

**Credit Access, Networks, Institutions and Performance
of Small and Medium-Sized Enterprises:
Insights from Vietnam**

Dissertation

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Chapter 1

Introduction and Summary

1.1. Background

Small and Medium-Sized Enterprises (SME) play a significant role in the development of the world economy in general, and developing countries in particular. Existing studies show that SMEs; create new jobs (Chandler, 2012; Hu & Schive, 1998; Neumark, Wall, & Zhang, 2011; Wit & Kok, 2014), contribute to poverty reduction (Beck, Demirguc-Kunt, & Levine, 2005), and improvement of technologies and innovations (Hemert, Nijkamp, & Masurel, 2013; Lee, Park, Yoon, & Park, 2010). In Vietnam, SMEs comprise 98% of existing enterprises, contribute 40% to the GDP and 30% to the State budget, and generate half of all jobs (APEC, 2017). There are about 500,000 SMEs in Vietnam and number is projected to grow significantly according to reports from The General Statistics Office of Vietnam - GSO (2016). This is at the backdrop of a Government programme to enhance SME startups and growth since 2016, referred to as “entrepreneurial ecosystem” development by improving production technologies and their management. Against this background, it is important to analyze SME environment in Vietnam and the critical drivers of SME performance in particular.

The evolution of SMEs in Vietnam dates back to the late 19th Century in the then Southern Vietnam which was a French colonial (1884-1945). SMEs’ growth was more pronounced between 1954-1975, but mainly in Southern Vietnam since private firms did not exist in the North where the economy was centrally planned. However, reunification of North and South Vietnam in 1975 led to adoption of the Northern system and immediate nationalization of all private enterprises. The situation lasted until the “Doi Moi” economic reforms of 1986 that formulated policies to nurture inception and growth of private firms and was further facilitated by the enactment of the first business law in 1990. However, the growth of SMEs was curtailed by the bureaucratic regulatory processes of registration thereby leading to changes in 1999 that improved the business environment by creating a single-point registration process which could be concluded in 15 days.

Growth of SMEs in Vietnam has been remarkable since implementation of the 1999 reforms. According to GSO (2004), 121,000 SMEs had been established between year 2000-2004, with an upward trend observed over the years. Recent statistics by GSO (2016) show that the number increased from 300,000 in 2010 to 500,000 by 2016 and contributing 40% to the Gross Domestic Product (GDP). This has wider implications on economic growth, employment and poverty reduction in Vietnam (Harvie, 2004; Bruce, Deskins, Hill, & Rork, 2009; Fatoki, 2014). The SMEs also promote development and generation of innovations (Li

and Daly, 2005). Hence, positive performance of such enterprises contribute significantly to long-term development of countries.

There is a growing body of literature on performance of SMEs in developing countries, capture using different metrics. For example, in terms of; financial outcomes (Chadha & Sharma, 2016), sales growth or market growth (Swierczek & Ha, 2003), customer satisfaction (Hirons, Simon, & Simon, 1998; Williams & Naumann, 2011), employee growth, and return on assets (ROA) (Wolff & Pett, 2006), enterprise restructuring, the microeconomic reform, and the long-term macroeconomic development (Bevan, 1999; Hudson, Smart, & Bourne, 2001; Otter, Engler, & Theuvsen, 2014; Swierczek & Ha, 2003; Wolff & Pett, 2006) and by the level of satisfaction on the part of the founders (Vivarelli & Audretsch, 1998). Performance is influenced by many factors in the micro and macro environment such as; years in operation - age (Le & Harvie, 2010), firm size (Le & Harvie, 2010), networks (BarNir & Smith, 2002; Hoang & Antoncic, 2003; Huggins, 2001; Lechner, Dowling, & Welpel, 2006; Watson, 2007; Watson, 2011), and firm ownership (Le & Harvie, 2010) among others.

Despite the remarkable growth in SMEs in the 30 years of economic reforms in Vietnam, empirical studies on the performance of the SMEs and the drivers to SME growth remains scarce. Existing studies largely analyze the firm-specific drivers of growth (Li, Meng, Wang, & Zhou, 2008; Wu & Chen, 2012). Hence, little is known about how regulatory and institutional frameworks impact on SMEs' growth in many developing countries and in Vietnam in particular. Such analysis would be critical to examine the ways to improve the regulatory and institutional frameworks under which SMEs operate in Vietnam, where SMEs face myriad of challenges ranging from limited access to credit to weak institutions. This dissertation addresses these gaps by focusing on the linkages between three topics: access to credit, the influence of networks and institutions on performance of SMEs in Vietnam.

The study findings are elucidated in the following essays of this dissertation, beginning with chapter two through chapter four.

1.2. Access to Credit, Networking and Institutional Factors Affecting Firm Performance

Access to credit

Capital plays a crucial role in the development of a firm and lack of it is one of the major causes of poor performance of SMEs in developing countries (Fatoki, 2014). There are two main public sources of capital for firms, namely stock markets and debts. SMEs face difficulties in accessing the stock market capital (Beck, Demirgüç-Kunt, & Maksimovic, 2005), therefore bank credit is their main source of capital (Nguyen, Le, & Freeman, 2006;

The United Nations, 2001; World Bank, 2015). However, access to credit is curtailed by market imperfections that result in high transaction costs (i.e. search costs for banks) and information asymmetries (Beck, 2007). Consequently, cost of credit is significantly higher in developing countries - high interest rates and collateral value requirements (UN, 2001). This partly explains the poor performance of SMEs in many developing and transition countries. The problem is further exacerbated by the fact that new SMEs lack broader networks with banks, credit and business history that could facilitate investor confidence to inject the much needed credit for expansion. The risk management costs of the banks in advancing credit to SMEs also increase in such circumstances (Malhotra et al., 2007).

Firms' access to credit is influenced by several factors such as; business networks (i.e. with banks and other partners), management competence, sector of operation and scale of operation (size) among others. Networking in business plays a pivotal role in facilitating access to inputs and output markets in general (Hoang & Antoncic, 2003; O'Donnell, 2014; Watson, 2011). In terms of credit access, each type of network has a different role and effect on the probability of receiving (or demanding) credit. In Vietnam, a good network with suppliers has a negative effect on access to credit by firms whereas a good network with customers has a positive effect on access to credit (Le & Nguyen, 2009). This is because good relationship with suppliers enables firm get supplies on credit, resulting in a lower demand for bank loans while good relationship with customers, leading to increased sales and their demand for credit. Management competencies of firm owners refer to their knowledge, skills, and behaviour. Better educated owners have bigger chances of accessing credit (Fatoki & Asah, 2011; Fatoki & Odeyemi, 2010) and this is closely linked with ability to develop good business plans (Beck & Demirguc-Kunt, 2006; Burkart & Ellingsen, 2004; Kira & He, 2012).

Networking and firm performance

The establishment of business networks is an important initiative in firms' development (Joel A. C. Baum, Tony Calabrese, & Brian S. Silverman, 2000; Lechner et al., 2006). In recent years, studies on businesses have focused more on networks, especially the role of network in the effectiveness of firm activities in terms of getting supplies at lower prices, credit at lower interest rates, selling more products. Beck et al. (2005) find that big enterprises and State-owned firms are more likely to access bank credit than SMEs. Watson (2007) also find that firms with a larger network have better performance (survival, growth in total income, return on equity). Moreover, SMEs are considered as 'riskier' partners for banks (Le & Nguyen,

2009). Hence, developing good business networks could significantly influence growth and performance of SMEs.

There are two types of networks, the formal and informal networks (Sue Birley, 1985; Watson, 2011). A formal network is that with the bank, with the local government as well as other businesses. The informal ones are the network with relatives or friends. From early 1990s, researchers started examining the role of social networks (i.e. networks with acquaintances, friends, and relatives) in growth of firms (BarNir & Smith, 2002; Marsden, 1990). Apart from the aforementioned benefits of networking, networks also facilitate access to information regarding business support programs from local authorities, access to new technologies and innovations to increase firm performance.

Networks can be measured by; the network size, time taken to build the networks (Danis, Chiaburu, & Lyles, 2010) and the diversity (type) of networks (Carson, Gilmore, & Rocks, 2004). Lechner et al. (2006) find that the size of a network is less important than type of network, therefore firms should identify which types of networks is the most relevant to their strategies. In conclusion, building a good network can improve firm performance therefore firms should invest more to enlarge their networks as well as improve the quality of relationship (e.g., frequency of information exchanged and the quality of exchanged information).

Institutional factors and firm performance

Institutional environment in which SMEs operate could also significantly influence performance in developing countries (Hoskisson, Eden, Lau, & Wright, 2000; Murrell, 2003; Wright, Filatotchev, Hoskisson, & Peng, 2005). North (1989) defines institutions as the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. Institutions can be classified as formal or informal (Pejovich, 1999). In less developed countries, the citizenry's awareness of formal laws is limited and formal institutions are rather weak. The citizens largely adhere to traditional social norms and local customs that often vary across regions even within a country. These customs are sometimes not regulated or embedded in the law but could affect enforcement of laws (e.g. by law enforcement) and people's adherence to laws. Hence, institutions affect significantly firms' activities, structures and performance in general (Li & Sun, 2017; Nguyen, Le, & Bryant, 2013). In Vietnam, sub-national institutions influence firms' exporting strategies (Nguyen et al. 2013) and also ability to attract foreign investment capital (Meyer and Nguyen 2005).

In this dissertation, institutional factors are captured using the Provincial Competitiveness Index (PCI), calculated based on annual survey findings on quality public service provision across the provinces. The index helps to assess the business environment and quality of public services offered by local authorities and is applicable to all firms in the same region.

Both formal and informal institutions have significantly changed over time in many countries at various stages of development, including Vietnam. SMEs often have limited adaptability to the changes in business laws due to lack of information and their adaptability is often slower than the institutional change (Hoskisson et al., 2000; Murrell, 2003). Murrell (2003) find that the political changes (i.e. from a centrally planned economy to the oriented-market economy) affect firms' inner structure and management styles. The Vietnamese Government has implemented various policy (law) reforms and innovation programs to support growth of SMEs since 1986. Despite this, formal institutions remain weak and unstable since laws are semi-autonomously enforced by the authorities in different regions and provinces (Tran, Grafton, & Kompas, 2009). Hence, effects of certain regulations on SMEs' performance may be region or province-specific.

Various panel data models are specified and estimated to analyze performance of SMEs and the critical factors affecting SME growth and access to credit as elucidated in the three essays of this dissertation.

1.3. Summary of Chapter Two to Four

The second chapter of this dissertation presents the first essay that examines the factors affecting access to credit by SMEs that were established within the last 42 months prior to the study in the Phu Tho province, located in Northern Vietnam. Data were collected from the sample of 259 SMEs in face-to-face interviews using semi-structured questionnaires. Both quantitative and qualitative approaches were used in the analysis. Probit model was first employed to examine the factors influencing the likelihood of accessing credit before analysing the factors influencing the intensity of credit acquired (amount of credit/total capital) using Tobit model. In addition, focus group discussions (FGD) were held with 10 firm owners and bank officials of 5 commercial banks in the Phu Tho province to gain a better understanding of the business environment of SMEs and issues of credit access by SMEs.

The probit regression results show that business plan, and networks increased the likelihood to obtain bank credit. Further, business plan, emotional trust, and knowledge trust were the main factors that influenced bank loan ratio (total credits over total capital). From the FGD

findings, SMEs' credit applications were rejected for the following reasons: (i) the low level of collateral; (ii) banks do not trust new SMEs; (iii) the poor networking due to the lack of information between firms and banks; (iv) the lack of support from bank officials to help new SMEs with their application documents. Other reasons included (i) inefficient production or business plan; (ii) the lack of insurance for the collaterals or assets; and (iii) lack of audited financial reports.

Based on the findings, we recommend that the government should create more supportive programs such as credit guarantee programs, low interest rate policies, as well as training course to improve firm owners' competencies to improve SMEs' access to credit.

The third chapter presents the second essay and explores the effects of different types of networks on SME performance in Vietnam using panel dataset from 5-rounds of survey of 2,500 firms in 10 provinces and cities in Vietnam from 2007 to 2015. The overall sample comprises 13,000 observations. Since different types of networks have different effects on SME performance (Le & Nguyen, 2009), the effects of the network types were tested by estimating separate models for each type of network (network with business people in the same sector; network with business people in a different sector; network with bank officials; network with politicians and civil servants) on firm performance. Performance was measured in terms of; net income, gross margin, growth of revenue, growth of employee, return on assets (ROA), and return on equity (ROE).

The results show that network within business sectors (captured as dummy) had mixed effects on firm performance - a positive effect on growth rate of employees but a negative effect on net income whereas networks with business people in the different sectors positively influenced net income, ROA and ROE. In addition, having at least one network with a bank helps increase the probability of revenue growth. A good network with a bank increases the probability of accessing bank credit that could significantly increase SMEs size and activities. These findings are in line with previous studies (Blackwell & Winter, 1997; Le, 2013; Le, Venkatesh, & Nguyen, 2006). Having at least one network with a local authority (person working with local government) increased net income, growth rate of revenue and number of employees. The results are similar to those of previous studies by Li et al. (2008) and Wu and Chen (2012). However, having at least one relationship within sector-network, bank and local authorities have a negative effect on gross margin (ratio of gross profits to total revenue).

In conclusion, each type of network has different effects on firm performance. We recommend that firms need to invest more in building networks for better performance. In addition, at least one network within the same sector and with banks would be beneficial.

Chapter four entails the third essay on the effect of institutions on firm performance in each province. The effects are analysed using a balanced panel dataset from the Danish international development agency (DANIDA) project conducted in 10 provinces and cities from the North to the South of Vietnam. The sample consists of 1,173 SMEs, which fully participated in 5 rounds from 2007 to 2015, totalling to 5,865 observations.

Vietnam is implementing administrative reforms to improve the business environment for private firms. Therefore, understanding the relationship between quality of public services (institutional performance) and firm performance is critical. We find that sub-indices of PCI influenced firm performance. Specifically, each sub-index had different effects on firm performance. In addition, firm performance was also influenced by entry costs and other factors related to firm and firm owners' characteristics. Low entry costs had negative effects on ROA, ROE and gross margins of the already established firms. This is plausible because it leads to increased number of firms and thus level of competitiveness which reduces performance in the short-run. Findings also show that competence of political leaders influenced firm performance by improving quality of public services. Labour training programs positively influenced firm performance as well.

Based on these findings, the local government should be more dynamic, reduce entry costs for business startups to promote SME growth and eventually economic growth in the long-run through higher GDP, employment and improved social security. This could be enhanced by levelling the playing field for both State-owned and private firms to thrive by improving public service.

1.4. Organization of the Dissertation

The rest of the dissertation is organized as follows:

Chapter 2 presents the first essay named "*Determinants of New Small and Medium-Sized Enterprises' Access to Bank Credit: Case Study in the Phu Tho Province, Vietnam*".

Chapter 3 presents the second essay named "*Networks and Firms Performance: A Case Study of Vietnamese Small and Medium-Sized Enterprises*".

Chapter 4 presents the third essay named "*How do Institutional Factors affect Firm Performance? Evidence from Vietnamese Small and Medium-Sized Enterprises*".

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Chapter 2

**Determinants of New Small and Medium-Sized
Enterprises Access to Bank Credit:
Case Study in the Phu Tho Province, Vietnam**

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Abstract

Small and medium-sized enterprises (SMEs) play a very important role in the Vietnamese economy. Specifically, new SMEs are seen as a suitable solution to cope with development issues such as poverty and a high unemployment rate. In Vietnam, a high SME failure rate is due to lack of capital and poor managerial experience of owners. Most existing research on SMEs focuses on well-established stages, and less attention is paid to new SMEs. This paper investigates the determinants of credit access by SMEs existing for less than forty-two months in the Phu Tho province located in Northern Vietnam. The quantitative data were collected from 259 SMEs in 2015. The regression analysis reveals that a business plan, the firm size, and networking (emotional trust, knowledge trust, and approachability) are the main drivers of access to bank loans by new SMEs. About 64% (165 observations) of new SMEs in our sample did not get any bank loan caused by high collateral requirements, unfavorable interest rate, poor business plans, limited networking, and lack of the government support. The results also indicate that, among the selected explanatory variables, having a concrete business plan significantly affects the bank loan ratio (total bank loans over total capital). Based on these results, we derived political implications.

Keywords: New SMEs, Bank Loan, Business Plan, Networking, Vietnam.

JEL Classification: M13, F65, G20

2.1. Introduction

Small and medium-sized enterprises (SMEs) play a vital role in economic growth worldwide. They substantially contribute to economic growth by creating jobs (Chandler, 2012; Hu & Schive, 1998; Neumark et al., 2011; Wit & Kok, 2014), reducing poverty (Beck, Demirguc-Kunt et al., 2005), and bringing about innovations (Hemert et al., 2013; Lee et al., 2010). While large businesses are necessary to preserve and maintain structure within economies, SMEs are often considered as main drivers of economic development (Ayodeji & Balcioglu, 2010). They account for approximately 95% of total enterprises in the OECD area (OECD, 2004), involving many business activities in both domestic and international markets. A World Bank report (2015) states that over 50% of SMEs worldwide are in short of capital what is considered as a main constraint to their growth. The situation is even worse in many developing countries because of high collateral requirements (Beck, Demirgüç-Kunt et al., 2005; Malhotra et al., 2007; Vo, T.C. Tran, V. D. Bui, & D. C. Trinh, 2011), lack of managerial skills and ineffective institutional structures (Beck, Demirgüç-Kunt et al., 2005), limited networking, unfavourable business environment (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2006), limited access to right certificated land, and high administration costs. Improving access to finance or bank credit could be a key to overcome these obstacles. As a result, governments have implemented several targeted policies to support enterprises, for instance, subsidised credit, reducing tax burdens and providing start-up grants.

Vietnam had succeeded in shifting the planned economy to a market-oriented economy since 1986. The economy (with a population of nearly 92 million) has continued growing at 6% annually in the last five years. Because of its positive development, Vietnam is an interesting case study for research on SMEs (World Bank, 2015). According to the General Statistics Office (GSO) of Vietnam (2014), the country had 324,691 enterprises, 258,656 (80%) of which were micro enterprises, 14% were small, and only 4% were medium size. These SMEs generate approximately 40% of annual gross domestic product (GDP). In addition, more than half of all employed Vietnamese citizens work in SMEs. Like other developing and transition countries, the Vietnamese government emphasises the importance of SMEs for long-term development. For example, the government has introduced numerous policies such as an economic reform programme (1986), the Company Law and Private Enterprise Law (1990). These laws were amended to the Enterprise Law (2005), the Decree No. 56/2009/ND-CP (2009) in order to support the development of SMEs. Recently, the Decision No.58 (2013) was implemented to set up an SME credit guarantee fund.

However, the growth contribution of SMEs is not likely to be sustained without establishing and supporting new businesses. Failures of SMEs occurred especially after the financial crisis of 2007-2008. In order to offset the failures, new SMEs are required. According to the GSO (2014), there were 76,955 enterprises set up in 2013, but also 60,737 enterprises failed due to the lack of capital. The majority of Vietnamese SMEs begin the business with capital from internal sources (e.g., borrowing from their families, friends, and relatives). Most of the time, such sources are not sufficient to adequately support the business development. As a result, bank loans could play a very important role as an external funding source for the long-term development of SMEs.

Financial constraints are a major source of business failure in developing countries. However, to our best understanding, previous research has not well analysed the determinants of securing access to financing for new SMEs in developing countries, especially not in Vietnam. We aim to close this research gap by exploring the determinants of access to finance for new SMEs in Northern Vietnam.

We try to understand how new SMEs acquire finance and identify drivers of access to finance. The term “new” SMEs could mean new firms, newly founded firms, or newly created firms, meaning those firms which begin at the business plan stage (Reynolds, 1987; Robb & Robinson, 2013). In this paper, the term “new” SMEs refers to those enterprises that have existed for less than forty-two months (Luong, Pham, Le, Doan, & Doan, 2016; Maas & Herrington, 2007).

