NETWORKING AND ITS IMPACTS ON SMES' PERFORMANCE AT HO CHI MINH CITY, VIETNAM

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Abstract: *The sufficient sample of 620 SMEs is investigated to find out how firm performance is affected by networking linkages. Findings proved that stronger network linkages, and an increase in network intensity cause a raise in firm performance. Additionally, an increase in network range contributes into saving labor cost of SMEs. And the higher activity with network actors, the higher productivity of SMEs. The study brings interesting findings and a great contribution to literature review. Once the firm has more frequency of advice and supports from its own network, labor costs are saved. Another interesting point is that SME's productivity is a significant association with its networking score. The study also confirms that the larger employee size of SMEs causes a higher returns on equity (ROE). Consequently, small firms have contacts with their surroundings, but these contacts aren't enough strong for their operation to improve ROE. In short, findings are significant contributions to policy makers for.*

Keywords: *Networking, SMEs, Vietnam.*

1. INTRODUCTION

Research on networks become a new area of requirement within the field of entrepreneurship, which has been happened approximately 15 years ago (Hoang & Antoncic, 2003). Many arguments on network linkages are positive contributions to the firm's business strategy as embedded communications with outside stakeholders. Once a firm with network linkages is, it can find legitimacy to lessen the perceived risk by associating with individuals and organizations. Therefore, the reliance on networks is not blocked the start-up stage of entrepreneurs.

Building up a network of the firm can create intangible values and promotion of the firm to innovation. Doing this way the firm can widen horizontal cooperation with various channels, *e.g.* banking system, consulting agencies, business associations. As argued by Konsti-Laakso et al. (2012), firms to be partners each other, they can share joint understanding or a shared vision. Once external communication linkage are considered, it constitutes an effective leverage of SMEs to save transaction costs and facilitates the firm using core competence to create its competitive advantage. In contrast, without network considered can cause inertia responsiveness to enable firm performance.

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The process of information exchange, getting advice, support emotional, and relationship are sourced by communications or communication frequency among partners. Value networks are argued as inter organizational networks linking together firms with different competencies and assets and that take on to address to new market opportunities (Konsti-Laakso, et al., 2012).

In recent years, the network literatures are paid more attention by researchers. Although in terms of networking are not always used, several studies have found that owners-managers conduct environmental scanning regularly (Brush, 1990).With technological development of today and fast improved information technology, building up networks among partners is more concerned by SMEs. According to Watson (2007), networking appears compelling and is beneficial, but to date little empirical evidence of an association between firm performance and the owners' use of networks. According to Borgatti & Foster (2003), the network literature has exploded as researchers have come to recognize the importance of relational and contextual understandings of social and economic life. To developed countries, network is a real advantage and contribute to firm performance. However, it is sceptic and not concerned much in underdeveloped countries (Boso, et al., 2013).

In fact, Vietnam has been just an emerging country in Asia for current years, market development strategies of SMEs are in process of learning and doing toward integration. Their network concept are limited initial and confused awareness. They need time to learn and improve that, particularly proofs of relevant previous studies are necessary, due to application. As a result, publications related to network consideration of Vietnamese SMEs are lack. This study contributes to filling this gap and is going to find out how Vietnamese SMEs consider networks and impacts of network linkages on SME performance.

Based on findings of previous papers, mostly related single network of firm studied the association between network access and firm performance, which formal and informal network are mainly considered. Based on actual situation as social issues considered, this paper is partly an extension study of Watson (2007), which network linkages of SMEs and its performance are investigated. The performance of SMEs is measured by growth rate, returns of equity (ROE), labor cost, and productivity. Networks employed in the study are networking score, network range, and network intensity.

Vietnamese SME and its Changes During Integration

Experienced in the Doi Moi policy (the economic renovation) since 1986, Vietnam's economy has positive changes, in which small and medium sized enterprises (SMEs) have more benefits through market driven development strategies under the state management. Vietnamese SMEs had more chances when relationship normalization between the USA and Vietnam was formally affected in 2001, plus with the accession

to the World Trade Organization (WTO) of Vietnam was verified since 2007. Changes in economic policies to the market economy of Vietnam cause positive impacts on entrepreneurs and the start-up business of new entrants. Therefore, according to Vietnam General Statistics Office (GSO), there is an increase in amount of enterprises in 2013. Evidently, there is 457.343 enterprises existing in the whole country, up 9.5% compared to the same period of 2012 and 57% compared with 2010. In which the share of State Owned Enterprises (SOEs) has been slowdown from 3.6% in 2005 to 1.5% in 2013, because of changes in privatization policies of the government.

It is doubtless for importance of SMEs' contribution to the national economic development, which is undisputable. SMEs in Vietnam take a large share as around 98% of the number of enterprises, where 66% of the national labor force has been expecting to prosperous life (ADB, 2013), and contribute 40% to GDP[*]. To preserve the marketplace, Vietnamese SMEs have paid more attention to the market-oriented strategies and the integration, in which approaches of networking ties of the organization is taken into account.

