

INNOVATION: FROM CAPABILITIES TO PERFORMANCE IN MANUFACTURING ENTERPRISES IN VIETNAM

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This paper examines the impact of innovation capabilities on innovation performance and firm performance of the manufacturing industry. Innovation capability as the firm's ability to reconfigure and develop its resources and organizational capabilities to innovate. Innovation capability has four components: sensing capability, combination capability, networking capability, and learning capability. The innovation performance is the achievement or success of innovation made by a firm by the target, describes the concept of the three components: internal performance, commercial performance, and social performance. Performance has three components: finance, customer, and employee. The research methods used in this study are Structural Equation Modeling (SEM) and Fuzzy-set Qualitative Comparative Analysis (fsQCA). Participants in the questionnaire include 205 directors, CEO of manufacturing enterprises in Ho Chi Minh City and Binh Duong City. SEM result shows that there is a positive effect of innovation capacity and innovation performance on firm performance. However, the result of fsQCA shows that the combination of components (innovation capability and innovation performance) constitutes sufficient conditions for the presence of the firm performance.

Keywords: Innovation Capability, Innovation Performance, Firm Performance

JEL Classification: M00

1. INTRODUCTION

Since 2000, Viet Nam industrial production develops with sectors such as textiles, leather footwear, and electronics. In the process of increased globalization (Batten and Vo, 2009, 2019; Vo, 2005, 2009; Vo and Daly, 2005, 2007, 2008, 2009; Vo et al., 2017), leading technology companies such as Samsung and Intel invest heavily in Vietnam to set up production and assembly facilities in both the South and the North Vietnam. The Vietnamese economy continues to perform well in the context of the global economic environment (Nguyen and Vo, 2017; Vo, 2017a).

Vietnam economy has grown very fast in the last few years (Vo, 2019; Vo and Bui, 2016; Vo and Truong, 2018), however, there are still several challenges for Vietnam as a developing country (Bui et al., 2018; Nguyen et al., 2018; Vo et al., 2016). The economic growth rate is about 6.7% in 2017. However, only 36% of Vietnamese enterprises are engaged in export-oriented production chains, which is quite low compared to nearly 60% in Malaysia and Thailand. Just 21% of SMEs enter the global supply chain. Participation in international organizations, free trade agreements with significant regions and economies, most Vietnamese enterprises are not fully aware of the challenges and are not yet ready to take advantage of opportunities. Companies in Vietnam now do not have high competitive competency. The rapid growth of technology, environmental change, the instability of the market require enterprises to increase their innovation capabilities specialized in the field of industrial production (UNIDO, 2016). What is the capacity of industrial manufacturing companies in Vietnam to make an innovation? What is the performance of industrial manufacturing companies after delivering an innovation project? How does innovation capability affect innovation performance and performance in manufacturing companies? This study aims to seek the answer to these questions. In the context of the rapid development of technology, changes in business models and high levels of global competition, the company requires continuous innovation. The data of the study are gathered from a sample of 205 directors or CEO of manufacturing companies in Ho Chi Minh City and Binh Duong City.

2. LITERATURE REVIEW

2.1. Competitive Advantage Theory, Resource-based Theory and Innovation

According to Porter (1985), competitive advantage is the leverage that helps the business against its competitors. Competitive advantage can be measured by the company's competency of offering clients with value, rare, inimitable and non-substitutable, called VRIN (Eisenhardt and Martin, 2000). A company with the competitive advantage can bring unique products or services to the market. In general, the competitive advantage of firms can not last long because competitors easily copy them in the first place. Then the competition theory is proposed to deal with this problem. However, the competition theory focuses on analyzing the role of the environment in the business performance of the business, focusing on environmental impacts rather than personal firm attributes on the competitive position of the business.

The resource-based theory of business (Wernerfelt, 1984) focuses on competitive analysis based on internal factors resources of the business. The resource-based theory is expanding and forming the competitive advantage and business performance of the firm in the market.

According to Fontana (2011), the company aims to make innovation in order to create competitive advantage of firms even with external factors or internal factors.

Innovation supports the businesses to achieve their firm performance based on sustaining a pattern of continuous change in the company, and then to improve the firm's competitiveness. Innovation capability is the internal factor to develop the competitive advantage to achieve the business performance of firms (Gamal, 2011).

2.2. Innovation Capability and Innovation Performance

Madanmohan (2003) considers the framework for analyzing the innovation capability of the company which is including sensing capability, combination capability, and relationship capability. Lawson and Samson (2001) develop innovation capability in organizations with dynamic capabilities approach. Lin et al. (2016) evaluate the effect of dynamic capability on management innovation. Tseng and Lee (2014) assess the impact of dynamic capability on firm performance, and this is emphasized by Lopez-Cabrales et al. (2016) when they evaluate the role of dynamics in an organization. Dynamic capabilities include integration capability, learning capability and reconfiguration capability (Wang and Ahmed, 2007). Integration capability is considered as the capability of collecting and analyzing data from the market, and reconfiguration capability is recognized as the capability to respond to the market. Both of those capabilities help the firm to sense about the market, support the company to build a sensing capability in innovation capability. Chiu et al. (2013) find the relationship between four types of dynamic capabilities (sensing, coordination, autonomy and reconfiguration capabilities) and innovation performance. The concept of innovation capability is more wide and reflect organizational capability actively than the idea of dynamic capability because it mentions to networking and combination capability which belongs to innovation capability that is not included in dynamic capability. Then in this paper, we use the concept of innovation capability.