For a definition of SMEs, we followed the Vietnamese Decree No. 56 (2009): “SMEs are enterprises have registered capitals less than VND 100 billion (USD 4.5 million) or an average number of annual employees of less than 300.”

The rest of the article is organised as follows: Section 2 reviews the literature on access to debt finance of SMEs in developing countries. Section 3 provides the research methodology and develops testable hypotheses. Section 4 shows the regression results. Finally, the article closes with a conclusion and suggests implications to policy-makers and SMEs’ owners in developing countries.

2.2. Literature Review

2.2.1. SMEs’ Financing Problems in Developing Countries

Bank loans have been considered a crucial element for the growth process of SMEs not only in developed countries but also in developing countries (Nguyen et al., 2006; The United

Nations, 2001; World Bank, 2015). Compared to larger enterprises, SMEs have less access to finance provided by banks, stock markets or private equity markets (Beck, Demirgüç-Kunt et al., 2005). As major constraints for SMEs in developing countries to access external bank loans, Beck (2007) found high transaction costs and asymmetric information. In addition to these two constraints, the United Nations (2001) pointed out high interest rates and insufficient assets.

Asymmetric information occurs when one business partner cannot provide full information to the contracting party (Le, 2013; Malhotra et al., 2007). Le (2013) illustrates that a borrowing SME itself has more information about the credit risk than the bank providing the credit. SMEs usually know the specific market conditions in the markets they operate in better than banks. They are also more aware of risks within small enterprises such as their productivity, their operational capacity, the condition of the machines and facilities, etc. To solve the problem of asymmetric information, banks or financial institutions have applied common strategies, e.g., collateral requirement, collecting information on SMEs, building networks, and applying strict contracts.

Measures to resolve asymmetric information regularly raise transaction costs, which are the major obstacle for SMEs' access to bank loans. Transaction costs are considered a main constraint for the access of SMEs to credit (Malhotra et al., 2007). The cost is measured by summing up the costs from borrowers and lenders to give their decisions related to the exchange of credit. It is caused by the imperfect information in credit markets (Le, 2013).

The relationship between newly founded firms and banks or financial suppliers generally is very weak. Banks have to search for information from their clients and predict their actions. Transaction costs are higher if banks have to hand out many small loans that require more administration work to control risks (Malhotra et al., 2007). SMEs also experience transaction costs if they have to provide information or invest in networks in order to secure credits (Malhotra et al., 2007).

For our paper, the question is crucial whether new SMEs have more constraints to access bank loans than more mature SMEs. The literature on the access of new SMEs to credit is limited. Only few studies explore the situation in developed countries (Reynolds, 1987). For example, Reynolds (1987) found that new SMEs in the United States frequently did not succeed due to financial constraints in their second or third year of operation.

Puhakka (2007) indicated that research on business organisations is switching from the management of existing firms to the creation of new firms. This is because of the

importance of new businesses in changing the competition in the business environment. In addition, policy makers have agreed that the creation of new SMEs reduces unemployment and poverty rates, especially in developing countries. Li and Daly (2005) point out that new SMEs trigger competition, stir research, development and innovation, push old firms to improve their efficiency, and result in economic growth, technological upgrading, job creation and welfare improvement.

Fatoki (2014) argues that successful new SMEs are likely to add significant benefits to regional and national economies. The benefits are likely to take the form of new products, new jobs, greater exports and taxation revenues. Bruce et al. (2009) found that the number of births of new SMEs adds significantly to a country's GDP. Therefore, new SMEs provide long-term benefits to the local economy. Maas and Herrington (2007) endorse the argument that new SMEs make a significant difference to economic prosperity and that South Africa risks economic stagnation without a high new SME creation rate. Countries that are able to replenish the stock of businesses and jobs and have the capacity to accommodate volatility and turbulence in the entrepreneurial sector are best placed to compete effectively. In countries ranking high in the Global Entrepreneurship Monitor (GEM) analysis, entrepreneurship and new SME creation is an integral and accepted feature of economic and personal life.

The two external financial sources for new SMEs are equity and debt. In Vietnam, external equity in form of stock exchange is not available for new SMEs because they are usually not able to meet the entry requirements of stock exchange. Moreover, venture capitalists often invest in firms at middle or later stages of their life cycle. Venture capital in Vietnam is especially scarce (Scheela & Nguyen, 2004). External equity in form of venture capital or stock exchange is limited for new SMEs in Vietnam. Le (2013) found that SMEs with a closer bank relationship have a higher probability of receiving a bank loan. However, it is also difficult for firm owners to build up their networks with bank officers. Therefore, new SMEs rely on bank loans and informal credits from friends or relatives for their early stage financing. However, SMEs are generally considered to be riskier than large firms. SMEs confront several barriers in order to access bank loans, such as lack of collaterals, banks' unwillingness to lend to SMEs, and high interest rates. Nguyen and Luu (2013) reported that 75% of SMEs interviewed would like to seek bank loans but only 30% of them succeeded. Results from the enterprise survey in Vietnam reveal that 71% of small firms (5-19 employees) were not able to access bank loans in comparison to 44% of medium firms (20-99

employees). These numbers show that financial services providing credit for SMEs are insufficient (World Bank, 2015).

2.2.2. Determinants of the Access of New SMEs to Bank Loans

Determinants of access to bank loans could be networking, managerial competence, business information, the sector of the economic activity, firm size and the firm's location. In this section, we review some relevant literature regarding access to bank loans.

Networking in a small firm context is an activity in which entrepreneurially oriented SME owners build and manage personal relationships with particular individuals in their surroundings. Networking is one of the most important means for the access of SME owners to resources or inputs and for them to market their goods and services (Hoang & Antoncic, 2003; O'Donnell, 2014; Watson, 2011). According to Le and Nguyen (2009), networking with suppliers has a significantly negative correlation to the use of bank loans while networking with customers is positively related to it. Nguyen and Ramachandran (2006) indicated that SMEs having a larger networking were able to receive more trade credit and other resources for their operations, and SMEs that pay more attention to their relationship with banks will incur more debt, especially short-term debt. Fatoki and Odeyemi (2010) found that new SMEs with owners who can rely on previous relationships with banks are significantly more likely to be successful in their credit applications. For China, Li, Meng, Wang, and Zhou (2008) found that private firm owners who are members of the Communist Party are more likely to receive bank loans.

Managerial competencies are sets of knowledge, skills, behaviours and attitudes that contribute to personal effectiveness as a manager. Fatoki and Odeyemi (2010) and Fatoki and Asah (2011) found that new SMEs in South Africa managed by owners with a high education level and related business experience are more likely to be successful in their credit application.

Fatoki and Odeyemi (2010) indicated that SMEs with a business plan are more likely to be successful in their credit application than those that do not have a business plan. If SMEs have and can provide more business information, their likelihood of applying for finance increases since they are familiar with regulations and requirements of lenders (banks or credit funds; Fatoki & Asah, 2011; Kira & He, 2012).

Access to debt financing is positively related to the sector of a firm. Most of the sources of financing prefer lending to manufacturing sectors while other sectors are rather left

unsupported (Kira & He, 2012). Le (2012) found that industry dummies are statistically significant to the probability of obtaining a bank loan.

Burkart and Ellingsen (2004) showed that a larger firm size tends to provide greater access to long-term debt. This is also supported by Beck and Demirguc-Kunt (2006), Kira and He (2012), and Mulaga (2013). They all found that larger firms have a higher access to debt financing than smaller ones. For South Africa, Fatoki and Odeyemi (2010) and Fatoki and Asah (2011) found that firm size is positively associated with access to finance. The positive relationship between firm size and the access to bank loans is also demonstrated for Vietnam (Le, 2012).

Kira and He (2012) found that a positive relationship between a firm's location and its debt ratio. Firms located in urban areas have a higher possibility to receive bank loans than firms located in rural areas in South Africa (Fatoki & Asah, 2011; Fatoki & Odeyemi, 2010).

Another determinant is the maturity of a firm measured in years. A higher age of a firm brings about a positive effect on the probability of getting a bank loan (Fatoki & Asah, 2011; Kira & He, 2012; Le, 2012).

2.3. Research Methodology

2.3.1 Data Collection

Data for the study were collected in the Phu Tho province in Northern Vietnam over the course of four months from May to August 2015 using a simple random technique (Creswell, 2009; Khandker, Koolwal, & Samad, 2010). The province is known as an old industrial area but now a growing number of small and medium sized enterprises chose the province as their location (see table 2.1). The majority of its population lives in rural areas and supplies many SMEs with a large number of labourers.

(Insert table 2.1 here)

The overall targeted population in Phu Tho for our study was around 1,200 new SMEs (Phu Tho Province, 2015). The Raosoft¹ sample size calculator (margin of error: 5%; confidence interval: 95%; response distribution: 50%) suggests a minimum recommended sample size of 292 observations.

Based on the list of new SMEs from the Phu Tho Tax Bureau and the Planning and Investment Department (including telephone numbers and email addresses) covering one

¹ Raosoft is a free software used to calculate the sample size in our survey.
Source: <http://www.raosoft.com/samplesize.html>

city and twelve districts belonging to the Phu Tho province, we took two steps selecting interviewed firms. Firstly, we purposely chose one city and six districts to represent urban and rural areas. Secondly, we randomly selected firms from the list from each selected district-level unit. A total of 350 questionnaires were handed out, 289 (82%) were returned, 259 (74%) of which were fully completed both in urban and rural areas. Owners or representatives of SMEs were asked several open-ended questions relating to general characteristics of firms, financing, business information, and managerial, networking characteristics. Data were then entered with the SPSS package and analysed with STATA.

(Insert figure 2.1 here)

We set up a team of enumerators who are native to the province conducted the survey. They were trained in both data collection methods and the reasons behind each item in the questionnaire in four days. After training activities, the enumerators did a pre-test for the questionnaire with some enterprise owners. The survey covers solely new SMEs defined by capital less than VND 100 billion (USD 4.5 million) or less than 300 employees (The Vietnamese Government, 2009). The enumerators directly contacted the selected new SMEs via email or telephone to make appointments with SME owners. Then the enumerators came to enterprises to hand in the questionnaire, explaining the reasons of conducting the survey. The enumerators had to follow up the surveyed firms and came back to collect the completed questionnaires.

2.3.2. Model Specifications and Hypotheses

We estimated two models: a probit model estimates the probability to receive a bank loan, a tobit model estimates the bank loan ratio as an additional measure. Both models use the same set of explanatory variables. The variable “networking” was combined of four main dimensions (emotional trust, knowledge trust, approachability, and personal sharing). To construct this variable, the firm owners were asked to select the level of relationships between firms and bank’s credit official based on a 5-point Likert scale. Factor analysis was employed to build the four dimensions used in the models. Another explanatory variable is managerial competence, also measured by a 5-point Likert scale (1 = very bad; 5 = very good). These five items have a reliability test with Cronbach’s alpha of 0.899 (see table 2.9). The selected independent variables are shown in greater detail in table 2.8.

(Insert figure 2.2 here)

To analyse whether there is a correlation between firms, owners' characteristics and access to bank loans, a simple probit model was applied (1) to find out which factors influence the probability of SMEs successfully getting a bank loan.

Probit model: probability of getting a bank loan

$$y_{1i}^* = X'_{1i}\beta_1 + v_i, \quad (1)$$

There is a large body of literature on the drivers of access to bank loans (y_{1i}^*). Most studies prefer a logistic regression (e.g., logit and probit models) to find out how selected independent variables affect the dichotomous variable (Coleman, 2000). Having a bank loan in 2014 is a dummy variable, and X_i is a vector of explanatory variables expected to influence the probability of receiving a bank loan. A probit model is suitable for analysing regression where the dependent variable only has two values (Greene, 2012; Wooldridge, 2010). Explanatory variables are networking, managerial competency, business information, firm industry, firm size, firm location, and owners'/managers' characteristics.

Secondly, we divided the sample into two groups (one that did and one that did not have a bank loan in the fiscal year 2014). To examine the intensity of a bank loan (the percentage of bank loans), a tobit model was applied (2).

$$y_{2i}^* = X'_{2i}\beta_2 + \mu_i, \quad (2)$$

$$y_{2i} = \begin{cases} y_{2i}^*, & \text{if } X'_{2i}\beta_2 + \mu_i > 0 \\ 0, & \text{otherwise} \end{cases} \quad (3)$$

Following Blackwell and Winter (1997), Le and Nguyen (2009) and Mulaga (2013), we used the bank loan ratio measured by total bank credit over the total capital stock of the enterprise as a dependent variable in our model. This ratio does not depend on firm size, thus it is suitable for measuring the ability of access to bank loans. As the bank loan ratio is a continuous dependent variable including zero value, we applied a tobit model (Verbeek, 2004). In our study, a substantial part of the SMEs has a bank loan ratio equal to zero while the rest of our sample has a positive value.

The bank loan ratio of new SMEs is given by y_{2i}^* . X_{2i} is the vector of explanatory variables expected to have an influence on the bank loan ratio. The two error terms v_i and μ_i are expected to be independent and normally distributed with $v_i \approx N(0,1)$; $\mu_i \approx N(0,\sigma^2)$.

Based on the literature review and our conceptual framework, we hypothesise:

- H1: there is a positive relationship between the level of networking and the access to bank loans for new SMEs.

- H2: there is a positive relationship between the managerial competence and the access to bank loans for new SMEs.
- H3: there is a positive relationship between business information and the access to bank loans for new SMEs.
- H4: new SMEs in trade and service have more credit constraints than those in manufacturing.
- H5: new micro and small firms have more credit constraints than new medium ones.
- H6: new SMEs in rural areas have more credit constraints than the ones in urban areas.

2.4. Results and Discussion

2.4.1. Characteristics of the Sample

Table 2.2 presents descriptive statistics of the characteristics of the SMEs in our sample of 259 new SMEs, 71% of which were companies with limited liability, 20% were shareholding companies, and only 9% were private companies. The number of employees in new SMEs range from 1 to 125. The capital stock of SMEs varied between VND² 30 million to 104,423 million (USD 1,300 to 4,700,000). There was 47% of the companies focus on trading while 31% concentrate mainly on service, and only 22% focus on manufacturing. In terms of location, 53% of the firms are located in an urban area, and 47% in rural areas.

Regarding the owners' characteristics, 76% of the owners are male, and 24% are female. About 50% of the owners have a university degree. The owners' management experience ranges from 1 to 20 years.

(Insert table 2.2 here)

Regarding the access to bank loans, about 36% of firms received loans from banks while 64% did not. The range of bank loans over the total capital defined as the bank loan ratio ranged from 0.03 to 0.83.

Table 2.3 presents mean values and T-tests of the mean difference³ of the variables in the regression analysis. Using T-tests, we found that most of the variables are significantly different (except those variables regarding the owners' characteristics) between bank loan recipients and non-recipients. Overall, the recipients seem to have more experience in management skills and are more active in networking with banks. Furthermore, recipient SMEs have significantly more business plans (56%) than non-recipient SMEs (only 25% had

²USD 1.00 = VND 22,000 at the time of the survey

³ Tests comparing SMEs that received a bank loan or that did not.

a plan). Finally, recipient SMEs have a larger firm size (measured by number of employees) than those which did not receive a bank loan.

(Insert table 2.3 here)

In order to discover the multicollinearity issues of selected independent variables in the model, we run a correlation matrix (see table 2.10). From the matrix, we found that service is positively correlated with the trade sector. Educational level is negatively associated with age. Manager experience is negatively correlated with the service sector but positively associated with age. Manager skills are correlated with the education level and manager experience. Firm size is negatively correlated with the trade sector but positively associated with the business plan and manager skills. Emotional trust has positive associations with the business plan. Knowledge trust is also positively correlated with the business plan, age, firm size and emotional trust. Approachability is negatively correlated with age and knowledge trust; however, it is positively associated with emotional trust. Interestingly, personal sharing has positive associations with manager skills, emotional trust, knowledge trust, and approachability. Finally, location is negatively correlated with plan and gender, but has a positive relation to the educational level. Since selected explanatory variables are not highly correlated, all variables are put in the regression models in the next two sections.

2.4.2 Determinants of Receiving a Bank Loan

The empirical results of the probit model are presented in table 2.4. Overall, the model can explain 20.6% of the change of probability of receiving a loan ($R^2 = 0.206$ at 1% significant level). This implies that the set of selected explanatory variables reliably distinguishes between firms with a bank loan and firms without a bank loan. The marginal effects (ME) of each model helps to better understand the magnitude of the effect of an independent variable on the probability of receiving bank loans.

(Insert table 2.4 here)

SMEs which have a business plan have a 16.4% higher probability to receive a bank loan compared to new SMEs without a business plan. This supports hypothesis H3. New SMEs' lack for data on past business history and low financial information as well as limited ability to put together a business plan make them more likely to fail in acquiring a bank loan.

Among the firms' characteristics, firm size had a significantly positive effect on the probability of getting a bank loan, supporting hypothesis H5. The bigger firms with more assets as collateral are 11.8% more likely to obtain a bank loan.

In addition, variables such as emotional trust, knowledge trust, and approachability of bank officers all have a statistically positive influence on the probability of getting a bank loan. It is not surprising that new SMEs with a good relationship to banks are more likely to receive a bank loan, supporting hypothesis H1.

In order to further analyse the effect of location on the probability of access to bank loans, we ran two additional models with independent variables (see table 2.4). Overall, there is no difference in our sample between SMEs located in rural and those located in urban areas, whereby hypothesis H6 is not supported.

2.4.3 Factors Influencing the Bank Loan Ratio

Factors influencing the bank loan ratio are shown in table 2.5. The estimated tobit model was employed to examine whether selected explanatory variables such managerial competency, business information, networking, industry, firm size, or location influence the bank loan ratio. The model is statistically significant with $R^2 = 0.217$ ($\text{Chi}^2 = 0.0000$).

As expected, a business plan positively influences the bank loan ratio at a highly significant level. The bank loan ratio of those new SMEs that had a business plan is 19% higher than that of SMEs without one.

The results for emotional trust (Coef = 0.11868 at 5% significant level), knowledge trust (Coef = 0.09677 at 1% significant level), and approachability of bank officers (Coef = 0.10570 at 1% significant level) were both positively and significantly related to the bank loan ratio.

(Insert table 2.5 here)

2.4.4. Reasons for not Receiving a Bank Loan

Table 2.6 summaries the reasons for surveyed SMEs not getting a bank loan.

(Insert table 2.6 here)

There are many financing constraints such as high interest rates, complex application processes, high collateral requirement from banks, and the lack of a business plan. In our sample 42.3% (110 firms) of new SMEs did not apply for any bank loan. Reasons include the complexity of loan application procedures, a high interest rate and high collateral requirements. About 19% of those firms are self-financed in the first years of operation. Interestingly, those new SMEs that did not apply for any bank loan believed that they would not be successful. In general, they had a short networking with banks officers, a lack of collateral assets, none or poor business plans and a low ability to write the application.

The proportion of new businesses that applied for but did not receive a loan was about 21.2% of the total sample. In order to understand why new SMEs failed to obtain a bank loan despite having applied for it, we conducted a focus group discussion shortly after the survey with 10 owners of SMEs. The reasons for the rejection of loan applications were: (i) low level of collateral; (ii) banks do not trust in new SMEs; (iii) poor networking due to the lack of information between firms and banks; (iv) lack of support from bank officers to help new SMEs with their application documents.

A focus group discussion with bank officers also took place after our survey. Five commercial bank officers in the province who work closely with new SMEs participated in the discussion illustrating the reasons why banks rejected to provide financial means to firms. The main findings were: (i) inefficient production or business project; (ii) lack of collateral and assets' insurance; (iii) lack of audited financial reports.

