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**Impacts of Symbiotic Relationships on Risk, Return and Value
of Micro-, Small and Medium Enterprises**

A thesis
submitted in fulfilment
of the requirements for the degree
of
Doctor of Philosophy in Accounting and Finance
at
The University of Waikato
by
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THE UNIVERSITY OF
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Abstract

This thesis investigates the impact of symbiotic relationships on risk, return and value of micro-, small and medium enterprises (MSMEs). The research study examines how connections and networking help MSMEs to enhance financial gains by maximising return and minimising risks associated with business performance. This thesis focuses on New Zealand MSMEs, as they are significant contributors to the country's economy and provide employment opportunities for many people. Funds allocated by the New Zealand government to different business clusters indicate how the government pay attention to these associations making it pertinent to explore whether these MSMEs grow, and how helpful the concept of symbiosis is in promoting their growth.

Globalization and changes in economic conditions can intensify competitive behaviour among businesses. While increased business competitiveness may have minimal effects on the business performance of large-sized firms, it can create challenges for MSMEs. Limitations of resources and finance, volatility and opacity can push these businesses to a critical juncture. In order to overcome these problems, many MSMEs' owners have discarded the idea of flying solo, and adopted a synergistic model of working where everybody get benefits from cooperation. The concept of symbiosis is adopted as a strategic tool which can improve profitability, business survival rates, goodwill and growth potential, as well as reduce potential risk caused by the limitations of firm size. Symbiotic relationships can enhance the bottom-line and help businesses to be successful, as a consequence of creating innovative outcomes for individual firms, societies and countries.

Although some previous studies discuss the impact of networks and connections, there is still considerable work to be done in evaluating the effects of business symbiosis, especially from a financial perspective. In order to do this, various financial theories, namely Signalling theory, Stakeholder theory and Agency theory are incorporated into this thesis to explain how symbiotic relationships enable MSMEs to increase return, and reduce risks and uncertainties associated with business performance of MSMEs. Significantly, these theories are widely adopted in studies relating to (listed) large companies, but not often found in small business

studies. Therefore, this thesis contributes to the literature. This study points out how financial theories adopted in (listed) large firms can also explain business transactions in MSMEs, particularly when the concept of symbiosis is incorporated. Furthermore, the adoption of non-finance theories such as Social network theory, Resource dependency theory and Transaction cost theory in this thesis encourages an innovative cross-disciplinary perspective. At the same time, a financial perspective is important and necessary to investigate how business symbiosis enhances MSMEs performance, particularly regarding risk and return.

As this thesis aims to examine the impact of connections between several MSMEs and how their cooperation helps MSMEs owners to boost financial gains, this study reviews prior works to understand the factors that can be affected by networks and connections in businesses. Following this step, secondary data was accessed from the New Zealand Benchmarking Survey, provided by the Institute of Business Research at the University of Waikato, to run simulations to assess the potential profit of firms when applying the concept of symbiosis. It was found that potential firm profits differ depending on the specified range of parameters and type of distributions used. To ascertain the impacts of symbiosis more precisely, it was necessary to use real samples. Correspondingly, the researcher conducted fieldwork and collected primary data by using surveys and semi-structured interviews. The research participants are MSMEs' owners who operate businesses in Cambridge New Zealand. Both surveys and interviews are concurrently conducted and both close-ended and open-ended questions were asked. The questions relate to owner characteristics, business attributes, symbiotic relationship activities and firm performance. The analytical process is divided into two parts: quantitative analysis and qualitative analysis. All survey responses were analysed by applying econometric models namely Ordered Logistics Regression (Ologit) and Partial Least Square Structural Equation Modelling (PLS-SEM).

The results of Ologit in relation to symbiotic relationships between MSMEs and banks are important. The findings show that having no connections with banks is positively associated with a reduction in net profit while having connections with banks positively relates to an increase in net profit. It was also found that symbiotic relationships among firms are crucial. The study found a positive relationship between a change in net profit and having business connections among MSMEs.

This positive association is also found in MSMEs operated by business owners who have frequent interactions with other business owners. Regarding business owner characteristics and firm attributes, the findings indicate that there is a significant difference between the age of a business owner and frequency of interaction among firms across different industries. Also, the frequency of interaction among businesses is associated with firm age (the operating years) and firm size (the number of employees).

The thesis also examines the association between two groups of symbiotic relationships, interfirm relations (connections between several businesses), and business-bank relations (connections between businesses and banks) to see if these associations relate to the change in net profit of MSMEs. PLS-SEM was applied for this section of the study. Moreover, Social Network Analysis (SNA) was adopted to calculate network scores when MSMEs have been connected with others, and these scores were put into PLS-SEM as indicative variables. Findings of SNA show there are seven industrial areas with a high density of connections. PLS-SEM results showed there is no association between interfirm relations and business-bank relations. However, it was found that change in net profit is negatively associated with business-bank relations. The findings also demonstrate that connection with only one bank is the important indicator explaining business-bank relations in Cambridge.

In order to examine why and how symbiotic relationships impact on risk, return and value of MSMEs, thematic analysis was used to analyse the responses to open-ended questions in semi-structured interviews. The empirical findings confirm that business symbiosis enables MSMEs to reduce costs and expenses while also assisting them to increase return and added values. Moreover, MSMEs having good connections with banks obtain benefits regarding access to finance and services. It was found that signals indicating symbiotic relationships in Cambridge are donations, use of referrals, participation in trade associations or professional networks among MSMEs' owners, and personal interactions among business owners. The study found factors supporting and maintaining business symbiosis in Cambridge. These factors relate to location proximity of the town, non-growth-oriented characteristics of MSMEs, two-way relationships where both business partners get mutual advantages from connections, trustworthiness of business

owners, a rapidly developing and high-growth town, the density of embeddedness relationships, and good corporate governance in trade associations and business clusters.

The findings support Signalling theory regarding asymmetric information. MSMEs try harder, compared with larger firms, to reduce information asymmetry, and this goal can be achieved when they connect or network with others. With the consistence of Stakeholder theory and Agency theory, these symbiotic relationships provide mutual and additional benefits to MSMEs, and it can last longer when they have good corporate governance to manage the whole network. It could be worthwhile to have a nominee or some group of people who can deliver ideas or information in business clusters and associations, however a conflict of interest between this group of people and other members could diminish the whole network. Therefore, trading off between risk and return is still significant. This thesis supports Transaction cost theory and Resource dependency theory which were incorporated with Social network theory to examine how having networks and connections enable MSMEs to reduce transaction costs and enhance overall performance as well as the security market line.

This thesis has implications for MSMEs, banks, government and policy makers. While the study does have limitations, however these does not affect the analysis. Although this thesis uses Cambridge as a case study, this thesis is generalizable in concept, and the findings show a particular context where existing theories can be developed. Some recommendations for further studies relating to the uses of a Business Operations Survey are stated. This could not only be beneficial for investigating symbiotic relationships in other contexts, but could also lead to further contributions based on this thesis.

Dedication

To my beloved family for their support and their unconditional love.

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List of Abbreviations

A-D	Anderson-Darling
AIC	Akaike Information Criterion
ANOVA	Analysis of Variance
ANZ	Australia and New Zealand Banking Group Limited
ANZSIC	Australian and New Zealand Standard Industrial Classification
ASB	Auckland Savings Bank
ATM	Automated Teller Machines
B&B	Bed and Breakfast
Ba5	Business after Five
BIC	Bayesian Information Criterion
BLUE	Best Linear Unbiased Estimator
BNI	Business Network International
BOS	Business Operations Survey
CBD	Central Business District
CCC	Cambridge Chamber of Commerce
CEO	Chief Executive Officer
CSC	Christian Supply Chain Charitable Trust
EFTPOS	Electronic Funds Transfer at Point of Sale
FINTECH	Financial Technology
GDP	Gross Domestic Product
GSCA	Generalized Structure Component Analysis
ID	Identity Document
IV	Instrumental Variable
L/C	Letter of Credit
LBD	Longitudinal Business Database
MGI	Mutual Guarantee Institutes
MSMEs	Micro, Small and Medium Enterprises
NoC	Networking over the Coffee
NP	Net Profit
OECD	The Organisation for Economic Co-operation and Development
Ologit	Ordered Logistic Regression
OLS	Ordinary Least Squares
Oprobit	Ordered Probit

PLS-SEM	Partial Least Square Structural Equation Modelling
R&D	Research and Development
ROA	Return on Asset
ROE	Return on Equity
Sa5	Seminar after Five
SEM	Structure Equation Modelling
SMEs	Small and Medium Enterprises
SNA	Social Network Analysis
Stats NZ	Statistics New Zealand
USM	Universal Structured Modelling
VIF	Variance Inflation Factor
WOM	Word of Mouth

Chapter 1: Overview of Thesis

1.1 Introduction

This study uses a financial risk and return framework to explore the potential impact of symbiotic relationships on micro-, small and medium enterprises (MSMEs). Although MSMEs are sometimes regarded as the power house of the economy, they tend to be the most vulnerable entities. Their limited resources and insufficient information could affect their overall performance. This study deals with financial performance which relates to how to reduce risk yet grow return, then provide long term sustainability in MSMEs. This is important as it involves personal wealth of business owners, local economy and country economic growth. If MSMEs want to increase return, it is important to increase income and provide the potential to achieve the growth, well-being and more equitable redistribution of the economy.

It is important to identify whether networking and connection can help MSMEs raise their financial performance to the higher level. Using a financial lens, it is significant to adopt several finance theories to evaluate this effect. The main theoretical underpinning for the research is Stakeholder theory, combined with Signalling theory, as a means of evaluating information driving return and risk. Analysis is undertaken to identify how symbiosis is manifested in information signals, which within a stakeholder framework, impact the return and risk estimates and subsequent value of the firm. This is a significant new approach for investigating MSME interactions in terms of risk and return impacts and consequent value changes. Previous research employs numerous methods of enhancing a firm's performance in terms of increasing returns, improving survival, and reducing inventories. Signalling theory is not prevalent in the financial literature relating to MSMEs. Stakeholder theory in the financial context has received attention in relation to larger companies but not small businesses. Within the MSME space, there has been some discussion of succession planning, subsequent generation performance, diversity and gender, and recently an emerging discussion of Agency

theory and bankruptcy matters. Symbiosis, from a financial perspective, is a focus in this research.

