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Improving Start-up Performance Through Business Model Innovation: A Case of Start-up Firms in Ba Ria - Vung Tau Province

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Abstract:- This study examines the relationship between components of business model innovation and start-up performance of start-up firms in Ba Ria - Vung Tau province. This relationship is verified based on a sample of 425 start-up owners. The findings show that components of business model innovation positively influence start-up performance. In conclusion, the study proposes policy implications for start-up firms and suggests directions for further researches.

Keywords:- *Business model innovation, start-up performance.*

I. INTRODUCTION

Trimi and Berbegal-Mirabent (2012) have expanded the theory of business model innovation (BMI) applied to start-up firms, a recently new topic that is gaining increasing interest among researchers. BMI will help start-ups to make right decision in order to enhance their chance of success. Initially, the chosen business model for start-ups must be relevant, if not, they have to innovate it in order to establish competitive advantages and efficiency (Aspara, Hietanen and Hietanen, 2010). In perspective, the stable firms are required to have an effective evaluation for changes in components of the business model. BMI is closely in line with vision, creative ability and intuition in business (Foss and Saebi, 2016). Therefore, BMI is very essential for start-ups as well as stable businesses.

In the context that Vietnam is stepping up the start-up movement, for start-up firms, surviving in the early years would be a difficult process. In Vietnam, according to GEM (2016), the percentage of the business activities under the start-up stage was 13.7%, including the percentage of the start-up firm (less than 3 months) of 1%, and the proportion of the successful start-up (under 3.5 years) of 12.7%. Failure of the start-up firms was yet to build quality relationship and BMI (Nguyen Quang Thu et al., 2016). The study referred to the start-up failure to innovate business model that impacts the performance. This relationship has not been verified by international studies as well as in Vietnam.

Ba Ria - Vung Tau (BRVT), a province located in the Southern key economic region of Vietnam, has a significant attention to innovative creations for start-ups. The province has facilitated the start-up ecology and creations innovation, creating a favorable environment to boost the formation and development of potentially fast-growing firms by exploiting intellectual property, technologies, new business models (Decision No. 3380/QD-UBND). Therefore, this study aims to achieve three objectives: (1) Identify the components of business innovation; (2) Examine the relationship between business innovation and start-up performance; (3) Give managerial implications to improve the start-up performance. The survey participants are the owners of the private firms operating in BR-VT province, excluding those operating in the financial sector.

The structure of the paper is composed of the following sections: introduction, literature review, data and methodology, findings and discussions, conclusions and managerial implications.

II. LITERATURE REVIEW

A. Theoretical basis and analytical framework

- *Differentiate between start-up and firms*

According to Decision No. 448 / QD-TTg on the approval of the Project of start-up ecosystem and innovative content development by the National Economic Advisor to 2025, "Start-ups are individuals and organizations with rapid growth projects based on new technology and business model in an operating period not exceeding 5 years from the date of issuance of the first registration certificate. " Businesses operating over 5 years have been stabilized, developed, considered to be a firm. According to the GEM (2016) in less than 3.5 years, start-up firms were likely to fail, the successful rate was just at 12.7%; Over-3.5-year start-up firms have been considered as being stable. Based on the view of GEM (2016), this study will only regard to the start-up firms operating for no more than 3.5 years.

Often, state firms typically take place in the technology sector. In Vietnam in general and BRVT in particular, newly established firms operate in multiple fields. There are new market entrants with traditional family trades in order to fullfill employment issues for themselves and their families, which are less innovative and creative but capable of rapid growth. In addition, firms start in the field of information technology, applications of technology are required to bring creativity. In this study, regardless of any field of activity among start-ups, the common default is the start-up businesses operating less than 3.5 years.

- *Business model innovation*

Business model innovation is to restructure the course of action in the existing business model to create innovative

products / services , a streamlined method of renovation because the resources and capabilities are available to save the investment to a minimum (Santos et al., 2009). Aspara (2009) defined an innovative business model as a constantly strategic alternating option. In order to build a sustainable firm, it is necessary to renovate the business and its components (Carayannis, Sindakis and Walter, 2014). The three components of business model are value creation, value proposition and value capture, BMI is to change these three components (Baden Fuller and Mangematin, 2013). Spieth and Schneider (2013) have developed BMI components such as value creation innovation, value structure innovation and revenue model innovation.