The social networks and private credit of SMEs in the early stages of Vietnam's integration toward the market economy still play a key role(Hai, et al., 2009). With open policies of the government, SMEs have been more dynamics to generate communications with external partners for improving product quality, reducing the production cost, increasing competitive advantage. In parallel, the government has been trying to build up the support bridge to SMEs. By doing this SME can get more knowledge of technological transfer, market information, business law, etc. However, as argued by Hai et al. (2009), there are a lack of formal network linkages and technological cooperation among technological research organizations, between supporting institutions and SMEs, and with other firms. As a result, the roles of supporting agencies are not brought into seriously. In addition, although the Vietnamese government pays more attention to information and consulting provisions to promote the SMEs, *e.g.* market information, technological information, and counsel, those are not seemly qualified. This means the quality of information is till questionable, and what SMEs get from supporting agencies still away from their expectation.

Based on the concept of the leading state organization, state owned enterprises (SOEs) in Vietnam play an utmost leading position in the market economy under the state management, support policies to SMEs are more priority. As a result, SOEs are main beneficiaries for those supports, which sometimes causes the negative thinking of non-state owned enterprise's to SOEs, as unfair policies to rival market. While private SMEs are handicapped, due to a lack of information structure (Thai & Chong, 2008).

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[*] http://moj.gov.vn/tcdcpl/tintuc/Lists/PhapLuatKinhTe/View_Detail.aspx?ItemID=390

In general, we cannot negate what Vietnamese SMEs' contribution are. However those in Vietnam have operated with far less information than that of other countries, although they have concerned the market oriented strategy during the integration.

With the fast development of information system and more considerations on social network for recent years, SMEs in emerging markets, *e.g*. Vietnam, pay more attention to seeking network linkage and ties, due to a change to diffuse information. But, in fact that networking can be a new idea for developing countries, such as Vietnam, so studies related to impacts of network linkages of SMEs at Ho Chi Minh City on the firm performance have been expected. As a result, this paper aims to find out how the firm is using the network and its effects on SME's performance. Because positive views on a firm's network linkages can in turn lead to subsequent beneficial resource exchanges (Hoang & Antoncic, 2003), achievements of SMEs can be addressed.

2. THEORETICAL ANALYSIS

Networking and its Effects

As argued by Borgatti (1987), a network is a group of actors or social entities connected by a set of linkages through which they are going to exchange information or resources or both. While Provan & Kenis (2007) criticized that network is typically institute to coordinate and promote network and share many characteristics with other governance devices. Network communications provide emotional support for entrepreneurs toward risk take acceptance, but based on qualified and dissected information. Entrepreneurs seek legitimacy to reduce risks by associating with individuals and organizations (Hoang & Antoncic, 2003).

There are two types of the network, which inter organizational networks offer networks of alliance partners (Rindfleisch & Moorman, 2003), and channel members (Antia & Frazier, 2001). While intra organizational networks present connected business units (Houston, et al., 2001) and individual managers within a single business unit (Bond, et al., 2004).

According to Forret & Dougherty (2001), there are five types of networking behavior: (i) maintaining contacts; (ii) socializing; (iii) engaging in professional activities; (iv) participating in community; (v) increasing internal visibility. Senik, et al. (2011) argued that networking is an important source of SMEs business expansion, due to its contributions to market integration. Convergent views of networking consist of three interconnected sources: (i) government institutions; (ii) business associates; (iii) personal relations.

With the fast development of information system, causing an increase in social media users, individuals and organizations get more approaches in building

communications and cooperation, making expansion of network range. Once the firm has more networks by acquaintances, he or she can access more information (Granovetter, 1983), also potential benefits will be derived.

As documented by Havnes & Senneseth (2001), networks are a mean to help SMEs in diffusing innovations, partners in which can share each other ideas and cooperation. With a survey conducted on five companies by in-depth approach, Konsti-Laakso et al. (2012) found the first meeting between companies centered on making acquainted toward decisions about joint actions. Collaboration among firms is a good solution for a firm can find a way to escape and prevent market threats. Mostly networks build are based on collaboration, not only for production, but also for services. So participation in network linkages often requires large investments to enable compatibility with network partner's cooperation.

According to Senik et al. (2011), Asian firms are eager for building network, in which external relationships are taken into account. Sim & Pandian (2003)offered a concept of quanxi, it is a presentation of network built through personal connection of the owners, family ties, connection with selected state-owned enterprises. According to Li & Matlay (2006), quanxi is the key to successful entrepreneurship and facilitate Chinese SMEs to utilize social capital for business development and survival. Similarly, Coleman (1988)argued that networking can heighten an SME owner's social capital, due to a chance of assessing to information embedded within the networks accessed.

External networks generate opportunities and enhance utilization maximization to increase competitive advantages, which network range plays important role in providing organization with access to diverse information and expanded learning opportunities (Reagns & McEvily, 2003). Once network range is expanded, it increases knowledge gained opportunities as network-spanning relationships with partners, also gather new ideas that they had not previously been exposed.