Although this study only deals within a finance framework, other theories contribute to this thinking. Insights gained from Resource dependency theory and Transaction cost theory are considered with the main concept of Agency theory, Stakeholder theory and Signalling theory. The study integrates insights from Social network theory into financial analysis to explain MSME behaviours. Consideration is given as to how MSMEs working cooperatively might generate symbiotic forces.

1.2 Significance of the study

This study is significant because it deals directly with the value creation potential for MSMEs that may arise through symbiotic relationships. According to Ministry of Business, Innovation and Employment (2015), 473,846 MSMEs account for 97 percent of New Zealand enterprises, and 27 percent of the country's GDP is contributed by businesses having fewer than 20 employees. A small increase in value will have a significant impact on the national income. In order to understand the impacts of symbiotic relationships among MSMEs, this study focuses on a large sample of businesses in Cambridge, New Zealand. The result from GEPHI software showing the density diagram gives a clear picture of business networks, and those interconnecting in the simulation result showing the likelihood of firm performance.

New knowledge about the impact of symbiotic relationships on corporate risk and return can significantly influence how risk is priced for MSMEs. Prior research mentions a variety of methods for increasing business performance, especially for individual enterprises, which can improve their internal management, reduce costs and boost returns. A small amount of research has focused on the Signalling and Stakeholder theories in relation to MSMEs. Financial analysis of how information flows might reduce risk or bolster returns has not been widely conducted, therefore a good understanding of the impact of symbiotic relationships may add corporate value in both normal and competitive situations.

In terms of national investment, this study is important in guiding policy makers on how to leverage value from significant government contributions to industry development and to support local events, national fairs and high performance competitions. It is valuable to individual enterprises, societies and the country if the

government invests an appropriate amount of funds in the proper sectors. However, some businesses may lose the opportunity for mutual benefits if they do not associate or cooperate with the others. This study investigates various types of business relationships in Cambridge and the impacts of those connections. It offers an opportunity to view the general picture of many industries and signalling transmission. The results will show a relationship diagram and give some idea of which entities should connect or be connected to others. The modelling proposed for this symbiosis will provide a mechanism and framework for policy analysts to estimate the incremental economic and social value for a community. The study makes explicit the trade off public policies that would help MSMEs to have better relationships. Some local events and activities are analysed to discover whether they can be the driving determinants and offer an opportunity for local firms to increase their values. As a result, many enterprises could receive benefits from public policies. If local activities, fairs or events can be key driving factors for business growth, or provide a major opportunity for firms to build symbiotic relationships with others, government may launch policies supporting these kinds of events as well as trying to eliminate possible threats from large multinational firms.

With regard to literature, this study is significant in terms of expanding the concept of symbiosis into financial studies. Adopting financial theories to explain signalling transmittance can offer benefits to individual enterprises and business communities. Although some previous studies mention symbiosis in a range of business contexts, there is little research on signalling processes that can affect MSMEs' value. Different scenarios will help to provide a clearer picture and to develop a good signalling model. Particularly, the impact of exogenous factors, such as sport competitions, local fairs and events, on MSME relationships, and corporate performance will be examined.

This study uses new approaches in dealing with particular cases of MSMEs. A mixed method approach, including both qualitative and quantitative elements, is used in this study. A number of previous studies use small-sized sample groups for quantitative analysis, so the results may not demonstrate the clear relationship between symbiosis and financial performance. Therefore, this study used semi-structured interviews with open-ended questions for more thoroughly examining

the symbiotic relationships in a business community. The more sophisticated qualitative method of analysis can increase the probability of robust results. Additionally, specifically interviewing a key group of people can provide an opportunity to observe their behaviours and understand their norms and beliefs which may provide valuable information. In order to validate the evaluation in the financial area, this study integrates theories incorporating the concept of symbiosis with the simulation study. This study provides justification for the empirical test which draws on the literature to suggest the nature of the connection between other business communities, or other countries.

1.3 Key issues and motivation of the study

Ninety six of percent of New Zealand enterprises are MSMEs (Statistics New Zealand, 2017). These drive the country's economy and provide job opportunities for many people. However, many are not sustainable in the long term. Statistics show that more than 50 percent of small businesses in New Zealand fail within the first years (Mason, 2006). One important factor could be because of a competitive rather than collaborative attitude among many entrepreneurs. Although discarding ideas of flying solo and adopting a synergistic model of working where every entities can benefit from cooperation sound interesting, many business owners overlook these ideas. This may be because they cannot visualise their potential.

Although previous studies impacts of symbiotic relationship, more research is needed to evaluate potential financial gain. It is important to use a case study which focuses on one particular area to explore symbiotic relationships of MSMEs in that environment. This study adopts various theories to analyse the impacts of symbiotic relationships on MSMEs from a financial perspective in terms of risk, return and value. Specifically, the importance of information flows in symbiotic relationships among various entities in Cambridge are investigated and modelled. With support from local authorities, and the interaction between business owners from several industries who intend to create a networking environment, Cambridge provided an appropriate site to explore the impact of this interaction on MSME performance, and examine how symbiotic relationships in this town appear.

This study adopts the foundational linear relationship between risk and return of enterprises to investigate how this is related to the concept of symbiosis. Signalling

theory focuses on reducing information asymmetry between two parties, senders and receivers (Spence, 2002). Signalling theory is used as a research framework to explain the flow of information, news, and data sharing through the symbiotic relationships among MSMEs. Stakeholder theory, an expansion of Shareholder theory, facilitates the modelling of the consequent gains or losses of risk and return movements in MSMEs (Jensen & Meckling, 1976). Transaction cost theory reinforces the idea that networking reduces transaction costs in business activities; Resource dependency theory emphasizes how several businesses receive the benefits of sharing resources for long term sustaining.

Assets are priced on the basis of risk and return (Sharpe, 1964). Businesses can enhance performance by trying to increase returns, and reduce unplanned risks occurring (Megginson & Smart, 2009). However, there are some limitations on the ability of small firms to increase performance. Small firms may not readily access information that can add value to individual enterprises. To illustrate this, some small companies may not be able to update themselves on local events or news in the business community, so may lose an opportunity to make higher profits from up-coming events. Also, having no knowledge of upcoming community events, small companies may not be able to accommodate changes in a timely manner and experience a consequent increase in benefits from clear signals on which to make good decisions about risk and returns. If signals are not well transferred, received or are distorted, then business owners may face a degree of opaqueness in operating businesses. This leads to increased information search cost for enterprises.

The efficient market hypotheses suggest that asset prices impound all publicly available information, and asset prices react quickly and in an unbiased manner to new signals. Signalling theory contributes to explaining how individuals and organisations access different information. Normally, senders will transmit information through a variety of types of signals to receivers who interpret those signs (Connelly, Certo, Ireland, & Reutzel, 2011). MSMEs may face challenges in accessing some information because of a lack of connection with other businesses. Some benefits from being informed come from sharing resources and access to business news from newsletters, such as entrepreneur training programmes and upcoming events. This information is useful for running a business and helpful as preparation for potential changes and unexpected risks.

In Cambridge, the Home of Champions, firms participating in elite sport clusters can access information which flows through a loose grouping. Enterprises can prepare for opportunities, and MSMEs can benefit from incoming visitors visiting Cambridge. Understanding the signalling constructs (signaller, signal, receiver, and feedback) is important in recognising the process of information flow which can be visualised with computer software. Sport competitions in Cambridge related to the cluster of elite sports bring visitors from other areas to watch them. Local MSMEs have opportunities to the benefit from these exogenous factors.

Information about these competitions might not be transmitted to all entities, so, some MSMEs may not increase their customer numbers or increase revenue during the sporting competition. Potentially, the Chamber of Commerce can act as a signal distributor. I-site, for example, may act as an information hub for visitors entering Cambridge. Special places, activities, shops, restaurants or hotels can be informed. Particular enterprises can also inform visitors when information is needed. Visitors to Cambridge for events can receive recommendations from hotel managers about high quality places for dining, souvenir shopping or tourist attractions, providing other businesses with opportunities to improve their incomes through selling goods and services. In addition to membership of the Chamber of Commerce, individual enterprises can work collaboratively in particular groupings, to receive mutual benefits from symbiosis.

This study concurrently adopts Stakeholder and Signalling theories to examine the impact of symbiosis within the business community. If signals are well transferred to entities in the symbiotic community and directly transmitted to target groups, then enterprises receiving these signals benefit and may enhance their firm's performance through lowered search costs. For example, if information about a sport competition in Cambridge is well transferred to the accommodation industry, dining facilities, and souvenir shops, these industries can prepare themselves to increase income from expected visitors. Sufficient stock, adequate number of employees or good marketing campaigns can be prepared if good advance information is received. The cost of business operation can be decreased. In a symbiotic community, some businesses can work together as groups for mutual benefits when sport events occur. The advertising costs can be reduced if those businesses advertise their products or services together.

1.4 Research objectives and research questions

With the room for contributing new ideas, applying what literature and previous studies have found about business symbiosis to deeper examine how it impacts risk and return components in the real community, this study has established four specific research objectives:

1. To understand the impact of symbiotic relationships upon the performance of MSMEs, particularly on the key components of risk and return, by examining prior theoretical and empirical research
2. To explore the application of the Monte Carlo method in estimating net profit of businesses in different industries
3. To examine how interfirm networks and relationships between businesses and banks are associated with changes in profit and a firm's growth. At this point, this study aims to investigate how these two groups relate to each other and how these interactions associate with the profit of firms
4. To explore detailed information relating to connections among several enterprises, and interactions among business owners in Cambridge in terms of the attributes and environment of symbiosis

To achieve these research objectives, the following more specific research questions need to be answered. The research questions in Table 1-1 to be tackled are considered and are discussed in Chapters 5, 6, 7 and 8.