Clauss (2016) has developed a measurement model for BMI that includes:

New capabilities suggest that firms need new capabilities to innovate in order to capture opportunities arising from the external environment (Teece, Pisano and Shuen, 1997). New capabilities are developed through training, education, knowledge integration, development, exploration of new ideas and lessons learned (Achtenhagen, Melin and Naldi, 2013).

New technologies/equipment centers on technological resources needed to carry out BMI. Wei et al. (2014) demonstrated the significance of allocating technological advances to an appropriate BMI to be successful. Firms need to acquire new technology to restructure business model. For example, new products/services may require new production technology, and new revenue models will require new technical system for payment.

New processes/structures refer to the way in which activities and tasks in the business model can be embedded. (Zott and Amit, 2010). Casadesus-Masanell and Ricart (2010) show that the process/structure of the system determines the performance of business model.

*New partnerships***:** with suppliers, customers or competitors represent the external resources for BMI. Strategic partners are the important external resources that businesses cannot develop at the moment (Dyer and Singh, 1998). BMI is complex and requires support from partners, businesses need to find new partners and maintain the existing relationship (Bierly and Gallagher, 2007).

New products/services suggest firms' offers to address customer problems or meet their needs in new or better ways (Johnson, Christensen and Kagermann, 2008). Innovation of products/services relies on research and development or use of new technologies (Teece, 2010). The new products/services is the most obvious change in a firm's BMI.

New customer segments/markets relate to the customer groups or market segments that the company provides current or future products/services (Afuah, 2014). BMI is to redefine the current market or penetrate new markets. The target market is determined by the question "Who is willing to pay for products/services provided by the company?" (Baden-Fuller and Haefliger, 2013).

New distribution channels relate to the delivery of value to customers (Baden-Fuller and Mangematin, 2013). Distribution is done in a variety of ways, especially for intangible goods or services (Osterwalder et al., 2005). For example, Dell is a company that has built its business model upon the direct distribution channel to consumers without the involvement of retailers.

New customer relationships are the ability of the business to build present relationships or establishment of new relationships with customers. Establishment of new customers is the key to BMI when products/services can be replaceable or the market has become mature. The customer relationship will provide up-to-date environmental information and potential market demands, leading to a change in Business model (Chesbrough, 2006).

New revenue models state that customers pay for the value proposition (Afuah, 2014). Questions related to this issue include "When is the revenue generated?", "How long is the revenue generated?", "Who is the revenue generator?" (Baden-Fuller and Haefliger, 2013).

New cost structures are direct and indirect costs associated with business operations (Casadesus-Masanell and Ricart, 2010). The established cost structure will determine the strategic scope of products/services and the suitability of the market strategy (Zott and Amit, 2008). Cost structure in a business model will be changed by the corporate strategy.

- *Start-up performance*

Littunen, Storhammar and Nenonen (1998) defined start-up performance as existence/survival over the first three years, continuing after the start of business. Start-up performance is influenced by many factors: entrepreneurial characteristics, characteristics of firms, results of the initial start-up phase and impacts from the environment. The continuation of business activities is a sign of success for start-up performance, the early operating years of the business are highly important to stabilize business activities in the long run. According to the assessment of business development in Vietnam, GEM (2016) has developed two indicators: the ratio of start-up business activities and the ratio of business activities have been stable.

Based on the point of view of GEM (2016); Littunen, Storhammar and Nenonen (1998), Nguyen Dinh Tho and Nguyen Thi Mai Trang (2009), start-up performance is understood as the existence of firms in the start-up phase (over 3 months and less than 3.5 years), which is persistently stable and able to achieve goals set for start-up individuals (revenue, profit and market share as desired).

- *The relationship between business innovation and business start-up performance*

The criterial consequences for BMI are the economic effects (profitability, productivity, return on turnover, market value) and value capture (Andreini and Bettinelli, 2016).

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Pedersen, Gwozdz and Hvass (2016) demonstrated a correlative relationship between business innovation and financial efficiency. Cucculelli and Bettinelli (2015) found that firms adjusting business model over time and innovating had the same effect on the use of venture capital. Hence, based on the criterial outcomes for BMI, this study continues to assess the relationship between BMI and start-up performance in BR-VT province.

B. Empirical studies review

Spieth and Schneider (2013) based on the business model and product innovation theory, defined BMI as business innovation that has effect to at least one out of three components in the business model, including value creation, value structure and revenue model.