There are some authors who evaluate the relationship between the components of the innovation capability and organizational performance (Richard et al., 2011; Kafetzopoulos and Psoma, 2012; Saunila et al., 2014; Nham et al., 2015). Aryanto et al. (2015) prove that strategic human resource management significantly affects innovation capability. Furthermore, innovation capability also considers the changes to organizational performance. The corporate performance is recognized as the overall performance of the firm, not specified as any part such as internal performance, social performance, and commercial performance.

Antonio et al. (2010) find the relationship between combination and networking capability and innovation performance. While Zahra and George (2002) study on absorptive capability which is relevant to sensing and learning capability. Antonio and Wiliam (2015) find the effect of absorptive capacity and innovation performance. Previous studies often focus on clarifying the relationship between a component of the innovation capability and a component of innovation performance. The relationship between the full innovation capability and the whole innovation performance is not evaluated.

Innovation capability

Companies need to innovate more to meet the market demand and to adapt to the development of the technology, by creating new products or modifying a business model. Antonio et al. (2010) explain that companies should be able to extend the life cycle of their products on the market or to create a new product with innovation. Companies need to maintain innovation capabilities to survive and grow as well as (Davila et al., 2006; Trott, 2008; Crossan and Apaydin, 2010). Skarzynski and Gibson (2008) estimate that to get good performance innovation companies need to have the ability to innovate. The same opinion is stated in the study of Davila et al. (2006), whereby the need for businesses to develop creative skills based on positive behaviors, capabilities, and motivation of the rank and staff manages to get a useful innovation.

Moreover, in the opinion of Lawson and Samson (2001) innovation capacity of the company is its ability to convert knowledge and ideas into new products, new processes for the benefit of the company and the stakeholders of it. Madanmohan (2003) defines innovation capacity as the company's ability to form and develop their resources as well as the ability to organize for innovation. Based on Madanmohan (2003), Lawson and Samson (2001), Lin et al. (2016), Wang and Ahmed (2007), Chiu et al. (2013), sensing capability, combination capability, networking capability, and learning capability are four dimensions of innovation capacity.

Innovation performance

The innovation performance achievement or success of innovation is done by a company with a suitable target (Wang and Lin, 2012; Fontana, 2011; Aryanto et al., 2015). Approaches can measure innovation performance range from technical, financial and nonfinancial (Gamal, 2011). OSLO Manual developed by the OECD (2005) describes some aspects that can be used to measure the innovation performance in the form of the output of innovation (examples: the number of new products produced, improve quality of the work) and impact of innovation (examples: changes in competition, market expansion, increased productivity, profit, and environmental effects). Based on De Meyer and Garg (2005); Fontana (2011); innovation performance is described as: (i) internal performance, (ii) social performance, (iii) commercial performance.

Firm performance

Firm performance is considered to be a multidimensional construct (Naser et al., 2004) and is the measurement of a company's success and achievements (Yeung et al., 2003). Garvin (1987), Lee et al. (2001) and Sousa and Voss (2002) deem operating and financial performance of the companies, to be their performance dimensions. Furthermore, Lakhali et al. (2006), following a literature review of strategic

management, marketing, and operations management, choose three performance-related dimensions: financial performance, operational performance, and market performance.

Financial performance is a measure of how well a firm can achieve their business and financial objectives (Lee et al., 2001; Conca et al., 2004; Lakhali et al., 2006; Feng et al., 2008; Singh, 2008). Operational performance is a measure of how and well a firm can operate to achieve core business goals (Feng et al., 2008; Lin and Jang, 2008; Su et al., 2008; Uyar, 2009). Market performance is a measure of how well a firm can increase customer experience and network (Nham et al., 2015; Saunila et al., 2014).

2.3. The Research Model

Base on previous studies (Antonio et al., 2010; Richard et al., 2011; Kafetzopoulos and Psoma, 2012; Saunila et al., 2014; Nham et al., 2015; Aryanto et al., 2015; Antonio and Wiliam, 2015), this paper aims to identify the relationship between innovation capability (measuring as sensing capability, combination capability, networking capability, and learning capability); innovation performance (measuring as internal performance, social performance, commercial performance); and firm performance (measuring as financial performance, market performance, operational performance).

