ATLANTIS
PRESS

Relationship Network and Business Model Innovation of Start-Up Companies in the Context of Industrial Revolution 4.0: An Evidence from Vietnam

T. N. Ghi & N. T. P. Anh
Ba Ria – Vung Tau University, Vung Tau, Vietnam

N. Q. Thu. & N. Q. Huan
University of Economics, Ho Chi Minh City, Vietnam

ABSTRACT: In the starting phase, despite incentives of government support policies and related entities' supports, startup companies face many difficulties in accessing external information and resources to innovate current business models. The role of management resources in building relationship networks to promote business model innovation (BMI) is a popular topic but has not been tested in transition markets and the context of Industry 4.0. This study was conducted by applying the Partial Least Squares method (PLS-SEM) to examine relationship networks and BMI of startup companies in Vietnam. The research results showed that relationship with government officials positively influences BMI's components; social relations positively affect value proposition innovation; relationship with business partners positively influences value creation innovation and value proposition innovation. Relationship network and BMI are essential for startup companies to respond to environmental changes. The research results also provide useful information for startup support organizations in connecting and consulting effective business models for startup companies.

Keywords: Relationship network, business model innovation, start-up companies

1 INTRODUCTION

In the first phase of operation (less than five years), Vietnamese startup companies are entitled to get incentives from the Government's supporting policies (e.g., Decision No. 844/QD-TTg, Decree No. 35/NQ-CP, Decree No. 39/2018/ND-CP, etc.). In fact, startup companies face many difficulties in accessing external information and resources to innovate their current business models. In the development trend of the 4th industrial revolution, technology is always changing rapidly. Thus, how can startup companies adapt and capture business opportunities in a dynamic market? How do startup companies access external support resources to implement business model innovation (BMI)? To answer these two questions, the study of relationship network affecting BMI is essential because it determines the existence and development of startup companies.

Some scholars have published studies on the influence of the relationship network on BMI. For example, Guo et al. (2013) examined the impact of human capital, and social capital on BMI, Anwar &

Shah (2018) assessed the impact of financial, political, and business partners' networks on BMI. These two studies adopted the BMI measurement scale of Zott & Amit (2007). The background theories used to explain the formation of companies' external support resources are social network theory, social capital theory, and innovation diffusion theory. Thus, there have not been many types of research adopting the BMI concept as a type II scale by Javis (2003) to test relationship network and BMI. Moreover, the institutional theory is a new approach to explain the formation of external support resources, which brings new interpretations to this research issue.

1.1 Institutional theory

The point drawn from institutional theory is that each business, when complying with constraints from institutions will be socially accepted (legitimacy). When being accepted, businesses are more likely to "survive" and exist. "Social acceptance" has become the central point of institutional theory. This acceptance is the extent to which the public, stakeholders, government leaders, and officials know and

accept an organization in accordance with norms and laws (Scott, 1995). Therefore, organizations can increase the level of acceptance by extending their existence awareness to stakeholders and proving that their activities are socially appropriate.

1.2 Relationship network

The relationship network of startup companies' top managers is with 3 groups of startup supporting individuals and organizations as follows: Ties with government officials (TiesGOV) including leaders at all levels of government, officials at the local Industries, officials at supporting organizations such as Tax Department, State Bank, Department of Industry and Trade, Department of Science and Technology, etc. (Peng & Luo, 2000). Ties with relatives and friends, members of social associations and clubs (SOTIES) and those who do not belong to the above groups (Le et al., 2006). Ties with business partners (TIESMANAGER) including customers, suppliers, and competitors (Peng & Luo, 2000).

1.3 Business model innovation

Baden-Fuller & Mangematin (2013) outlined three components of a business model: value creation, value proposition, and value capture. The combination of these three components constitutes the business model of an enterprise (Shafer et al., 2005). BMI is to review the current business model and requires changes in the three components (Baden-Fuller & Mangematin, 2013). Value Creation Innovation (VCI) is developing new capabilities, new technology/equipment, new partners, and new processes/structures. Value Proposition Innovation (VPI) is developing *new offers, new markets, new distribution channels, and new customer relationships. Value Capture Innovation (VCIN) is developing a new revenue model and the new cost structure (Clauss, 2017).*

1.4 Proposing research hypotheses

An incubator created by government support organizations can enhance the acceptance level of startup companies (Tötterman & Sten, 2005). Therefore, startup companies can access more donations, aid, and support programs of the government. They will be supported with training programs to improve their capacity (knowledge/expertise, capacity to respond to environmental change, etc.) and supporting programs in technology development. In addition, startup companies are also introduced to partners,

investors, funding supporters in testing, making samples, and changing the appropriate process. Hypothesis H1a is proposed as follows:
H1a: Strong relationship of startup companies with government officials has a positive impact on BMI's value creation innovation