2.5. Conclusions and Policy Implications

This paper has investigated factors influencing bank financing to new SMEs in Vietnam. We mainly focused on new SMEs in the Phu Tho province in Northern Vietnam and their current access to bank loans. The literature suggests many constraints for obtaining sufficient bank loans such as lack of managerial skills, weak relationship with banks, and high transactions costs. We applied several specifications such as descriptive statistics, and probit and tobit regressions.

Overall, the results support our hypotheses which included business information, managerial competency, networking and firm characteristics. Having a good business plan positively influences the probability of getting a bank loan. New SMEs with a business plan are more likely to receive a bank loan as opposed to SMEs without a business plan; further analysis about determining the bank loan ratio also reveals that a business plan is important. Firm size has a positive effect on receiving a bank loan. New small firms are more likely to get a bank loan in comparison with new micro firms. However, firm size is not significant with regard to the bank loan ratio in the tobit model. To avoid lending risks, banks demand collateral from micro firms or provide a loan with a high interest rate. Unfortunately, micro firms do not usually have assets to offer as bank loan collaterals. The results also indicate that networking factors positively and significantly influence the grant of a bank loan and the bank loan ratio. In addition, there are about 60% of new SMEs in our sample that did not get any access to formal external credit sources. This fact could lead to the failure of new firms due to the lack of sufficient capital to keep their business in operation. Based on these findings, we argue that

credit denial mainly depends on poor business plans. This is of particular importance for managers of new small businesses.

As the rate of failure of new SMEs is high, more support from the government could help SMEs to grow, to provide jobs and to contribute to regional growth. It can be suggested that the government should encourage the development of SMEs by implementing credit guarantee programmes, focusing more on credit interest policies (subsidising), and improving owners' capacity for management, especially in start-up companies. The government should pay more attention to the financing market and provide concrete proper financial information (availability, interest rate, requirements, and supported policies). It is recommended that start-up training programmes should focus more on owners or managers of new SMEs to assist them in developing their business plans properly. It is also important for new firm owners to take writing their business plans more seriously since it will be the key principle for their success in doing business, as well as pay more attention on the credit application and compliance process.

We acknowledge several limitations of our research. The access to bank loans (recipients and non-recipients) might lead to biased and inconsistent coefficients. In such a case, the advanced method like propensity score matching that controls the selection bias could be employed. It is also important to explore the long-term effect of the access to bank loans on firm performance by using panel data.

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Table 2.1. New Business Registration and Failure in the Phu Tho Province 2012-2016

	2012	2013	2014	2015	2016
- SMEs established	317	464	405	548	717
- SMEs closed down	140	198	939	496	300
- SMEs bankrupted	23	29	69	46	30

Source: *The Phu Tho Tax Bureau, 2017*

Table 2.2. Descriptive Statistics of the Entire Sample

	Absolute number	Percentage (%)
<i>Legal Status</i>		
- Shareholding companies	52	20.08
- Limited liability companies	183	70.66
- Private companies	24	9.27
<i>Firm Size (number of employees)</i>		
- Range	1-125	
- Mean	11.143	
- Std. deviation	15.338	
<i>Total Capital (in million VND)</i>		
- Range	30 - 104,423	
- Mean	3,970.486	
- Std. deviation	8,801.347	
<i>Firm Industry</i>		
- Trade enterprises	120	46.51
- Service enterprises	80	31.01
- Manufacturing enterprises	58	22.48
<i>Location</i>		
- Urban area	138	53.28
- Rural area	121	46.72
<i>Owner Gender</i>		
- Male	196	75.68
- Female	63	24.32
<i>Owner Education</i>		
- Have a university degree	129	49.81
- Do not have a university degree	130	50.19
<i>Owner Experience</i>		
- Range	1-20	
- Mean	4.822	
- Std. deviation	4.264	
<i>Access to Bank Loans</i>		
- Have not borrowed	165	63.71
- Have borrowed	94	36.29
<i>Bank Loan/Capital</i>		
- Range	0.028-0.833	
- Mean	0.359	
- Std. deviation	0.216	
N	259	

Note: * Total number of new SMEs that received bank loans in the sample.

Table 2.3. Descriptive Statistics for Recipients of Bank Loans

Variables	Non-recipients (N = 165)	Recipients (N = 94)	Differences
Trade (1 = SME focuses on trading)	0.418	0.553	-0.135**
Service (1 = SME focuses on service)	0.376	0.191	0.184***
Plan (1 = yes)	0.255	0.564	-0.309***
Age (in years)	41.091	42.894	-1.803
Gender (1 = male)	0.758	0.755	0.002
Education level (1 = having a university degree)	0.491	0.511	-0.020
Manager experience (in years)	4.461	5.457	-0.997*
Manager skills ^a	3.610	3.653	-0.043
Firm size (1 = small firm)	0.200	0.383	-0.183***
Emotional trust ^b	1.742	2.149	-0.407***
Knowledge trust ^b	2.995	3.779	-0.784***
Approachability ^b	3.822	4.121	-0.298**
Personal sharing ^b	2.409	2.654	-0.245*
Location (1 = located in urban area)	0.539	0.521	0.018
<i>N</i>	259		

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

a: Those variables were measured by using a 5-point Likert scale (1 = very bad; 5 = very good)

b: Those variables were measured by using a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree)

Table 2.4. Factors Influencing Credit Access by Probit Model

Variables	Full sample		Urban firms		Rural firms	
	Coef	ME	Coef	ME	Coef	ME
Trade (1 = SME focuses on trading)	0.24426	0.0716	0.24382	0.0743	0.30998	0.0803
	(0.25313)	(0.0735)	(0.38586)	(0.117)	(0.37163)	(0.0955)
Service (1 = SME focuses on service)	-0.29480	-0.0864	-0.07689	-0.0234	-0.62186	-0.161
	(0.25490)	(0.0744)	(0.34238)	(0.104)	(0.42896)	(0.109)
Plan (1 = yes)	0.55919***	0.164***	0.63965**	0.195**	0.59068**	0.153**
	(0.19207)	(0.0534)	(0.27449)	(0.0789)	(0.27616)	(0.0692)
Age (in years)	-0.00360	-0.00106	0.00068	0.000209	0.00203	0.000527
	(0.01067)	(0.00312)	(0.01463)	(0.00446)	(0.01606)	(0.00416)
Gender (1 = male)	-0.00339	-0.000995	0.14026	0.0428	-0.32367	-0.0839
	(0.21739)	(0.0637)	(0.27311)	(0.0832)	(0.36842)	(0.0957)
Education level (1 = having a university degree)	0.04421	0.0130	-0.02929	-0.00893	0.16810	0.0436
	(0.18345)	(0.0538)	(0.24278)	(0.0740)	(0.29078)	(0.0751)
Manager experience (in years)	0.02767	0.00811	0.02694	0.00821	0.02931	0.00759
	(0.02260)	(0.00658)	(0.03280)	(0.00997)	(0.03386)	(0.00867)
Manager skills ^a	-0.08085	-0.0237	-0.12922	-0.0394	-0.01543	-0.00400
	(0.16799)	(0.0493)	(0.24379)	(0.0745)	(0.24340)	(0.0630)
Firm size (1 = small firm)	0.40152*	0.118*	0.53135	0.162*	0.15731	0.0408
	(0.22119)	(0.0631)	(0.32469)	(0.0956)	(0.33304)	(0.0858)
Emotional trust ^b	0.29371**	0.0861**	0.34600*	0.105*	0.27140	0.0703
	(0.14378)	(0.0410)	(0.20924)	(0.0610)	(0.19382)	(0.0498)
Knowledge trust ^b	0.26741***	0.0784***	0.14178	0.0432	0.43111***	0.112***
	(0.09815)	(0.0280)	(0.14889)	(0.0453)	(0.13230)	(0.0313)
Approachability ^b	0.28380**	0.0832**	0.20167	0.0615	0.37374*	0.0968**
	(0.12563)	(0.0355)	(0.17494)	(0.0521)	(0.19193)	(0.0473)
Personal sharing ^b	0.04229	0.0124	0.04068	0.0124	0.06015	0.0156
	(0.11472)	(0.0336)	(0.16021)	(0.0488)	(0.16555)	(0.0428)
Location (1 = located in urban area)	-0.04278	-0.0125				
	(0.18599)	(0.0545)				
Constant	-3.11712***		-2.67559*		-4.21327***	
	(1.00839)		(1.48796)		(1.48498)	
Observations	259		138		121	
R ²	0.2059***		0.1709		0.2964***	
Wald chi2	51.51		21.89		42.30	

Note: robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Coef: coefficients; ME: marginal effect

Table 2.5. Factors Influencing the Bank Loan Ratio by Tobit Model

Variables	Coefficients
Trade (1 = SME focus on trading)	0.10123 (0.08344)
Service (1 = SME focus on service)	-0.11198 (0.09488)
Plan (1 = yes)	0.19449*** (0.06715)
Age (in years)	0.00014 (0.00380)
Gender (1 = male)	0.02849 (0.07528)
Education level (1 = having a university degree)	0.02738 (0.06603)
Manager experience (in years)	0.00635 (0.00814)
Manager skills ^a	-0.04471 (0.05918)
Firm size (1 = small firm)	0.06265 (0.07506)
Emotional trust ^b	0.11868** (0.04656)
Knowledge trust ^b	0.09677*** (0.03550)
Approachability ^b	0.10570*** (0.03981)
Personal sharing ^b	0.01054 (0.03669)
Location (1 = located in urban area)	-0.02771 (0.06724)
Constant	-1.13684*** (0.33698)
Observations	259
R ²	0.2172
Wald chi2	0.0000
Sigma	0.40295*** (0.03337)

Note: standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2.6. Reasons for New SMEs without Credit

	Absolute number	Percentage (%)
<i>Applied for a bank loan but did not get all financing requested</i>	55	100
- The application was rejected	44	80
- Refused because interest rates are too high	9	16.36
- Refused because of insufficient size of loan	1	1.82
- Other	1	1.82
<i>Did not apply for any bank loan</i>	110	100
- Firm has sufficient internal funds	21	19.09
- Application procedures for loans or lines of credit are complex	13	11.82
- Interest rates are not favourable	15	13.64
- Collateral requirements are too high	13	11.82
- Size of loan is insufficient	4	3.64
- Maturity of loan is insufficient	2	1.82
- Do not think it would be approved	42	38.18
- Other	0	0
N (number of observations)	165	

Source: authors' calculations from the survey in 2015.

Table 2.7. The Definition of SMEs in Vietnam

Type of firm	Number of employees	Total capital
Micro	1-10	
Small	11-200	Maximum VND 20 billion (USD 900 000)
Medium	201-300	VND 20 - 100 billion (USD 4.5 million)

Source: Decree No. 56 (2009)

Table 2.8. Independent Variables Used in Logistic Regression Analysis

Variables	Measurement
1. Dependent Variable	
Getting a bank loan	1 = had a bank loan; 0 = did not have a bank loan
Bank loan ratio	Bank loan ratio = bank loan over total capital
2. Independent Variables	
Managerial competency	Education level
	Management experience
	Managerial skills*
Business information	Business plan
Networking	Emotional trust*
	Knowledge trust*
	Approachability*
	Personal sharing*
Firm industry	Service; trade; manufacturing
Firm size	Micro; small; medium
Firm location	1 = urban area; 0 = rural area

Table 2.9. Measuring Manager Skills, Emotional Trust, Knowledge Trust, Approachability of Bank Officers, and Personal Information Sharing

Manager Skills

Five items (D1.3.6, D1.3.7, D1.3.8, D1.3.9, D1.3.10) were extracted to measure the managers' skills. The scale of these five items had a Cronbach's alpha of .899. However, if the fourth item (D1.3.9 -risk taking) was dropped, the Cronbach's alpha increased to .902. Therefore, I decided to drop it and to use the other four items (D1.3.6, D1.3.7, D1.3.8, and D1.3.10) to measure the managers' skills.

Emotional Trust

There were five items (E.1.5, E.1.6, E.1.7, E.1.8, and E.1.9) extracted to measure emotional trust. The scale of these five items had a Cronbach's alpha of .843. However, if the first item (E1.5- You rely on the bank official(s) to find ways of meeting business's changing financial needs) was dropped, the Cronbach's alpha increased to .882. Therefore, I decided to drop it and to use the other four items (E.1.6, E.1.7, E.1.8, E.1.9) to measure emotional trust.

Knowledge Trust

Four items (E.1.1, E.1.2, E.1.3, E.1.4) were extracted to measure knowledge trust. These four items had a Cronbach's alpha of .876. All these four items were kept to measure this factor.

Approachability of Bank Officers

There were three items (E.1.12, E.1.13, E.1.14) extracted to measure approachability. These three items had a Cronbach's alpha of .819. All three items, therefore, were kept to measure approachability of bank officers.

Personal Information Sharing

There were two items (E.1.10, E.1.11) extracted to measure personal information sharing. These two items had a Cronbach's alpha of .718. Therefore, all two items were retained for this measure.

Results of Factor Analysis

Description	Cronbach's alpha if item deleted
<i>Manager Skills</i>	
D1.3.6 Managerial skills	.883
D1.3.7 Analytical skills	.867
D1.3.8 Creativity	.866
D1.3.9 Risk-taking	.902
D1.3.10 Innovation	.863
$\alpha = .899$	
<i>Emotional Trust</i>	
E1.5 You rely on the bank official(s) to find ways of meeting your business's changing financial needs	.801
E1.6 You get to know the bank credit official(s) (background, personal life, habits, etc.)	.788
E1.7 You attend the important events of their personal life (e.g., wedding or funeral of their family's member)	.795
E1.8 When appropriate, you give this/these bank official(s) some gifts	.791
E1.9 You get together with them on some holiday occasions	.882
$\alpha = .843$	
<i>Knowledge Trust</i>	
E1.1 The bank official(s) is/are available to help in a crisis	.817
E1.2 You trust the advice from your bank official(s)	.840
E1.3 You are confident that the bank official(s) understand your business	.844
E1.4 The bank official(s) often come forward with positive suggestions to help your business	.862
$\alpha = .876$	
<i>Approachability of bank officers</i>	
E1.12 You prefer to avoid contact with bank officials	.786
E1.13 The bank official(s) is/are not interested in your business	.749
E1.14 You feel intimidated when dealing with (a) bank official(s)	.716
$\alpha = .819$	
<i>Personal Information Sharing</i>	
E1.10 You share with this/these bank credit official(s) some of your own personal information (e.g., background, personal life)	
E1.11 You feel free to share with this/these bank credit official(s) your ideas, feelings, hopes, or problems that may not directly relate to business	
$\alpha = .718$	

Table 2.10. Correlation Matrix

		Trade	Service	Plan	Age	Gender	Edu-	Mana_ex	Mana_sk	Firm Size	Emot-	Know-	Appr-	Pers-	Location
1.	Trade (1 = SME focuses on trading)	1													
2.	Service (1 = SME focuses on service)	-0.6260*	1												
3.	Plan (1 = yes)	0.0581	-0.0927	1											
4.	Age (in years)	0.0565	-0.102	0.0316	1										
5.	Gender (1 = male)	-0.0463	-0.0300	-0.0913	-0.00670	1									
6.	Education level (1 = having a university degree)	-0.0815	0.00260	-0.00510	-0.2016*	-0.0292	1								
7.	Manager experience (in years)	0.0627	-0.1468*	0.0562	0.3767*	-0.0850	0.0107	1							
8.	Manager skills ^a	-0.0229	-0.0798	-0.00590	-0.0120	0.0506	0.1913*	0.1710*	1						
9.	Firm size (1 = small firm)	-0.2142*	-0.0626	0.1575*	0.105	0.118	0.0635	0.103	0.1754*	1					
10.	Emotional trust ^b	-0.0680	-0.00610	0.1332*	0.00480	0.113	0.00760	-0.00530	0.0415	0.0941	1				
11.	Knowledge trust ^b	0.0753	-0.107	0.2396*	0.1609*	-0.00730	0.00830	0.0292	0.0699	0.1837*	0.3230*	1			
12.	Approachability ^b	-0.0267	0.0263	-0.0751	-0.1220*	0.0490	0.0107	-0.00780	0.0901	-0.0571	0.4515*	-0.1737*	1		
13.	Personal sharing ^b	0.0228	0.0240	0.0963	-0.0152	0.0688	0.00180	0.0239	0.1237*	-0.00690	0.6364*	0.1940*	0.4596*	1	
14.	Location (1 = located in urban area)	-0.0383	0.0733	-0.1866*	-0.0803	-0.1341*	0.1899*	-0.0318	-0.0831	0.00410	0.0277	0.0843	-0.0855	-0.0969	1

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

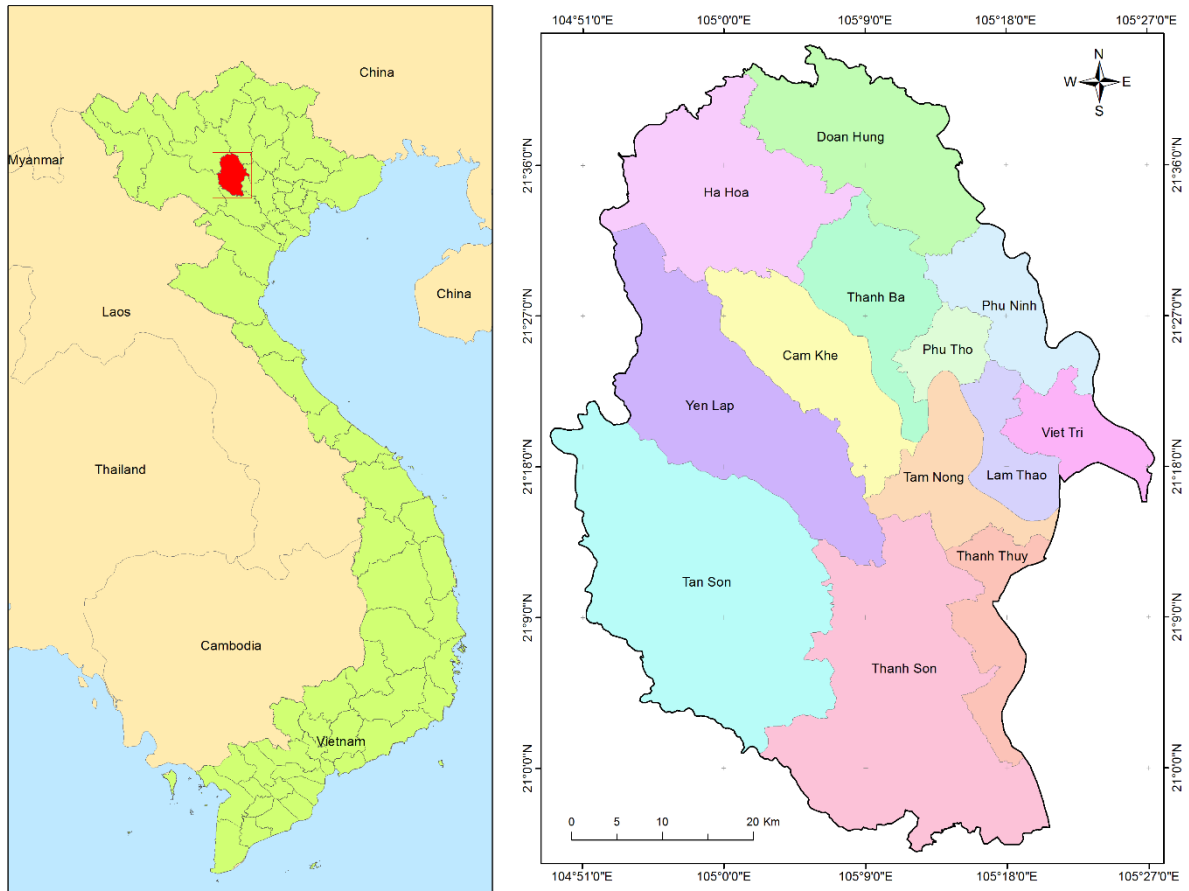


Figure 2.1. Map of Vietnam (left) and the Phu Tho Province in Northern Vietnam (right)

Source: <http://www.phutho.gov.vn>

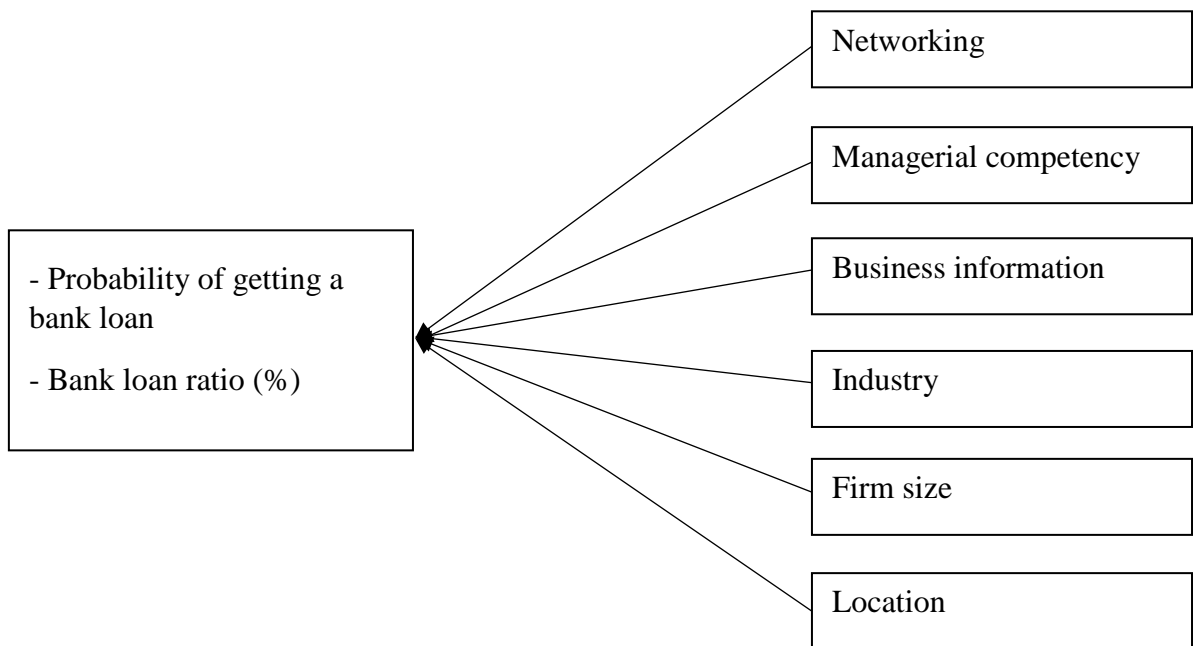


Figure 2.2. Conceptual Framework of the Access of New SMEs to Bank Credit

Source: Own illustration.