Table 1-1: Research questions

Question type		Question posed
Key question		How do symbiotic relationships among MSMEs generate financial gains?
Minor questions		
Into the symbiotic relationship	1.1	Do symbiotic relationships exist among MSMEs?
	1.2	Which entities offer dynamic forces to MSMEs?
	1.3	How does information flow among MSMEs?

Into financial performance; risk, return, and value	2.1	What is exchanged by actors or players in a symbiotic community?
	2.2	How do exogenous factors affect risk and return of MSMEs?
	2.3	How can a good signalling model be created in order to improve the risk and return position of MSMEs?

1.5 Organisation of the study

This study begins with the overview chapter that outlines the background, significance, key issues and motivations, following by research objectives and research questions. Chapter 2 presents the background of the study. It starts by demonstrating statistics relating to MSMEs and giving an overview of Cambridge in terms of demography and geography while presenting detailed information about local events, fairs and interactivities which are normally arranged in the town. Chapter 3 discusses theories adopted in this study: Signalling, Stakeholder, Agency, Transaction cost, Resource dependent and Social network, and Sociological finance perspective, and how these theories are relevant to other sections and the overall study. Reviewing literature in Chapter 3 describes how research hypotheses are created. Additionally, the chapter systematically reviews literature relating to MSME symbiosis, an evaluation of the concept of symbiosis, and how this concept emerged in the financial field. The concept of symbiosis relating to risk and return is elaborated. Chapter 4 explains both the conceptual and methodology framework used in this study. The pragmatic worldview used to evaluate the objectives and research questions is explained in the chapter. The chapter elaborates on the scope of symbiosis in this study which comprises two main parts, a simulation model and field work study.

Chapter 5 discusses the evaluation of the Monte Carlo application in estimating the probability distributions of MSMEs' net profits in different industries. The integration of the symbiotic concept and the simulation study is demonstrated in this section, and the process of selecting the probability distributions and their ranges from secondary data is explained. The final part of Chapter 5 addresses the

limitations of the simulation model which can be addressed through fieldwork. Chapter 6 explains the survey instrument used in the field work, the data collection process, research methodology, and analysis techniques. The chapter describes variables, and various statistical methods and econometric models used to analyse the primary data from the field. Chapter 7 presents fieldwork findings: the results of descriptive statistics analysis, and bivariate and multivariate analytical results. The results of Ologit inform the key factors associated with firm profit and firm growth while the results of PLS-SEM address the mediated effects on a firm's performance from interfirm relations and business-bank relations.

Chapter 8 presents the findings from semi-structured interviews which give insights into how and why symbiotic relationships enable MSMEs to enhance financial gains. Also, it highlights details to further explain results of Ologit and PLS-SEM. Quotations from participants support the interpretation of findings. The discussion is examined through a financial lens only. Chapter 9 is the Conclusion chapter which summarizes the whole thesis, reiterating what was to be examined and why it is significant. This chapter discusses the implications for MSMEs' owners, banks, policy makers and other related entities. The last part of the chapter discusses limitations of this study and provides suggestions for future research.

To start the exploration and to provide the platform for the analysis, the next chapter describes the background of the study.

Chapter 2: Background of Study

2.1 Introduction

This chapter describes the background of New Zealand enterprises, particularly micro-, small and medium enterprises (MSMEs) that are the major drivers of the country's economy. As this study follows the MSME definition of New Zealand Ministry of Economic Development, micro-enterprises are defined as enterprises which have fewer than five employees, small enterprises are those having six to nine employees, and medium enterprises are those that have ten to 19 employees. Initially, the chapter provides an overview of New Zealand enterprises in terms of business type, location, ownership structure, size and statistical information of GDP contributed by businesses operating in different industries. Information about MSMEs definitions and characteristics is then provided. Statistical details about New Zealand MSMEs, both generally, and in the specific area of Cambridge, are outlined. As Cambridge is one of the towns in New Zealand experiencing high growth, many local businesses have an important role in supporting employment and generating a flow of money in the local community.

The chapter sets out demographic and geographic information about the town, the types of enterprises and industries. Some policies of government agencies, such as the Waipa District (in which Cambridge is located), which are bound to impact on the success of the Cambridge economy are presented in this chapter to promote understanding of how business activities and practices could affect performance and the growth of local enterprises. Background information about different sporting groups, local activities, fairs, and events, as well as the development of roads and construction, is outlined as these factors may constitute opportunities or threats to businesses.

The general information about MSMEs, particularly those operating in Cambridge, provides the basic backdrop to the samples used in this study. More importantly, as this thesis uses a mixed-method analysis framework, understanding the background

of MSMEs assists the researcher to evaluate different aspects of relationships between MEMEs in Cambridge, and examine factors associated with business performance in this particular context (Easton, 1995; Lee, 1989). Understanding local activities, characteristics of Cambridge enterprises, and local network groups gives intensive and rich information about “contemporary phenomenon within real life context” (Yin, 1989) which is critical for describing business networks and developing literature (Halinen & Törnroos, 2005).

2.2 Snapshot of New Zealand enterprises

New Zealand is part of Oceania. An economic reformation during the 1980s and 1990s enabled New Zealand to open up the economic system, as a result of increasing competitive competency in the global market. New Zealand’s economy is dependent on agricultural and dairy products, the major contributors to the country’s GDP. According to the Market Development Division (2017), food products made up 55 percent of the value of all the country's exports in 2014, followed by the timber industry at 7 percent. The GDP of the country is contributed to by businesses operating in different areas, mainly from enterprises in Auckland, Wellington and Waikato regions.

According to Statistics New Zealand (2016), overall, New Zealand had 515,050 enterprises, and this number had increased by 1.6 percent from 2015. These enterprises engaged 2.1 million paid employees, and had 2.4 percent increase from 2015. The highest proportion of enterprises is in Auckland (34%), Canterbury (13%), and Wellington (10%). The West Coast region has the lowest number of businesses and had a further decrease of 2.2 percent during 2016. The proportion of employees who work in the business sector corresponds to the number of enterprises.

Regarding ethnic groups, a number of Māori enterprises are located in three areas: the Waikato region, the Bay of Plenty, and Gisborne. Although there are several groupings among the indigenous population, the Iwi is the largest social unit in New Zealand Māori society. In New Zealand, 12 percent of the Māori population run businesses (Cant, 2007). These Maori businesses not only focus on financial growth and economic activities, but also on managing business in ways that connect to the local community and indigenous culture (Whitford & Ruhanen, 2009). Prior studies

note that indigenous business owners prefer to use a sustainability development model which focuses on environmental, economic, cultural and social aspects to operate their businesses (Harmsworth, 2005). A number of Māori business owners incorporate socially driven objectives with financially related goals to promote their businesses and the local community concurrently (Higgins-Desbiolles, 2010). Statistics indicate that Māori enterprises play important roles in export transactions and contribute to the country's economy. Their contribution stood at 63 percent in 2015, compared to 49 percent for all New Zealand business (MacPherson, 2016).

2.3 Micro-, small and medium enterprises (MSMEs)

2.3.1 Definition

Globally, small and medium enterprises (SMEs) have no single and exact definition, so can be categorized differently depending on a country's pattern (Ayyagari, Beck, & Demircuc-Kunt, 2007). The definition of MSMEs can be formulated in two categories: *economic* and *statistical*. The economic definition distinguishes SMEs from large firms on the basis of scale. As this definition is associated with economic contribution, MSMEs are defined as units with uncertainty of innovation, lower motivation and difficulties in adaptation to the environment (Wynarczyk, Watson, Storey, Short, & Keasey, 1993). A statistical definition focuses on the size of SMEs and their contribution to economies. The comparison between SMEs in different countries or in various sectors in terms of the number of employees can offer an overall picture of those SMEs in relation to total assets and turnover (Storey, 1994). It is noted that size could be small in one sector where the market is large, but a firm of similar proportions could be considered large in another sector. Many studies use the number of employees to define the size of enterprises as this is easy to determine (Filion, 1990) although some argue that the number of employees does not reflect the real size of a business (Osteryoung & Newman, 1993) as large-sized firms do not always require many employees (Gibson & van der Vart, 2008).

SMEs can be defined by total assets, number of employees, sales figures, and capital. According to Ayyagari et al. (2007), SMEs are defined as enterprises having up to a maximum of US\$ 250,000 of fixed assets. The European Union Standard (2005) defines SMEs by using three criteria: the number of employees, annual turnover, and annual balance sheet. This new definition states that micro-enterprises are

defined as firms having fewer than ten Annual Work Units (AWU) or firms having annual turnover of less than €2 million. Small firms are defined as firms with fewer than 50 AWU or firms having annual turnover of less than €10 million. Medium enterprises are defined as companies having less fewer than 250 AWU or firms having annual turnover of less than €50 million.

Apart from quantitative measurement, qualitative criteria can be used to identify the distinctive characteristics of MSMEs which distinguish them from larger firms (Buculescu, 2013; Loecher, 2000). A number of MSMEs face difficulties such as inadequate finance and capital, especially in the initial stage of operation (Cassar, 2004). While larger firms tend to have financial support from banks and financial institutions, many small firms receive financial support from families and friends (Beck, Demirgüç-Kunt, & Maksimovic, 2008). Many micro- and small firms are self-operated and do not hire professionals or experts therefore having little specialization in management (Staley & Morse, 1965). Many micro- and small firms are more flexible in management than larger firms which require regulations to fulfill their corporate plans (Chaston, 1997; De Kok & Uhlaner, 2001; Scase, 2003). Micro- and small firms have close personal contacts with employees and customers while larger firms tend to have more formal connections, particularly with external entities (Scase, 2003). The distinction between small and large firms can demonstrated by types of products or service, marketing distribution, management, operating system and innovation (Acs & Audretsch, 1998).