Ties with government officials enable startup companies to access many Government-sponsored projects or Government customers' projects (Le et al., 2006). Startup companies will be supported to create new products/services, through in-depth training in product development, market testing, and access to foreign markets, available distribution channels, and customer network. Hypothesis H1b is proposed:
H1b: Strong relationship of startup companies with government officials has a positive impact on BMI's value proposition innovation

Building relationships with Government officials will help minimize transaction costs in business and registration activities in accessing information, land usage, and other operating licenses (Meyer & Nguyen, 2005). Startup companies are also supported with low-interest loans and reduced cost of capital. Finally, startup companies will be supported in commercializing the results of scientific researches, exploitation, and the development of the intellectual property to create more revenue. Thus, hypothesis H1c is proposed:
H1c: Strong relationship of startup companies with government officials has a positive impact on BMI's value capture innovation.

When startup companies are connected with startup associations/clubs, they will be supported with free training courses and startup coaching courses to develop new capacity. Startup companies will receive legal support and participate in co-working space to learn from experts (process innovation). Startup clubs support in connecting members with the startup ecosystem and other startup clubs (new partners). Hypothesis H2a is proposed:
H2a: Strong social relations of startup companies have a positive impact on BMI's value creation innovation.

By joining startup associations/clubs, startup companies will be connected with consultants, investors, entrepreneurs, startup support organizations, and policymakers to create support solutions for the startup community (product development, distribution channels, and new customer relationships) and expand the market for startup products. Hypothesis H2b is proposed:
H2b: Strong social relations of startup companies have a positive impact on BMI's value proposition innovation.

According to Birley (1985), in the early stage of development, informal contacts with business associates, family members, and friends will provide labor and facilities for business. Startup clubs share business opportunities and cross-selling among club members may guarantee large orders (developing a new revenue model) and give a startup fund for capital support. In addition, the relationship between startup companies with relatives, friends, and colleagues will offer fast capital raising, simple procedures, and low costs (developing a new cost structure). Hypothesis H2c is stated as follows:

H2c: Strong social relations of startup companies have a positive impact on BMI's value capture innovation.

Anwar & Shah (2018) suggested that decent communication with business partners will give new ideas, new business opportunities, capture customer needs, new knowledge, and technology. Newly established businesses having good relationships with the managers of mature businesses will easily have access to new information, resources, and new knowledge (Li et al., 2015), which will affect their innovation (Breuer & Ludeke-Freund, 2017). The relationship between senior management will promote BMI (Guo et al., 2013). Designing a new business model requires much information about customers, suppliers, competitors (Timmers, 1998). On that basis, hypotheses H3a, H3b and H3c are proposed:

H3a: Strong relationship of startup companies with business partners has a positive impact on BMI's value creation innovation.

H3b: Strong relationship of startup companies with business partners has a positive impact on BMI's value proposition innovation.

Hypothesis H3c: Strong relationship of startup companies with business partners has a positive impact on BMI's value capture innovation.
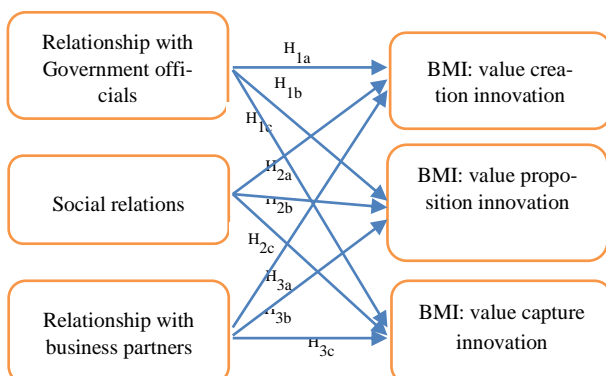

Figure 1. Proposed research model

2. RESEARCH METHODS

In the data collection stage, online questionnaires were sent to local startup communities via emails and social media channels. The official research sample was selected by convenience sampling method. The number of valid responses was 150 startup companies. Hair et al. (2010) suggested that the minimum sample size should be from 100 to 150. The study used the SmartPLS 3 analysis tool so that a small sample size of 150 startup companies can be used for proper quantitative research. According to observed sampling criteria, innovative startup companies were selected to satisfy the following criteria: (1) the company has been running not more than 5 years; (2) the company applied technology or intellectual property; (3) the company experiences fast growth rate (revenue, customers, etc.); and (4) new business model (different from available business model in the market).

The study used the PLS-SEM method to calculate the measurement model (tests of composite reliability, convergent validity, unidirectional and discriminant validity), the structural model with Bootstrapping (N = 5000): determination coefficient (R^2), predictive relevance (Q^2), and effect size (f^2).