SME QUESTIONNAIRE 2015

Survey on access to finance for new SMEs in the North of Vietnam

Introduction

I am a PhD-student from Georg-August-University of Goettingen in Germany, who are interested in all activities related to access to finance at the firm level. Your firm has been randomly selected to participate in a survey on access to finance for new small and medium-sized enterprises.

We assure that all of your information will be kept confidentially, only using for research purposes. It will take roundly 30 minutes to finish the questionnaire. If you have any questions or comments about this survey, you may contact Mr. Pham, Duy Hung; Cell phone: (84)165.9639087 or email: phung@wiwi.uni-goettingen.de

The questionnaire is composed of 5 sections that are mentioned below:

Section 1: General characteristics of the firm	Page: 2	Section 4: Managerial competency of the firm	Page: 6
Section 2: Financing of the firm	Page: 3-4		Page: 7-9
Section 3: Business information of the firm	Page: 5	Section 5: Networking of the firm	

SECTION 1: GENERAL CHARACTERISTICS OF THE FIRM

Name of the firm:

Address:

Name of respondent: Position:

Land phone: Mobile phone: Email:

A.1. What is main economic activity of the firm? (Please circle one economic activity that has largest proportion of annual turnover of fiscal year 2014)

- [1] Trade [2] Service [3] Manufacturing [4] Other (specify).....

A.2. What is currently the most pressing problem the firm is facing?

- [1] Finding customers [2] Competition [3] Access to finance [4] Cost of production [5] Cost of labour [6] Availability of skilled staff [7] Experienced managers [8] Regulation [9] other (specify)

A.3. Did the firm begin business before formally registering? [1] Yes [2] No

	Month(mm)	Year(yyyy)
The firm began operations		
The firm formally registered		

A.4. How many employees did the firm employ in the fiscal year 2014?.....

SECTION 2: FINANCING OF THE FIRM

B.1. Did the firm apply any loan or line of credit from a bank or a financial institution? [1] Yes [2] No, go to BN.1

a) Did the firm get all of the financing requested? [1] Yes [2] No

b) If the firm did not get all of the financing requested, what was the main reason?

[1] The application was rejected [2] Refused because too high interest rates [3] Refused because insufficient size of loan [4] Refused because insufficient maturity of loan [5] Other (specify).....

BN.1. What was the main reason why the firm did not apply any line of credit or loan from a bank or a financial institution?

[1] No need for a loan - firm has sufficient internal funds [2] Application procedures for loans or lines of credit are complex [3] Interest rates are not favorable [4] Collateral requirements are too high

[5] Size of loan is insufficient [6] Maturity of loan is insufficient [7] Do not think it would be approved [8] Other (specify).....

B.2. Please estimate the use of the following financial sources in 2014?

Sources	Value (1 million VND)
Owner's capital	
Bank loans	
Trade credit	
Loans from families	
Loans from friends	
Others (specify)	
Total	

B.2.1. If the firm has a bank loan, please fill out following information about the bank loan.

Which bank did the firm apply the loan?	What was the amount of loan the firm applied? (1 million VND)	What was the amount of loan at the time of approval? (1 million VND)	How long did you wait for the loan? (days)	Maturity of the loan (months)	Collateral		Interest rate Unit: [1] Per month [2] Per year		What was the main reason for applying the loan? (Code B)
					Value (1 million VND)	Types (Code A)	%	Unit	

Code A:

[1] Land, buildings under ownership of the firm [2] Machinery and equipment including movables [3] Accounts receivable [4] Inventories [5] Personal assets of owners [6] other (specify)

Code B:

[1] Working capital [2] Land [3] Buildings [4] Equipment [5] Vehicles [6] Research and development or intellectual property [7] Promotion [8] Staff training [9] Buying another business [10] other (specify)

SECTION 3: BUSINESS INFORMATION OF THE FIRM

C.1. Could you please tell me whether the firm had its financial statements of following fiscal years checked and certified by an external auditor, and what main reason for auditing?

	2014		2013	
	Did the firm have financial statement audited? [1] Yes [2] No, go to the previous year	What was main reason for auditing financial statement? (Code C)	Did the firm have financial statement audited? [1] Yes [2] No, go to the previous year	What was main reason for auditing financial statement? (Code C)
Financial statement				

Code C: [1] It is necessary (required by authorities) [2] Required by banks [3] Required by shareholders [4] Other (specify)

C.2. Did the firm have any bad credit record? [1] Yes [2] No

C.3. In fiscal year 2014, did the firm have a written business plan? [1] Yes [2] No, go to D.1

C.4. Is the business plan produced by an accountant/ or consultant? [1] Produced by an accountant [2] Produced by a consultant [3] Neither by an accountant/ or consultant

C.5. How would you evaluate the business plan in following statements? Please circle the one that fits.

	Very bad					Very good					
	1	2	3	4	5		1	2	3	4	5
1. Business plan is good and feasible						6. Analyzing critical risks is good					
2. Marketing plan is good						7. Having a good future growth					
3. Financial plan is feasible						8. Contingency plan is good					
4. Cash flow shows that credit can be repaid						9. The firm has suitable business premises					
5. Manufacturing plan is feasible						10. High competition					

SECTION 4: MANAGERIAL COMPETENCY OF THE FIRM

D.1. Please fill information of the highest firm manager.

D.1.1. Personal information

Full name	Position	Age (in year)	Gender [1] male [2] female	Marital status [1] Not married [2] Married [3] Widowed/widower [4] Divorced [5] Separated [6] I don't know

D.1.2. Education and experience information

Education					Experience				
Years of schooling (years)	Highest level of education Code D	Did the member participate any management course? [1] Yes [2] No	Did the member participate any financial course? [1] Yes [2] No	Did the member participate any taxation course? [1] Yes [2] No	General working experience (years)	Management/ Entrepreneurial experience			Other (specify)
						Years	Positions Code E	Organization	

Code D: [1] Illiteracy [2] Primary [3] Secondary [4] High school [5] Vocational training [6] College/ University [7] Graduate degree

Code E: [1] Chairman of management board/ Chairman of member council [2] General Director [3] Chief accountant [4] Other (specify).....

D.2. How would you evaluate the knowledge and skills of the highest manager? Please circle the one that fits.

Knowledge	Very bad					Skills	Very good				
	1	2	3	4	5		1	2	3	4	5
Knowledge of the firm's industry	1	2	3	4	5	Managerial skills	1	2	3	4	5
Knowledge of finance	1	2	3	4	5	Analytical skills	1	2	3	4	5
Knowledge of marketing	1	2	3	4	5	Creativity	1	2	3	4	5
Knowledge of human resource management	1	2	3	4	5	Risk-taking	1	2	3	4	5
Knowledge of enterprise law, tax law	1	2	3	4	5	Innovation	1	2	3	4	5

SECTION 5: NETWORKING OF THE FIRM

E.1. In each of the following statements of the relationships between you and the bank's credit official(s) who directly work with you. Please circle the one that is more demonstrative of relationships with your firm's bank credit official.

	Strongly disagree			Strongly agree	
	1	2	3	4	5
The bank official(s) is available to help in a crisis	1	2	3	4	5
You are confident in the advice from your bank official(s)	1	2	3	4	5
You are confident that bank official understand your business	1	2	3	4	5
The bank official(s) often come forward with positive suggestions to help your business	1	2	3	4	5
You rely on the bank official(s) to find ways of meeting business's changing financial needs	1	2	3	4	5
You learn about the bank credit official(s) (background, personal life, habits, etc.)	1	2	3	4	5
You attend their important personal life events (e.g., wedding or funeral of their family's member)	1	2	3	4	5
When appropriate, you give this bank official(s) some gifts	1	2	3	4	5
You get together with them on some holiday occasions	1	2	3	4	5
You share with these bank credit official(s) some of your own personal information (e.g., background, personal life)	1	2	3	4	5
You feel free to share with bank credit official(s) your ideas, feelings, hopes, or problems that may not directly relate to business	1	2	3	4	5
You prefer to avoid contact with bank officials	1	2	3	4	5
The bank officials not interested in your business	1	2	3	4	5
You feel intimidated when dealing with bank	1	2	3	4	5
It is important to provide your bank officials with timely and regularly management information	1	2	3	4	5

E.2. In the following questions, please circle the number that best describing the extent to which top managers at your firm have utilized personal connections during the past 3 years for your business.

	Very little	Little	Average	Extensive	Very extensive
Your relationship with top managers of buyer firms	1	2	3	4	5
Your relationship with top managers of supplier firms	1	2	3	4	5
Your relationship with top managers of competitor firms	1	2	3	4	5
Your relationship with political leader in various levels of government	1	2	3	4	5
Your relationship with officials in Department of commerce and industry	1	2	3	4	5
Your relationship with officials in regulatory and supporting organizations such as tax bureau, state banks	1	2	3	4	5
Your relationship with universities/ institutions	1	2	3	4	5

E.3. Did the firm participate in any association/ organization in fiscal year 2014? [1] Yes [2] No, go to E.4

a) How many associations/ organizations did the firm participate in?

b) Please answer the following questions about participating in the association/ organization.

associations/ organizations	Duration of membership? (years)	Used services from the association? [1] Yes [2] No	Got advice from the associations' leaders? [1] Yes [2] No	Did the association help the firm to get credits? [1] Yes [2] No	If the association does not directly benefit your firm, but has benefits other members, you would contribute labour and money to the association? [1] Yes [2] No	The association always treat the firm fairly? [1] Yes [2] No	In general, do you believe information received from the association? [1] Yes [2] No

E.4. Please fill information about networking of the firm with relatives and friends in below items over the fiscal year 2014.

Relatives and friends	Borrowing money		Getting advice		Willing to help		
	Did the firm borrow money from relatives/ friends? [1] Yes [2] No, go to the next item	How frequently did the firm borrow money from relatives/ friends? Code N	Did the firm get advice from relatives/ friends? [1] Yes [2] No, go to the next item	How frequently did the firm get advice from relatives/ friends? Code N	If the firm has struggles with debt, do you think your relatives/ friends will lend money? [1] Yes [2] No	How many relatives/ friends are willing to lend money?	How much do you think the firm would borrow from relatives/ friends? (1 million VND)
1. Relatives							
2. Friends							

Code N: [1] Never; [2] 1-3 times; [3] 4-6 times; [4] Greater than 6 times

Thank you very much for your information!

Chapter 3

Networks and Firm Performance: A Case Study of Vietnamese Small and Medium-Sized Enterprises

with Petrik Runst and Kilian Bizer

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Download: <http://www.ifh.wiwi.uni-goettingen.de/de/inhalt/ifh-working-papers>

Abstract

Small and medium-sized enterprises play an important role in developing and transition economies. Recently, more attention has been paid to the role of networks in improving firm performance. By using data from the DANIDA project on SME survey with more than 2,500 manufacturing firms in Vietnam, we examine the relationship between networks and firm performance, particularly focusing on small and medium-sized businesses. Network data covers four dimensions of networking including within-sector-network, across-sector-network, informal and formal creditors, and politicians and civil servants. Multivariate panel regressions have been applied. The results suggest that firm performance is positively related to the existence and the size of networks with individuals in a different sector and networks connecting to politicians and civil servants.

Keywords: SMEs, Networks, SME Performance, Vietnam, Panel Data

JEL Classification: L25, L60, L29

3.1. Introduction

Small and medium-sized enterprises (SMEs) have an important role in economic growth worldwide. They have been found to create jobs (Chandler, 2012; Hu & Schive, 1998; Neumark et al., 2011; Wit & Kok, 2014), to reduce poverty (Beck, Demirguc-Kunt et al., 2005), and bring about innovation (Hemert et al., 2013; Lee et al., 2010). SMEs are the main drivers of economic development (Ayodeji & Balcioglu, 2010) and are also widespread in developed economies. SMEs make up 95% of all enterprises in the OECD area (OECD, 2004).

In this paper, we will investigate SME performance in one highly successful developing country, i.e. Vietnam. The annual growth rate of the Vietnamese economy is around 6% over the last five years. This positive development makes Vietnam an interesting country for research on SMEs (World Bank, 2015). Vietnamese SMEs generated about 40% of annual gross domestic product (GDP) in 2014. While most large companies are state owned, SMEs represent the growing private sector. In order to support economic development in general, and SME development in particular, the government has implemented many policies such as an economic reform program since 1986, the Company Law and Private Enterprise Law (1990) which were amended to the Enterprise Law (2005).

There is a growing body of literature on firm performance of SMEs in developing countries. Firm performance is measured by financial outcomes (Chadha & Sharma, 2016), sales growth or market growth (Swierczek & Ha, 2003), customer satisfaction (Hirons et al., 1998; Williams & Naumann, 2011), employee growth rate, and return on assets (ROA) (Wolff & Pett, 2006). It is also measured by establishing a foundation upon which future growth may take place (Bevan, 1999; Hudson et al., 2001; Otter et al., 2014; Swierczek & Ha, 2003; Wolff & Pett, 2006) and by the level of satisfaction on the part of the founders (Vivarelli & Audretsch, 1998). Other author considers the societal contributions of small firms as an indicator of their performance (Reynolds, 1987).

Firm performance has been influenced by several factors, for instance owners' age (Le & Harvie, 2010), firm size (Le & Harvie, 2010), networking (BarNir & Smith, 2002; Hoang & Antoncic, 2003; Huggins, 2001; Lechner et al., 2006; Watson, 2007; Watson, 2011), ownership (Le & Harvie, 2010), etc.

Networking has been paid more attention in recent years for at least two reasons. Firstly, private SMEs face twin challenges with respect to business and ownership forms (state-owned vis-à-vis private sector; Fogel, 2001). For example, large and state owned enterprises

usually have better access to finance (Beck, Demirgüç-Kunt et al., 2005). In this case, SME networking could potential mitigate these disadvantages. Secondly, private SMEs are seen as very high-risk partners because of the high failure rate (Le & Nguyen, 2009), and information asymmetries (Frame, Padhi, & Woosley, 2001). For example, customers mainly rely on their personal networks to get information on a firm's credibility. Therefore, networks could help a firm to spread knowledge of its existence, product quality and credibility to related stakeholders.

Our main objective is to examine the effects of networking on SME performance (net income, gross margin, growth rate based on revenue and employee, ROA and ROE). Our study contributes to the previous literature by using panel data. Antecedent studies are based on cross sectional data. They mainly focus on developed countries and one network type, while our study investigates multiple network types in a developing country, i.e. Vietnam.

The rest of the paper is organized as follows: Section 2 presents the overview of SMEs development in Vietnam. Section 3 reviews the literature on networks and firm performance. Data collection and research methodology will be described in section 4. Then, section 5 shows the regression results. Finally, the paper closes with a conclusion and suggests implications to policy-makers and SMEs' owners in developing countries regarding the development of SMEs.

3.2. Overview of SMEs Development in Vietnam

The economic reforms in 1986 created a more liberal economic model and business environment for private firms in Vietnam. During the French colonial period (1884-1945), there existed a limited scope for private firm operations. In the period of 1954-1975, Vietnam was divided into two political systems: the democratic republic North and the republican South (with a presence of the United State in military and funding). In the North, the Communist Party followed a nationalized industrialization policy. In the South, private firms were comparatively more developed. Later, in the period between 1976 and 1980, the Northern economic system was transferred to the South. The nationalization of all private companies brought the market system to a stand still.

Since 1986, a series of policies and economic reforms has paved the way for private firm development. In 1990, the Enterprise Law was first issued. However, there were a number of challenges for new start-ups, such as a complex legal procedure or lack of funding. To ease the registration process, the New Enterprise Law was implemented in 1999. The number of newly registered firms increased. From 2000 to 2004, about 121,000 enterprises registered,

most of which were SMEs. Since 2010, the growth of SMEs has been increasing gradually (see figure 3.1). In 2010, there were 279 thousand enterprises, after 6 years, there was an increase of 198 thousand enterprises (equal to 70%).

(Insert figure 3.1 here)

According to Decree No. 56/2009/ND-CP (2009), SMEs are divided into three levels: micro-sized enterprises, small-sized enterprises, and medium-sized enterprises based on the size of their total capital or the number of labourers annually (see table 2.7). Those enterprises have received support (e.g. access to credit, infrastructure, training activities) by the Vietnamese Government, the Vietnam Chamber of Commerce and Industry (VCCI), banking systems, and non-governmental organizations (NGO).

However, they still face numerous constraints such as low levels of supra-regional competitiveness, lack of well-trained workers, weak networking, poor infrastructure and lack of solid supporting industries (Tran, Le, & Nguyen, 2008), which could hinder their development. Based on several business environment indices, it can be stated that there is a considerable potential in further improvements of the institutional quality. Vietnam current ease-of-doing-business rank is 82, and therefore comparable to China's. Similarly, its overall index of economic freedom is 54.2, with particular disadvantages in the area of judicial effectiveness and government integrity. Based on our findings, the authors recommended to improve the business environment as well as implementing firm-oriented policies (also see Hoang, 2016).

3.3. Literature Review on Networks and Firm's Performance

In the 1980s and early 1990s, research on social networks has been carried out in sociology (BarNir & Smith, 2002; Marsden, 1990). Networks can be systems, consisting of people or things, in order to exchange information or develop personal or professional contacts. Networks play vital roles in many aspects: connecting people, transferring knowledge, enhancing business activities, etc.