Although there are different criteria for defining enterprises, many OECD countries, including New Zealand, adopt a statistical definition and use the number of persons employed to categorise size of enterprises (OECD, 2004). New Zealand is a relatively small country with a population of approximately 4,793,700 in 2017 (Statistics New Zealand, 2018b). This partially relates to how to define MSMEs; for instance, small enterprises in other bigger countries could be regarded as large firms in New Zealand. According to the New Zealand Ministry of Economic Development, micro-enterprises are defined as enterprises which have fewer than five employees, small enterprises are those having six to nine employees, and medium enterprises are those that have ten to 19 employees (Ministry of Business Innovation & Employment, 2015). While the definition of MSMEs in New Zealand

maybe different from other countries, according to MBIE (2016) New Zealand MSMEs have some common attributes:

- They are commonly owner-operated;
- They are autonomous and have independence to make principal decisions; and
- They tend to have a relatively small market share.

This definition is applied in every type of enterprise in New Zealand, even some businesses, especially those operated in farming industries (animal farming, crop growing and forestry and farm practices) which are mostly small-sized firms run by family members (Tipples, Wilson, Edkins, & Sun, 2004).

2.3.2 Characteristics

Having low entry barriers, the MSMEs sector is relatively easy to enter. This does not necessarily imply that all new MSMEs require a small amount of capital to operate initially compared to larger firms (Nakos & Brouthers, 2002; Pan & David, 2000). It is also found that micro- and small firms have a high exit level (Haltiwanger, Jarmin, & Miranda, 2013). Research shows that New Zealand enterprises fail years after starting (Mason, 2006). Compared with larger firms, small businesses normally have limited tangible and intangible capital (Barnir & Smith, 2002). Headd (2003) states that a number of small firms start business with low capital, then are not able to survive in the long term. When a financial crisis occurs, many small enterprises face problems because they are unable to acquire financial capital during that period (Brock & Evans, 1989). Even in normal situations, many small businesses face difficulties if they want to obtain a bank loan (Becka, Demirgüç-Kunta, Laevenb, & Maksimovic, 2006; Cassar, 2004; Cavalluzzo & Wolken, 2005; Petersen & Rajan, 1994). Their ability to repay loans is normally lower when compared with larger companies, so banks tend to be hesitant about offering loans to them (Petersen & Rajan, 1994). This becomes clear when small firms decide to expand into international markets (Acs, Randall, Shaver, & Bernard, 1997). Bank loans are normally available to firms with established credit worthiness (Petersen & Rajan, 1994), therefore many small firms do not get financial support from banks and other formal financial institutions (Chen, Li, & Zhang, 2016). Banks usually require collateral in the form of tangible assets and

personal guarantees in order to secure bad debts (Berger, Klapper, & Udell, 2001). This requirement can increase the cost of finance for small firms (Bhattacharya & Londhe, 2014). Limited capital and an inability to access finance can be obstacles to increasing their firms' performance.

Many MSMEs encounter difficulties when competing with large, international firms (Etemad, 1999). Some enterprises experience a decline in sales growth and profit margins when major competitors are larger-sized businesses. Micro- and small enterprises are more likely to experience a high churn rate than the larger firms (Gray & Mabey, 2005). Another reason for failure of MSMEs relates to management and operation. The management process in many large enterprises is predictive and set by policies or objectives for long-term goals (Johnson & Scholes, 2002) whereas micro- and small businesses have flexible management processes concentrating on short-term plans and adapting to limitations of resources. Unlike many large and multinational firms operated by professionals or experts, a number of MSMEs are self-operated firms run by owners. Poor financial decision-making, inability to make decisions in difficult situations in a timely manner, lack of business experience and inability of business owners to recognise business opportunities can lead to failure (Beaver & Jennings, 2005; Gaskill, Van Auken, & Manning, 1993).

2.3.3 Numbers and contributions

In New Zealand, 26 percent of the GDP is contributed by enterprises with fewer than 20 employees. Regarding the number of enterprises, 97 percent of firms have fewer than 20 employees; only 1 percent are large-sized enterprises (see Figure 2-1).

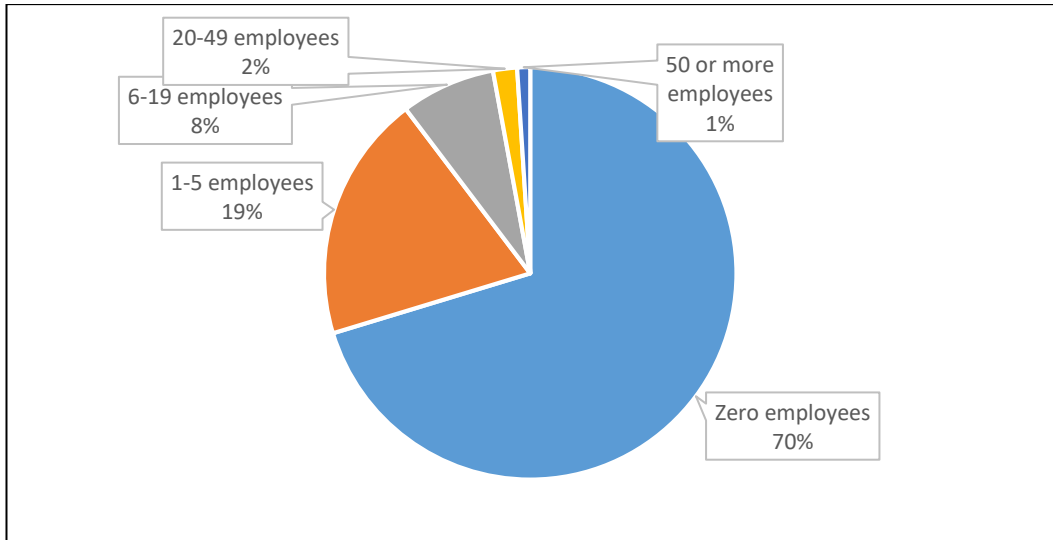


Figure 2-1: Number of enterprises by employee size group

Source: Statistics New Zealand, 2015

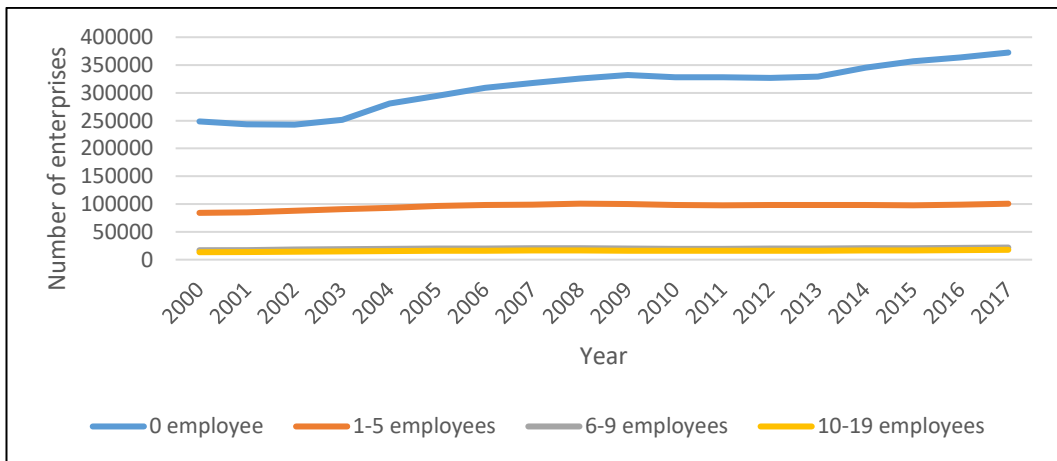


Figure 2-2: Number of enterprises from 2000-2017

Source: Source: Statistics New Zealand, 2015

The number of MSMEs increased gradually from 2000-2017 (see Figure 2-2). The number of self-employed firms increased dramatically by 33 percent from 248,805 to 372,429. This number of enterprises corresponds to the number of employees hired. The highest percentage in employment growth rate is found in micro-firms with one to five employees: the lowest percentage in firms with six to nine employees.

According to the Ministry of Business and Innovation (2016), the highest number of MSMEs are in rental, hiring, and real estate services, followed by enterprises in agriculture, forestry and fishing. The lowest percentage of enterprises is found in

mining, following by those operating in public administration and safety (See Figure 2-3).

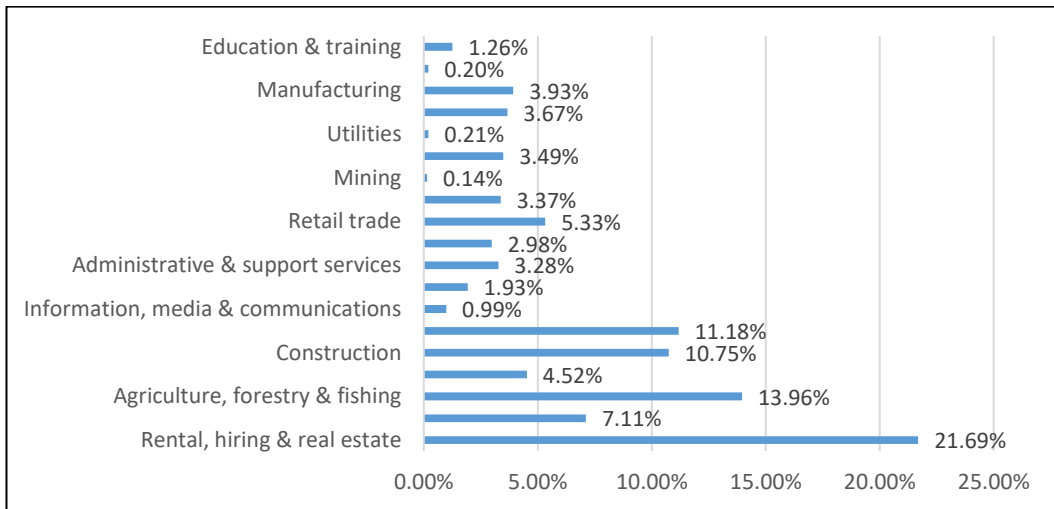


Figure 2-3: Number and percentage of MSMEs by industry

Source: Statistics New Zealand, 2016

The largest percentage of enterprises is found in firms with no employees, operated by self-employed owners with 44 percent being more than 50 years old, and only 9.3 percent less than 30 years old. Of zero-employing firms, the highest percentage are found in businesses operating in the rental, hiring, and real estate service industry, followed by those operating in agriculture, forestry and fishing (see Figure 2-4).