Hypothesis

According to Houston et al. (2004), network variables can and do serve as both independent and dependent variables. In case of network being independent variables, Rindfleisch & Moorman (2003) found that network linkages influence a firm's new product outcomes. With network variables as dependent variables, network linkages across firms result from a need to reduce a firm's exposure to risk (Gulati, 1995). However, in this paper, the firm's network linkages as independent variables are taken into account, its impacts on the firm performance is analysed.

Based on a study on small and medium size enterprise (SME) internalization process in Malaysia, Zizah et al. (2011) argued that networking of SMEs is a linkage with institutions, business associates and personal relations, in which business

associate and personal relations are main networks, due to a strong link. The institutions mean the supporting government agencies. Personal relations consist of previous employment contract, colleagues, friends and relatives. Business associates are other owners, managers of both large local firm, foreign companies. As documented by Watson (2007), two main network linkages that the firm can gets communication for gathering information, formal and informal networks, which formal networks are more important than informal networks to improve firm performance. Therefore, the first hypothesis is suggested to be bested as below.

Hypothesis 1: The stronger network linkages, the more impacts on firm performance (growth, ROE, labor growth, productivity)

More broadly, Chittithaworn (2011) found the business success of SMEis significantly depended on the way of doing business and cooperation, the firm's characteristics, customer and market, resources and finance, and external environment. The firm performance is distributed by the way of doing business and cooperation. Seeking advice and supports from an existed network in business as well as new network generation is indispensable for SMEs. Especially, SMEs at the early business stage is in more need of helps. Once advice and supports of each business transaction are more, it is a huge contribution to changes in market oriented strategies of SMEs. So, the second hypothesis is considered as below.

Hypothesis 2: An increase in network intensity causes a raise in firm performance (growth, ROE, productivity and labor growth).

As argued by Collins & Clark (2003), systems of human resource practices may lead to higher firm performance and assure sources of sustained competitive advantages. However, to address good labor force, a director of firm needs external and internal communication and think of that as a serious leverage to improve capacity building of employees. For technology firms, sensitive and complex information are particularly useful to motivate an entrepreneur to lower lab or costs during production. With view mentioned, the third hypothesis considered is.

Hypothesis 3: An increase in network range contributes in saving labor cost of SMEs.

In novativeide as in mind of SMEs are always considered to defend and win their competitors in the marketplace. Thereby, SME doesn't want its products being backward and high production cost. So it doesn't stop improving their actual technology to address quality standard with reasonable price, which a network must play a decisive role in the process (Matteo, et al., 2005). However, there is a big challenge to understand whether such a network of contacts could lead to the emergence of productivity. To find out this for SMEs in Vietnam, the fourth hypothesis is enrolled as below.

Hypothesis 4: The higher activity with network actors, the higher productivity of SMEs

Peformance Measure

Moorthy, et al. (2012) documented that the performance of the SME is affected by the use of marketing information as well as the application of information technology. This means that networks can create the value of the firm and contribute to achievements. Measuring firm performance is different from views of previous studies. However, based on what already criticized, four indicators are employed to measure firm performance: Firm growth, returns on equity (ROE), labor cost, and productivity. They play as dependent variables with a dichotomous score, 1 being high and 0 being low, which binary logistic model is used.

Firm growth: To find out impacts of networks on business growth, Donckels & Lambrecht (1995) used log-linear technique, and found an evident impact of network on firm growth, in which a growth of the firm is defined as the increasing in turnover over the last two years. Watson (2007) used firm growth as measure of the percentage increase in total income (sales plus other income) across the last two years. By doing this, Watson measured firm growth by defining the upper and lower quartiles, which the firm in the upper quartile is coded "1" as high firm growth and those in the lower quartile coded "0" as low firm growth. Premaratne (2001) defined firm performance by measuring performance in sales and performance in profitability. However, profit is seldom used in research considered with the performance, because researchers believe that profit is not important but due to concerns over response rates (Watson, 2007). As documented above, measuring firm growth in this paper is based on Donckels & Lambrecht (1995) and Watson (2007).

Return on equity (ROE): financial performance is partly measure of firm performance. To find out impacts of network on small business growth, Premaratne (2001) employed performance in profitability, employed as business growth of the firm. Watson (2007) argued that ROE is an indicator to evaluate firm growth. Accordingly, ROE is measured by summing the annual profit for the last two years, dividing by the total equity, then multiplying by 100 to report it as a percentage. As a result, this concept is used in this study to define ROEas measure of SME performance with the period of two years 2011-2012.