Guo, Su and Ahlstrom (2015), based on data investigation of the Chinese businesses, indicated a positive relationship between exploratory orientation, opportunity identification and BMI.

Zhang, Zhao and Xu (2015) demonstrated firms with existing competitive advantages have to change their business model. The finding was to enhance the subject of business model, knowledge provision and suggestions to BMI.

Velu (2015) studied the impacts of the BMI on the newly established firms. The data survey included 129 businesses in the U.S bond market, period 1995-2004. The finding showed that firms with high degree of BMI would survive longer than those with moderate level.

Waldner, Poetz, Grimpe and Eurich (2015) investigated how different stages in an industry's life cycle influence BMI and performance. Based on a sample of 1.242 Austrian firms, the result suggested that BMI should be carried out in the emergent stage of the industry's life cycle.

Pedersen, Gwozdz and Hvass (2016) assessed the impacts of BMI on financial efficiency based on survey responses from 540 managers in different majors, such as marketing, logistics, finance and others. Results showed that BMI effect positively to the financial efficiency with an intermediate role of the business sustainability.

Bouncken and Fredrich (2016) researched in size, age, experience and corporation duration effect to the BMI's retained value and BMI have a positive effect on Return on Equity (ROE), even stronger than the mature businesses.

Based on the researches mentioned above, none of them have looked at the relationship between BMI and start-up performance. It was also a research suggested by Foss and Saebi (2016) when integrating researches about BMI from 2000 to 2015.

C. Data and research methods

From existing theories and related researches, this research uses 10 factors from Clauss's BMI (2016). Pertaining to the result from group discussion with specialists, as the start-ups come into operation, its components within will connect activities and tasks with each other so that there is no need to reconfigure procedures/structures. For example, Canvas BMI is composed of nine components, helping start-up firms to merge business activities to create value for customers and value capture (Osterwalder & Pigneur, 2010). Hence, Clauss's factors to procedure/structure innovation are not in use for the start-up firms in Ba Ria-Vung Tau.

According to the theoretical basis and the result of qualitative researches, the suggested conceptual framework contains nine factors of BMI: capability innovation, technology innovation, partnership innovation, product innovation, market innovation, distribution channel innovation, customer relationship innovation, revenue model innovation, cost structure innovation and the dependent variable is start-up performance (see Figure 1.).

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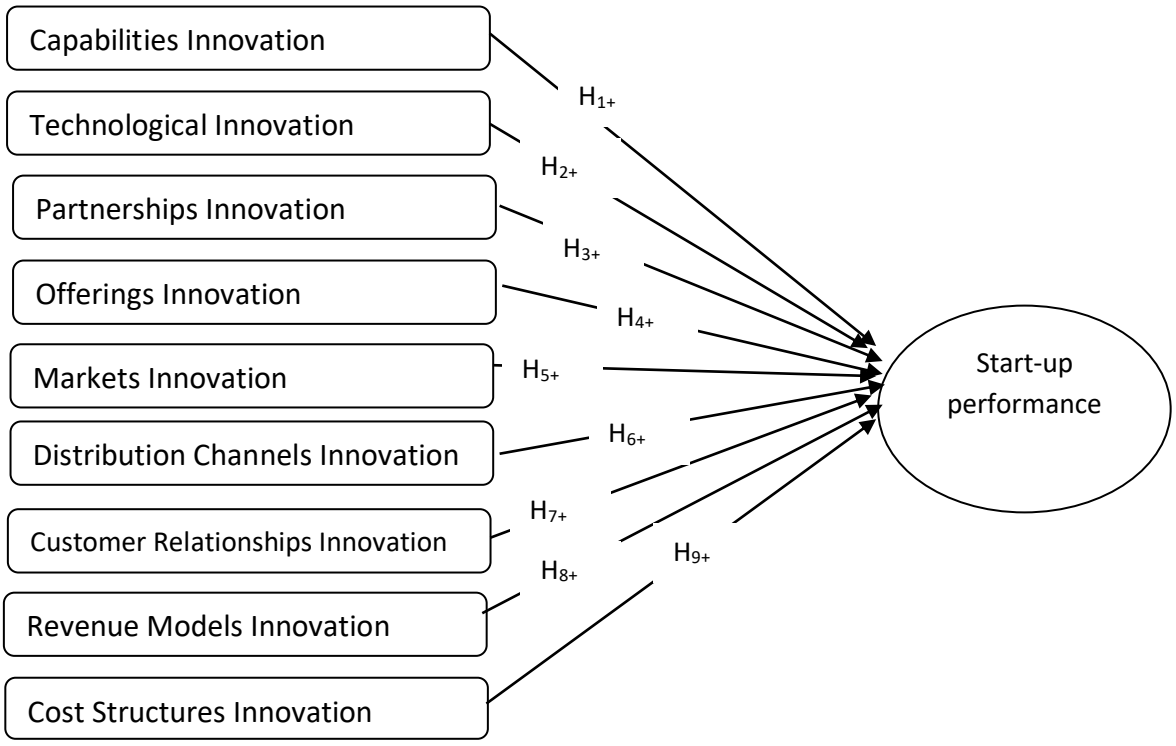