With regard to the study conducted by Antonio et al. (2010), Kafetzopoulos and Psoma (2012) explain that there is a connection between innovation capability and social performance which is one of innovation performance. The evidence of the existence of the relationship between innovation capability and commercial performance which includes the ability to develop high-quality, the launch speed of new products, just-in time, etc. (Nham et al., 2015; Antonio and Wiliam, 2015; Aryanto et al., 2015). The basis of the framework is the idea that companies has to concentrate on developing the four aspects of innovation capability to achieve higher innovation performance. The findings of the study test the relationship between innovation capability and innovation performance with better theoretical background. Then we propose the hypothesis:

H1: Innovation capability has a positive effect on innovation performance.

Tseng and Lee (2014), Lopez-Cabrales et al. (2016) prove the effect of dynamic capability to firm performance. According to Wang and Ahmed (2007), a dynamic capability is somehow like sensing and learning capability. Then dynamic capability is a part of innovation capability. There are some authors who evaluate the relationship between the components of the innovation capability and organizational performance (Richard et al., 2011; Kafetzopoulos and Psoma, 2012; Saunila et al., 2014; Nham et al., 2015). This paper tests the relationship widening between innovation capability and firm performance. Then we propose the hypothesis:

H2: Innovation capability has a positive effect on firm performance.

Davila et al. (2006) emphasize the importance of innovation to firm performance. Lakhali et al. (2006); Antonio et al. (2010); Aryanto et al. (2015) also show the relationship between innovation and performance. Then we propose the hypothesis:

H3: Innovation performance has a positive effect on firm performance.

The basis of the framework is the idea that companies have to concentrate on developing the four aspects of innovation capability to achieve higher innovation performance and firm performance. The findings of the study thus test the relationship between innovation capability, innovation performance and firm performance with a better theoretical background.

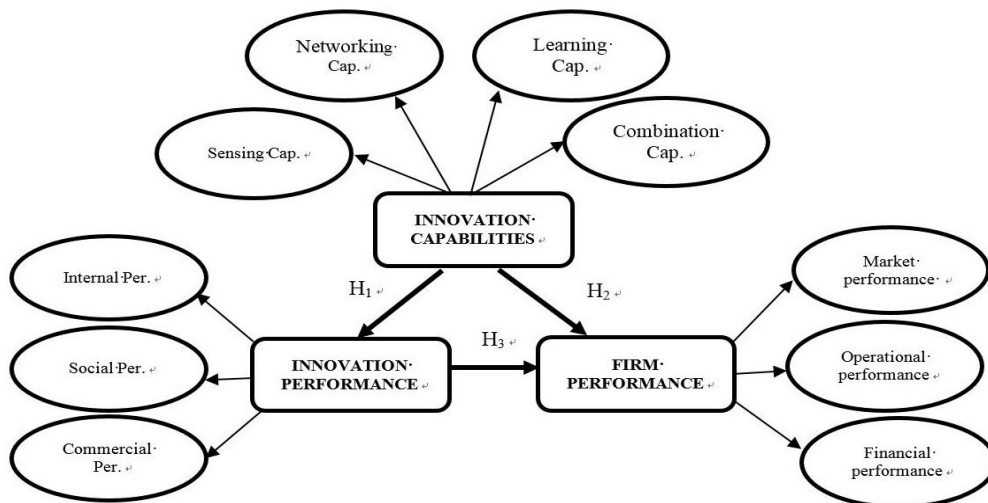


Figure 1. Research Model

3. METHODOLOGY

3.1. Measurement

3.1.1. Innovation Capability

Sensing capability (SC)

SC rates the capacity of the company and the need for innovation. The measures of SC are: scan the environmental changes to identify new business opportunities, review on how environmental changes influence on customer, review our products to reassure

that they meet customer demand, efforts on the functions new and existing products (Tseng and Lee, 2014); and implementing ideas for new products and improving current outcomes (Lopez-Cabrales et al., 2016).

Combination capability (CC)

CC includes the items representing the ability to search, select and synthesize many different sources of information as the basis for the innovation of company as customers, suppliers, competitors, employees in the business, professional organizations, consultants and experts (Aryanto et al., 2015).

Networking capability (NC)

The research of Lin et al. (2015) showed as NC includes a set of items related to connectivity, the interaction between the members of the company that motivates innovation, and also a leadership culture that facilitates change. Based on these, the content of items focuses on the support of the whole organization, progresses as planned, managers participate, acquires the opinions of consultants and industry experts, employees' feedback.

Learning capability (LC)

LC includes the items that measure self-learning of the members of the organization, the environment encourages the exchange and enhances knowledge, the process of receiving and distributing knowledge (Lopez-Cabrales et al., 2016). Contents of items include: people are encouraged and supported to learn more through short course training, self-learning, etc., people receive support and encouragement when presenting new ideas, people are encouraged to take risks in the organization.

3.1.2. Innovation Performance

Internal performance (IP)

IP comprises five items. This factor includes a set of efficiency manifestations related to the internal operations of companies such as satisfaction, positive and proactive employees, growing productivity, etc. (Aryanto et al., 2015). The content of items is: employees are more creative and innovative compared with them in the past, employees always propose to be new ideas to solve problems, quality of employees in the company are growing compared with them in the past, the productivity of the company grows, the performance of the company significantly improves through the creative views of its members in recent years (Aryanto et al., 2015).