Networks plays a crucial role in the development of SMEs (Joel A. C. Baum et al., 2000; Lechner et al., 2006). It can be defined as the personal relationships of owners or managers to individual suppliers, customers, business associations or the government officials. There is a growing body of literature on effects of networks in developing and transition countries. It is assumed to have larger effect on access to credit, access to resource or inputs, and access to markets (Blackwell & Winter, 1997; Fatoki & Odeyemi, 2010; Hung D. Pham, 2017; Li et al., 2008; O'Donnell, 2014; Petrik Runst, 2010; Watson, 2011). Firm owners rely on their

networks for obtaining and exchanging information, as well as gaining social-economic supports. In addition, through networking firms can adopt technologies or innovations as well as reduce information asymmetry.

It is also hypothesized that if firms have larger networks they are more likely to display increased performance (Watson, 2007). As firm owners use their personal networks to contact stakeholders (customers or suppliers) and get better services (e.g., access to credit or information of modern technologies). Through networking, firms can enlarge their production scale. A strong network could potentially reduce transaction costs, thereby increase revenue or net income. In addition, it can play a role in reducing risks in markets. Blackwell and Winter (1997) pointed out that networking with bank officers helps firms reducing their costs of capital (lower interest rate). Le et al. (2006) and Le (2013) also found a close network with banks help improving access to credit. The effect of networks on firm's performance also depends on types of firms. For instance, Acquah (2012) found that family owned firms and non-family owned firms get different benefits from network relationship with bureaucratic officials and politicians in Ghana. Similarly, Wu, Wu, and Rui (2012) and Li et al. (2008) also found political connection has a positive effect on firm value and performance in China. The literature on business networking is linked with the literature on development economics and institutional economics, since firm networking can overcome detrimental official rules or power structures (Méon & Weill, 2010).

(Insert table 3.1 here)

Watson (2011) and Sue Birley (1985) categorized networks into 2 parts: (i) formal network including relationship with external accountants, banks, solicitors, industry associations, business consultants, tax officers; (ii) informal network such as relatives and friends, business contact. In the early stages of firm development, small firms' owners mainly rely on their informal network to search for funds. Curran, Jarvis, Blackburn, and Black Sharon (1993) classified networks of small businesses with four themes: the family and kindship, co-directors and partners, customers and the market, and investment or finance. From the literature, we can define that firm networks composed by the relationship with competitors, member of formal network organization, and personal contact of owners or managers as well as staffs. We paid more attention on the last four components to construct the networking indicators in our study.

In the Vietnamese context, Nguyen, Alam, Perry, and Prajogo (2009) found that networks of SMEs heavily depend on informal relationships and cultural characteristics which somewhat

influence the SMEs' development. John Mcmillan and Christopher Woodruff (1999) examined the effect of trading relationship of firm in Vietnam, firms offer a larger credit to their partners for a longer relationship. Other studies also illustrated the role of networks in long-term development of firms (e.g., firm success or technical efficiency) (Santarelli & Tran, 2013; Viet Le & Charles Harvie, 2010).

There are several ways to quantify a firm's networks: network size (continuous variable), network intensity (time spent developing and maintaining business-related contact, see (Danis et al., 2010), and network diversity (Carson et al., 2004). Network intensity and network diversity can be dummy or continuous variables. Lechner et al. (2006) found that the overall network size (e.g. the number of contacts across all types of networks) is less important for firm performance than the size of specific types of networks, i.e. the relational mix. Thus, our research contributes to the recent literature by examining the role of different network types on firm performance in Vietnam.

3.4. Research Methodology

3.4.1. Data collection

The data were obtained from the long-term survey of DANIDA Project in Vietnam. The survey was conducted by the Institute of Labour Science and Social Affairs (ILSSA), the Central Institute for Economic Management (CIEM), and Department of Economics of University of Copenhagen. The survey was distributed by more than 2,500 manufacturing SMEs in Vietnam. The data was collected in ten representative provinces and cities every two years, including Ho Chi Minh, Ha Noi, Hai Phong, Ha Tay⁴, Quang Nam, Phu Tho, Nghe An, Khanh Hoa, Lam Dong, and Long An. For a geographic overview see the map in figure 3.2.

(Insert figure 3.2 here)

Owners or representatives of SMEs were interviewed face to face, gathering information on firm's characteristics, network characteristics and firm performance. The panel dataset includes five survey rounds from 2007 to 2015 with a total sample size 13,070 observations. The number of SMEs sorted by province and year is displayed in table 3.11.

In addition, we selected 1,173 firms have fully participated in 5 round-survey summing up to 5,865 observations to create a pure panel dataset. In each wave of the survey, bankrupt or

⁴ Ha Tay is now a part of Ha Noi since 2008

over-developed enterprises (not SMEs anymore) were replaced by other enterprise in the same sector as well as same territory.

(Insert table 3.2 here)

Table 3.2 shows the distribution of firms by ownership type. About 65% of firms are household businesses, 20.9% are limited liability companies and other types of firm ownership (e.g., private enterprise, cooperatives, Joint Stock Company) accounted for over 10%. For analyzing purpose, we re-categorized in two group based on firm legal status (household business and other firms). It is due to the fact that household businesses in Vietnam have smaller sizes compared to others. Another reason to reclassify is the trend of growing number of household business in many rural areas in Vietnam. Moreover, household businesses are significantly lower performing and all other types are insignificant.

Newman, Rand, Talbot, and Tarp (2015) used two-digit codes for manufacturing sectors to categorize firms. However, there are a small number of observations in several sectors, therefore we generate categories based on economic activities (see table 3.3). About 30% of all enterprises can be found in the largest sub-sector, i.e. food, beverages, and tobacco. Other sub-sectors are less common, for instance: wood, paper products, and painting (16.2%); basic metals (17.9%), furniture (6.43%), etc.

(Insert table 3.3 here)

3.4.2 Model Specifications and Hypotheses

After summarizing descriptive statistics, we employ Pooled-OLS, and more importantly Panel Data Techniques in order to analyse the relationship between selected independent variables and firm performance. We run several regressions to examine the relationship between performance outcomes and the main variables of interest (network variables) and other control variables.

$$Y_{it} = \lambda + \beta \text{Network type}_{it} + \sigma X_{it} + \mu D_{it} + \omega_i + \varepsilon_{it} \quad (1)$$

where X'_i is a vector of control variables comprising firm and owner characteristics. The year subscript t represents 2007, 2009, 2011, 2013 and 2015; ω_i captures unobserved heterogeneity and ε is the error term. Control variables (X_{it}) were measured at the firm and managerial levels including the log of the number of employees, firm age, year of education of owners. D_{it} is a vector of firm ownership dummies.

Firstly, we run pooled OLS regression to examine the relationship between variables. Later on, random effect (RE) and fixed effect (FE) models are employed. For RE models, the

individual-specific effect (unobserved heterogeneity) is a random variable that is uncorrelated with the independent variables, whereas an FE specification is used when the two are correlated. Model choice depends on the results of a Hausman Test.

The following network types are analyzed: network with business people in the same sector; network with business people in the different sector; network with bank officials; network with politicians and civil servants. For each of them we generate a dummy variable, which is equal to zero if the manager or owner has zero contacts, and it is equal to one if more than zero contacts are available. We also generate a variable which records the number of contacts in each network group. We replace outliers in terms of network size by mean value before regression since they do not affect our findings.

Since network size was measured by asking respondent to state how many people he or she has regular contact with, this method does not account for other nuances of networking (e.g. frequency of contact or intensity, duration of acquaintance, and network density). Lechner et al. (2006) found that the overall network size is less important than the size of specific types of networks. Thus, our study contributes to this more recent strand of the literature.

The correlation matrixes for all variables were created to explore the relationship between sets of variables using in the regressions. It was found that majority of the variables have both positive or negative correlation. For instance, number of labour force has the highest correlation with net income of the firm (0.49). The correlation could also identify collinearity within selected variables. Moreover, we tested the relationship between each of the selected independent variables for multicollinearity based on variance inflation factors (VIF).

Hypotheses:

Expansionary performance is positively affected by:

- H1: the existence and size of the network with business people in the same sector.
- H2: the existence and size of the network with business people in a different sector.
- H3: the existence and size of the network with bank officials.
- H4: the existence and size of the network with politicians and civil servants.

In contrast, we do not expect that the non-expansionary performance measure (gross margin) is positively affected by networks.

Variables of Interest

Dependent Variables

All variables and their description can be found in table 3.4. According to Dhaliwal, Subramanyam, and Trezevant (1999) net income is an indicator strongly associated with the market value of equity and predicts future operating cash flows and income. Therefore, this study used net income as its first direct measure of firm performance. The second performance measure used in this study is gross margin (Otter et al., 2014). This is the ratio of gross profits over total revenue. This performance measure must be interpreted with care as it captures the profit weighted by total revenue. In addition, we used four other variables for measuring firm performance: growth rate of revenue, growth rate of the number of employees, ROA and ROE. We tested for normality since some dependent variables are continuous and we control for outliers before running regressions.

While an increase in net income, the total employee growth rate, revenue growth, ROA and ROE represents an *expansionary* measure of success (increasing size and market share), the sixth measure, gross margin, is a measure of success related to companies close to the technological frontier. A company may increase sales by lowering prices, thereby expanding their market share. This strategy is to be expected in countries whose comparative advantage relates to low price production (*extensive* economic growth). The expansionary strategy can lead to revenue growth, a higher number of employees, and increased net income. However, an expansionary company may experience a growing total profit and a shrinking gross margin at the same time as per unit profits fall. In contrast, a high-tech company may not want to actively pursue a low prices/high sales strategy. Instead they may want to focus on the ratio of total profits to total revenue. Companies that focus on research and development are more likely to keep prices high and build up a reputation for innovative products instead. Overall, we expect expansionary measures of success to be more relevant to our research setting of small and medium sized companies in a developing country.

Independent Variables

Network variables were measured by asking respondents about the number of people that they currently have regular contact.

- How many businesses people in the same sector they regular talk to and share information with? (Within-sector-network)
- How many businesses people in a different sector they regular talk to and share information with? (Across-sector-network)

- How many bank officials (both formal and informal creditors) they have a close contact?
- How many politicians and civil servants they have a close contact?

Control Variables

We also control for age of company, the number of employees, whether the company has easy access to rail, survey year, ownership type, economic sector and education level of firm owner (see table 3.4).

(Insert table 3.4 here)

3.5. Results and Discussion

3.5.1. Descriptive Statistics

We divided the sample into two groups according to firm ownership (household businesses and other type of firms) as mention before. Overall, household businesses are worse off than other company types (e.g., private enterprise, cooperative/partnership, limited liability companies, joint stock company, and local state enterprise), both in terms of net income, network size, education level, and access to infrastructure. Most strikingly, household companies have a smaller likelihood of being connected to a source of finance and a politician or bureaucrat. The network size is lower for household businesses across all four types of networks. However, household businesses have slightly better performance outcomes such as gross margin, growth rate of revenue, growth rate of employee, ROA and ROE.

In regard to socio-economic characteristics, household businesses are older than other firms (16.3 and 11.4 yearolds), also the size of firms are much smaller (5.7 and 34.4 labourers).

(Insert table 3.5 here).

Table 3.6 presents descriptive statistics of all variables used in the regression models from 2007 to 2015.

Net income is the excess of revenues over expense of a firm that is commonly used as a measurement of performance. On average, the net income of an individual firm was VND⁵ 137,172,000 (USD 6,235; $\ln_{net} = 11.83$). The values of other outcome variables in total sample were: gross margin (0.21), growth rate of revenue (0.43) and growth rate of employee (0.019), ROA (0.30), and ROE (0.30). These descriptive results show that firms experience increasing net incomes between 2007 and 2015 and mostly stagnant gross margins. Meanwhile, total revenue and the number of employees increase slowly.

⁵ USD 1 = VND 22,000 at the time of the survey 2015

On average, a firm keeps in touch with 5.5 business people in the same sector and a larger network of business people in different sectors with an average of 16.2. Meanwhile, the number of regular contacts for bank officials as well as politicians and civil servants is rather limited with 1 and 1.1 respectively. In the five-year period, we can see that the average size of the four types of networks varies little.

Regarding firms and owners' characteristics, we measured the highest professional educational completed of respondents using dummy variables. On average, the number of employees in a firm is about 16 and the mean age of firms is about 14.5 years.

Regarding access to infrastructure, about 53.3% of all firms can easily access railways. In the period of 2007-2015, we observe an improving access to rail. Using dummies to measure the level of access to transport infrastructure, we expect the variable to have a positive influence on firm performance.

(Insert table 3.6 here)

3.5.2. Regression Results

We illustrate the regression results for our dummy network variables together with the continuous network variables are displayed in table 3.7 and table 3.8. The network-dummy specifications (see table 3.7) shed light on the performance effects of the *existence of a network*. In other words, does the existence of at least one contact in each type of network affect outcomes? On the other hand, the continuous network variables (see table 3.8) captures the effects of *network size* on performance instead.

Each column investigates the performance determinants for one of our six outcome variables described above (log of net income, gross margin, growth in revenues, employee growth, ROA, and ROE). Based on Hausman Tests (Chi(2)) we select a fixed effects (FE) model for all regressions.

(Insert table 3.7 here)

In table 3.7, the coefficient for the dummy "within-sector-network" displays a positive and statistically significant effect on growth of employee and negative effect on net income and gross margin. Having a within-sector-network increases the growth rate of employees by 5.7% but lowers log income by 6%. Lechner et al. (2006) found that relationships with direct competitors have a significantly positive influence on firm development. In contrast, our results are mixed, and therefore inconclusive.

On the other hand, having a connection with business people in a different sector exerts a positive and significant effect on firm performance, for instance net income increases by almost 12.3 percentage points and the ROA and ROE increase by almost 8.7 and 11 percentage points respectively.

If there is at least one connection with a bank official, growth of revenue increases by 8.4 percentage points. Theoretically, a relationship with banks may help enterprises to obtain credit. This finding is similar to earlier research showing that the relationship with banks increases the likelihood to access credit (Blackwell & Winter, 1997; Hung D. Pham, 2017; Le, 2013; Le et al., 2006).

The existence of a political network increases net income by 4 percentage points, growth rate of revenue by 11.6%, and growth of employee by 2.7%. This result is in line with previous studies (Li et al., 2008b; Wu & Chen, 2012)

However, the existence of three out of four network types has a negative impact on gross margin. The existence of a within-sector-network reduces gross margin by 1.2 percentage points. The existence of a bank-official-network lowers it by 1.4 percentage points, and the existence of a political network lowers it by nearly 0.9 percentage point. As we have stated above, gross margin is the only variable which does not belong to the category of an *expansionary* firm strategy (*extensive* growth), where prices fall and output increases. Instead, the gross margin relates to intensive growth driven by technological advances, which is arguably not the case for most of our sample.

Overall, the results in table 3.7 lend solid support to hypotheses H2 and H4, while there is some support for H3. Based on the findings we can acknowledge the important role of political networks and networks with people in a different sector in improving firm performance.

Moreover, we found some control variables such as firm age, total labour force of enterprise, firm ownership, firm sector and professional education level significantly influencing firm performance.

Furthermore, we also run regression in which *network size* is used as our main variable of interest (table 3.8). Overall, the size of the across-sector-network and the size of the political network have a positive and significant impact on expansionary firm performance. If the size of an across-sector-network increases by one unit, net income increases by 0.24 percentage points, employee growth increases by 0.12 percentage points. If the size of a political network increases by one unit, net income increases by 3.2 percentage points and revenue growth

increases by 5.3 percentage points. Thus, the quantitative impact of political network size is larger than the quantitative impact of the across-network size. Overall, our results are very similar with the regression using dummy variables, lending support to hypothesis H2 and H4.

(Insert table 3.8 here)

3.5.3. Testing for Multicollinearity

As mentioned earlier, we tested for multicollinearity using VIF before running all regressions. As showed in table 3.9 & 3.10, VIFs range from 1.04 to 1.36 that are below threshold of 10 (Hair, Tatham, Anderson, & Black, 1998). There are no biased by the presence of severe multicollinearity in any regression.

(Insert table 3.9 here)

(Insert table 3.10 here)

3.6. Conclusions and Policy Implications

The paper analyzed factors influencing firms' performance using the unbalanced panel dataset from the survey in Vietnam with a sample of more than 2,500 firms. SMEs are very important for long-term development of the developing countries, particularly in Vietnam. In most country, firms play a role as a main driver of growth rate and sustainability. For development of SMEs, networks play a crucial role in their business, especially to get information from their partners and from the market in order to make a right decision. Firms have several types of networks, for instance: network with business people in the same sector, in a different sector, network with customers, or network with bank or societies. However, not every network type has the same effect on firm performance. Also, the existence and size of each type of network depends on the owners or managers' strategy. Many firms strive to diversify their networks not only with other business people but also politicians and credit officers, meanwhile others only invested in specific network.

We contribute new insights to our understanding of the factors influencing SME performance (e.g. net income, gross margin, growth rate of revenue, growth rate of employee, ROA and ROE) in developing countries by using panel data from Vietnam. We focus on the role of different types of networks. We find that the four types of networks have different effect on firm performance measurement. It also depends on the Vietnamese context where SMEs are paying more attention on building their networks in order to improve firm's performance. Other control variables (firm age, total labour force of enterprise, firm ownership, firm sector and professional education level) significantly influence firm performance. These results are

in line with the previous studies on the role of networks (Acquaah, 2012; Le & Nguyen, 2009; Lechner et al., 2006; Watson, 2007). One of the most interesting findings is the role of network with politicians or civil servants in improving firm performance, that is similar to the results from studies by Wu et al. (2012) and Li et al. (2008).

In order to improve performance, firm owners invest in building their networks. Firm owners reduce price for their close partners. On the one hand, it might lead to a lower profit per unit. In this manner, the enterprise most likely sells more products, resulting in higher total profits. Relatively more successful owners build up the relationship with at least one firm in the same sector, and at least one bank. In addition, relatively more successful firms build up relationships with people in a different manufacturing sector as well as with politicians/civil servants.

Further research should aim at measuring networks in more detail, for instance, the diversity of networks or network ties. It is important to know how firm owners use their networks to exchange information such as frequency and importance of the exchanged information within the networks and its effect on firm performance.