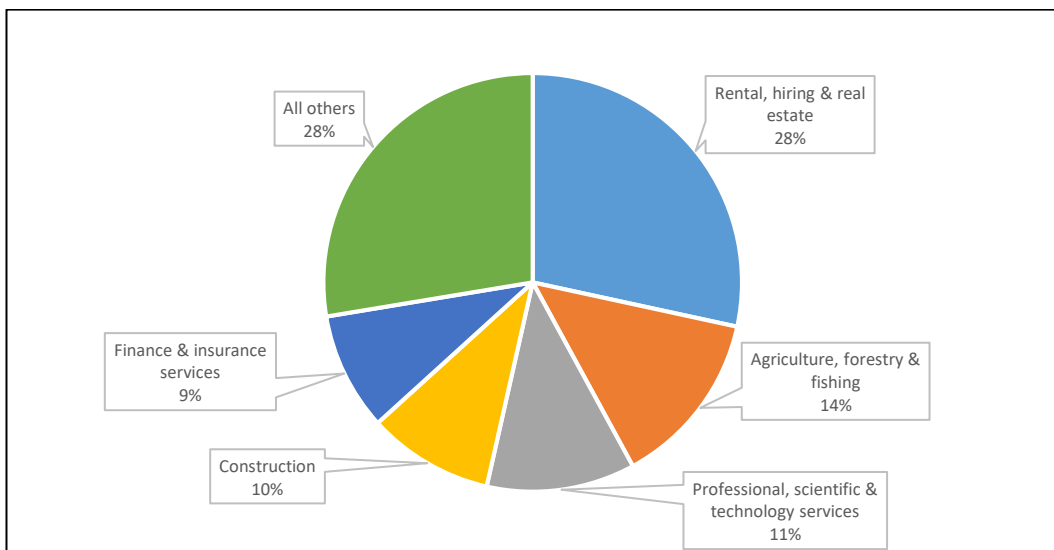


Figure 2-4: Zero-employing firms by industry

Source: Statistics New Zealand, 2016

2.3.4 Setups and failures

Setting up a new business in New Zealand is relatively simple. All processes can be completed in a short time via online instruments. It is important and recommended that people interested in going into business should undertake prior research to check whether their idea will work. Several links provided by the New Zealand government help individuals with setting up, buying and running a business. This support includes guidelines regarding planning, protecting, structuring a business, and advice pertaining to staff and human resources, compliance requirements and tax obligations (Statistics New Zealand, 2018a). For the registration of a new business, a business proposal should be submitted to Inland Revenue to review. At this stage, an IRD¹ number is required. After making a decision, Inland Revenue will report the result within three working days, indicating whether the proposal is approved or more information is needed (see Table 2-1).

Table 2-1: Guide to starting a business in New Zealand

Guidelines	Links
1. Make sure your idea is viable	https://www.business.govt.nz/getting-started/business-planning-tools-and-tips/how-to-write-a-business-plan/
2. Choose a business name	https://www.business.govt.nz/onecheck/ https://www.business.govt.nz/getting-started/building-a-brand/choosing-a-business-name/
3. Choose a business structure	https://www.business.govt.nz/choose-business-structure/ https://www.business.govt.nz/getting-started/choosing-the-right-business-structure/business-structure-overview/
4. Get a RealMe® ² login	https://www.realme.govt.nz/

¹ IRD (Inland Revenue Department) is the public service department of New Zealand charged with advising the government on tax policy, collecting and disbursing payments for social support programmes, and collecting tax (Inland Revenue, 2018).

² *RealMe® is a registered trademark of the New Zealand government and New Zealand Post (New Zealand Government, 2018).

5.	Get a New Zealand Business Number	https://www.nzbn.govt.nz/get-an-nzbn
6.	Secure your business name	https://dnc.org.nz/registrars https://companies-register.companiesoffice.govt.nz/help-centre/starting-a-company/how-to-reserve-a-company-name/ https://www.iponz.govt.nz/manage-ip
7.	Look into regulations	https://www.business.govt.nz/compliance-matters/
8.	Register your company	https://companies-register.companiesoffice.govt.nz/help-centre/starting-a-company/
9.	Register for GST	http://www.ird.govt.nz/ http://www.ird.govt.nz/gst/
10.	Register your trade mark	https://www.iponz.govt.nz/about-ip/trade-marks/

Source: Ministry of Business, Innovation and Employment (2018)

Setting up a new business can be done easily in New Zealand, and it does not require a large amount of money in the setting up stage, so MSMEs have lower barriers to entry compared to large-size firms. However, the failure rate for MSMEs is also high. According to Statistics New Zealand (2017), total enterprise failures in micro-enterprises with zero employees is 93 percent. The failure rate includes bankruptcy/loss to creditors, disposal to prevent further losses, failure to "make a go of it", discontinuance of ownership, and discontinuance of business (Cox & Vos, 2005) (see Figure 2-5).

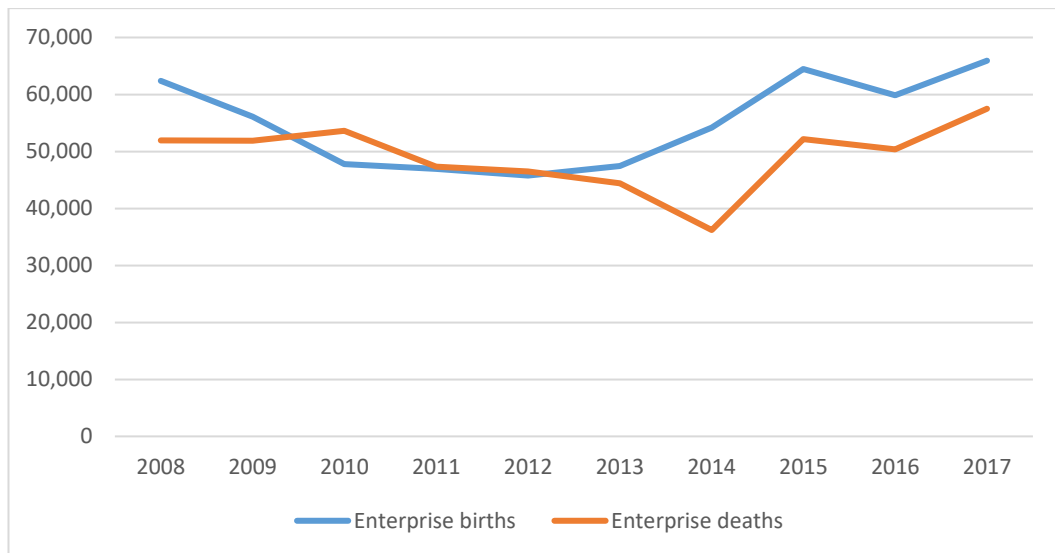


Figure 2-5: Number of MSMEs births and deaths

Source: Statistics New Zealand (2017)

2.3.5 Supporting agencies

In New Zealand, MSMEs are supported by government and non-government agencies. Government agencies include MBIE, the Department of Internal Affairs, Inland Revenue, Treasury New Zealand, Statistics New Zealand, New Zealand Trade and Enterprise, and Callaghan Innovation, and have specific goals and policies to support MSMEs in a range of areas. According to Chetty, and Holm (2000), the New Zealand government emphasize three types of collaboration: joint action group, hard business network, and industry cluster.

1. *Joint Action Group*: This aims to encourage firms in the same industries to cooperate with each other in order to increase export growth.
2. *Hard Business Network*: This aims to combine five or six similar or different industries in order to achieve business growth when they cannot reach this goal by themselves.
3. *Industry Cluster*: This aims to encourage similar enterprises in the same regional areas to collaborate with each other to gain mutual benefits from each other's core competencies.

Non-government agencies also play important roles in building success in MSMEs. Many of these types of agencies require business owners to apply for membership. Non-government agencies mainly focus on specific sectors, business groups or

industrial activities. For instance, the New Zealand Chambers of Commerce has four hubs in different regions across New Zealand and provides members access to business networks (New Zealand Chambers, 2018). Retail New Zealand assists its members by providing retail advice, member benefit savings, industry information and education (Retail New Zealand, 2018). Both government and non-government agencies provide all kinds of support to help the growth of individual MSMEs and the country's economy. As many businesses in New Zealand are run by indigenous people, many projects are organized to support this group of business owners, for example, Māori and Pacific Business Support, and Regional Business Partner (RBP).

Māori and Pacific business support

The developing economy also increases opportunities for Maori and Pacific businesses. The Crown-Māori Economic Development Strategy named He kai kei aku Ringa is created to help Māori and Pacific businesses to decide their own economic destiny and preserve their indigenous cultures. Te Puni Kōkiri's Māori Business Growth Support provides information, connections, and advice to Māori business owners to improve their abilities in management and investment. Many free workshops relating to Māori SMEs are provided by MBIE. All activities aim to support Māori and Pacific business owners to contribute to New Zealand's economic success.