Labor cost: A labor force of the firm is an indication of size measure. Once the firm achieves during the birth stage of organization (Jones, 2013), it will further demand more labor toward market expansion. The larger size organization, the more labor recruited, the more facilities, are asked, which training programs to the internal labor force and the divisional structure are strictly required to be designed to meet reasonable costs and strengthen competitive advantages. To do this the firm must need outside stakeholders or/and external experts for advice and counsel. This cost can be high or low, being depended on the firm's networks. However, once networks are placed, it contributes to optimization of costs of transaction and government (Konsti-Laakso, et al., 2012). Impacts of network linkages on labor

cost are a new idea in this paper, because it isn't seemly done in previous studies. Whereby, the labor cost as measure of the percentage increase in total labor cost across the last two years, which the period of 2011-2012 is considered.

Productivity: To evaluate efficiency, the firm normally measures its output based on productivity, because that contributes to competitive advantages with low costs. According to Johansson & Loof (2015), productivity is a determinant of growth, it presents an important indicator related to changes in technology, which impact on the firm performance. Improving on firm productivity is caused by a path along with the firm's knowledge-creation efforts, in which knowledge is a main contribution from external networks by advice and consulting services or cooperation system shared. Productivity is defined as binary variable, in which its measure is based on the question to ask entrepreneurs, which levels of growth rate below 50% is coded "0" and 50% up is coded "1".

3. EXPERIMENTAL ANALYSIS

Sample and Data Collection

Sampling enterprises through the survey is conducted by Vietnam General Statistics Office (GSO). Although the survey is implemented in the country broadly, enterprises located in Ho Chi Minh City are extracted, as scope study. There are 636 entrepreneurs doing business at Ho Chi Minh City interviewed during 2013. However, there are 16 entrepreneurs found through examining the data, not registered their business with the local authority. Therefore, these enterprises were excluded, because they are not active business as official business. Additionally, formal networks of these unregistered SMEs aren't seriously recruited by banks, external accountants, industry associations. According to the questionnaire designed, total sales, total labor cost, and total equity of the enterprise of 2011 and 2012 are measured. This is an important contribution to define growth rate of sales, return of equity (ROE), labor cost of two continuous years.

Based on arguments of Watson (2007), formal networks in this paper are defined as the firm's communication with business associates, business consultants, banks, industry associations, external professional (accountant, lawyer). According to the questionnaire, entrepreneurs are asked to rate their communication with each member in their network based on four point scale, in which score of "0" is defined never access network linkages and "3" being access network linkages completely.

The score of formal networks is calculated by the mean value of scores rated at each formal network multiplied with the number of formal networks, that the firm accessed during the year. For instance, if the firm has networks with two external partners, *e.g.* business associates and banks, it is asked to rate each network linkage

with the four point scale. The calculation of the score of formal network in which is the value of rate on average multiplied with two network linkages.

Source of informal networks is defined to be family and friends(Watson, 2007), local community (women union, youth union, farmer association, veteran's organization), and local authority. Similarly, score calculation of informal networks is the same to the formal networks, also based on the mean value of scores rated at each informal network multiplied with a number of informal networks that the firm accessed during the year.

With details by questions enclosed in the questionnaire, network intensity of the firm is calculated by ratio between total advice and supports, and total number of transaction of the firm with networks. It means total advice and supports that the firm get from networks, they are divided by the total number of transactions. This calculation is different from Watson (2007), because it is based amount of advice and support per network. As such, network intensity is defined as an indication of the average intensity with which owners access networks to get advice and supports. In calculating an owner's network intensity score, only those networks accessed by the firm are included.

Networking score is measured by the average rate of a scale point from 0 to 3 (0 being never access network ties and 3 being access network linkages completely) multiplied with its total number of formal and informal networks. This measure is different from network range, because it doesn't measure frequency of advice and supports that any individual owner of the enterprise got.

Unlikely, network range presents the amount of disparate pools of knowledge based network ties (Kreiser, 2011).Watson (2007) measured network range based on the total potential number of networks, formal and informal. However, network range in this paper is defined more practice, because its measurement is based on frequency of advices, supports per year that the any individual owner of the enterprise got from all network linkages, not number of networks. Therefore, network range is a measure of communication or interaction frequency, as a measure of relational strength (Uzzi, 1999).

4. RESULTS

Table 1 is a summary of network access of SMEs at Ho Chi Minh City, Vietnam during 2011-2012. Accordingly, the network of business consultants is rated by a high score of 59%. It means SMEs very much consider advice and supports from this member. This result is different from Watson (2007), because Watson found that 72% of Australian SMEs never accessed business consultants during 1995-1996. This difference can be explained by competition of 20 years ago wasn't fierce, also changes in technology was unlikely from now. In addition, Ho Chi Minh City is a

central business place of the country, seeking advice and supports from business consultant of SMEs is obviously.

Although the bank network is defined as an important linkage that every firm must address to get a loan for business, 62.26% of SMEs at Ho Chi Minh City during 2011-2012 never accessed this network. This can be explained those firms are a strong enough capital, or they don't want to ask loan during the period of the global recession. In general, business consultants, business associates and industry associations of formal networks are highly evaluated by SMEs to get information, advices, and counsels.