Social performance (SP)

SP includes the items that represent the operating effectiveness of community connections, build corporate image (Aryanto et al., 2015). Based on this result, questions focus on: information about the innovation and development of the company is available from many sources, many competitors try to copy product/model of the company, most customers have positive feedback after using company's services, the number of customers knowing about the company's brand is increasing, quality of employees who apply for a job at the company is better.

Commercial performance (CP)

CP includes items representing the ability to bring products into the market (Tseng and Lee, 2014). According to Lopez-Cabrales et al. (2016), CP can be measured as a higher number of new products (compare to competitors in the same industry), a higher number of pitching and launching events of new products, grasp the right timing for launching new products or services. According to Tseng and Lee (2014), CP is also measured as the ability to develop high-quality new products, launch the speed of new products.

3.1.3. Firm Performance

This study relies on multiple measures of performance to attain the robustness of results. So, three performance-related dimensions are chosen: financial performance, market performance, and operational performance.

Financial performance is defined as the achievement of economic and market share objectives (Lin and Jang, 2008). Indicators of business performance such as market share, company sales growth, profitability, net profit margin are used in this paper. These indicators are drawn from the studies of Lee et al. (2001), Conca et al. (2004), Lakhali et al. (2006), Feng et al. (2008), Singh (2008) and Han et al. (2009).

Market performance is a measure of how well a firm can increase customer experience and network (Nham et al., 2015; Saunila et al., 2014). Then the market performance can be measured as: customer's satisfaction, customer's loyalty, number of customers).

Operational performance is usually measured as several performance dimensions (Ketokivi and Schroeder, 2004) and reflects the performance of a company regarding the process, strategic implementation in effectiveness and efficiency (Naser et al., 2004). Lakhali et al. (2006), Feng et al. (2008), Lin and Jang (2008), Su et al. (2008) and Uyar (2009) also propose operational performance such as product, product quality, employee's satisfaction, strategic implementation.

3.2. Sample and Data Collection

The approach of this study is quantitative. The questionnaire developed for the study consists of three major parts. The first part comprises 15 items measuring different issues related to innovation capability, divided into four subcategories including sensing capability (SC), combination capability (CC), networking capability (NC) and learning capability (LC) (Madanmohan, 2003; Antonio, 2012). The second part comprises three subcategories measuring innovation performance with internal performance (IP), social performance (SP) and commercial performance (CP) (De Meyer and Garg, 2005; Fontana, 2011) with 14 items. The third part has 13 items (Lee et al., 2001; Sousa and Voss, 2002; Lakhali et al., 2006) measuring firm performance (financial performance, market performance, operational performance).

A seven-point Likert-type scale measures each of these variables, ranging from 1 (absolutely disagree) to 7 (absolutely agree). Data are collected by sending the questionnaires to many participants who attend two conferences on the manufacturing field which organized in Ho Chi Minh City in 2017. A total of 400 questionnaires are sent, and 280 questionnaires are collected. 75 questionnaires are excluded due to lack of information; the remaining 205 questionnaires are used to analyze (73% of the total questionnaires). Finally, the data are gathered from a sample of 205 directors or CEO of 205 manufacturing enterprises in Ho Chi Minh City and Binh Duong City.

4. RESULTS AND DISCUSSION

The age of respondents is generally between 30 and 40 years. The proportion of men and women participating in the questionnaire is well balanced. All are working in the management position (director or vice director) with years of experience in management activities mainly 2-4 years and 4-10 years. Regarding organizational size based on the number of employees, 64 percent of the respondents are from the company that has 1000 employees or less, and around 36 percent are from the company that has 1000 employees or more. Based on revenue, around 48 percent of the respondents are from companies with 200-500 billion VND revenue of year, around 42 percent from firms with 500-800 billion VND revenue of year, and around 10 percent of businesses with over 800 billion VND revenue of the year.

Table 2 shows the means and standard deviations (SD) of the variables used in this study. The means of all items close to 5.21, which is the median on a seven-point scale (1-strongly disagree; 7-strongly agree). This result shows that the degree of consensus from respondents for the content of innovation capability, innovation performance, and firm performance aspects are above average. The standard deviation value is approximately from 0.841 to 1.444, which shows the stability of those surveyed answers.