Regional Business Partner (RBP)

New Zealand Trade and Enterprise and Callaghan Innovation fund the RBP Network in order to help businesses build partnerships with local organisations. This network aims to help enterprises increase their growth by helping business owners connect with the right resources, experts and networks. Growth advisors also help with access to business mentoring services, management training support, innovation services, and grants (Ministry of Business Innovation & Employment, 2015). These are done through:

- Cooperative projects in businesses, industry association and research organizations which relate to technology or innovation and joint ventures
- Workshops and meetings with international technology-seeking authorities;

- Corporative entities whose work deals with solving problems relating to common innovation and technology; and
- Participation with Māori business groups who aim to bring innovation in creating shared opportunities.

2.3.6 Cambridge and MSMEs

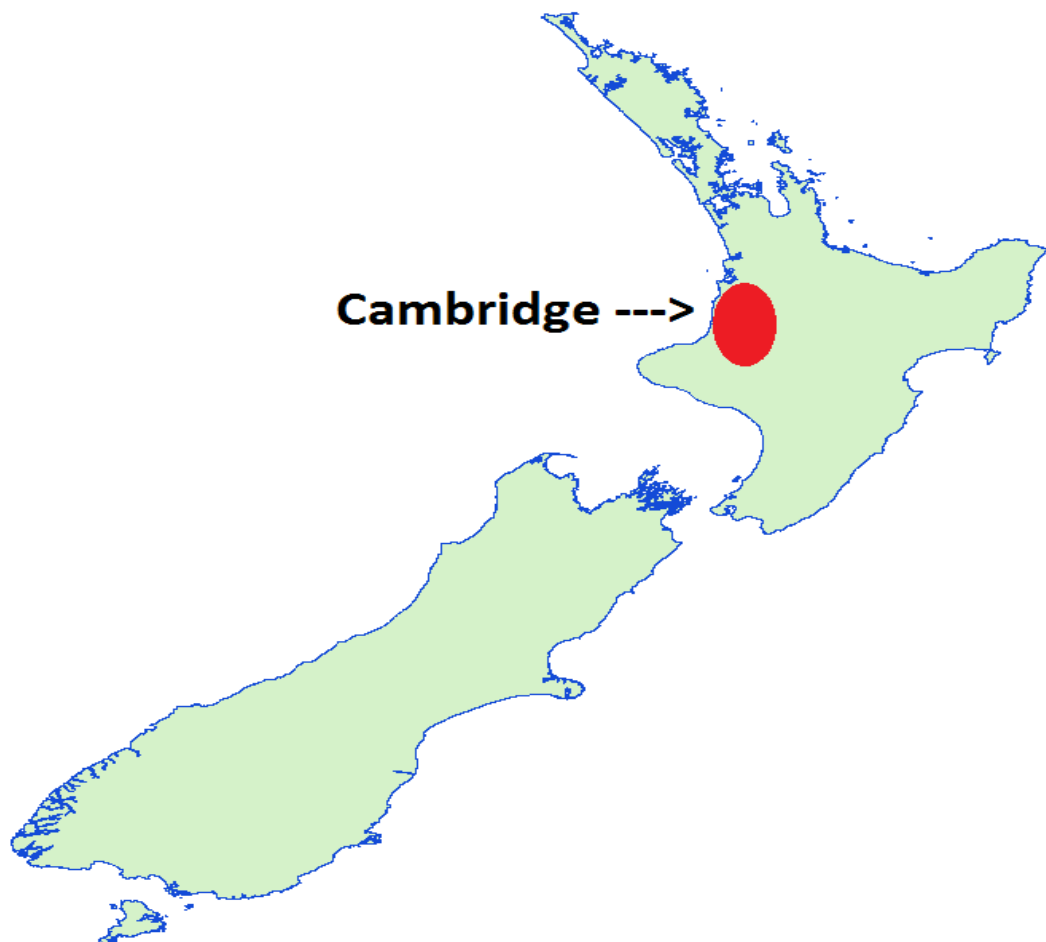


Figure 2-6: Location of Cambridge New Zealand

Source: Backpack New Zealand (2018). Used with permission.

Cambridge is a town located in the Waipa District of the Waikato Region of the North Island of New Zealand (see Figure 2-6). The town comprises three sections: Cambridge North, East and Central. With a population of 20,200, Cambridge is the largest town in the Waipa District, and the third largest urban area in the Waikato (after Hamilton and Taupo). It is one of the towns in New Zealand with high growth in population, and this explains why the number of enterprises in Cambridge is increasing every year (see Figure 2-7).

The highest percentage of industry units and employment are found in Cambridge Central rather than Cambridge North and West. From 2000 to 2016, the number of industry units increased by 28 percent, 17 percent and 22.5 percent in Cambridge North, West, and Central, respectively. The employment rate in Cambridge Central is higher than in Cambridge North; 27.7 percent and 11.4 percent, respectively. In contrast, from 2000 to 2016, the number of employees in Cambridge West decreased by 31 percent (Statistics New Zealand, 2017).

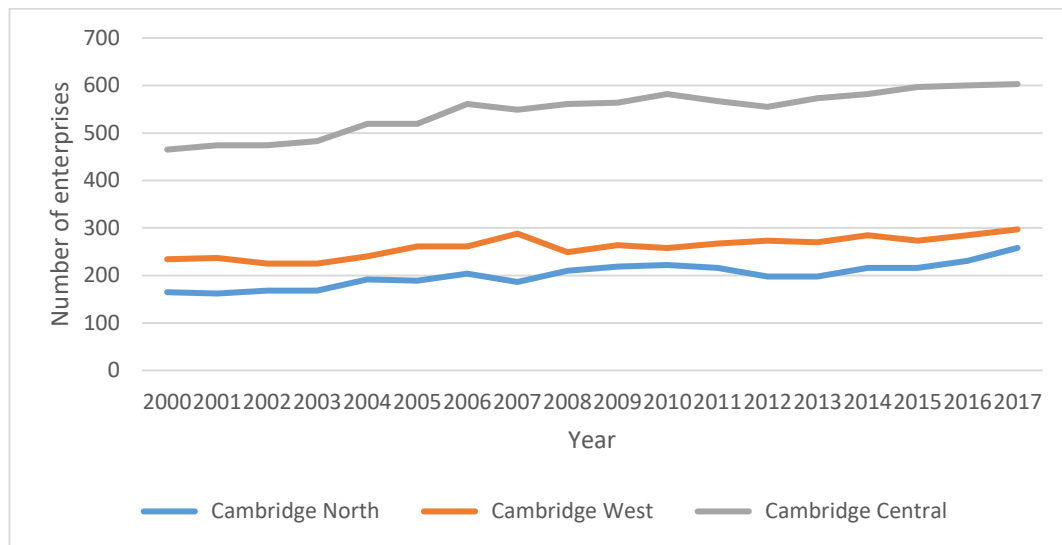


Figure 2-7: Number of enterprises in Cambridge, New Zealand from 2000-2017

Source: Statistics New Zealand (2017)

Cambridge has a number of affluent areas where many businesses are located and these generate a significant contribution to the local economy. A majority of the enterprises in Cambridge are MSMEs that operate in various industries. There are many micro- and small cafés, restaurants, and retail shops in the main streets: Victoria Street, Duke Street, Queen Street, and Albert Street. Medium- and large-sized enterprises in the construction and manufacturing industries are located in Dominion Avenue and Achilles Avenue. Except for house and construction businesses, and farm engineering firms, various business types and light industries are found in Cambridge. The town is known not only for boarding schools and as a retirement centre, but also has many tourism-related businesses and industries. Different types of accommodation such as motels, hotels, and bed and breakfast accommodation are found around the town.

2.3.6.1 Local economic drivers

Cambridge, with other towns including Te Awamutu, Kihikihi, Pirongia, Ohaupo, and Leamington, operates under the control of the Waipa District Council. The surrounding environment, with large green areas for pedestrians and cyclists, a grid street pattern and many trees, gives Cambridge a unique character which motivates people to visit and settle there. The Waipa District Council identifies Cambridge as one of the growth cells of local economic growth. There were many projects in 2017: the development of a roundabout at the intersection of Victoria and Cambridge roads; pathways and cycle ways around Lake Te Ko Utu; pedestrian crossings; car parking spaces; footpaths; and the restoration of the Lake Te Koo Utu gates. Further plans for growth include improving infrastructure and developing residential areas.

The town is regarded as the ‘Home of Champions’ and recognised as the host of cultural and sporting events. There are nine sporting associations based in Cambridge that are Elite Centres of Sporting Excellence and actively stage events: Rowing NZ; Karapiro Rowing; Swim NZ regional hub; Tri NZ (triathlon); Cycling NZ, road cycling and the new velodrome; BMX Club (hosts regular events, held 2013 national championships in Cambridge); the Equine Hub formed by St Peter’s School for dressage, show jumping and eventing; Cambridge Raceway for trotters and pacers; Cambridge Jockey Club; the Golf Academy at St Peter’s School; and Canoe Racing NZ. Potentially, the development of this high-performance sports cluster in the Cambridge environs and the Cambridge by-pass of SH1 offer trading opportunities for local businesses. Every year, many people visit Cambridge to participate in local fairs and sporting competitions. The results of this can be seen in the increase in visitor numbers and the increasing growth of local businesses. More visitors and the associated flow-on effects, as well as the new Waikato expressway, may impact on the speed of growth of Cambridge enterprises.

The Waikato expressway running between Tamahere and the south of Cambridge under the responsibility of New Zealand Transport Agency was formally opened on December 2015 (Leaman, 2015; New Zealand Transport Agency, 2016). The expressway benefits people who travel as they can avoid traffic congestion and reduce travelling time. Additionally, both those who live in the town and those who visit Cambridge can reduce the risk of being involved in the high rate of accidents

that occur on State Highway 1. People who live in Cambridge, but work in Hamilton, can reduce peak hour travel time by 10 minutes, and thus save on petrol expenses, potentially contributing to economic improvement. Residency may also increase as land and accommodation in Cambridge is less expensive than in Hamilton. This may result in improved business performance for those in the accommodation industry as there are improved opportunities for increasing customer and visitor numbers. The Waikato expressway connects people from Auckland and those living in the north of New Zealand to the Waikato region.