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Table 3.1. Benefits of SME-Networks

Network Type	Potential Benefits	Literature
General, Multiple	Multiple	Watson (2007); O'Donnell (2014); Lechner et al. (2006); Santarelli and Tran (2013); Petrik Runst (2010); Nguyen et al. (2009);
Within-Sector-Networks	Production Cooperation	Lechner et al. (2006); Joel A. C. Baum et al. (2000);
Across-Sector and Customer Networks	Input Procurement, Sales of Intermediate or Final Products, Informal Credits through Customer Relationships	Petrik Runst (2010); McMillan and Woodruff (1999); Lechner et al. (2006)
Bank Officials	Access to Finance, Reduces Interest Rates (Overcoming Asymmetric Information Problems)	Le et al. (2006); Le (2013); Blackwell and Winter (1997); Lechner et al. (2006); Fatoki and Odeyemi (2010); Hung D. Pham (2017)
Bureaucrats and Politicians	Circumventing official rules; Gaining Information	Acquaah (2012); Petrik Runst (2010); Méon and Weill (2010); Li et al. (2008); Wu et al. (2012)
Other	Gender effects	Watson (2011)

Table 3.2. Category SMEs Based on Ownership (Pooled Sample)

Order	Firm ownership	Absolute number	Percent	Cum.
1	Household business	8,442	64.59	64.59
2	Private enterprise	1,002	7.67	72.26
3	Cooperative/Partnership	376	2.88	75.13
4	Limited liability companies	2,731	20.90	96.03
5	Joint stock company	515	3.94	99.97
6	Local state enterprise	4	0.03	100.00
Total		13,070		

Source: DANIDA survey, authors' calculation

Table 3.3. Category SMEs Based on Manufacturing Sector (Pooled Sample)

Order	Firm sector	Absolute number	Percent	Cum.
1	Manufacture of food, beverages, tobacco products	3,845	29.42	29.42
2	Manufacture of wood, paper products, and printing	2,112	16.16	45.58
3	Manufacture of coke and refined petroleum, chemical, rubber, plastics, and other non-metallic mineral products	1,579	12.08	57.66
4	Manufacture of basic metals and fabricated metal products	2,341	17.91	75.57
5	Manufacture of furniture	840	6.43	82.00
6	Manufacture of other products	2,061	15.77	97.77
7	Others	292	2.23	100.00
Total		13,070		

Source: DANIDA survey, own calculation

Table 3.4. Variables, Measures and Expected Sign of Influence on Firm Performance

Variables	Measures	Expected signs
1 Dependent variables		
lnnet	Natural logarithm of net profit	
gross_margin	Gross profit / Revenue	
growth_revenue	$(\text{Revenue}_t - \text{Revenue}_{t-1}) / \text{Revenue}_{t-1}$	
growth_emp	$(\text{Employee}_t - \text{Employee}_{t-1}) / \text{Employee}_{t-1}$	
ROA	Return / total assets	
ROE	Return / total equity capital	
2 Main independent variables		
d_same_sector	Dummy network with business people in the same sector	+
d_diferent_sector	Dummy network with business people in a different sector	+
d_bank_officials	Dummy network with bank officials	+
d_politicians	Dummy network with politicians and civil servants	+
net_same_sector	Network size with business people in the same sector	+
net_diferent_sector	Network size with business people in a different sector	+
net_bank_officials	Network size with bank officials	+
net_politicians	Network size with politicians and civil servants	+
3 Control variables		
firmage	Age of firm in years	
employees	Total labour force of enterprise	
access_rail	Easy access to rail	
year of survey	Year of survey (2007; 2009; 2011; 2013 and 2015)	
firm ownership	Firm ownership (household business; private enterprise; cooperative/ partnership; limited liability companies; joint stock company; local state enterprise)	
firm sector	Economic sector of firm (see table 3)	
owner education	Education level of owner (no_certificate; vocational; advanced_vocational; college degree; university degree)	

Table 3.5. Descriptive Statistics from Pooled Sample (by firm ownership)

Variables	Other firms	Household business	Differences
lnnet	12.813	11.285	1.53 ^{***}
gross_margin	0.171	0.235	-0.06 ^{***}
growth_revenue	0.404	0.445	-0.04 [*]
growth_emp	0.001	0.028	-0.03 ^{**}
ROA	0.220	0.339	-0.12 ^{***}
ROE	0.227	0.345	-0.12 ^{***}
d_same_sector	0.929	0.898	0.03 ^{***}
d_diferent_sector	0.970	0.970	0.00
d_bank_officials	0.643	0.425	0.22 ^{***}
d_politicians	0.715	0.562	0.15 ^{***}
net_same_sector	6.456	4.998	1.46 ^{***}
net_diferent_sector	17.786	15.267	2.52 ^{***}
net_bank_officials	1.472	0.784	0.69 ^{***}
net_politicians	1.375	0.970	0.40 ^{***}
firmage	11.351	16.286	-4.93 ^{***}
employees	34.445	5.739	28.71 ^{***}
access_rail	0.645	0.472	0.17 ^{***}
<i>N</i>	4,628	8,442	

Note: ^{*} $p < 0.10$, ^{**} $p < 0.05$, ^{***} $p < 0.01$

Table 3.6. Descriptive Statistics from Pooled Sample

Variables	Full sample				2007		2009		2011		2013		2015	
	Min	Max	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Dependent variables</i>														
lnnet	8.0	16.9	11.826	1.396	11.357	1.408	11.703	1.431	11.958	1.369	12.049	1.316	12.073	1.318
gross_margin	-0.2	1.0	0.212	0.119	0.224	0.136	0.205	0.110	0.216	0.123	0.207	0.098	0.207	0.123
growth_revenue	-1.0	5.0	0.431	1.034	.	.	0.680	1.200	0.499	1.060	0.257	0.930	0.294	0.859
growth_emp	-1.0	2.0	0.019	0.502	.	.	0.026	0.518	0.009	0.515	-0.004	0.493	0.044	0.481
ROA	-4.8	3.0	0.297	0.433	0.314	0.453	0.315	0.421	0.277	0.420	0.280	0.447	0.298	0.421
ROE	-2.0	3.0	0.303	0.478	0.307	0.500	0.323	0.499	0.280	0.458	0.289	0.472	0.316	0.459
<i>Independent variables</i>														
d_same_sector	0.0	1.0	0.909	0.287	0.857	0.351	0.948	0.223	0.928	0.259	0.925	0.263	0.890	0.313
d_diferent_sector	0.0	1.0	0.970	0.171	0.939	0.240	0.923	0.266	0.998	0.044	0.996	0.062	0.995	0.073
d_bank_officials	0.0	1.0	0.502	0.500	0.465	0.499	0.571	0.495	0.451	0.498	0.534	0.499	0.489	0.500
d_politicians	0.0	1.0	0.616	0.486	0.553	0.497	0.635	0.481	0.550	0.498	0.666	0.472	0.676	0.468
net_same_sector	0.0	29.0	5.514	5.159	5.309	5.244	6.251	5.655	4.897	4.421	5.781	5.234	5.313	5.038
net_diferent_sector	0.0	69.0	16.159	12.084	14.540	12.245	14.545	11.861	15.946	11.401	17.732	11.513	18.065	12.843
net_bank_officials	0.0	6.0	1.029	1.341	0.901	1.233	1.173	1.378	0.893	1.265	1.143	1.425	1.030	1.368
net_politicians	0.0	4.0	1.114	1.099	1.009	1.113	1.203	1.147	0.976	1.067	1.175	1.068	1.203	1.073
<i>Control variables</i>														
firmage	2.0	59.0	14.538	10.021	13.312	10.227	14.509	11.340	13.350	9.280	15.538	9.862	15.961	8.899
employees	1.0	300.0	15.903	30.077	17.137	31.456	17.004	29.690	15.758	29.649	14.724	28.685	14.853	30.719
access_rail	0.0	1.0	0.533	0.499	0.377	0.485	0.579	0.494	0.512	0.500	0.577	0.494	0.621	0.485
N	13,070				2,635		2,659		2,552		2,575		2,649	

Source: Authors' calculation

Table 3.7. Effects of Availability of Network Types on Firm Performance

VARIABLES	FE 1 lnnet	FE 2 gross_margin	FE 3 growth_revenue	FE 4 growth_emp	FE 5 ROA	FE 6 ROE
Dummy network with business people in the same sector	-0.05942* (0.03273)	-0.01165*** (0.00425)	0.04092 (0.05662)	0.05721** (0.02841)	-0.01351 (0.01633)	-0.01457 (0.01812)
Dummy network with business people in a different sector	0.12294** (0.05911)	0.00329 (0.01074)	-0.08421 (0.11748)	-0.07659 (0.05437)	0.08726*** (0.03286)	0.11054*** (0.02748)
Dummy network with bank officials	0.01076 (0.02106)	-0.01440*** (0.00262)	0.08484** (0.03753)	0.02179 (0.01791)	-0.01260 (0.00979)	-0.01642 (0.01089)
Dummy network with politicians and civil servant	0.04127** (0.02045)	-0.00927*** (0.00248)	0.11556*** (0.03508)	0.02735* (0.01640)	-0.00791 (0.00900)	0.00323 (0.01000)
Firm age (in years)	-0.00037 (0.00159)	-0.00051** (0.00025)	0.00771** (0.00336)	0.00118 (0.00148)	-0.00010 (0.00068)	-0.00071 (0.00077)
Total labour force of enterprise	0.00833*** (0.00116)	0.00002 (0.00007)	0.00697*** (0.00135)	0.00711*** (0.00089)	0.00080*** (0.00028)	0.00045 (0.00032)
Easy access to rail	-0.03146 (0.02263)	-0.01220*** (0.00271)	0.05943 (0.04188)	-0.02249 (0.02051)	0.00564 (0.00988)	-0.00071 (0.01160)
Year of survey	yes	yes	yes	yes	yes	yes
Firm ownership	yes	yes	yes	yes	yes	yes
Firm sector	yes	yes	yes	yes	yes	yes
Owner education	yes	yes	yes	yes	yes	yes
Constant	10.96672*** (0.12884)	0.24699*** (0.01638)	0.30258 (0.20843)	-0.12703 (0.11038)	0.25765*** (0.06365)	0.23919*** (0.05254)
Observations	12,979	12,980	8,379	8,379	12,980	12,980
R-squared	0.11455	0.02182	0.04858	0.04340	0.01712	0.01173
Hausman test (Chi2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Number of firm_ID	4,602	4,602	3,278	3,278	4,602	4,602

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

Table 3.8. Effects of Network Size Variables on Firm Performance

VARIABLES	FE 7 lnnet	FE 8 gross_margin	FE 9 growth_revenue	FE 10 growth_emp	FE 11 ROA	FE 12 ROE
Networksize with business people in the same sector	-0.00005 (0.00195)	0.00035 (0.00024)	0.00089 (0.00329)	0.00230 (0.00160)	-0.00195*** (0.00075)	-0.00088 (0.00092)
Networksize with business people in a different sector	0.00239*** (0.00083)	-0.00018* (0.00009)	0.00123 (0.00136)	0.00117* (0.00066)	0.00043 (0.00037)	0.00044 (0.00042)
Networksize with bank officials	-0.00539 (0.00864)	-0.00516*** (0.00096)	0.02100 (0.01346)	0.00010 (0.00672)	-0.00288 (0.00354)	0.00114 (0.00415)
Networksize with politicians and civil servant	0.03162*** (0.00961)	-0.00211* (0.00111)	0.05343*** (0.01600)	0.01054 (0.00739)	0.00420 (0.00369)	0.00489 (0.00436)
Firm age (in years)	-0.00064 (0.00158)	-0.00051** (0.00025)	0.00793** (0.00331)	0.00139 (0.00147)	-0.00025 (0.00067)	-0.00095 (0.00077)
Total labour force of enterprise	0.00831*** (0.00116)	0.00002 (0.00007)	0.00702*** (0.00135)	0.00712*** (0.00089)	0.00077*** (0.00028)	0.00042 (0.00032)
Easy access to rail	-0.03134 (0.02262)	-0.01239*** (0.00273)	0.05601 (0.04160)	-0.02545 (0.02043)	0.00692 (0.00977)	0.00183 (0.01151)
Year of survey	yes	yes	yes	yes	yes	yes
Firm ownership	yes	yes	yes	yes	yes	yes
Firm sector	yes	yes	yes	yes	yes	yes
Owner education	yes	yes	yes	yes	yes	yes
Constant	10.99731*** (0.10839)	0.23694*** (0.01244)	0.24604 (0.16676)	-0.17257* (0.09391)	0.32427*** (0.05219)	0.32317*** (0.04226)
Observations	12,979	12,980	8,379	8,379	12,980	12,980
R-squared	0.11556	0.01906	0.04827	0.04280	0.01623	0.01006
Hausman test (Chi2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Number of firm_ID	4,602	4,602	3,278	3,278	4,602	4,602

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

Table 3.9. Collinearity Tests (using dummies for network type)

Variables	VIF	1/VIF
d_same_sector	1.04	0.959
d_diferent_sector	1.07	0.933
d_bank_officials	1.12	0.890
d_politicians	1.1	0.908
firmage	1.16	0.860
employees	1.36	0.734
access_rail	1.09	0.917
year of survey	yes	yes
firm ownership	yes	yes
firm sector	yes	yes
owner education	yes	yes

Notes: Controlled for year of survey, firm ownership and firm sector; VIF, Variance inflation; 1/VIF, Tolerance.

Table 3.10. Collinearity Tests (using network size)

Variables	VIF	1/VIF
net_same_sector	1.06	0.941
net_diferent_sector	1.08	0.930
net_bank_officials	1.18	0.848
net_politicians	1.12	0.891
firmage	1.15	0.870
employees	1.37	0.731
access_rail	1.08	0.925
year of survey	yes	yes
firm ownership	yes	yes
firm sector	yes	yes
owner education	yes	yes

Notes: Controlled for year of survey, firm ownership and firm sector; VIF, Variance inflation; 1/VIF, Tolerance.

Table 3.11. Number of SMEs Surveyed 2007-2015

Province/City	2007	2009	2011	2013	2015
Ha Noi	279	279	270	285	296
Phu Tho	242	257	252	259	254
Ha Tay	381	371	340	347	371
Hai Phong	194	208	205	190	219
Nghe An	349	352	349	347	340
Quang Nam	154	151	158	167	171
Khanh Hoa	86	93	97	90	99
Lam Dong	81	67	78	88	92
Ho Chi Minh	602	603	574	622	653
Long An	124	127	126	136	133
Total	2,492	2,508	2,449	2,531	2,628

Source: CIEM and DANIDA surveys, 2007-2015

Note: The overall number of provinces is 63

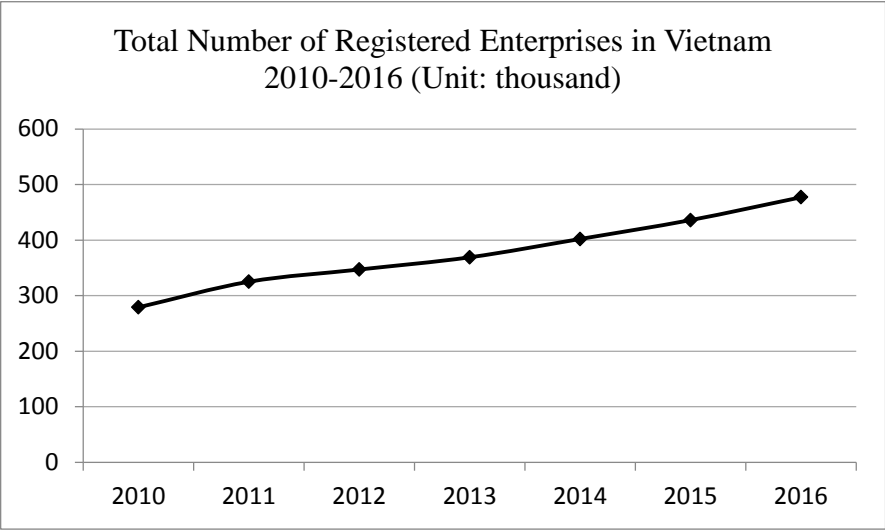


Figure 3.1. The Development of Enterprise in Vietnam (GSO, 2016)

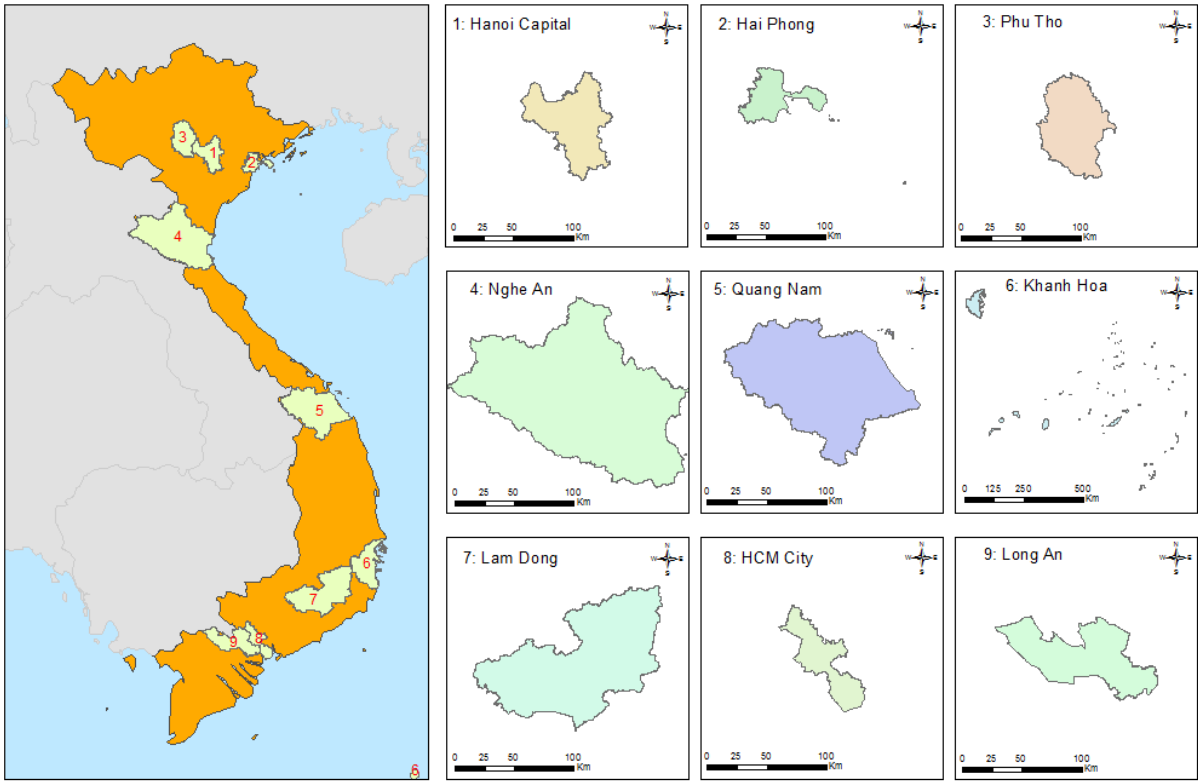


Figure 3.2. Map of Vietnam (left) and the Surveyed Provinces (right)

Source: <http://www.mapsofworld.com>

Chapter 4

How do Institutional Factors affect Firm Performance? Evidence from Vietnamese Small and Medium-Sized Enterprises

Abstract

This paper examines the effects of institutions on performance of small and medium-sized enterprises (SMEs) using five rounds of panel data collected from 1,173 SMEs in Vietnam from 2007-2015. Controlling for other factors, we estimate multiple linear regression models and find that SMEs domiciled in provinces with higher provincial competitiveness index (PCI) have better performance than SMEs domiciled in low ranked provinces. However, we get mixed effects on performance when sub-PCI indices are used. We recommend that the regional governments in Vietnam should reduce the barriers to SMEs' entry into the market by creating a conducive business environment for inception and growth of SMEs. Policy reforms towards creating stronger formal institutions that support SME growth would be beneficial.

Keywords: Formal Institutions, SME Performance, PCI, Panel Data, Vietnam.

JEL Classification: B25, B52, D02, L25, P26

4.1. Introduction

There is extant institutional economics literature in the last two decades, especially about the role of institutions in spurring economic growth and development in transition and developing countries (Hoskisson et al., 2000; Murrell, 2003; Wright et al., 2005). In many of these countries, formal institutions are generally weak and their populations largely observe traditional informal institutions to conduct business. This further cripples enforcement of laws as the level of awareness of statutory laws and regulations is limited. Analysis of existent formal institutions and their influence on inception and growth of small and medium-sized enterprises (SMEs) is critical particularly in countries such as Vietnam.

North (1989) described the role of institution and its effect on development and economic performance. He defined “Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction”. Defined this way, institutions are affected and shaped by these factors: socio-economic factors, politico-administrative factors, as well as the structure of organizations. They can be classified into formal and informal institutions (Pejovich, 1999). Formal institutions vary across regions or countries and significantly affect organisation (structure), operations and performance of firms i.e. adversely negatively affect the activities of foreign enterprises (Li and Sun, 2017), firms’ export strategies (Nguyen et al., 2013), and where or how foreign investments are set up (Meyer and Nguyen, 2005). However, empirical studies on the role of institutional factors in enhancing growth of SMEs remains scarce particularly in the case of Vietnam.