Table 1. Characteristics of Respondents

Age	29%	under 30 years
	40%	30 – 40 years
	26%	40 – 50 years
	5%	over 50 years
Sex	53%	Male
	47%	Female
Position	48%	Director
	49%	Vice- Director
	3%	Other
Management experience	10%	1 – 2 years
	50%	2 – 4 years
	30%	4 – 10 years
	10%	Over 10 years
Size Company	64%	1000 employees or less
	36%	1000 employees or more
Revenue	48%	200 – 500 billion VND/year
	42%	500 – 800 billion VND/year
	10%	800 billion VND/year or more
Type	45%	Textile and garment
	55%	Footwear

Before hypothesis testing, reliability evaluation and exploratory factor analysis are performed on the research model. The adequacy of the sample is checked with the Kaiser-Meyer-Olkin (KMO) test. KMO value of innovation capability and innovation performance are 0.855 ($0 < \text{KMO} < 1$), which is acceptable for this type of analysis. For the reliability of the results, a Cronbach's Alpha test is performed. The alpha value of factors, as shown in Table 2, is higher than 0.60. Then, construct validity is assessed by principal component analysis with Promax rotation. Nine factors are obtained with the factor analysis (Table 1). This solution explains 62.597 percent of the total variance.

First, a confirmatory analysis of first order is carried out with the constructs' factors affecting innovation performance and firm performance which show optimum results. So, the standardized λ coefficients are higher than 0.5 in every case, which denotes acceptable convergent validity (Steemkamp and Van Trijp, 1991). To test discriminant validity, we follow the procedure described by Anderson and Gerbing (1998), in which the confidence intervals for the correlation of the constructs are estimated and compared with unity. The intervals contain the value 1 under no circumstances. As a result, the proposed measurement model is an acceptable fit.

To assess the reliability of the constructs, Cronbach's alpha and the average of variance extracted (AVE) are used (Table 2). After testing the validity of the scale, the reliability and validity of every construct in the causal model are analyzed using a confirmatory analysis. The proposed model is correct (Table 2), since all second-order latent variables have inner strength, as the Cronbach's alpha values show it and the AVE coefficient, close or higher than 0.7 and 0.5, respectively. Standardized coefficients are

all of them significant and greater than value 0.5, guaranteeing the convergent validity in every dimension.

Table 3 presents the correlation between the factors in the model, and the results show that there are correlations among the factors.

This study uses the interview method with one survey participant (one respondent and at the same time). Therefore, the ability to deviate due to the Common Method Bias (CMB) method may be present. To test this deviation, the study uses the Harman test with CFA and the unmeasured latent variable (Markel and Frone, 1998). The results show that the fit of the single factor model [χ^2 [100] = 1507.16 ($p = 0.000$); GFI = 0.566; CFI = 0.588 and RMSEA = 0.168] are far from the multifactor model [χ^2 [105] = 345.60 ($p = 0.000$); GFI = 0.756; CFI = 0.931 and RMSEA = 0.068]. The results with latent dummy variables also show that the weightings of the variables that measure the study concepts change insignificantly and that these weights on the dummy variables are small and not statistically significant ($p > 0.05$). Therefore, the CMB, if any, does not distort the results of the study.

This study uses SEM to test the hypothesis to examine the overall impact of Innovation Capability and Innovation Performance on Firm Performance. The SEM results show that the model is suitable for market data: $\chi^2 = 1352.70$ ($p = 0.0000$), TLI = 0.917, CFI = 0.926 and RMSEA = 0.054. The SEM results show that: (1) Innovation capability has a positive effect on innovation performance; (2) Innovation capability has a positive effect on the firm performance; (3) Innovation performance has a positive effect on firm performance. In estimating the CFA and SEM models, the Heywood phenomenon does not appear in any model, and the variance of the errors is less than [2.32].

Consider the Pearson correlation coefficient between the components of the innovation capability and firm performance (Table 4). The results show that all correlation coefficients are positive and statistically significant. This result means that all components of the innovation capability, innovation performance are positively related to the components of the firm performance. Thus, the multi-collinear phenomenon is likely to occur. Therefore, we need to consider correlation relationships between the components of the innovation capability and innovation performance. However, the interpretation of the meaning is not straightforward (Ragin, 2008). Thus, this study uses fsQCA to further examine these complex causal relationships (Fiss et al., 2013; Ragin, 2008; Woodside, 2013).

The results of fsQCA with a consistent threshold of 0.90 show Sensing Capability (SC), Combination Capability (CC) are two conditions that are sufficient for Innovation Performance (including Internal Performance, Social Performance, and Commercial Performance) to exist. However, Networking Capability (NC) is not a sufficient condition for Innovation Performance which incorporates the Learning Capability (LC) component to create sufficient conditions for Innovation Performance.