Although there are many possible advantages of the Waikato expressway, there are some potential negative effects. People can drive to the southern part of New Zealand without passing through the centre of the town. This may have some negative impacts on local businesses located in the Central Business District (CBD) as customer numbers may decrease. This may also have direct effects on tourism and hospitality businesses such as hotels, motels, bed and breakfast (B&B) accommodation, cafés, restaurants, and gifts and souvenir shops located in the town centre. By driving past the town, many people may no longer take the opportunity to stop and spend money on buying, relaxing, and enjoying a variety of services offered in Cambridge.

2.3.6.2 Network events/activities

There are a number of events in Cambridge. In addition to sporting activities which are the main drivers of the town's economy, other type of events, for example, markets and festivals, potentially encourage people to visit and spend money in Cambridge. The Farmers' Market (Figure 2-8) is open every Saturday and is a good distribution source for products grown by farmers and supports the sustainability of the local economy. The Trash & Treasure Market (Figure 2-9 & Figure 2-10) held by the Cambridge Lions Club in the second week of each month has become a feature event. Over 200 stalls are set up along Victoria, Duke, and Empire Streets, offering a variety of both new and second-hand products as well as different types of food and beverage. Another big event in December is the Cambridge Christmas Festival held in Cambridge Town Hall. The decorated Christmas tree and parade make Cambridge an attractive destination for many people (Destination Cambridge Incorporation, 2017). Events and festivals in Cambridge are mainly supported and

sponsored by local entities such as the Cambridge Chamber of Commerce, Cambridge New World, and the Waipa Council.



Figure 2-8: Cambridge farmer's market

Source: Author.



Figure 2-9: Cambridge trash & treasure market

Source: Author.



Figure 2-10: Cambridge trash & treasure market

Source: Author.

2.3.6.3 Local agencies

Cambridge MSMEs are supported by both government and non-government agencies, and the main entities are Waipa District Council, Cambridge i-SITE, and Cambridge Chamber of Commerce.

Waipa District Council

Waipa District Council is one of the government agencies that contributes to the oversight of MSMEs in the towns of Te Awamutu, Cambridge, Kihikihi, Pirongia, Ōhaupō, and Leamington. The organization aims to foster a collaborative community and build and maintain connection with key stakeholders, focusing on creating financial sustainability and developing the growth of local businesses. In order to develop Waipa as a place for doing business, the Council focuses on creating a productive and diversified economic foundation to sustain the natural and cultural environment (Waipa District Council, 2014). The Council has plans for the next ten years to develop local resources, facilities and significant construction projects, and to preserve the Cambridge Town Hall as an iconic part of the town (Waipa District Council, 2018). The Council works cooperatively with local

authorities and the Cambridge Community Board for alignment of action plans and development goals. Therefore, growth of MSMEs in Cambridge not only depends on the local communities, but is influenced by the policies created by the Waipa District Council. Various resources such as the magazine *Love Waipa*, websites, and a local newspaper are also used to promote the town and its MSMEs.

Cambridge i- SITE

The Cambridge Information Centre, i-SITE, is a non-governmental agency related to the growth of local MSMEs. Its main aim is to provide information and services to both residents and visitors about the town in terms of itinerary planning, bookings nationwide, maps, internet kiosks and local information (Destination Cambridge Incorporation, 2018). In promoting Heritage tourism, Cambridge i-SITE is one of the hubs in building connections among various entities. The Centre collaborates with local entities such as Cambridge Chamber of Commerce, Cambridge Museum and local enterprises, particularly accommodation, restaurants, and gift and souvenir shops in the town. A number of accommodation businesses place their leaflets, brochures or business cards at the Centre for tourists to take. With the cooperation of Cambridge i-SITE, these MSMEs are recommended to many visitors. This network works well in Cambridge.

Cambridge Chamber of Commerce

The Cambridge Chamber of Commerce is one of the influential networks supporting the growth of local MSMEs. The Chamber promotes strong corporate governance and the engagement of all members. It provides business resources, information, and various workshops and training for its members. For instance, there are six events organised by the Cambridge Chamber of Commerce which aim to support the growth of MSMEs in the town: Business after Five (Ba5), Networking over Coffee (NoC), Seminar after Five (Sa5), First XV events, Annual breakfasts and lunches, and The Retailers' Group.

Business after Five (Ba5) is organised by the Cambridge Chamber of Commerce to provide an opportunity for both new and current members to present and promote their businesses. New members can make a brief presentation about their products or services, and their sites. These events provide an opportunity for members to network, socialise, share experiences and make valuable business connections.

There are also benefits for current members who want to present their innovations and market new products or services. Members who want to host an event can make a request to Cambridge Chamber of Commerce. The Chamber then informs other members through their websites and an e-newsletter.

Networking over Coffee (NoC) (see Figure 2-11) allows members to meet others who could be new customers, contacts and suppliers. These events offer an opportunity for participants to present their businesses. The difference between Ba5 and NoC is that Ba5 is normally arranged by the host businesses who are the main organisers. They are required to cover the venue and catering costs. However, NoC occurs in many places without a host business and the Cambridge Chamber of Commerce is the main organiser. Participants can share ideas and exchange business cards over coffee.



Figure 2-11: Network over the Coffee at Cambridge Chamber of Commerce

Source: Cambridge Chamber of Commerce (2018). Used with permission



Figure 2-12: Seminar after Five at Cambridge Chamber of Commerce

Source: Cambridge Chamber of Commerce (2018), Used with permission

Seminar after Five (Sa5) (Figure 2-12) provides opportunities for members of the Chamber of Commerce to update knowledge, business strategies, techniques to develop various areas of business such as human resource management, and trading and marketing strategies. Presenters are the Chamber's members who have expertise in a specific area. The Chamber's members who participate in these seminars can share ideas and responses in relation to a particular topic. Participants can also obtain updates on current matters in Cambridge such as upcoming events, some statistics, and news through the Cambridge Chamber of Commerce.

First XV events is sponsored by Accounted4. These events provide opportunities for young professionals within the first fifteen years of their career or business venture to develop their personal and professional skills.

Annual breakfasts and lunches are organized by the Cambridge Chamber of Commerce to provide a forum for social networking and provide topical, informative, relevant and credible guest speakers. These include, among others, milestone celebrations such as our Administrative Professionals' Day Breakfast, political briefings, inspirational breakfasts with notable speakers, and CEO breakfasts for corporate leaders. These activities enable business people to get to know other business owners and support entrepreneurship.

The Retailers' Group is organized for retail members. Regular meetings, arranged by the Cambridge Chamber of Commerce, aim to provide news and information relating to retail businesses in Cambridge. This allows members to share and exchange ideas regarding business strategies, plans and collective goals. The organisation aims to enhance awareness of Cambridge and increase opportunities for enhancing business performance. The campaign Love Cambridge is run for businesses in Cambridge who aim to effectively promote Cambridge as a destination for dining and shopping. It is organised to support retail businesses and service enterprises as well as generate money flow within Cambridge.

Training and workshops are organised not only by Cambridge Chamber of Commerce, but also by other professional groups. Other associations such as the Accommodation Association provide a range of training opportunities around service to customers, and dealing with difficult situations. Three banks, ANZ, ASB and Westpac, work cooperatively with the Cambridge Chamber of Commerce as members and business partners meaning that banking information can be transferred easily. Figure 2-13 and Figure 2-14 show examples of these events.



Figure 2-13: Business after Five with Cambridge Edition

Source: Cambridge Chamber of Commerce (2018a), Used with permission



Figure 2-14: Business after Five with Jigsaw

Source: Cambridge Chamber of Commerce, (2018a), Used with permission

With the exception of industrial/trade associations and professional groups which organise regular workshops or training for their members, many clubs, and personal groups play important roles in the development of local economy. Sport clubs such as Central Cambridge Bowling Club, Cambridge Polo Club, Cambridge Racquets Club, Hautapu Rugby Club, Cambridge Football Club, Cambridge Golf Club and Cambridge BMX Track are hubs for many people to meet. Many business owners join these groups not only for relaxation and entertainment, but also to interact with other business owners to share ideas, information, build personal relationships and find business partners.

2.3.6.4 Signal transference and symbiotic environment

In relation to Signalling theory, participation in trading associations such as the Cambridge Chamber of Commerce and Business Network International (BNI) signals MSME owners' intention to be involved in business networks. Attendance at some events arranged by Cambridge Chamber of Commerce such as Sa5, Ba5 and NoC indicates interaction among members as well as networking between the Chamber and the members. Three banks, ANZ, ASB and Westpac, work cooperatively with Cambridge Chamber of Commerce as members and business

partners. Interaction between bankers and business owners in terms of providing financial advice and organizing workshops for new business owners to improve capability in cash flow management and financial management knowledge indicate the proactive policy of banks in building and maintaining relationships. Some members of Cambridge Chamber of Commerce, ProFinance, Accounting4, Jigsaw, and CSC Buying Group New Zealand, also work with the Chamber as business partners in order to promote their businesses and provide helpful information to other members. The types of events and workshops organized by the Chamber and its partners are signals that indicate the symbiotic relationships among them. The First XV events set up by the Chamber can be seen as the signals confirming the importance of networking among young business owners. This also shows that the young generation is one of the groups driving the Cambridge economy.

The setup of retailing groups indicates that retail businesses are one of the entities which play an important role in the Cambridge business network. Reluctance and hesitation about becoming members of trading associations can be seen as a signal informing those associations that they need to work harder to provide information regarding the benefits of membership, as this reluctance suggests that business owners overlook mutual advantages available from connecting with others.

In addition to networking through being members of trading associations, some business owners in Cambridge arrange informal meetings every Wednesday morning at the French Café. These informal meetings enable knowledge and information to be transferred from person to person. Some business owners act as signallers informing people of events and fairs which are to occur in the town. Some business owners are receivers and transferors who obtain and pass on the information to others. These networks indicate symbiotic relationships and some personal ties between Cambridge business owners. As Cambridge has many sport communities, personal relationships between business owners are also generated when business owners belong to the same sport clubs. As a small-sized town, physical location of businesses plays an important role in creating and maintaining relationships between entities which are in close proximity to each other. This physical proximity offers opportunities for business owners to talk and interact.

