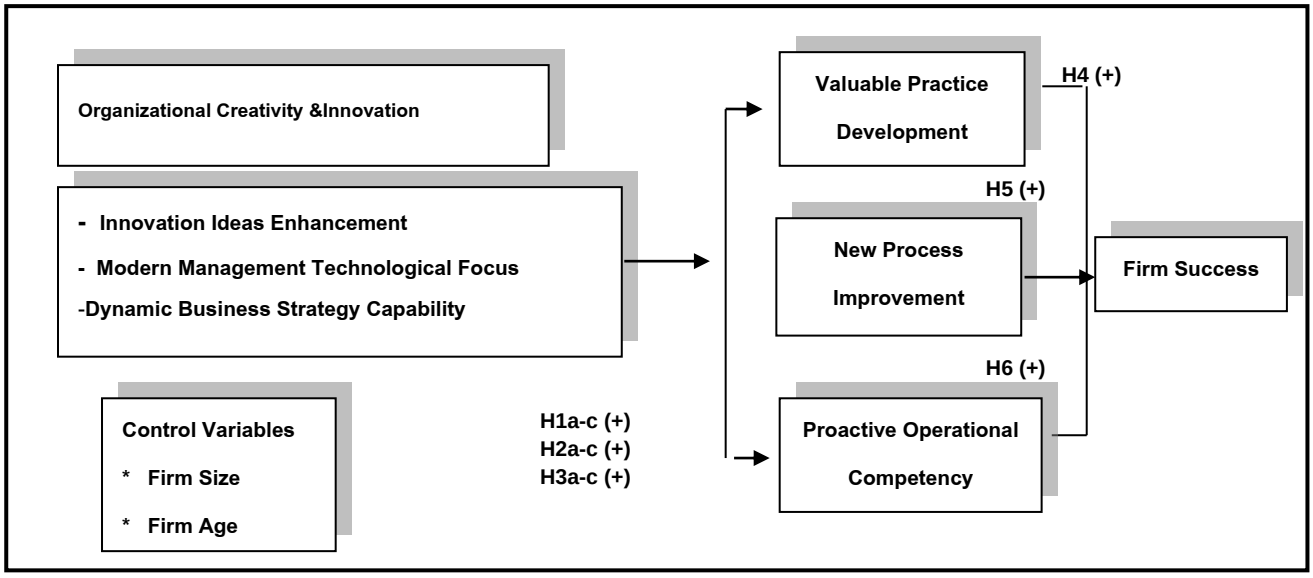

Figure 1: Conceptual Model of Organizational Creativity, Innovation and Firm Success (Created by the authors for this study)

- *Questionnaire Development*

Since most of the constructs in the conceptual model are newly developed a pre-test method was appropriately conducted to assert the validity and reliability of the questionnaire, which was also double-checked by experienced scholars. The questionnaire consists of five parts. Part one asks for personal information. Part two is about the general background information of the organization. Part three evaluates each construct in the conceptual model. The questions in the fourth part are designed to measure creativity organizational creativity and innovation, mediation, and firm success. Finally, an open-ended question is included in part fifth. In this conceptual model, all the variables are measured on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), excluding control variables.

- *Validity and Reliability*

Validity reflects the accuracy of the measurement. In order to verify the accuracy and validity of the research instruments, two types of validity were tested: content validity and construct validity. Content validity is a measure of the degree to which data is collected using a particular instrument representing a specific domain or content of a particular concept. As noted earlier, two academic experts in the field of organizational creativity ensured that the questionnaires were properly worded and covered all the constructs associated with the variables. Secondly, factor analysis was used to examine the construct validity of the data in the questionnaire. If the size of the factor loading is greater than the 0.40 cut-off, they are statistically significant (Nunnally and Berstein, 1994). All factors loading are greater than the 0.40 cut-off. Therefore, they are statistically significant.

As determined by Hair et al. (2010), reliability measures the stability and consistency of the respondent in answering items in the questionnaire about constructs that are part of the dimension of a variable. To test the reliability of the data in this research, the item-total correlation and the Cronbach's alpha test were used. As shown in Table 1, regarding the item-total correlation, each item score exceeded 0.3, which means each item did correlate very well with the overall scale (Hair et al. 2010). When evaluating the reliability of the measurements using Cronbach alpha coefficients, they were greater than 0.70 and produced internally consistent results. The questionnaires were thus valid and reliable.