Fig 1:- Recommended research model

Foss and Saebi (2016) research BMI period 2000 - 2015. Research results show that BMI is executed for reducing costs, introducing new products, accessing new markets and improving the level of efficiency of the financial performance. BMI enhances competitive advantage, profitability, creativity and efficiency (Zott and Amit, 2007).

Based on the criterial consequences of BMI (Pedersen, Gwozdz and Hvass, 2016), integrated results and research proposals on BMI of Foss and Saebi (2016), period 2000-2015. The result from group discussion of specialists indicated that new changes of business model components would contribute to start-up performance improvement.

Alam (2013) demonstrated a positive relationship between capabilities innovation and operating performance of the Malaysian manufacturing firms. Based on that, the H_1 hypothesis is stated:

H_1: There is a positive relationship between capabilities innovation and start-up performance.

Reichert and Zawislak (2014) assessed the relationship between technological capabilities and firm performance of 133 firms in Brazil. Results showed that they had a positive relationship. Therefore, technology innovation will positively affect the performance of firms. From the analysis above, the hypothesis H_2 is proposed:

H_2: There is a positive relationship between technological innovation and start-up performance.

During the start-up stage, start-up firms work intensively with partners to be supported of external resources. Goerzen and Beamish (2005) surveyed 580 firms to examine the impact of the cooperative network on firm performance. Research results show that firms with more experience of cooperation would gain much firm performance than those with little experience of cooperation. Partnership innovation positively affects firms performance. Thus, the H_3 hypothesis is proposed:

H_3: There is a positive relationship between partnership innovation and start-up performance.

Markets innovation focuses on developing the target market and identifying the best way to serve the target market (Shirokova and Socolova, 2013). Therefore, start-up firms need to innovate offerings, distributing channels to satisfy demands; bring value to customers and firms performance. Atalay, Anafarta and Sarvan (2013) have demonstrated positive relationships between offerings innovation, processes innovation and performance of the automotive supply industry in Turkey. From the basis of analysis above, the hypothesis H_4, H_5 and H_6 are as the followings:

H_4: There is a positive relationship between offerings innovation and start-up performance.

H_5: There is a positive relationship between markets innovation and start-up performance.

H_6: There is a positive relationship between channels innovation and start-up performance.

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Customers make revenue for the firm, customer relationship management will help the firm use data and information to understand customers and create value for them (Payne and Frow, 2005). Customer relationships innovation will help firms find new customers and bring value to firms. Haislip and Richardson (2017) demonstrated that customer relationship management has a positive effect on performance. Therefore, customer relationships innovation will generate revenue that leads to firms efficiency. We have the hypothesis H_7, H_8 is stated:

H_7: There is a positive relationship between customer relationships innovation and start-up performance.

H_8: There is a positive relationship between revenue models innovation and start-up performance.

During the start-up stage, start-up firms incurred much cost of their initial investment and fixed investment. Cost structure determines firms performance. Cost structures innovation is to identify the types of costs required in relation to firms operation at the lowest level. Hypothesis H_9 is stated:

H_9: There is a positive relationship between cost structures innovation and start-up performance.

III. DATA AND METHODOLOGY

A. Data

This study uses direct interview technique and e-mail sending with a detailed questionnaire with a 5-level Likert scale (from 1: completely disagree to 5: fully agree). The interviewees are the start-up owners in Vung Tau, Ba Ria, Tan Thanh, Dat Do and Long Dien. Interview time is on 8/2017.

Constructs in the research model were developed based on the original scales from previous studies and were adjusted following qualitative research. The research model has 10 research concepts with 35 observation variables as shown in Table 1.