3. RESULTS AND DISCUSSIONS

Characteristics of the research sample were startup companies that have been operating as private enterprises (accounting for 42.7%) and limited liability enterprises (accounting for 43.3%). They operated mainly in the service sector (accounting for 49.3%) and trading and commerce (accounting for 30%). The number of labor is mainly under 10 employees (accounting for 43.3%) and from 10 to 30 people (accounting for 41.3%).

Evaluation of measurement model: the results showed that the scale with composite reliability (CR)> 0.7, variance extract (AVE)> 0.5 reaches composite reliability and convergent validity. In addition, the Fornell - Larcker matrix coefficients are larger than the coefficients in the same column, so the scale reaches discriminant validity. SRMR coefficients of critical and estimated models are <0.12, which meets the requirement of survey data's compatibility with market data (Henseler et al., 2015).

Table 1 shows the VIF value <5, so the estimated structure model does not have multicollinearity (Henseler et al., 2015). The effect of relationship with government officials on BMI is moderate (f^2 <0.35). The effect of relationship with business partners on VCI and VPI, the effect of social relations

on VPI are considered as low ($f2 <0.15$). The path coefficient is within the confidence range from 2.5% to 97.5%, which is reliable. The predictive relevance of the relationship network to BMI has a moderate level ($Q2 <0.35$) (Hair et al., 2017).

Table 1. Results of Structural Equation Modeling

Relationship	Estimation		Standard deviation	t	VIF	P
	β	Boot-strap				
Relationship with Government officials --->BMI						
TIESGOV --> VCI	0.483	0.485***	0.061	7.895	1.169	0.000
TIESGOV --> VPI	0.317	0.319***	0.069	4.633	1.169	0.000
TIESGOV --> VCIN	0.375	0.377***	0.070	5.326	1.169	0.000
Social relations ---> BMI						
SOTIES --> VCI	0.125	0.129ⁿˢ	0.078	1.601	1.318	0.109
SOTIES --> VPI	0.276	0.278***	0.071	3.880	1.318	0.000
SOTIES --> VCIN	0.072	0.074ⁿˢ	0.079	0.914	1.318	0.361
Relationship with business partners --> BMI						
TIESMANAGER --> VCI	0.175	0.179**	0.075	2.328	1.282	0.020
TIESMANAGER --> VPI	0.165	0.170**	0.068	2.415	1.282	0.016
TIESMANAGER --> VCIN	0.123	0.127ⁿˢ	0.090	1.376	1.282	0.169

Research results showed that the theoretical model is compatible with market data, adding to the theoretical framework of relationship network and BMI in the startup field.

When startup companies build a good relationship network, the benefits will promote BMI activities, help companies adapt to the rapid changes in the market, especially with the Industry 4.0 development trend. Compared to companies in developed economies, companies in a transitional economy have more difficulties in startup resources due to the institutional environment and underdeveloped input market. The new contribution of this study has demonstrated the vital role of management resources affecting the BMI of startup companies. At the same time, the study provides evidence that institutions influence the role of management resources to BMI.

Relationship with government officials has a positive impact on BMI (VCI, VPI, and VCIN). Estimated results showed that all hypotheses are accepted (H1a: β = 0.485, p = 0.000 <0.01; H1b: β = 0.319, p = 0.000 <0.01 and H1c: β = 0.377, p = 0.000 <0.01). The results are similar to Wu (2011) and Guo et al. (2017) that stated that when companies have a good relationship with Government officials, it will positively affect the business model.

The test results showed that the hypothesis H2b is accepted (H2b: β = 0.278, p = 0.000 <0.01). The hypotheses H2a and H2c are rejected (H2a: β = 0.112, p = 0.1109> 0.1; H2c: β = 0.074, p = 0.361> 0.1). Hypotheses H3a and H3b are accepted (H3a: β = 0.179, p = 0.020 <0.05; H3b: β = 0.1170, p = 0.016 <0.05). These relationships have not been well tested previously, but Anwar & Shah (2018) stated that relationships with business partners influence BMI in the same direction. Hypothesis H3c is rejected since the test result is not statistically significant (H3c: β = 0.112, p = 0.169> 0.1).

4. CONCLUSION

Research results showed that the theoretical model is compatible with market data, adding to the theoretical framework of relationship network and BMI in the startup field. When startup companies build a good relationship network, the benefits will promote BMI activities, help companies adapt to the rapid changes in the market, especially with the Industry 4.0 development trend. Compared to companies in developed economies, companies in a transitional economy have more difficulties in startup resources due to the institutional environment and underdeveloped input market. The new contribution of this study has demonstrated the vital role of management resources affecting the BMI of startup companies. At the same time, the study provides evidence that institutions influence the role of management resources to BMI.