Table 2. Descriptive and Factor Analysis Results (Loadings over 0.5 Presented)

	Items	Factor loading	Mean	SD	Standard lambda	Cronbach's Alpha	AVE	λ
Sensing capability	- The company frequently scans the environmental changes to identify new business opportunities	0.776	5.741	1.123	0.633			0.57
	- The company frequently reviews products to reassure that they meet customer demand	0.733	6.032	1.135	0.736	0.863	0.472	0.58
	- The company periodically reviews how environmental changes influence on customer	0.543	5.372	0.841	0.715			0.62
Combination Capability	- The company innovates based on comments/information from professional organizations	0.869	6.072	1.138	0.732			0.61
	- The company innovates based on the opinions/information contributions of employees in the company	0.822	5.308	1.188	0.667			0.66
	- The company combines ideas/opinions /information from customers, suppliers, competitors	0.642	4.949	1.232	0.673	0.793	0.572	0.59
	- When conducting improvement/innovation, company acquires the opinions of consultants and industry experts	0.636	5.244	1.176	0.731			0.63
Networking Capability	- The company encourages employees to have teamwork to create an innovation	0.838	5.904	1.361	0.675			0.72
	- The company tries to improve their culture to increase agreeable and support from the whole organization	0.817	6.136	1.444	0.737			0.69
	- The company has innovation plan and try to implement it	0.791	5.844	1.334	0.726	0.785	0.551	0.56
	- The managers always get feedback for their ideas	0.751	6.004	1.363	0.693			0.56
	- The employees participate in ideation and development	0.729	5.844	1.334	0.726			0.61
Learning Capability	- People in the company are encouraged and supported to learn more through short course training, self-learning, etc.	0.981	5.788	1.331	0.625			0.63
	- People in the company receive encouragement and support to present new ideas	0.718	5.984	1.314	0.667	0.825	0.571	0.58
	- People are encouraged to take risks in this organization	0.661	5.581	1.223	0.723			0.65
Internal Performance	- Employees in the company are more creative and innovative compared with them in the past	0.988	5.572	1.055	0.786			0.62
	- Employees always propose new ideas to solve problems	0.908	5.644	1.017	0.833			0.71
	- Quality of employees in the company are growing compared with them in the past	0.79	5.488	1.166	0.815	0.836	0.502	0.7
	- The productivity of the company grows	0.694	5.724	1.014	0.797			0.68
	- Performance of the company significantly improves through the innovative ideas of its members in recent years	0.684	5.608	1.093	0.806			0.65

Table 2. Descriptive and Factor Analysis Results (Loadings over 0.5 Presented) (Con't)

Social Performance	- Information about the innovation and development of the company is available from many sources (Internet, social network, mass media, etc.)	0.89	4.748	1.114	0.723	0.71	
	- Many competitors try to copy product/model of the company	0.841	5.684	1.083	0.671	0.67	
	- Most customers have positive feedback after using company's services	0.806	5.692	1.078	0.722	0.787	0.511
	- Number of customers knowing about the company's brand is increasing	0.682	5.448	1.172	0.699	0.59	
	- The quality of employees who apply for a job at the company is better	0.629	5.932	0.999	0.705	0.63	
Commercial Performance	- The number of new products is higher than other competitors in the same industry	0.871	5.084	1.247	0.735	0.66	
	- The number of pitching and launching events of new products is more than other companies in the same industry	0.739	6.036	1.197	0.787	0.58	
	- The company can grasp the right timing for launching new products or services	0.672	5.264	1.219	0.702	0.59	
	- The number of new products with high-quality is increasing	0.661	6.196	1.194	0.812	0.63	
Financial performance	- The market share of the company is high compare to the main competitors	0.758	4.572	1.122	0.776	0.61	
	- The company's profit ratio is very high	0.762	5.237	1.007	0.825	0.59	
	- The company's revenue is very high	0.698	5.221	1.166	0.815	0.57	
	- The company's ratio of return on investment is very high	0.785	5.724	1.014	0.797	0.55	
	- The company's net profit margin is higher than its in the past	0.669	5.608	1.093	0.806	0.62	
Market performance	- The customer's satisfaction is high	0.647	5.036	1.007	0.767	0.55	
	- The number of loyalty customer is increasing in recent years	0.722	5.265	1.019	0.732	0.56	
	- The company increases numbers of customers	0.719	5.366	1.035	0.712	0.61	
Operational Performance	- Process is worked effectively in the company in terms of time and cost	0.746	5.372	1.072	0.706	0.63	
	- Product quality of the company is high compare to the main competitor	0.728	5.037	1.071	0.725	0.59	
	- Products of the company are better in terms of price, quality, function compare to them in the past	0.766	5.128	1.106	0.735	0.762	0.581
	- Employees in the company are more satisfied compare to them in the past	0.753	5.321	1.005	0.757	0.55	
	- Implementation of strategy and business plan is well	0.719	5.388	1.037	0.801	0.52	