Unlike Watson (2007), family and friends plays an important source for SMEs to get information. This is not completely surprised, because Vietnamese culture is friendship and helpful each other once people become a good friends, and thinking the family is the best and the strongest mainstay. This result is consistent with Birley (1985), who found that entrepreneurs heavily rely on informal networks rather than formal networks.

In addition, as resulted in table, role of local community and authority is a slight contribution to SMES approaching supports, in which local authority of district and local community of hamlet are prominent, because of positive changes in entrepreneurship program of local authorities for current years.

Table 1
Score of formal and informal networks

Network	Scale				Total
	0 (%)	1 (%)	2(%)	3(%)	
Formal network					
Business associates	12.9	16.13	30.81	40.16	100
Business consultants	4.35	7.26	29.19	59.20	100
Banks	62.26	21.61	11.29	4.84	100
Industry associations	36.94	35.80	18.87	8.39	100
External professional (accountant, lawyer)	43.71	16.61	19.84	19.84	100
Informal networks					
Family and friends	17.74	55.81	19.35	7.10	100
Local communities	56.45	38.71	2.58	2.26	100
Local authority	51.12	43.55	3.39	1.94	100

Source: GSO

Note: 0 being never access networks, and 3 being access networks completely.

As depicted in table 2, firm age with range 10-20 years old and range of 5-10 years old account for 70% of total sample. However, there is no difference in low and high quartile for firm growth, ROE, labor cost, and productivity. ButSMEs with

age range of larger than 20 and 60 years old have a significant difference at 1% level between high and low performance of ROE, and significant at 10% level between high and low productivity.

Employee groups developed in the sample are based indication of the survey of GSO, which the enterprise with the size of 5-10 employees and 10-49 employees are significantly higher proportion than others, particularly for employee groups by high and low quartile of ROE. There also appears to be significant differences between various groups belong to labor cost growth and productivity. Most of enterprises with different sectors, *e.g.* manufacture of food products, manufacture of textile and leather products, manufacture of wood and paper products, manufacture of rubber and plastics products, manufacture of fabricated mental and electrical products, and manufacture of mechanical products are not found significant differences appeared in various groups.

However, appearing family enterprise, limited company, and joint stock Company with capital of State is significant differences between low and high quartile of ROE. Family enterprises, private enterprises, and limited companies are also significant differences in low and high quartile of the enterprise's productivity.

Table 2
Firm performance with demographic variables

Demographic indication	Growth		ROE		Labor cost growth		Productivity	
	Low	High	Low	High	Low	High	Low	High
Firm age								
>1 - 5 years old	12.9	14.52	12.62	14.79	12.89	14.41	14.95	11.78
>5 - 10 years old	38.39	33.87	34.63	37.62	37.63	34.83	34.88	38.38
>10 - 20 years old	39.03	38.71	39.81	37.94	38.68	39.04	35.88	41.42
>20 - 60 years old	9.68	12.9	12.94	9.65[a]	10.80	11.72	14.29	8.42[c]
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Employee group								
< 5 employees	25.48	22.26	32.36	15.43[a]	19.51	27.63[b]	25.91	19.19[b]
5 - 9 employees	31.94	35.16	41.42	25.72[a]	39.02	28.83[b]	35.22	33.00
10 - 49 employees	34.51	33.23	22.33	45.34[a]	34.15	33.63	32.56	36.36
50 - 199 employees	7.10	8.70	3.56	12.22[b]	5.92	9.61	5.65	10.44
>= 200 employees	0.97	0.65	0.33	1.29[c]	1.40	0.30	0.66	1.01[a]
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Industry								
Manufacture of food products	22.33	20.9	25	20.9	21.95	23.8	27.24	18.92[b]
Manufacture of textile and leather products	19.09	18.65	17.53	18.65	17.07	18.98	16.61	20.95

Demographic indication	Growth		ROE		Labor cost growth		Productivity	
	Low	High	Low	High	Low	High	Low	High
Manufacture of wood and paper products	13.27	15.43	11.04	15.43	12.54	13.86	11.96	14.19
Manufacture of rubber and plastics products	16.5	13.18	17.53	13.18	14.29	16.27	17.61	13.18
Manufacture of fabricated mental and electrical products	22.33	26.37	22.73	26.37	27.53	21.97	22.26	28.04
Manufacture of mechanical products	6.48	5.47	6.17	5.47	6.62	5.12	4.32	4.72
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Firm style								
Family enterprise	47.1	42.58	59.87	29.9	47.04	42.94	52.16	37.04[a]
Private enterprise	10.65	13.55	12.3	11.9	11.85	12.31	9.63	15.49[b]
Limited Company	39.03	38.39	25.24	52.09	37.98	39.34	34.22	42.76[b]
Joint Stock Company with capital of State	3.22	5.48	2.59	6.11	3.14	5.41	3.99	4.71
Total	100.00	100.00	100.00	100.00	100.01	100.00	100.00	100.00

Source: GSO

Note: (a) significant at 1%, (b) significant at 5%, (c) significant at 10%.