In order to increase the social acceptance of companies' practical operations, an essential strategy of startup companies in the transitional economy is to build a network of relationships with stakeholders. The role of the owner/senior manager is significant in building relationships and negotiating transactions with Government officials and authorities at all levels. If the owner/manager knows how to lobby, the companies will get information, policies, and decisions that benefit the business within the framework of the law. Startup companies should actively participate in startup contests so that their startup projects will be known to the public. This helps increase social acceptance of them. Therefore, the firm owner/manager needs to invest a certain amount of time and investment to build, maintain, and strengthen positive relationships with Government officials and local authorities.

Startup companies need to actively participate in local startup associations/clubs to interact, learn, connect, and share opportunities among members. More people will be aware of the companies' actual operation, and the social acceptance level of their startup projects will be increased.

To build good relationships with customers, startup companies need to invest time to take care of and understand customers' needs and tastes. Companies should often contact and collect customers' feedback after using products/services. Good relationships with suppliers will help startup companies get high-quality input materials, excellent service, and timely delivery. Startup companies with good relationships with competitors can facilitate cooperation; minimize risks and uncertainty (Peng, 2000).

The official research sample of 150 that represents 3000 startup companies in Vietnam was small; thus, the representation level for the overall population is low. For the subsequent research, it is recommended that the sample size needs to be more significant to increase the representation level. Startup companies have supporting resources from relationship network; therefore, further researches should assess the benefits gained from the relationship network leading to BMI.

REFERENCES

Anwar, M., & Ali Shah, S. Z. 2018. Managerial Networking and Business Model Innovation: Empirical Study of New Ventures in an Emerging Economy. *Journal of Small Business and Entrepreneurship*, 1–22.

Baden-Fuller, C., & Mangematin, V. 2013. Business models : A challenging agenda. *Strategic Organization, 11*(4), 418-427.

Birley, S. 1985. The role of networks in the entrepreneurial process. *Journal of Business Ven tunng, 1,* 107-117

Breuer, H., & F. Ludeke-Freund. 2017. Values-Based Network and Business Model Innovation. *International Journal of Innovation Management, 21*(03).

Clauss, T. 2017. Measuring business model innovation: conceptualization, scale development, and proof of performance. *R&D Management*, *47*(3), 385-403.

Guo, H., Zhao. J., & Tang. J. 2013. The role of top managers' human and social capital in business model innovation. *Chinese Management Studies*,7(3),447-469.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. 2010. *Multivariate Data Analysis (7th Edition).* NJ: Prentice Hall.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. 2017. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM).* Thousand Oaks: Sage.

Henseler, J., Ringle, C. M., & Sarstedt, M. 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135.

Guo, B., Pang, X., & Li. W. 2017. The role of top management team diversity in shaping the performance of business model innovation: a threshold effect. *Technology Analysis & Strategic Management*.

Jarvis, C. B., MacKenzie, S. B., & Podsakoff, P. M. 2003. A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research. *Journal of Consumer Research*, *30*(2), 199–218.

Le, N. T. B., Venkatesh, S., & Nguyen, T. V. 2006. Getting bank financing: A study of Vietnamese private firms. *Asia Pacific Journal of Management*, *23*(2), 209–227.

Li, H., de Zubielqui, G. C., & O'Connor. A. 2015. Entrepreneurial Networking Capacity of Cluster Firms: A Social Network Perspective on How Shared Resources Enhance Firm Performance. *Small Business Economics 45* (3), 523–541.

Meyer, K., & Nguyen, V. H. 2005. Foreign investment strategies and sub-national institutions in emerging market: Evidence from Vietnam. *Journal of Management Studies*, 42(1), 63–93.

Peng, M. W. 2000. *Business Strategy in Transition Economies.* Sage Publication California, London.

Peng, M. W., & Luo, Y. 2000. Managerial ties and firm performance: the nature of a micro-macro link. *Academy of Management Journal*, *43*(3), 486–501.

Scott, R.W. (1995). Institutions and Organizations, Thousand Oaks, CA: Sage.

Timmers, P. 1998. Business models for electronic markets. *Journal on Electronic Markets, 8*(2), 3-8.

Tötterman, H., & Sten, J. 2005. Startups: Business incubation and social capital. *International Small Business Journal*, *23*(5), 487–511.

Wu, J. 2011. Asymmetric roles of business ties and political ties in product innovation. *Journal of Business Research*, *64*(11), 1151–1156.

Zott, C., & Amit, R. 2007. Business model design and the performance of entrepreneurial firms. *Organization Science, 18*(2), 181–199.