Table 3. Correlation of Factors

	Covariance	Standard Error	R	t-statistic
Sensing Capability ↔ Combination Capability	0.46	0.063	0.53	7.12
Sensing Capability ↔ Networking Capability	0.55	0.068	0.67	8.05
Sensing Capability ↔ Learning Capability	0.45	0.053	0.67	8.21
Sensing Capability ↔ Internal Performance	0.25	0.042	0.55	5.76
Sensing Capability ↔ Social Performance	0.22	0.038	0.51	5.58
Sensing Capability ↔ Commercial Performance	0.23	0.042	0.52	5.52
Sensing Capability ↔ Market performance	0.26	0.043	0.50	5.36
Sensing Capability ↔ Operational Performance	0.30	0.047	0.56	6.12
Sensing Capability ↔ Financial Performance	0.22	0.041	0.39	4.97
Combination Capability ↔ Networking Capability	0.48	0.056	0.51	8.62
Combination Capability ↔ Learning Capability	0.21	0.076	0.57	8.93
Combination Capability ↔ Internal Performance	0.22	0.046	0.31	4.79
Combination Capability ↔ Social Performance	0.25	0.041	0.36	4.38
Combination Capability ↔ Commercial Performance	0.25	0.032	0.56	5.66
Combination Capability ↔ Market performance	0.27	0.048	0.52	5.78
Combination Capability ↔ Operational Performance	0.21	0.050	0.37	4.73
Combination Capability ↔ Financial Performance	0.25	0.041	0.51	5.26
Networking Capability ↔ Learning Capability	0.35	0.069	0.32	5.01
Networking Capability ↔ Internal Performance	0.22	0.041	0.39	4.97
Networking Capability ↔ Social Performance	0.25	0.036	0.53	5.06
Networking Capability ↔ Commercial Performance	0.27	0.039	0.50	5.73
Networking Capability ↔ Market performance	0.20	0.041	0.51	5.58
Networking Capability ↔ Operational Performance	0.26	0.047	0.39	5.52
Networking Capability ↔ Financial Performance	0.22	0.038	0.46	5.47
Learning Capability ↔ Internal Performance	0.25	0.043	0.51	6.01
Learning Capability ↔ Social Performance	0.31	0.047	0.38	5.09
Learning Capability ↔ Commercial Performance	0.30	0.051	0.37	5.12
Learning Capability ↔ Market performance	0.26	0.036	0.50	5.08
Learning Capability ↔ Operational Performance	0.29	0.032	0.52	5.32
Learning Capability ↔ Financial Performance	0.30	0.031	0.47	5.29
Internal Performance ↔ Social Performance	0.38	0.053	0.40	8.32
Internal Performance ↔ Commercial Performance	0.20	0.066	0.41	7.63
Internal Performance ↔ Market performance	0.26	0.031	0.52	5.37
Internal Performance ↔ Operational Performance	0.23	0.035	0.51	5.16
Internal Performance ↔ Financial Performance	0.21	0.037	0.52	5.72
Social Performance ↔ Commercial Performance	0.27	0.032	0.40	5.56
Social Performance ↔ Market performance	0.23	0.047	0.53	5.52
Social Performance ↔ Operational Performance	0.22	0.038	0.56	5.47
Social Performance ↔ Financial Performance	0.21	0.053	0.51	6.11
Commercial Performance ↔ Market performance	0.27	0.051	0.58	5.19
Commercial Performance ↔ Operational Performance	0.30	0.053	0.57	5.12
Commercial Performance ↔ Financial Performance	0.20	0.039	0.56	5.08
Market performance ↔ Operational Performance	0.29	0.032	0.40	5.32
Market performance ↔ Financial Performance	0.26	0.031	0.41	5.39
Operational Performance ↔ Financial Performance	0.23	0.036	0.42	5.47

Table 4. SEM's results: Regression coefficients

	Estimate			t-Statistic	P-Value
	B	SE	β		
Innovation Capability → Innovation Performance	0.257	0.081	0.226	3.152	0.003
Innovation Capability → Firm Performance	0.313	0.076	0.298	3.279	0.000
Innovation Performance → Firm Performance	0.269	0.079	0.237	3.196	0.001

SC + CC + NC × LC => Internal Performance (Solution coverage: 0.990215; Solution consistency: 0.7032757)

SC + CC + NC × LC => Social Performance (Solution coverage: 0.990215; Solution consistency: 0.7032757)

SC + CC + NC × LC => Commercial Performance (Solution coverage: 0.990215; Solution consistency: 0.7032757)

Sensing Capability (SC), Combination Capability (CC) are two conditions that are sufficient for Firm Performance (including Financial Performance, Market performance, Operational Performance) to exist. However, Networking Capability (NC) is not a sufficient condition for Firm Performance which incorporates the Learning Capability (LC) component to create sufficient conditions for Firm Performance.

SC + CC + NC × LC => Market performance (Solution coverage: 0.990215; Solution consistency: 0.7032757)

SC + CC + NC × LC => Operational Performance (Solution coverage: 0.990215; Solution consistency: 0.7032757)

SC + CC + NC × LC => Financial Performance (Solution coverage: 0.990215; Solution consistency: 0.7032757)

Internal Performance, Social Performance, and Commercial Performance are three conditions that are sufficient for Firm Performance (including Financial Performance, Market Performance, Operational Performance) to exist

IP + SP + CP => Market Performance (Solution coverage: 0.990357; Solution consistency: 0.706289)

IP + SP + CP => Operational Performance (Solution coverage: 0.981266; Solution consistency: 0.715239)

IP + SP + CP => Financial Performance (Solution coverage: 0.990215; Solution consistency: 0.7032757)

The result of fsQCA shows that the LC and NC components are INUS (Insufficient but Necessary part of a condition) of Innovation Performance and Firm Performance (Mackie, 1965). They are not sufficient conditions (because they must be combined with other components to create sufficient conditions), but necessary (in combination with other components) to create sufficient conditions for business results. However, this combination is not a prerequisite because other components are customer response, aggressive response) but are sufficient for business results. Thus, SEM helps us to discover the overall effect through the value of the beta regression of Innovation Capability components affecting components of Innovation Performance and Firm Performance of companies, and fsQCA helps to explore the complex causal relationship

between them. The results suggest that researchers should use a variety of analytical methods in their research to explore the complex relationship of business variables (Ragin, 2008; Woodside, 2013).