As defined previously, four indicators, firm growth, ROE, labor cost, productivity of SMEs are measure of firm performance, and employed in binary logit model. Each indicator as a dependent variable has independent variables, which three models (*e.g.* model 1, model 2, and model 3) of each indicator are defined. As resulted in table 3, model 1 of four performance indicators only consists of demographic variables, while model 2, it includes demographic variables, network score, and network range and network intensity. Model 3 of four performance indicators are demographic variables and formal network, informal network, network range and network intensity.

As resulted in table 3, model 1 has demographic variables as independent variables, in which ROE is a significant difference in various groups of employee. Thereby, the more scale of employee working at the SME, the higher ROE of its. In addition, business sectors of SME also depict a significant association with ROE. SMEs with labor less than five person occur a high labor cost, due to the coefficient of less than 5 employees is significant at 5% level.

Continuously, model 2 for the first indicator of firm growth, all coefficients are not significant at any level, except to network score. Because the coefficient of network score is positive and significant at 10% level. This means than an increase in networking score causes a raise in firm growth. Although this result is consistent

with Watson (2007), however the impact level of network score found by Watson (2007) is greater than that of this finding. In terms of impacts of networking score on firm growth of model 3, formal network is a main reason. It isn't enough obvious to infer a significant impact of informal networks on firm growth. As a result, the impact of networking score on firm performance is mainly explained by formal networks, as a prominent contribution to firm performance. This can be debated that strong linkage are likely to be more important in the information dissemination than weak linkages, which is oppositely with the finding of Granovetter (1983).Likely firm growth, ROE is also depended on formal networks, this results that there is a significantly positive impact of formal networks on ROE. In addition, the coefficient of network range in both model 2 and model 3 of ROE is positive and significant, so an increase in network range cause a raise in ROE. While Watson (2007) found not significant association between network range and ROE. As a result, the finding adds a strong support the first hypothesis, the stronger network linkages, the more impacts on firm performance, particularly for firm growth.

Checking significance of network intensity, the result shows network intensity is an important contribution to firm growth, due to its significant level, but not for other three indicators. This result is obvious confirmation of the second hypothesis to be supported, an increase in network intensity causes a raise in firm performance.

Interestingly, model 3 with labor cost rate as the dependent variable, it draws a significant association between labor cost and network range. However, this relationship is negative, it means the more network range of the firm considered, the lower labor cost growth. This result is corresponding with actual situation of Vietnam, because Vietnamese culture for transaction is heavily distributed by traditional and long acquaintance. This finding is a strong support to the third hypothesis, an increase in network range contributes in saving labor cost of SMEs.

With productivity is employed as a dependent variable, model 2 presents an interesting result, which there is a significantly positive association between firm productivity and networking score. Because model 3 of which confirms an evident relationship between firm productivity and informal networks, the conclusion is that weak linkages play more important role than strong linkages to increase firm productivity, corresponding with Birley (1985). This finding is evidence to accept the fourth hypothesis, the higher activity with network actors, and the higher productivity of SMEs. However, actors in this term is belong to informal networks. This finding isn't a big surprising, because family and friends, local community (women union, youth union, farmer association, veteran's organization), and local authority can be a reliable information source that SMEs are seriously shared with secret advice and support with respect to technology improvement.

Table 3
Log it model with growth and ROE as dependent variables

Variables	Growth						ROE					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	B	$P > z$	B	$P > z$	B	$P > z$	B	$P > z$	B	$P > z$	B	$P > z$
>1 - 5 years old	0.044	0.930	0.008	0.988	0.012	0.981	−0.095	0.855	−0.064	0.903	−0.070	0.893
>5 - 10 years old	0.083	0.861	0.036	0.939	0.001	0.999	−0.380	0.438	−0.372	0.452	−0.437	0.376
>10 - 20 years old	0.035	0.940	−0.019	0.968	−0.039	0.934	−0.631	0.189	−0.582	0.230	−0.625	0.196
>20 - 60 years old	0.567	0.288	0.517	0.335	0.469	0.388	−0.904	0.119	−0.853	0.144	−0.921	0.115
< 5 employees	−0.110	0.795	−0.093	0.826	0.021	0.960	−0.074	0.870	0.059	0.899	0.064	0.891
5 - 9 employees	−0.190	0.646	−0.202	0.627	−0.125	0.765	0.054	0.903	0.209	0.645	0.188	0.678
10 - 49 employees	−0.040	0.922	−0.059	0.886	0.010	0.980	0.932	0.030	1.060	0.017	1.029	0.020
50 - 199 employees	0.376	0.501	0.312	0.579	0.379	0.505	1.074	0.069	1.131	0.060	1.035	0.084
>= 200 employees	0.116	0.836	0.039	0.945	0.039	0.945	1.852	0.004	1.920	0.004	1.855	0.005
Manufacture of food products	0.724	0.305	0.675	0.341	0.582	0.412	1.721	0.042	1.852	0.030	1.774	0.040
Manufacture of textiles and leather	0.741	0.297	0.712	0.317	0.645	0.366	1.548	0.068	1.733	0.043	1.712	0.049
Manufacture of wood and paper products	0.698	0.332	0.653	0.365	0.565	0.434	1.763	0.040	1.942	0.026	1.914	0.030
Manufacture of rubber and plastics products	0.529	0.460	0.515	0.474	0.463	0.519	1.247	0.145	1.459	0.093	1.408	0.109
Manufacture of fabricated metal and electrical equipment	0.786	0.263	0.730	0.300	0.628	0.373	1.750	0.038	1.934	0.023	1.910	0.027
Manufacture of basic metals	0.619	0.441	0.564	0.483	0.452	0.577	1.835	0.050	2.008	0.035	1.951	0.042
Family enterprise	−0.469	0.443	−0.509	0.407	−0.619	0.316	−0.151	0.819	−0.207	0.753	−0.237	0.720
Private enterprise	−0.199	0.752	−0.215	0.735	−0.303	0.634	0.344	0.611	0.207	0.760	0.200	0.769
Limited Company	−0.297	0.616	−0.360	0.546	−0.434	0.467	0.662	0.301	0.583	0.363	0.540	0.402