The purpose of this paper is to explain institutional factors influencing firm performance and derive policy implications from the results. Due to the limitations of survey data, we mainly focus on the effects of formal institutions (e.g., political institutions, laws, legal systems, or regulations) on SMEs’ performance and hypothesize that specific institutional factors significantly affect SMEs’ performance (in terms of net income, return on assets - ROA, return on equity - ROE, gross margin, growth of revenue, employees, and assets). To test the hypotheses, multiple panel regression models are fitted on five-rounds panel data on 1,173 SMEs, collected from Danish international development agency (DANIDA) database in Vietnam. We contribute to the body of literature on the effects of institutions on SME performance in developing countries using the provincial

competitiveness index (PCI)⁶ in the context of Vietnam. Overall, results show that formal institutional factors have significant positive effect on SME performance. Based on the findings, we recommend strengthening formal institutions to improve public services and business environment that accelerate SME growth.

The rest of this paper is organized as follows: Section 2 presents the literature on institutions and firm performance, followed by methodology in section 3 and result and discussion in section 4. Section 5 entails the general conclusions and policy implications from the study.

4.2. Literature Review on Role of Institution in Firm Performance

Our overall research agenda concerns the link between a region's institutional framework and the performance of its respective firms. Therefore, in the following discussions, we review the relevant literature on both domains.

Regarding the measurement of firm performance, it is predominantly measured by; financial outcomes (Chadha and Sharma, 2016), sales growth or market growth (Swierczek and Ha, 2003), customer satisfaction (Hirons et al., 1998; Williams and Naumann, 2011), employee growth, and ROA (Wolff and Pett, 2006). It is also measured by established foundations for growth in the future (Bevan, 1999; Hudson et al., 2001; Otter et al., 2014; Swierczek and Ha, 2003; Wolff and Pett, 2006), and by the level of satisfaction on the part of firms' founders (Vivarelli and Audretsch, 1998). Other authors consider the societal contributions (e.g. gross sales revenue, out-of-state or domestic exports, and job creation) of small firms as an indicator of their performance (e.g. Reynolds, 1987). Firm performance is affected by several other factors such as: owners' age (Le and Harvie, 2010), firm size (Le and Harvie, 2010), networking abilities (BarNir and Smith, 2002; Huggins, 2001; Lechner et al., 2006; Watson, 2007; Watson, 2011), firms' ownership (Le and Harvie, 2010), and institutions (Li and Sun, 2017).

From a new institutional economics perspective, transition countries like Vietnam have experienced a rapid change in formal and informal institutions (e.g., statutory laws and regulations, social norms, culture or traditions) in recent years due to globalization and modernization of business systems (Tran et al., 2009). This is also relevant in our study particularly on the factors influencing firm activities, structure and performance. In fact, a large number of SMEs lack strategies to cope with the changing business environments to

⁶ For details of the PCI, we refer to: <http://eng.pcivietnam.org/>

better performance and their adaptation is slower than the rapid institutional changes (Hoskisson et al., 2000; Murrell, 2003). Institutional change can contribute to long-term development of firms (e.g., firm growth, governance, and performance) and economy-wide transformation in general. Krasniqi and Desai (2017) found that good informal institutions improved export performance in 26 transition economies. Bardhan (2005) explained how institutions affect economic performance in many poor countries but the effects are mixed (e.g., it can negatively or positively influence performance). Li and Sun (2017) also found that sub-national institutions such as the government effectiveness, legal environment, and economic performance affect performance of foreign firms in China. Due to the changes in socio-economic and political institutions within the country, sub-national institutions are expected to affect firm performance at regional levels.

Similarly, changes in formal institutions and regulations also significantly affect firm performance in Vietnam (Nguyen et al. 2017). Revenue growth of SMEs is a dependent variable to measure firm performance and selected independent variables such as: local governance quality, informal charges and transparency (two indices of PCI). Other control variables were applied in the regressions for instance: firm ownership, firm age, firm size and asset structure.

Another study by Nguyen et al. (2013) examined sub-national institutional factors influencing the relationship between export strategy and firm performance. Based on the institutional economic theory, the authors used two main factors - State-owned enterprises (SOE) bias⁷ and local governmental transparency to test several hypotheses of the effect on firm performance that is measured by the pooled return on investment (direct effect). The study found the local governmental transparency had a positive effect on firm performance as well as on firms' internationalization effort meanwhile the SOEs bias negatively influence firm performance.

Murrell (2003) stated that the political changes such as movement from centralized planning to market oriented economy and the accompanying institutional changes can affect the internal organizations of firms as well as the mechanism of firm governance. The institutional frameworks in transition countries have significantly improved since the 1990s. The author differentiated these types of institutions: (i) those produced by private bodies with a formal role promoted or facilitated by the State; (ii) political institutions; (iii) institution-like behaviour by State administrative bodies; (iv) the effects of the actions of independent quasi-

⁷ SOEs bias means local governments (e.g., provinces, States) favor State-owned firms development.

governmental bodies; (v) the legal systems. Based on this approach, Murrell (2003) concluded that institutions play a central role in the processes of economic development.

In Vietnam, there has been remarkable institutional reforms since 1986 when the country shifted from centralized planning to market oriented economy. This paved the way for private firms' development and adjustments to the changes. However, some of the changes in laws and regulations were rather ambiguous, resulting in misinterpretation or heterogeneous implementation of policies by the regional (provincial) Governments. Studies on economic performance in Vietnam with an institutional focus are scarce (Tran et al., 2009). Chand et al. (2001) provided an intensive review of the role of institutions in development and concluded that right institutions can lead to rapid growth, and increased productivity especially in the agricultural sector. Using a large sample of more than 300,000 SMEs, Nguyen et al. (2017) found that firm performance (growth of revenue) was positively influenced by the quality of local governance. In addition, the effect of institutions is stronger for young and small SMEs in areas where there had been less support for development of private enterprises. Tran et al. (2009) found that the right institutions have a positive effect on firm performance and that governance remains the central obstacle for the development of private firms in Vietnam.

Our paper contributes to existing literature on the role of formal institutions in the development of SMEs in developing countries. We test the effects of various regional and institutional factors on firm performance using 7 performance indicators constructed from a balanced panel dataset. Our study is novel for two reasons. First, unlike other studies that only focused on one or two outcome variables (indicators) of performance, we include several performance indicators in the regressions. In the context of this study, firm performance broadly refers to operational and financial outcomes such that mixed effects of the relationships could be analysed more clearly. Secondly, to the best of our knowledge, no studies have analysed the effect of formal institutions on firm performance for the case of Vietnam.

4.3. Research Methodology

4.3.1. Data Collection

The data were obtained from a long-term survey by the DANIDA Project in Vietnam. The surveys were conducted every two years by the Institute of Labour Science and Social Affairs (ILSSA), the Central Institute for Economic Management (CIEM), and the Department of Economics of University of Copenhagen, among more than 2,500 manufacturing SMEs in

Vietnam. The geographic coverage encompassed 10 representative provinces and cities from North to South of Vietnam, including Ho Chi Minh, Ha Noi, Hai Phong, Ha Tay, Quang Nam, Phu Tho, Nghe An, Khanh Hoa, Lam Dong, and Long An.

(Insert figure 3.2 here)

Face-to-face interviews with firm owners (or representatives) were conducted using semi-structured questionnaires. The questionnaires detailed; general characteristics of firms, and firm owners, and firm performance. The panel dataset includes five survey rounds from 2007 to 2015. We selected only 1,173 firms that were surveyed in all the five rounds, totalling to 5,865 observations.

We used the Provincial Competitiveness Index (PCI) as a measure of institutional factors. The Vietnam Chamber of Commerce and Industry (VCCI) and the United States Agency for International Development (USAID) conduct an annual business survey assessment and ranking of the economic governance quality of provincial authorities to help create a more favourable business environment. It was first introduced in 2005 and has become an important index for evaluating the competitiveness of each province or city. The PCI comprises ten sub-indices, reflecting economic governance areas that affect SMEs development and also ranking the level of competitiveness of each province within the country.

(Insert table 4.1 here)

Table 4.1 shows the distribution of firms by ownership type. About 72% of firms are household businesses, 16% are limited liability companies and other types of firm ownership (e.g., private enterprise, cooperatives, Joint Stock Company) constitute 12%.

Newman et al. (2015) used two-digit codes for manufacturing sectors to categorize firms. However, there is only a small number of observations for several of the sectors; therefore, we generated categories based on economic activities (see table 4.2). About 31% of all enterprises can be found in the largest sub-sectors, e.g., food, beverages, and tobacco. Other sub-sectors are less common, for instance: wood, paper products, painting (18%), basic metals (18%), furniture (8%), etc.

(Insert table 4.2 here)

4.3.2. Model Specifications and Hypotheses

The effects of formal institutions on the firm performance of SMEs can be explained by using an equation in the following form:

$$Y_{it} = \lambda + \beta * \text{Institutional Quality}_{it} + \sigma X_{it} + \mu D_{it} + \omega_i + \varepsilon_{it} \quad (1)$$

Y: dependent variable stands for firm performance; X_i : control variables ($i = 1, \dots, n$); D_i : dummy of firms located in the three biggest cities ($D = 1$).

where X'_i is the vector of control variables comprising firm, owner characteristics, and time (t) or year of survey ($t = 1, 2, 3, 4, 5$) stands for 2007, 2009, 2011, 2013 and 2015. ω captures unobserved effects and ε is the error term.

Our main hypothesis is that formal institutions have an influence on firm performance. Based on literature, we formulated 10 specific hypotheses are as below:

* Firm performance is negatively affected by:

H1: the low entry cost for starting up a business. Our hypothesis based on the theory of the low entry cost to participate in markets leading to an increase number of enterprises. According to Klapper et al. (2006) low entry cost has a positive effect on the number of new firm established. We therefore expect that, once the level of competitiveness firm increases, this will negatively influence firm performance.

H2: the proactive and creative provincial leadership in solving problems for enterprises. This type of leadership leads to an increase in the number of firms established; therefore, the level of competitiveness no the market will increase. That way, active leadership, while desirable from an economic policy perspective, can negatively affect firm performance in the short-run.

* Firm performance is positively affected by:

H3: the easy access to land and the security of business premises (the ability of government for protecting all aspects of businesses to minimize the risks). Our assumption is that the easier access to land use right reduces renting cost for firms. In Vietnam, Carlier and Tran (2004) found that private firms incur transaction costs by visiting many government agencies, paying a large amount of informal fees and waiting up to 2 years for a land use right certificate.

H4: the overall transparency of the business environment. From literature can acknowledged that business transparency helps firms fully access related information regarding their business sector. Based upon this information, firm owners propose and implement relevant

policies or strategies. For instance, the government plans to implement a financial support program for firm in the agricultural sector. If the information is transparent, all firms in the sector can prepare all required conditions in order to access to the financial support program. As a result, firm can reduce financial cost, which in turn will improve firm performance. According to Nguyen et al. (2013) provincial transparency had a positive significant with firm performance and export strategy in Vietnam.

H5: the limited time requirements for bureaucratic procedures and inspections. If firms reduce time to solve administrative processes such as tax application or submitting reports, firms will invest more time in doing business activities. In addition, a reduction in time for solving administrations work can lead to a decrease of labour costs. Li and Sun (2017) found that the limited time spent on bureaucratic interactions has a positive effect on performance of foreign firms in China.

H6: the informal charges. A decrease of informal charges (e.g., corruption) reduces time firms spend on building networks with local authorities, thereby reducing unnecessary costs and avoiding any troubles from local authorities. In China, Li and Sun (2017) found that the low taxes and fees have a positive effect on performance of foreign firms. Similarly, Nguyen and van Dijk (2012) found that high corruption has a significant negative effect on firm growth in Vietnam.

H7: the limited crowding out private activity from policy biases toward State-owned firms. Theoretically, the fairness in dealing with firms, whether private, State-owned or foreign enterprises creates a good business environment for all, by enabling easy access to input and output markets. Nguyen et al. (2013) found that the biases for State-owned enterprises have a negative effect on performance of private firms in Vietnam.

H8: the development of high-quality business support services. According to the international monetary fund - IMF (2000) Vietnam lacks transparency and a service sector to effectively support business development. In theory, the quality of public and private directly impacts firm performance in certain areas. A poor service causes the wastes of time and money of firms. For instance, if the tax bureaus do not fully support (due to the lack of specialization) firms, they have to spend more time on applying reports, thus increasing costs. Another example is that the poor transportation services taking more time to transfer products from producers to end-consumers resulting a low quality.

H9: the quality of labour training policies. Theoretically, the quality of labour forces increases the quality of products using certain technologies. In addition, firms can reduce costs for re-

training labours (e.g., training course, practical training costs) if they have well-trained labour sources. In China, Li and Sun (2017) found that the low level of labour flexibility has a negative effect on performance of foreign firms.

H10: the fair and effective legal procedures for dispute resolution. The fairness of laws plays an important role in the development of firms. If advocacy groups (special interest groups) have found guilty of corruption existing, it can be negatively influence on firm performance. According to Li and Sun (2017), the high level of confidence in court and property right protection has a positive effect on foreign firms in China.

Variables of Interest

Dependent Variables

According to Dhaliwal et al. (1999) net income as an indicator of firm performance is strongly associated with the market value of equity and predicts future operating cash flows and income. Therefore, this study uses net income as its first direct measure of firm performance and the second one is gross margin (Otter et al., 2014). This is the ratio of gross profits to total revenue. This performance measure must be interpreted with care as it captures the profit weighted by total revenue. In addition, we used five other variables for measuring firm performance: growth rate of revenue, growth rate of the number of employees, growth of assets, ROA and ROE. In our model, net income, ROA, ROE, and gross margin are variables represent for short-run effects since those variables explain firm performance in a given year. Meanwhile, the variables: growth of revenue, growth of employees and growth of assets represent long-run effects. The reason is that those variables measure the extend of firm scales as well as the firm growth over time.

Independent Variables

The PCI is employed in order to measure the quality of local government services in this paper (PCI, 2017). The PCI is constructed in a three-step sequence: (1) collect business survey data and published data sources, (2) calculate ten sub-indices and standardize to a 10-point scale, and (3) calibrate the composite PCI as the weighted mean of ten sub-indices with a maximum score of 100 points. The higher score, the better the quality of local government operations. In addition, each sub-PCI has a different effect on firm performance. Regarding the sampling procedure, firms were selected using random sampling to mirror provincial populations. Stratification is used to make sure that firm age, legal type, and sector are accurately represented.

The first sub index considers the entry costs for SME start-up. The goal of this sub-index is to assess the differences in entry costs for new firms across provinces. This sub index comprises of several factors such as: length of business registration in days; percentage of firms that need additional licenses/permits; number of licenses and permits necessary to start operations after 2010; number of days to wait for land use right certificate, etc. The second sub index is the ease of access to land and security of tenure, two most critical land issues affecting entrepreneurs.

The third sub index is transparent business environment and equitable access to business information. This is a measure of whether firms have access to the proper planning and legal documents which are necessary to run their businesses, whether those documents are available to the public, whether new policies and laws are communicated to firms and predictably implemented, and the business utility of the provincial webpage. It is commonly measured by the 5-points Likert scale.

The fourth sub index considers the minimal informal charges that represents how much firms pay in informal charges, how much of an obstacle those extra fees pose for their business operations, whether payment of those extra fees results in their expectation and whether provincial officials use compliance with local regulations to illegally extract rents.

The fifth sub index is the limited time requirements for bureaucratic procedures and inspections. A measure of how much time firms spent on bureaucratic compliance, as well as how often and for how long firms must shut their operations down for inspections by local regulatory agencies.

The sixth sub-index is the limit crowding out of private activity from policy biases toward State, foreign, or connected firms. It represents the privileges that local governments give to State-owned economic group, corporations, causing difficulties to businesses.

The seventh sub-index is the proactive and creative provincial leadership in solving problems for enterprises. A measure of the creativity and cleverness of provinces in implementing central policy, designing their own initiatives for private sector development, and working within sometimes unclear national regulatory frameworks to assist and interpret in favour of local private firms and other government support.

The eighth sub-index is the developed and high-quality business support services. This sub index is a measure of provincial services for private sector trade promotion, provision of regulatory information to firms, business partner matchmaking, provision of industrial zones or industrial clusters, and technological services for firms.

The ninth sub-index is the labour training policies, which shows how provincial authorities promote vocational training and skills development for local industries and to assist in the placement of local labour.

The tenth and final sub-index is the fairness and effective legal procedures for dispute resolution. It measures the private sector's confidence in provincial legal institutions; whether firms regard provincial legal institutions as an effective vehicle for dispute resolution, or as an avenue for lodging appeals against corrupt official behaviour.

Control Variables

We also control for age of firm, the number of employees, survey year, ownership type, and economic sector (see table 4.3).

(Insert table 4.3 here)

4.4. Results and Discussion

4.4.1. Descriptive Statistics

Descriptively, we compared performance between firms located in the three biggest cities (Ha Noi, Ho Chi Minh and Hai Phong) with firms located in other areas. The hypothesis is that firms located in the biggest cities having better opportunities to access credit and markets resulting in lower transaction costs and better performance. We found that firms located in the three biggest cities had higher net incomes than their counterparts in other areas. However, these firms had less ROA, ROE, and growth of assets at 1% significant level.

(Insert table 4.4 here).

Table 4.5 presents descriptive statistics of all variables used in the regression models from 2007 to 2015.

Net income is measured by the excess of revenues over expense of a firm that is commonly used as a measurement of performance (Dhaliwal et al., 1999). On average, the net income of an individual firm was about 137 million VND (USD 6,200; $\ln net = 11.77$). The values of other outcome variables in total sample were: ROA (0.30), ROE (0.32), gross margin (0.22), growth of revenue (0.44), growth of employees (0.07), and growth of assets (0.40). These descriptive results show that firms experienced increasing net incomes between 2007 and 2015.

On average, the highest PCI sub-index is the low entry costs (7.9 points) and the lowest is the proactive and creative provincial leadership (4.5 points). It means that the local governments have done quite well in order to reduce the costs of entry into markets. This is in line with the

Vietnamese government strategies to encourage start-up programs to improve economic performance. However, the proactive and creative provincial leadership is rather low meaning that there is a limitation of provincial leadership in solving problems for enterprises.

(Insert table 4.5 here)

4.4.2. Institutional Factors Influencing on SMEs Performance

We found that the low entry costs negatively influenced ROA, ROE, and gross margin, meaning that a decrease in entry cost leads to an increase in number of enterprises. Thus, it is expected to increase the level of competitiveness within firms in the same province, therefore firms have to reduce product prices. As a result, firm performance can be reduced in the short-run. However, the existence of additional firms in the market means that firms can find their partners (suppliers and customers) more easily and sell more products, enlarge business scales and increase revenues. Hence, the low entry costs have a positive effect on growth of revenue and growth of assets. This result provides evidence in favour of H1. In addition, the findings are similar to the results from study by Klapper et al. (2006).

Similarly, the proactive and creative provincial leadership has a significantly negative effect on net income, ROA and ROE. One way to explain this finding is that the province with proactive leaders helps increase the number of established firms by solving problems or difficulties that firms are facing in the establishment steps. These actions encourage people invest more in doing business, leading to an increase of the number of firms, which increases the level of competitiveness. Therefore, the current firms have to reduce price in order to compete with their counterparts and their performance in a short-run decrease as well. This result provides evidence in favour of H2. Findings also show that the low level of corruption in each province (minimal informal charges) has a positive effect on firm performance in a short-run (net income, ROA, and ROE). However, it has a weaker effect on firm development in the long-run (only negative effect on growth of assets at 5% level of significance). This result provides evidence in favour of H5 and H6. This can be explained such that the lower corruption level helps firms reduce costs, resulting in improved return on total assets and capital invested (an increase in ROA and ROE). In addition, the lower level of corruption helps firms save time for building unnecessary relationships, therefore they can invest more in selling products, leading to higher net incomes. This finding is in line with previous studies (Li and Sun, 2017; Nguyen and van Dijk, 2012). Similarly, the fair and effective legal procedures for dispute resolution the fair and effective legal procedures also help firms reduce

costs and time, therefore improving firm performance (positive effect on net income, ROA and ROE) as also found by Li and Sun (2017).