	Constructs	Number of observations	Sources
Business model innovation	Capabilities Innovation (CAP)	3	Clauss (2016)
	Technological Innovation (TEC)	3	
	Partnerships Innovation (PART)	4	
	Offerings Innovation (OFF)	3	
	Markets Innovation (MARK)	3	
	Distribution channels innovation (CHAL)	3	
	Customer Relationships Innovation (REL)	3	
	Revenue Models innovation (REV)	4	
	Cost Structures Innovation (COST)	4	
	Startup performance (STARTPER)	5	Pirolo & Presutti (2010), Nguyễn Đình Thọ & Nguyễn Thị Mai Trang (2008)

Table 1. Key concepts in model and construct sources

Sample:

Sample was selected conveniently upon the principle 5:1 (Bollen, 1989). The model has (35 observation variables) * 5 = 175. Therefore, the minimum sample size for this method is 175. However, in order to obtain an estimate for the Structural Equation Modeling (SEM), the sample size must be larger than 200 (Hoelter, 1983).

According to Yamate (1967), if you know the population, use the following formula: $n = \frac{N}{1 + N.e^2}$

Where n is the sample size; N is the population; e is the standard error.

According to statistics from BRVT provincial Department of Science and Technology (2017), the number of start-up firms established between 2014 and 2017 was 4470, with a 95% confidence level, the significant level is at 5%. Estimated sample size:

$$n = \frac{4470}{1 + 4470x0.05^2} = 367$$

During the data collection had to remove the unsatisfactory surveys. The sample size added 25% of the

minimum sample size: 367*(1+25%) = 459. So the number of survey questionnaires was 459, collected 431, excluding 6 invalid questionnaires. The remaining formal sample was 425.

B. Methodology

The research methodology was implemented through two stages: (1) preliminary research; and (2) formal study.

Preliminary qualitative research: used to adjust the observational variables in the measurement of the research concepts. The authors worked in groups discussion techniques so that their scales were clearly understood and conceptually identical.

Carried out a group discussion with 5 experts, including 2 scientists and 3 successful start-up owners. The preliminary qualitative results removed the "process/structure innovation" construct of BMI. The research model contains 9 independent variables, which are the components of BMI, and a dependent variable of start-up performance. There was a new observational variable added to the scale of start-up performance. The interview results were confirmed, developed and adjusted to the draft scale.

Preliminary quantitative research: The draft scale was used for the sample interviews with 101 firms by means of convenient sampling to test the reliability of the scale. After this step, the scale was completed and used for formal quantitative research. A preliminary quantitative research was conducted to evaluate the scale using reliability Cronbach's Alpha and exploratory factor analysis (EFA).

Formal research: conducted by a quantitative research through 425 start-up firms surveys at BRVT to test model and research hypothesis.

IV. FINDINGS AND DISCUSSION

A. Findings

The first set of research concepts were evaluated using reliability (Cronbach's Alpha) and exploratory factor analysis (EFA). Then verified through aggregated reliability, convergent value, and discriminant value by mean of Confirmation Factor Analysis (CFA). Structural Equation Modeling (SEM) method was used to test the theoretical model and hypotheses. The estimative method was Maximum likelihood (ML).

The proposed initial scale had 10 constructs with 35 observational variables. The results of the pre-test and the affirmation test showed that there was an observational variable in the Cost Structure construct (cost4) rejected. The result of the scale test was presented in Table 2.

Contructs	Number of variables	Reliability		Variance extract (ρ_{vc})	Value
		Cronbach's Alpha (α)	Composite (ρ_c)		
Capabilities Innovation (CAP)	3	0.837	0.840	0.636	
Technological Innovation (TEC)	3	0.824	0.826	0.613	
Partnerships Innovation (PART)	4	0.877	0.878	0.645	
Offerings Innovation (OFF)	3	0.823	0.871	0.693	
Markets Innovation (MARK)	3	0.800	0.805	0.581	Satisfied
Channels Innovation (CHAL)	3	0.855	0.856	0.664	
Customer Relationships Innovation (REL)	3	0.823	0.830	0.621	
Revenue Models Innovation (REV)	4	0.877	0.879	0.645	
Cost Structures Innovation (COST)	3	0.850	0.837	0.657	
Startup Performance (STARTPER)	5	0.869	0.867	0.568	

Table 2. Summary table of test results

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The result of the CFA analysis with the critical model showed that the Chi-squared statistic was 665,258 with 481 degrees of freedom (df), p = 0.000. If the degree of freedom is CMIN / df = 1,383 <2, satisfactory compatibility. Other indicators, such as GFI = 0.915, TLI = 0.971, CFI = 0.976, RMSEA = 0.030 <0.80, were satisfied. Thus, it can be concluded that the critical model achieved the level of compatibility with market data.