Variables	Growth						ROE					
	Model 1		*Model 2*		*Model 3*		*Model 1*		*Model 2*		*Model 3*	
	B	P > z	B	P > z	B	P > z	B	P > z	B	P > z	B	P > z
Joint Stock with state capital	0.286	0.727	0.263	0.750	0.150	0.856	0.968	0.282	0.810	0.369	0.902	0.320
Networking score			0.022	0.066					−0.009	0.499		
Network range			0.000	0.652	0.054	0.177			0.001	0.025	0.001	0.035
Network intensity			−0.011	0.571	0.309	0.010			−0.023	0.287	−0.022	0.311
Constant	−0.831	0.406	−0.894	0.375	−1.762	0.094	−0.831	0.406	−2.376	0.044	−2.570	0.032
Formal network					0.020	0.042					0.019	0.072
Informal network					0.054	0.177					−0.044	0.321
Nagelkerke R square	0.113		0.119		0.134		0.120		0.129		0.233	

Table 3
Log it models with labor cost and productivity as dependent variables (cont.)

Variables	Growth						ROE					
	Model 1		*Model 2*		*Model 3*		*Model 1*		*Model 2*		*Model 3*	
	B	P > z	B	P > z	B	P > z	B	P > z	B	P > z	B	P > z
>1 - 5 years old	0.889	0.138	0.858	0.152	0.937	0.118	0.421	0.424	0.387	0.466	0.453	0.395
>5 - 10 years old	0.426	0.460	0.425	0.460	0.458	0.427	0.666	0.180	0.627	0.211	0.664	0.186
>10 - 20 years old	0.651	0.247	0.620	0.269	0.684	0.223	0.687	0.158	0.640	0.192	0.667	0.175
>20 - 60 years old	0.913	0.148	0.895	0.156	0.955	0.131	0.175	0.756	0.129	0.820	0.172	0.763
< 5 employees	1.070	0.044	0.959	0.072	1.016	0.057	−0.419	0.327	−0.394	0.360	−0.393	0.361
5 - 9 employees	0.382	0.471	0.279	0.601	0.350	0.510	−0.214	0.607	−0.221	0.598	−0.189	0.652
10 - 49 employees	0.525	0.318	0.444	0.400	0.512	0.331	−0.267	0.515	−0.279	0.500	−0.223	0.590

Variables	Growth						ROE					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	B	P > z	B	P > z	B	P > z	B	P > z	B	P > z	B	P > z
50 - 199 employees	1.347	0.039	1.387	0.035	1.324	0.044	-0.306	0.592	-0.386	0.504	-0.346	0.548
>= 200 employees	0.534	0.437	0.577	0.409	0.640	0.354	0.679	0.261	0.611	0.321	0.713	0.246
Manufacture of food products	0.152	0.833	0.152	0.833	0.118	0.871	-0.366	0.713	-0.434	0.665	-0.420	0.673
Manufacture of textiles and leather	0.581	0.419	0.521	0.472	0.553	0.443	0.094	0.926	0.065	0.949	0.072	0.942
Manufacture of wood and paper products	0.475	0.515	0.440	0.550	0.457	0.533	-0.125	0.901	-0.184	0.856	-0.160	0.873
Manufacture of rubber and plastics products	0.321	0.659	0.221	0.763	0.270	0.711	-0.499	0.619	-0.510	0.613	-0.479	0.632
Manufacture of fabricated metal and electrical equipment	0.314	0.660	0.285	0.692	0.327	0.648	0.115	0.909	0.046	0.963	0.078	0.937
Manufacture of basic metals	-0.065	0.939	-0.049	0.955	-0.058	0.946	-0.060	0.956	-0.149	0.891	-0.137	0.899
Family enterprise	-0.651	0.301	-0.562	0.375	-0.553	0.383	-0.200	0.752	-0.260	0.682	-0.273	0.666
Private enterprise	-0.252	0.697	-0.143	0.827	-0.154	0.814	0.496	0.446	0.477	0.467	0.448	0.492
Limited Company	-0.739	0.222	-0.607	0.321	-0.659	0.281	0.123	0.842	0.029	0.963	0.040	0.948
Joint Stock with state capital	0.023	0.978	0.202	0.813	0.238	0.782	0.593	0.490	0.554	0.521	0.554	0.521
Networking score			-0.012	0.381					0.028	0.019		
Network range			-0.001	0.129	-0.236	0.053			0.000	0.673	0.000	0.692
Network intensity			0.035	0.108	0.804	0.273			-0.022	0.251	-0.026	0.170
Constant	-1.915	0.083	-1.759	0.113	-1.618	0.168	-0.258	0.824	-0.339	0.773	-0.533	0.692
Formal network					-0.010	0.526					0.017	0.100
Informal network					-0.032	0.485					0.083	0.046
Nagelkerke R square	0.136		0.145		0.144		0.140		0.150		0.153	