We found that the developed and high-quality business support services and the labour training policies positively and significantly influenced firm performance. A better service (e.g., notary or tax consulting services) reduce firms' costs and time, as well as increasing quality of products and reducing costs (e.g., better outsourcing services to improve product quality; good transportation services help ensure the quality of the goods). Meanwhile, the quality of labour source helps firms reduce their costs for re-training new labourers. These findings are similar to the results from previous study by Li and Sun (2017). Interestingly, we found mixed effects of the ease of access to land, the transparent business environment and the limited time requirement on firm performance. This result provides evidence in favour of the third and fourth hypotheses.

Overall, the selected variables explained 20% the variation of net income, about 3% the variation of ROA, about 2.5% the variation of ROE, gross margin, growth of employees and about 6.9% the variation of growth of revenue indices. To sum up, we stated that increasing the quality of provincial public governance leads to the improvement of firm performance due to the reduction in costs by cutting unnecessary processes.

(Insert table 4.6 here)

4.4.3. Robustness Checks

One may argue that our regression estimates are biased due to endogeneity issues since the causality between institutional factors and firm performance runs both ways. Therefore, we re-ran the regressions (see in table 4.6) by replacing all institutional variables with lagged institutional variables. The results confirm our findings transparent business environment and the fair and effective legal procedures have a positive influence on net income, ROA, and ROE. It means that a transparent business environment and a fair legal procedure will improve firm performance. This finding is particularly important for the implementation of administrative reform in developing countries, like Vietnam.

However, the robustness check does not confirm our findings with respect to the relationship between other independent variables and firm performance as well as the direction of relationship between selected control variables (total labour force and firm age) and firm performance.

(Insert table 4.7 here)

4.4.4. Testing for Multicollinearity

We tested for multicollinearity using the VIF test before running all regressions. As shown in table 4.8, VIFs range from 1.15 to 7.72 that are below threshold of 10 (Hair et al., 1998). Hence the model specifications do not suffer from multicollinearity problem.

(Insert table 4.8 here)

4.5. Conclusions and Policy Implications

In this paper, we used a balanced panel data collected over several years from 1,173 firms in Vietnam to analyse the effects of institutional factors on SMEs' performance. SMEs have been playing an important role in the development of developed countries as well as in developing and transition countries. Through the development of SMEs, institutional factors are crucial to help firms access to information, access to markets, as well as to reduce transaction costs and time to create new businesses. Formal institutions show the quality of activities conducted by the local governments in supporting firms and creating a favourable business environment. In Vietnam, the quality of local governments operations in each province is different, which is generally caused by the imprecise laws or rules and the diversity of social norms.

We found that the transparent business environment and the fair and effective legal procedures have a positive influence on net income, ROA, and ROE confirmed by the robustness check. We also contribute to the current literature through a deeper understanding of institutional factors' effects on firm performance (net income, ROA, ROE, gross margin, growth of revenue, growth of employees and growth of assets) using a sample from Vietnam. By analysing several aspects of local institutions based on 10 sub-indices of the PCI, we found that the local institutions have different effects on firm performances, particularly for new SMEs and stable ones (firms having a longer time to exist). The lower cost of entry into the market helps to create more firms but also has a negative impact on firm performance because of the higher competitive level within firms. Moreover, the developed and high-quality business support services, the labour training policies have a positive effect on firm performance. These results are in line with studies by Nguyen et al. (2017) and Nguyen and van Dijk (2012). Other controlled variables (e.g., age of firm owners, number of employees, type of enterprises and firm sector) also significantly influence firm performance. Overall, these findings provide solid support to hypotheses H4 and H10, while there is some support to hypotheses H1, H2, H5, H6, H8 and H9.

To improve firm performance, the local governments should focus on training labour force. Ideally, the close link between firms and training units helps these organizations provide better quality of trained labourers fulfilling firms' requirements. Therefore, it can reduce the gap between theory and practice in training activities. Based on the findings, local Vietnamese governments should address the quality of public services. It is also necessary to create a forum for firms to participate in the regional political discourse. Based upon this, the local governments should adjust their policies in order to help firms overcome their difficulties. Besides that, to encourage start-up programs, the local governments should create incentives for start-ups to foster the long-term development. The local governments should further minimize cost of entry into the market, thus creating an efficient process for establishing new firms.

Despite the interesting findings, some limitations of the study need to be mentioned. First, our measure of institutional factors is mainly based upon 10 sub-PCI indices, although the institutions have influenced by many other factors. Therefore, other important variables should be employed, such as transaction costs and social norms that might influence firm performance. Secondly, we only examined how formal institutions influence firm performance but did not empirically determine which informal institutional factors affect firm performance. This is due to the limitation of the dataset of SMEs survey in Vietnam.

Future studies should focus on evaluating the impacts of public service delivery by local Governments on SMEs' performance using metrics that capture transparency and corruption issues. In the Vietnamese context, the local governments still rely on social norms in each province. Therefore, it is important to determine the effects of equity in access to public services from local governments on the firm operations and performance. In addition, future research could focus on the influence of informal institutions on growth of SMEs as they most likely to influence firm governance as well as firm performance.

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Table 4.1. Category SMEs Based on Ownership

Order	Firm ownership	Absolute number	Percent	Cum.
1	Household business	4,208	71.75	71.75
2	Private enterprise	388	6.62	78.36
3	Cooperative/Partnership	171	2.92	81.28
4	Limited liability companies	963	16.42	97.70
5	Joint stock company	135	2.30	100.00
Total		5,865		

Source: DANIDA survey, authors' calculation

Table 4.2. Category SMEs Based on Manufacturing Sector

Order	Firm sector	Absolute number	Percent	Cum.
1	Manufacture of food, beverages, tobacco products	1,815	30.95	30.95
2	Manufacture of wood, paper products, and printing	1,051	17.92	48.87
3	Manufacture of coke and refined petroleum, chemical, rubber, plastics, and other non-metallic mineral products	709	12.09	60.95
4	Manufacture of basic metals and fabricated metal products	1,075	18.33	79.28
5	Manufacture of furniture	441	7.52	86.80
6	Manufacture of other products	774	13.20	100.00
Total		5,865		

Source: DANIDA survey, own calculation

Table 4.3. Variables and Measurements

Variables	Measures
1 <i>Dependent variables</i>	
lnnet	Natural logarithm of net profit
ROA	Return / total assets
ROE	Return / total equity capital
gross_margin	Gross profit / revenue
growth_revenue	$(\text{Revenue}_t - \text{revenue}_{t-1}) / \text{revenue}_{t-1}$
growth_emp	$(\text{Employee}_t - \text{employee}_{t-1}) / \text{employee}_{t-1}$
growth_assets	$(\text{Total assets}_t - \text{total assets}_{t-1}) / \text{total assets}_{t-1}$
2 <i>Main independent variables</i>	
PCI_entrycost	Low entry costs for business start-up
PCI_landaccess	Easy access to land and security of business premises
PCI_transparency	Transparent business environment and equitable business information
PCI_timecost	Has limited time requirements for bureaucratic procedures and inspections
PCI_informalcharges	Minimal informal charges
PCI_statebias	Limit crowding out of private activity from policy biases toward state, foreign, or connected firms
PCI_proactive	Proactive and creative provincial leadership in solving problems for enterprises
PCI_services	Developed and high-quality business support services
PCI_labourtraining	Labour training policies
PCI_legalprocedures	Fair and effective legal procedures for dispute resolution
3 <i>Control variables</i>	
firmage	Age of firm in years
employees	Total labour force of enterprise
year of survey	Year of survey (2007; 2009; 2011; 2013 and 2015)
firm ownership	Firm ownership (household business; private enterprise; cooperative/ partnership; limited liability companies; joint stock company; local state enterprise)
firm sector	Economic sector of firm (see table 4)

Table 4.4. Mean Difference of Firm Performance by Location in Three-biggest Cities (T-tests)

Variables	Others N1 = 2,625	Firm located in the		Differences
		3-biggest cities N2 = 3,240		
lnnet	11.224	12.216		-0.99***
ROA	0.380	0.227		0.15***
ROE	0.428	0.237		0.19***
gross_margin	0.218	0.213		0.01
growth_revenue	0.445	0.432		0.01
growth_emp	0.072	0.073		-0.00
growth_assets	0.452	0.349		0.10***
<i>N</i>	5,865			

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.5. Descriptive Statistics from Pooled Sample

Variables	Full sample				2007		2009		2011		2013		2015	
	Min	Max	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Dependent variables</i>														
Innet	6.612	19.515	11.769	1.419	11.285	1.407	11.626	1.419	11.919	1.419	11.995	1.341	12.041	1.365
ROA	-4.761	4.887	0.296	0.470	0.346	0.574	0.335	0.509	0.249	0.387	0.275	0.447	0.272	0.398
ROE	-4.447	4.887	0.323	0.576	0.358	0.629	0.377	0.672	0.270	0.496	0.311	0.593	0.296	0.456
gross_margin	-0.426	3.081	0.215	0.142	0.234	0.192	0.203	0.111	0.225	0.152	0.207	0.101	0.207	0.130
growth_revenue	-1.0	5.0	0.438	1.062			0.698	1.225	0.505	1.113	0.301	0.978	0.258	0.841
growth_emp	-1.0	5.0	0.073	0.634			0.075	0.604	0.059	0.663	0.062	0.625	0.094	0.643
growth_assets	-1.0	4.995	0.396	1.109			0.580	1.294	0.655	1.195	0.191	0.988	0.201	0.850
<i>Independent variables</i>														
PCI_entrycost	6.301	9.126	7.945	0.726	7.367	0.802	8.346	0.375	8.640	0.299	7.362	0.454	8.010	0.484
PCI_landaccess	4.123	8.375	5.611	0.871	5.630	0.968	5.355	0.585	5.741	0.938	6.212	0.629	5.116	0.740
PCI_transparency	4.907	7.150	6.038	0.479	6.302	0.598	6.042	0.365	5.977	0.451	5.673	0.370	6.195	0.294
PCI_timecost	4.890	7.891	6.087	0.668	6.240	0.504	6.182	0.612	6.146	0.721	5.658	0.707	6.208	0.589
PCI_informalcharges	4.256	7.899	5.614	0.919	5.909	0.544	5.425	0.670	6.314	0.919	5.648	0.854	4.773	0.763
PCI_statebias	3.875	7.458	5.260	0.833	6.015	0.588	5.260	0.544	5.260	0.544	5.251	0.982	4.513	0.664
PCI_proactive	1.391	6.890	4.500	1.039	4.908	1.257	4.139	1.066	4.245	0.989	4.881	0.971	4.326	0.472
PCI_services	3.046	8.734	6.197	1.322	6.228	1.821	6.654	1.432	5.646	1.390	6.229	0.799	6.227	0.541
PCI_labourtraining	3.854	7.360	5.688	0.822	5.583	0.627	5.265	0.851	5.192	0.457	5.786	0.563	6.614	0.657
PCI_legalprocedures	3.313	6.803	5.109	0.854	4.109	0.680	5.345	0.592	5.809	0.345	4.912	0.783	5.372	0.668
<i>Control variables</i>														
firmage	2	59	16.418	9.918	13.905	10.145	16.184	11.744	14.895	9.000	17.823	9.231	19.286	8.139
employees	1	300	15.362	29.834	16.849	32.392	16.765	30.290	15.412	30.139	13.924	26.928	13.859	29.062
N	5,865				1,173		1,173		1,173		1,173		1,173	

Source: Authors' calculation

Table 4.6. Effects of PCI sub-indices on Firm Performance

VARIABLES	FE 1 lnnet	FE 2 ROA	FE 3 ROE	FE 4 gross_margin	FE 5 growth_revenue	FE 6 growth_emp	RE 7 growth_assets
PCI_entrycost	-0.00305 (0.03402)	-0.06119*** (0.01525)	-0.05348*** (0.02001)	-0.00818* (0.00485)	0.40050*** (0.08294)	0.06321 (0.04848)	0.24209*** (0.06614)
PCI_landaccess	-0.06548** (0.02897)	-0.06496*** (0.01649)	-0.09342*** (0.01985)	0.00995** (0.00454)	-0.17065*** (0.05607)	-0.04100 (0.03691)	0.19236*** (0.05001)
PCI_transparency	0.20202*** (0.04167)	0.09561*** (0.01984)	0.07915*** (0.02703)	-0.00534 (0.00595)	0.13254* (0.06918)	-0.04625 (0.04288)	-0.36974*** (0.06011)
PCI_timecost	0.03096 (0.03199)	-0.00175 (0.01711)	0.00907 (0.02312)	-0.01301*** (0.00486)	0.25452*** (0.06157)	0.07531** (0.03656)	0.10513** (0.04924)
PCI_informalcharges	0.06100* (0.03537)	0.04445*** (0.01470)	0.05975*** (0.02065)	0.00802 (0.00599)	0.04959 (0.05680)	-0.02915 (0.03202)	-0.07828** (0.03570)
PCI_statebias	0.00242 (0.02852)	0.00408 (0.01368)	0.00131 (0.01671)	-0.00110 (0.00397)	-0.09522** (0.04240)	0.04210 (0.02950)	-0.07423** (0.03394)
PCI_proactive	-0.06803*** (0.01997)	-0.04544*** (0.01172)	-0.04489*** (0.01493)	0.00447 (0.00309)	0.02765 (0.04582)	0.01957 (0.02972)	-0.03671 (0.03137)
PCI_services	0.06166*** (0.01837)	0.02044** (0.00999)	0.02141* (0.01254)	0.00917*** (0.00289)	-0.06101 (0.04125)	-0.00227 (0.02492)	0.06022** (0.02403)
PCI_labourtraining	0.05306 (0.04202)	0.05328** (0.02103)	0.06477** (0.02787)	-0.00559 (0.00626)	-0.11266 (0.08809)	-0.04378 (0.05538)	0.06601 (0.05007)
PCI_legalprocedures	0.13076*** (0.03270)	0.03717** (0.01627)	0.03661* (0.02174)	-0.00533 (0.00502)	0.01287 (0.06811)	-0.00812 (0.04414)	-0.01122 (0.05059)
firm age (in years)	-0.00082 (0.00194)	0.00037 (0.00102)	0.00093 (0.00120)	-0.00060* (0.00031)	0.00747* (0.00401)	0.00132 (0.00176)	-0.00002 (0.00171)
total labour force of enterprise	0.01102*** (0.00135)	0.00138*** (0.00049)	0.00118* (0.00062)	0.00012 (0.00009)	0.00692*** (0.00173)	0.00648*** (0.00218)	0.00170** (0.00067)
year of survey	yes	yes	yes	yes	yes	yes	yes
firm ownership	yes	yes	yes	yes	yes	yes	yes
firm sector	yes	yes	yes	yes	yes	yes	yes
Constant	8.56125*** (0.47643)	-0.18854 (0.25077)	-0.32491 (0.34295)	0.27213*** (0.06999)	-3.13319*** (0.87690)	-0.44741 (0.54658)	-0.66431 (0.66210)
Observations	5,705	5,842	5,803	5,845	4,484	4,659	4,321
R-squared	0.20003	0.03055	0.02476	0.02514	0.06846	0.02850	
Hausman test (Chi2)	0.0000	0.0000	0.0000	0.0374	0.0000	0.0491	0.4529
Number of firm_ID	1,173	1,173	1,173	1,173	1,173	1,173	1,173

Note: Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; All fixed effect models were confirmed by the Hausman Test

Table 4.7. Robustness Checks with Effects of Lagged PCI sub-indices on Firm Performance

VARIABLES	FE 8 lnnet	FE 9 ROA	FE 10 ROE	FE 11 gross_margin	FE 12 growth_revenue	FE 13 growth_emp	FE 14 growth_assets
lagged_PCI_entrycost	0.05001 (0.03353)	0.02162 (0.01594)	-0.01231 (0.02291)	-0.00381 (0.00454)	-0.00960 (0.04760)	-0.00146 (0.02815)	-0.24398*** (0.05045)
lagged_PCI_landaccess	-0.02593 (0.03164)	-0.01964 (0.01410)	-0.01356 (0.02013)	0.00642 (0.00455)	0.08528* (0.04359)	0.00680 (0.02842)	0.00157 (0.04684)
lagged_PCI_transparency	0.09138* (0.04808)	0.08160*** (0.02572)	0.10798*** (0.03318)	-0.00612 (0.00655)	-0.17470** (0.07634)	-0.01958 (0.04093)	-0.11186 (0.07477)
lagged_PCI_timecost	0.14365*** (0.03678)	0.04716*** (0.01620)	0.06103*** (0.02128)	0.01771*** (0.00505)	0.03908 (0.05103)	-0.02829 (0.02933)	-0.09634* (0.05306)
lagged_PCI_informalcharges	-0.01118 (0.03794)	-0.03753** (0.01836)	-0.05954** (0.02726)	-0.01849*** (0.00514)	-0.06418 (0.05298)	-0.02381 (0.03446)	0.07584 (0.05960)
lagged_PCI_proactive	-0.00003 (0.01981)	-0.00334 (0.00970)	-0.00768 (0.01288)	-0.00088 (0.00284)	0.07740*** (0.02688)	-0.02067 (0.01652)	0.07457*** (0.02836)
lagged_PCI_services	0.03184 (0.02117)	-0.00953 (0.00999)	0.00267 (0.01376)	0.00957*** (0.00272)	0.01529 (0.02866)	0.01113 (0.01860)	0.00875 (0.03080)
lagged_PCI_labourtraining	0.00281 (0.04261)	-0.00928 (0.02293)	-0.03494 (0.03391)	-0.00026 (0.00678)	-0.08335 (0.06913)	-0.06948 (0.04542)	-0.21740*** (0.07224)
lagged_PCI_legalprocedures	0.06422* (0.03415)	0.04859*** (0.01759)	0.07576*** (0.02457)	0.01826*** (0.00478)	-0.17450*** (0.05287)	-0.03600 (0.03198)	-0.08290 (0.05296)
firm age (in years)	-0.00143 (0.00212)	-0.00112 (0.00117)	-0.00204 (0.00134)	-0.00090*** (0.00034)	0.00662 (0.00412)	0.00145 (0.00179)	-0.00035 (0.00385)
total labour force of enterprise	0.01105*** (0.00157)	0.00166** (0.00070)	0.00117 (0.00086)	0.00003 (0.00010)	0.00667*** (0.00170)	0.00644*** (0.00220)	0.00304** (0.00147)
year of survey	yes	yes	yes	yes	yes	yes	yes
firm ownership	yes	yes	yes	yes	yes	yes	yes
firm sector	yes	yes	yes	yes	yes	yes	yes
Constant	9.38639*** (0.56960)	-0.41606 (0.28319)	-0.43156 (0.37279)	0.11011 (0.08259)	2.15399** (0.87587)	0.87832* (0.52528)	4.37949*** (0.91616)
Observations	4,547	4,672	4,648	4,672	4,484	4,659	4,321
R-squared	0.11700	0.02536	0.02123	0.03373	0.06129	0.02650	0.05902
Hausman test (Chi2)	0.0000	0.0000	0.0000	0.0000	0.0014	0.0413	0.0439
Number of firm_ID	1,173	1,173	1,173	1,173	1,173	1,173	1,173

Note: Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; All fixed effect models were confirmed by the Hausman Test

Table 4.8. Collinearity Tests

Variables	VIF	1/VIF
PCI_entrycost	6.760	0.148
PCI_landaccess	7.170	0.139
PCI_transparency	2.350	0.425
PCI_timecost	4.200	0.238
PCI_informalcharges	4.870	0.205
PCI_statebias	2.950	0.339
PCI_proactive	3.360	0.298
PCI_services	2.800	0.357
PCI_labourtraining	7.720	0.130
PCI_legalprocedures	5.050	0.198
firmage	1.150	0.870
employees	1.410	0.708
year of survey	yes	yes
firm ownership	yes	yes
firm sector	yes	yes

Notes: Controlled for year of survey, firm ownership and firm sector; VIF, Variance inflation; 1/VIF, Tolerance.