The result of the SEM (Figure 2) analysis: the theoretical model has 482 degree of freedom (df), $\chi 2[482] = 668.117$, p = 0.000, CMIN/df = 1.386, GFI = 0.915, TLI = 0.970, CFI = 0.975, RMSEA = 0.03. It should be noted that the Heywood phenomenon does not appear in the estimation of CFA, SEM models. Therefore, it can be concluded that this model is appropriate for market data.

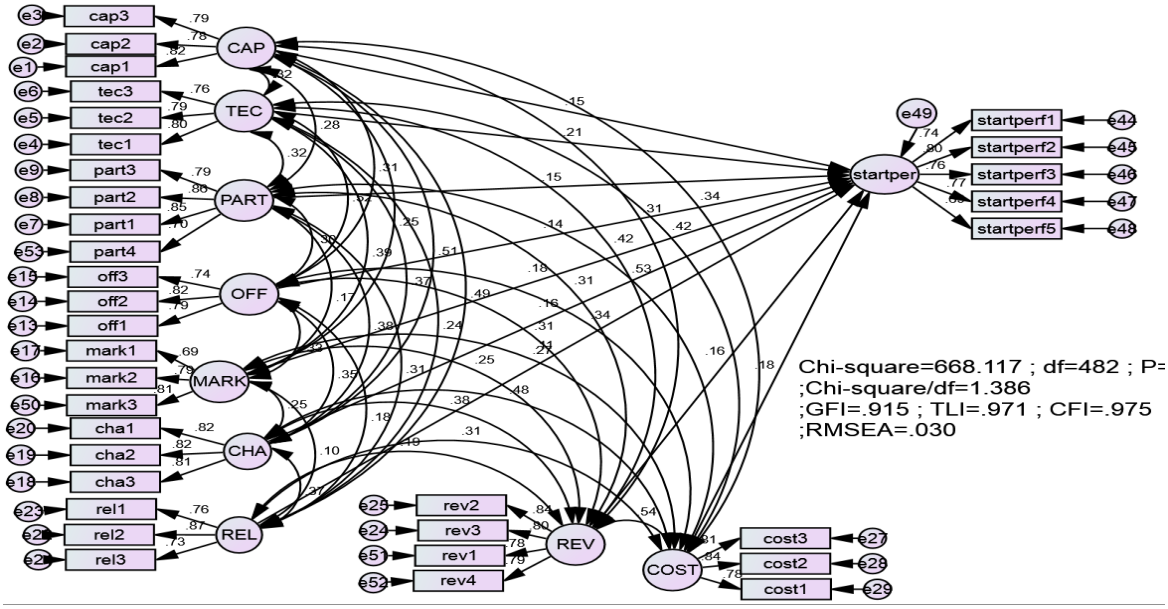

Fig 2:- SEM results of the theoretical model (standardized)

Results of key parameters are presented in Table 3. Accordingly, technological innovation has the most positive impact on the start-up performance (H_2: β = 0.202, p = 0.000); Next, there is a positive effect on the start-up performance from markets innovation (H_5: β = 0.193, p = 0.003) and cost structures innovation (H_9: β = 0.185, p = 0.004), p = 0.000) and capabilities innovation (H_1: β = 0.155, p = 0.000). Offerings innovation has a positive effect on the start-up performance (H_4: β = 0.153, p = 0.000); followed by the positive effect from revenue models innovation (H_8: β = 0.143, p = 0.000) and customer relationships innovation (H_7: β = 0.119; p = 0.005). Finally, partnerships innovation has the least positive effect on start-up performance (β = 0.114, p = 0.000). Thus, 9 hypotheses are accepted (H_1, H_2, H_3, H_4, H_5, H_6, H_7, H_8, and H_9), none of the hypotheses mentioned are rejected.