5. DISCUSSION

As argued by Littunen (2000), entrepreneurial networks are categorized as either formal or informal networks. Entrepreneurs at the start-up business pay more attention to networks, because once networks are set up, it create competitive advantage, innovation and efficiency. However, it is a pity, because this study didn't find evidence of contribution of network linkages to firm performance by age of SMEs. Evidence of difference in ROE between various groups of business sector is existed

Uzzi (1999) documented that a linkage among actors from formal and informal networks in many ways provide a means by which resources from one relationship can be engaged for another. But, the performance of SMEs at Ho Chi Minh City is mainly distributed by formal network.

What are found in this paper, significant impacts of network connections on firm performance are interesting findings, and it is not popularized in previous researches, especially for Vietnamese SMEs. More interestingly, productivity and labor cost of SMEs are improved once it get more networking scores, and increase the amount of disparate pools of knowledge by the increasing of frequency of communication and counsel.

A new point of this finding is to find a significant impact of networking score on firm productivity, in which informal network cause a main effect. This is also confirmed by Matteo et al. (2005). Improving the firm productivity is contributed by learning other firm's technological and organizational solutions. Because how fast and how efficiently information based on network linkages can permeate the firm innovation, that positively affect firm productivity. However, SMEs have high expectation to network ties with family and friends, local community (women union, youth union, farmer association, veteran's organization) and local authority. Because, the role of women union, youth union, farmer association, veteran's organization for current years are uphold effectively, these stakeholders are highly evaluated during poverty reduction programs of the government.

6. CONCLUSION AND DISCUSSION

With employing the statistical model of binary logistic regression to database sourced from GSO, the sufficient sample of 620 SMEs at Ho Chi Minh City in Vietnam is investigated to find out their performance affected by networking score, network range, and network intensity. As mentioned in empirical results, this study found strong evidence to accept the four hypotheses: (i) the stronger network linkages, the more impacts on firm performance; (ii) An increase in network intensity causes a raise in firm performance, in which grow firm is confirmed; (iii) An increase in network range contributes in saving labor cost of SMEs; (iv) The higher activity

with network actors, the higher productivity of SMEs, in which the role of actors, such family and friends, local community, and local authority are prominent.

Comparing with previous studies, *e.g.* Watson (2007), Granovetter (1983), this paper brings an interesting finding and great contributions to literature review. The growth of labor cost of SMEs are influenced by network range. Once the firm has more frequency of advice and supports from its own network connection, labor cost is saved. Another interesting one is that productivity of SMEs is a significant association with its networking score. However, the role of family and friends, local community (*e.g.* women union, youth union, farmer association, veteran's organization) and local authority are much more important. In addition, this study also confirm that the larger employee size of SMEs causes a higher ROE, especially for SMEs with range of larger 10 employees. This can be concluded small firms have contacts with their surroundings, but these contacts aren't enough strong for their operation to improve ROE. Besides, SMEs with fewer employees (less than five) cause higher labor cost. The empirical results showed a clear connection between business sectors and ROE of SMEs.

Implication

Findings of the paper related to network linkages impacting on firm performance are a great message to policy decision makers. The role of local community should be taken into account of supports and advice, while SMEs must utilize what they got from network communication to improve productivity. In parallel, formal programs of the government to SMEs through formal networks, *e.g.* business associates, business consultants, industry associations, external professional are necessary to improve firm growth, ROE, and labor cost. Once network linkages of SMEs are utilized, the firm has more chances to approach practical knowledge, such as skill and know-how of entrepreneurs, and to explore frequency of advice and supports. Because a key characteristic of entrepreneurial networks is the spatial dimension (Johannisson, 1998), SMEs need searching networks with respect to the economic features of firms.

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