The study also investigates the relationship between innovation capability, innovation performance, and firm performance. The findings contribute to the current theory by indicating that all aspects of innovation performance and firm performance are dependent on the state of innovation capability. This is consistent with significant studies on the impact of innovation, such as Madanmohan (2003), Alvaro Lopez-Cabrales (2007), Antonio (2012). The positive relationship between innovation capability and innovation performance and firm performance in this study. Based on that, SEM determines the effect of innovation capability on innovation performance; the effect of innovation capability on innovation performance and innovation performance has a positive effect on firm performance.

Accordingly, the relationship of innovation capability and innovation performance is as follows: sensing capability, combination capability, networking capability, and learning capability have a positive influence on all components of the innovation performance (including internal performance, social performance, and commercial performance). The fsQCA results indicate that both of these components (NC and LC) are not sufficient conditions for Innovation Performance, but they combine to create sufficient conditions for Innovation Performance presence. This result is consistent with the previous study as De Meyer (2005), Aryanto (2015). The relationship of innovation capability and firm performance is as follows: sensing capability, combination capability, networking capability, and learning capability have a positive influence on all components of the firm performance (including financial performance, market performance, operational performance). The fsQCA results indicate that both of these components (NC and LC) are not sufficient conditions for Firm Performance, but they combine to create sufficient conditions for Firm Performance presence. This result is consistent with the previous study as Dimitrios and Evangelos (2013). Finally, the relationship of innovation performance and firm performance is as follows: internal performance, social performance, commercial performance, have a positive influence on all components of the firm performance (including financial performance, market performance, operational performance). This result is consistent with the previous study as Nham Tuan et al. (2015).

This result shows that the level of concern of managers about learning capability enhancement in manufacturing companies in Viet Nam is low. This can affect the sustainability of companies because learning capability is a significant factor affecting competitiveness and performance (Alegre and Chiva, 2008). The results of this study show that companies need to seriously reconsider about building and improving company's innovation capability expressed through the activities: respond quickly to changes, establish and maintain a network of relationships, search and aggregate information from many different sources, the development the environment that encourages creativity, connecting members of the organization. To achieve the above

problems not easy, because most of the companies are limited by human resource, financial, management capabilities, organizational culture, and so on. However, to be able to continue to exist and develop, companies no longer any different ways.

5. CONCLUSIONS

The study contributes to the literature of the relationship between innovation capability, innovation performance, and firm performance by presenting an overall definition of innovation capability, innovation performance, and firm performance. Innovation capability includes sensing capability, combination capability, networking capability, and learning capability. Innovation performance includes internal performance, social performance, and commercial performance. Firm performance includes financial performance, market performance, operational performance. The study diminishes the gap between theory and practice, when a majority of the studies aim to capture the aspects of innovation capability, innovation performance and firm performance as a whole, are theoretical. This study shows that exists a relationship between innovation capability, innovation performance, and firm performance in which the components of innovation capability have different influences on every aspect of innovation performance. The fsQCA analysis is conducted to determine the complicated causal relationship between the types of competencies. It then identifies the problem why Learning Capability does not affect two on three components of Innovation Performance (Internal performance, Social performance), which is due to the characteristics of the manufacturing enterprises in Vietnam (Training content focuses mainly on professional, products development. Employees are no more conditions to improve their self-learning). However, the Learning Capability must incorporate Networking Capability as a condition of innovation performance. The research results contribute to the better understanding of the role of the innovation capability for the innovation performance of the company. From there, these measures to nurture and develop this capacity create a competitive advantage in the market during the integration into the international market. Based on the relationship between innovation capability and innovation performance, companies can choose to develop each aspect of innovation capacity or develop all with the aim to improve the innovation performance of them. The results of the study provide a good starting point for in-depth studies of the subject. This study has some limitations which should be acknowledged. First, the sample size should be expanded to increase representation, types of companies, type of businesses, operating locations and so on. Second, this study demonstrates a relationship built pole between innovation capacity and innovation performance, but whether they have a positive impact on the actual business performance of the company or not. For small and medium enterprises, business performance is one of the first conditions can consider before they accept innovation. Third, the measurement of aspects related to innovation capability seems to be rare in SMEs. This problem affects the self-perception of the innovation capabilities of each company.

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