Table 1: Results of Measure Validation

Variables	Factor Loadings	Item-total correlation	Cronbach's Alpha
Innovation Ideas Enhancement (IIE)	.719 - .759	0.727-0.825	.814
Modern Management Technological Focus (MMTF)	.716 - .824	0.762-0.839	.827
Dynamic Business Strategy Capability (DBSC)	.722 - .817	0.732-0.778	.795
Valuable Practice Development (VPD)	.738 - .795	0.747-0.761	.754
New Process Improvement (NPI)	.727 - .754	0.675-0.763	.729
Proactive Operational Competency (POC)	.732 - .787	0.673-0.726	.724
Firm Success (FS)	.734 - .763	0.657-0.687	.692

Source: created by the author of this study

- *Statistical Techniques*

The Ordinary Least Squares (OLS) regression analysis was used to test and examine the hypotheses based on the conceptual model. Since the variables were neither nominal nor categorical data, OLS is an appropriate method for examining hypothesis relationships. The following are the equation models of the aforementioned relationships:

Equation 1: $VPD = \alpha_1 + \beta_1 IIE + \beta_2 MMTF + \beta_3 DBSC + \beta_4 FS + \beta_5 FA + \varepsilon$

Equation 2: $NPI = \alpha_2 + \beta_6 IIE + \beta_7 MMTF + \beta_8 DBSC + \beta_9 FS + \beta_{10} FA + \varepsilon$

Equation 3: $POC = \alpha_3 + \beta_{11} IIE + \beta_{12} MMTF + \beta_{13} DBSC + \beta_{14} FS + \beta_{15} FA + \varepsilon$

Equation 4: $FS = \alpha_4 + \beta_{16} VPD + \beta_{17} NPI + \beta_{18} POC + \beta_{19} FS + \beta_{20} FA + \varepsilon$

4. Results and Discussion

A bivariate correlation analysis of Pearson's correlation was employed to explore the relationships among variables and detect multicollinearity in the multiple regression assumption. Multicollinearity might occur when inter-correlation in each predict variable is more than 0.80, which is a high relationship (Hair et al., 2010) In this study, the bivariat correlation procedure was scaled to a two-tailed test of statistical significance at $p<0.01$ and $p<0.05$, of which the result is shown in Table 2.

Table 2: Descriptive Statistics and Correlation Matrix

Variables	IIE	MMTF	DBSC	VPD	NPI	POC
Mean	4.106	4.258	4.182	3.738	3.704	3.629
SD	.416	.408	.437	.358	.368	.386
IIE	1					
MMTF	.571**	1				
DBSC	.416**	.683**	1			
VPD	.538**	.541***	.628**	1		
NPI	.674**	.564**	.541**	.656***	1	
POC	.443**	.571**	.575**	.538**	.573**	1

*** Correlation is significant at the 0.01 level (2-tailed),

** Correlation is significant at the 0.05 level (2-tailed)

Source: created by the author of this study

Table 3 presents the results of the OLS regression analysis pertaining to the dimensions of organizational creativity and innovation (the variables assessed in this study). The hypotheses predicted positive relationships. As can be seen in the table, variance inflation factors (VIF) were used to provide information on the extent to which the non-orthogonality among independent variables inflates standards errors. The VIFs, which range from 2.382 – 2.951, are well below the cut-off value of 10, which means that the independent variables are not correlated with each other. Therefore, no substantial multicollinearity was encountered in this study.

Table 3: Results of OLS Regression Analysis

Independent Variables	Dependent Variables			
	Equation 4: Firm Success	**Equation 1: Valuable Practice Development**	**Equation 2: New Process Improvement**	**Equation 3: Proactive Operational Competency**
Innovation Ideas Enhancement		.249** (.079)	.237** (.068)	.253** (.085)
Modern Management Technological Focus		.187** (.072)	.251** (.067)	.207** (.081)
Dynamic Business Strategy Capability		.182** (.081)	.173** (.074)	.074 (.064)
Valuable Practice Development	.274** (.062)			
New Process Improvement	.185** (.070)			
Proactive Operational Competency	.244** (.087)			
Firm Size	.0.05 (.093)	0.124 (.106)	0.117 (.123)	.131 (.106)
Firm Age	.100 (.094)	-0.11 (.016)	-0.172 (.012)	-0.151 (.106)
Adjusted R square	.301	.369	.384	.432
Maximum VIF	2.382	2.951	2.951	2.951

Note: The value of the beta coefficients is in the first row.
Below are the values of standard error in the parenthesis. $^{***}p < 0.01$ $^{**}p < 0.05$
Source: created by the author of this study

The results show that innovation ideas enhancement has a positive significant impact on valuable practice development (β_1= 0.249, p <0.05), new process improvement (β_6= 0.237, p <0.05), and proactive operational competency (β_{11}= 0.253, p <0.05). The results also indicate that innovation ideas are the initial element of firm competitiveness in the present situation. In order to develop products, processes and services, the organization need to be organized and managed sustainably (Damanpour & Schneider, 2006). This is consistent with prior research that found that when organizations develop their own organizational innovation mechanism, based on their own innovative capacities, they will gain a sustainable competitive advantage (D'Amato & Roome, 2009). Moreover, Mishra and Napier (2015) determined that process dynamic business strategy capability resulting from quality management innovation can reduce waste, which tends to reduce adverse environment effects while yielding other operational efficiencies. Hence, hypotheses 1a-1c were supported.