Relationship			Estimate	S.E	C.R	P-value
Startper	<---	PART	0.114	0.028	4.019	0.000
Startper	<---	TEC	0.202	0.043	4.657	0.000
Startper	<---	OFF	0.153	0.044	3.461	0.000
Startper	<---	MARK	0.193	0.041	4.706	0.000
Startper	<---	CHA	0.158	0.043	3.687	0.000
Startper	<---	REL	0.119	0.042	2.821	0.005
Startper	<---	REV	0.143	0.036	3.938	0.000
Startper	<---	COST	0.185	0.048	3.839	0.000
Startper	<---	CAP	0.155	0.043	3.586	0.000

Table 3. Result of relationship test between concepts (standardized)

B. Discussions

The proposed research model has 10 unidirectional research constructs: capabilities innovation, technological innovation, partnerships innovation, offerings innovation, markets innovation, distribution channels innovation and customer relationships innovation, revenue models innovation, cost structures innovation and start-up performance. The constructs have 35 observational variables, after the

preliminary tests and CFA, the scale has rejected one observational variable (cots4).

The result of the measurement model shows that the scale values achieve reliability (Cronbach Alpha coefficient, composite reliability) and approvable values (unidirectional, extraction deviation, convergent and distinguish).

The research findings have added to the conceptual framework a positive relationship between the components of BMI and start-up performance. This relationship have not been testified from previous studies. The research findings have supplemented the research problem of Foss and Saebi (2016) between BMI and firms performance.

V. CONCLUSIONS AND MANAGERIAL IMPLICATIONS

A. Conclusions

This research has demonstrated the relationship between the innovative components of BMI and start-up performance of the start-up firms in BRVT province. Research results show that capabilities innovation, technological innovation, partnerships innovation, offerings innovation, markets innovation, channels innovation, customer relationships innovation, revenue models innovation and cost structures innovation have positive effects on the start-up performance. Therefore, these hypotheses H_1, H_2, H_3, H_4, H_5, H_6, H_7, H_8 and H_9 are accepted.

B. Limitations and research direction

This study was conducted in BRVT province so that the representativeness was not high. Therefore, in order to improve the level of representativeness, the research should be retaken in other provinces/cities, such as Ho Chi Minh City, Dong Nai, Binh Duong, Can Tho ... are places whose many start-up firms.

This study examined the firms from various sectors, so it could not distinguish the specific characteristics and requirements in each sector. For a better test result, it is essential to take a research on a specific sector to see the role of BMI in improving start-up performance.

There are other factors that affect start-up performance: quality of relationships with strategic partners ... These are the issues proposed for further researches.

C. Managerial implications

The components of BMI are proven to have a positive effect on start-up performance. Therefore, start-up firms should focus on BMI to improve start-up performance. Here are the specific managerial implications:

Technological innovation (β = 0,202): start-up firms update technological resources, technical equipment development versus competitors, and utilize new potential technology to expand the offerings portfolio. Especially in the era of industrial revolution 4.0, start-up firms proactively approach differently from the previously-done approaches, improve management competencies, technology and investment in technological manufacturing against international standards ... Hence, start-ups are possibly ready to adapt to the industrial revolution 4.0 (Minh Phuong, 2017)

Markets innovation (β = 0.193): start-up firms are required to capture opportunities in new segments or developing markets, always put an interest in new market segments, unoccupied markets, searching for customer segmentation and new markets for offerings.

Cost structures Innovation (β = 0.185): start-up firms assess pricing strategies, actively seek opportunities to save production costs , regularly monitor and adjust the production costs over market prices and take advantages of opportunities arising from differentiated strategies.

Channels innovation (β = 0.158): start-up firms use new distribution channels for offerings, and change distribution channels to improve channel efficiency.

Capabilities innovation (β = 0.155): start-up firms foster staff to be trained in order to acquire knowledge, cognitive ability and new capabilities development. Start-up firms examine new capabilities needed to be established to adapt with demanding changes in the market.

Offerings innovation (β = 0.115): start-up firms are interested in new unfulfilled customers' needs, innovating offerings to meet customer needs versus competitors.

Revenue models innovation (β = 0.143): start-up firms develop new revenue opportunities, providing extra convergent services to receive long-term profits, replenish or replace revenue of the full payment method by long-term installment payment (for example: lease contract).

Customer relationships innovation (β = 0.111): start-up firms enhance customer retention with new services, focusing on innovative creations to increase customer retention.

Finally, *Partnerships innovation (β = 0.144)*: start-up firms seek new partners to cooperate with, exert the opportunities provided by cooperation, evaluate the potential benefits of using external resources and receive supports of partners to develop BMI.

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