Modern management technological focus has a positive significant impact on valuable practice development (β_2= 0.187, p <0.05), new process improvement (β_7 = 0.251, p <0.05), and proactive operational competency (β_{12}= 0.207, p <0.05). Empirical studies support these results. Modern management technological focus improves the efficiency of the organization's internal administrative process (e.g. Walker, Damanpour, & Devece, 2011) and facilitates change, including technical innovation, improving organizational performance (Leong and Jarmoszko, 2010). Thus, hypotheses 2a-2c were supported. Dynamic business strategy capability has a positive significant impact on valuable practice development (β_3= 0.182, p <0.05), and new process improvement (β_8 = 0.173, p <0.05). Strategy is the outcome of decisions made to lead an organization with respect to environment, structure and processes that affect its organizational performance and sustainability (Acquaah, 2013). Surprisingly, though, dynamic business strategy capability has no significant positive impact on proactive operational competency (β_{13}= 0.074, p> 0.05). Thus, hypotheses 3a-3b were supported. Chen (2009) found that dynamic business strategy capability is related to new process development. In addition, it focuses on heavy investments in development activities management and long-term change. Such investments aim to improve production. This is consistent with Golec's (2015) study in which it was determined that it is possible that too much rigidity in terms of rules administrative procedures; and employee job description will restrict some changes in the organization that could affect its operation. So, what are the consequences in terms of firm success?

The OLS regression analyses shown in Table 3 indicate that the three mediators have an effect on firm success. Specifically, valuable practice development has a significant positive influence on firm success (β_{16}= 0.274, p<0.05) as do new process improvement (β_{17}= 0.185, p<0.05) and proactive operational competency (β_{18}= 0.244, p<0.05). Therefore, hypotheses H4-H6 were supported. To effectively control and improve new process development, firm must develop strong process efficiency capability and process optimization capability. This is in-keeping with Mishra and Napier's (2015) study which determined that valuable practice development was positively correlated with competitive advantage and firm success. As determined by Yang, Lee, and Cheng (2017), both operational performance and employee creativity can be improved through the adoption of relevant operational development practices and learning capability. Additionally, new process improvement are also pertinent to process or quality improvement; two practices that affect performance.

5. Conclusion

This study examined the influence of three dimensions associated with organizational creativity and innovation on firm success, namely, innovation ideas enhancement, modern management technological focus, and dynamic business strategy capability. It also investigated the mediating effect of valuable practice development, new process improvement, and proactive operational competency on these three dimensions and their relationship with firm success. It was determined that innovation ideas enhancement, modern management technological focuses, and dynamic business strategy capability had a significant positive effect on valuable practice development, new process improvement and proactive operational competency.

In today's highly volatile environment, a firm's capacity to innovate greatly influences the predictability of its surviving and maintaining sustainable growth. Many firms try to embrace appropriate management method to improve their operation creative practices. As determined by this research, managing directors or managing partners, including those interviewed as managers and partners of firms in the Thai electronic and electrical appliance sector, should encourage teamwork across functions in order to stimulate the exchange of

new knowledge and adopt new business practices conducive to innovation. Valuable practice development, new process improvement, and proactive operational competency contribute to innovative ideas enhancement, modern management technological focus, and dynamic business strategy capability. They also assist in selecting technology that match the characteristics and conditions of the business effectively. Thus, the concept of organizational creativity is a strategic concept for successful transformation and value creation. It also promotes the diffusion of innovation and strongly support the correlation between innovation and firm success

To study the hypotheses developed in this research, this paper surveyed managers employed in the Thai electronic and electrical appliance sector. The low effective response rate (23.56%), however, suggests that the results are not capable of generalization and cannot be assumed to represent the entire industry. To gain added credibility, future research should therefore either use another sampling population (a different sector altogether) or if it focuses on the same sector should ensure that the return rate is much higher. This would go a long way in securing the generalizability of the research. Further studies could also include additional moderating variables and antecedent variables. Moreover, since self-administration may lead to bias and a halo effect, other methods of analysis may be used in the future such as in-depth interviews, case studies, and mixed methodology.

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