The signals generated from interfirm relations can also be transferred and affect the relationship between individual MSMEs and banks. In Cambridge, relationships

between franchisee and franchiser, or between supplier and retailing company give some signals regarding trading capacity to banks and financial institutions. This links with lending relationships between individual enterprises and banks. The ability of franchisees and retailing firms to purchase and pay for products within a specified credit period increases the confidence of banks about providing financial support. Likewise, a strong relationship between a business and banks impacts on interfirm relations. Trustworthiness from banks provides more opportunities for obtaining financial support and, as a result, owners are able to build more connections with other business owners.

2.4 Conclusion

This chapter provides information about MSMEs in relation to the definition and characteristics of MSMEs in the global context. It also presents information about New Zealand enterprises with some statistics regarding GDP, types and number of enterprises. In particular, the chapter provides information about Cambridge which is regarded as a growth cell in the Waipa District. It also discusses the number of enterprises and employees hired in the towns, demonstrating the opportunities for and threats to business growth which are related to sporting events, clubs, the existence of Waikato expressway, local events, and festivals. This information gives readers the context of this study.

Chapter 3: MSMEs Symbiosis - Literature and Related Theories

3.1 Introduction

This chapter discusses some of the main theories relating to the concept of symbiosis and its impacts on business performance. In the financial area, there is limited research that uses the exact terminology 'symbiotic relationships', but a number of studies use different terminologies for a similar concept. The chapter reviews empirical literature relating to networking and interconnection between individual businesses which both directly and indirectly affect the risk and return elements of micro-, small and medium enterprises (MSMEs).

In order to understand clearly how business risk can be decreased and how corporate returns can be increased, the chapter also presents literature relating to cooperation, association, and interaction at an interpersonal level to identify whether different characteristics of business owners are associated with how they interact with others and how these impact on business performance. It is believed that different characteristics of business owners (gender, age, education, interpersonal skills, and social ability) are associated with interaction among them. The concept of symbiosis has been used in various ways in the small business literature. This chapter reviews previous studies relating to the root of network study; the concept of symbiosis and its impacts on firm performance; different terminologies under the concept of symbiosis; factors associated with business symbiosis; and business and bank relations. Reviewing these has been beneficial for developing research propositions for this study, establishing the conceptual framework, and evaluating empirical findings and discussion.

The chapter has two major parts. The first discusses some of the theories relevant to business networks and performance of firms. The second part reviews some relevant empirical studies in the following broad categories: definitions of symbiosis and the root of network study; the concept of symbiosis and its impacts

on risk and returns of MSMEs; different terminologies for a similar concept; factors associated with symbiosis; and MSMEs and bank relations.

3.2 Theories related to business symbiosis and firm performance

By contrast with quantitative research that initially uses theories to create hypotheses, mixed method researchers review literature and related theories to guide research questions and hypotheses. Existing theories are used to explain the major relationships between variables, and to discuss the findings and results (Creswill, 2014). A mixed method study is also different from qualitative research. Existing theories are used to indicate research propositions which provide the broad ideas and conceptual framework of the study. Data are used to determine variables which may differ from those discussed in the literature, depending on different contexts.

The importance of reviewing related theories in this mixed method research approach is elaborated here. Firstly, existing theories are adopted to illustrate the benefits of connections and networking for risk and return in businesses. A discussion of the impacts of symbiosis on the elements of business performance is beneficial for developing the research hypothesis for this study. Secondly, these theories are also critical for specifying the factors related to a firm's performance as theories indicate causal relationships between variables. Thirdly, as this research uses a mixed method framework, reviewing theories will guide the identification and interpretation of potential themes. Although excessive adherence to existing theories can affect the research framework (Becker, 1970), under-reviewing theories that are related to the study could result in failure to identify core concepts that are pertinent to it (Maxwell, 2013). Finally, reviewing the literature enables the researcher to evaluate discussions, and can inform consideration of the key implications of the study.

3.2.1 Transaction cost theory

Transaction cost theory is one of the theoretical approaches to studying symbiotic relationships among business entities (Kogut, Contravtor, & Lorange, 1988; Williamson, 1985). This theory was generated in 1937 by Ronald Coase who discussed reducing transaction costs through interconnecting with other business units (Coase, 1937). This theory is used in many disciplines: economics,

entrepreneurship and sociology, for example. In Finance research, this theory relates to business performance and also to this study and is adopted to understand how corporate costs and expenses could be reduced when individual firms connect with each other.

According to existing theory, transaction costs are the costs of transferring goods and services from one unit to another (Williamson, 1985). These costs include bargaining, decision, and policing and enforcement costs. For individual enterprises, transaction costs include information searching cost for customers, suppliers, marketing distributions, and products. They also include the cost of negotiation with suppliers, wholesalers, distributors, and customers. Additionally, while operating business on a daily basis, a number of enterprises deal with banks and financial institutes for saving, depositing, lending, investing, refinancing and asking for other financial support. Transaction costs are generated from all interactions between enterprises and with banks and financial institutions. Market transactions, business transactions and bank transactions are costly, particularly for MSMEs that have limited resources.

Small businesses tend to have higher transaction costs than large enterprises because of the limitations imposed by firm size in relation to technology, financial support, and human resources. MSMEs may need to hire more employees if they want to increase production capacity or to access some information. In terms of investment, many MSMEs have higher bank transaction costs than larger enterprises as banks and financial institutes tend to offer higher interest rates to MSMEs. This is due to a higher rate of non-performing loans and a higher percentage of non-repayment.

Bygrave and Minniti (2000) state that interconnection among enterprises can help firms to reduce such costs as negotiation costs, as well as increase trustworthiness among entities. The benefits of grouping and the power of negotiation are found in lower product costs. According to previous studies, close relationships or connections with banks or financial institutes result in lower transaction costs in terms of interest rates and fees (Petersen & Rajan, 1994). The result can be improved performance of firms as net profit can be increased when corporate costs and expenses are reduced. In Capital asset pricing theory, there is a foundational linear relationship between risk and return of enterprises (Sharpe, 1964).

Rather than focusing on joint ventures, consortiums or reciprocal exchanges among larger enterprises, this study adopts Transaction cost theory to provide a rationale for firms' horizontal networking as it provides a sound basis for analysing symbiotic relationships among individual business units.

3.2.2 Resource dependence theory

Resource dependence theory is widely mentioned in organizational and strategic management as it explains how the external environment affects enterprise behaviours (Hillman, Withers, & Collins, 2009). This theory is mentioned in financial research, particularly regarding mergers, joint ventures, and alliance in firms which are interconnected because of the uncertain effect of external environments. Scholars mention the difference between Resource dependence theory and Resource-based view theory in the context of networks where the former addresses external networks providing resources while the latter states the importance of connecting with others to improve internal resources (Barringer & Harrison, 2000).

Resource dependence theory, initially stated by Pfeffer (2003), is that uncertain situations that may cause risks and failure are mitigated by interconnection between firms which act to manage interdependence. It states that business performance depends on resources and networks which can be received from the external environment through different social groupings and trading associations (Butler & Sohod, 1995). Small firms receive more benefits from co-operative relationships (Das, Sen, & Sengupta, 1998). In practical terms, interconnection will be sustained when trust between different parties is established. It is important that contracts, agreements and credible commitment between different firms should be revealed and written in a way that prevent problems regarding pre-contract opportunism, adverse selection, and agency problems. Therefore, business contracts involving interdependence between enterprises should consider ethical components (Rubin, 1978). Participation in industrial associations and interconnection between firms can be undermined when the problem of free riding exists and reduces the benefits of connection.

In the context of this study, Resource dependency theory is adopted to hypothesize the benefits of relationships among enterprises in a symbiotic environment. In order

to be sustainable, enterprises can acquire various resources, access information, and acquire physical resources from the external environment by incorporating themselves into different kinds of networks such as competitive connections and industrial associations. Networking with family and friends is critical in the early stages of a firm's formation as it provides financial and mental support for firms that are new to the environment (Larson & Starr, 1993). Interconnecting with various networks is beneficial for firms to understand the actors within a network and recognise the focal entities which provide help and support. This resource is critical for the success of firms, but it is insufficient (Pfeffer & Salancik, 2003). Interdependence among MSMEs creates the opportunity to access and share resources, build permanent and constructive networks, and enjoy reciprocal benefits. Transactions with the external environment can be in the form of horizontal, vertical, and diagonal interactions. While horizontal interconnection occurs between single enterprises on the same level, vertical interconnection is between different levels of entities such as seller-buyer, wholesaler-retailer, and manufacture-distributor. Diagonal relationships are widely seen when every entity at different levels or parties interconnect independently. While Resource dependency theory explains how the external environment drives firms to connect with each other, many scholars link this theory with Stakeholder theory as it is argued that business performance is increased through the satisfaction of every part of a network.

3.2.3 Stakeholder theory

Stakeholder theory was initially discussed by Freeman and Reed (1983), then widely adopted in management and entrepreneurial contexts. In this theory, it is argued that in order to attain sustainability and increase business performance, executives, directors or managers should pay attention to all stakeholders, including employees, customers, suppliers, and creditors (Freeman, 2010). Lawrence and Weber (2002) supported Freeman's work and define stakeholders as people or a group of people who influence or are influenced by policy, roles and regulations of an organization. Stakeholder theory has been extended to include environment and society as they are regarded as stakeholders (Simmons, 2004).

A number of scholars have expanded on Stakeholder theory. Stakeholder theory comprises various approaches: descriptive, instrumental, and normative

(Donaldson & Preston, 1995). The descriptive approach relates to corporate characteristics and behaviours in relation to the nature of each firm, firm management, and particular parties and their expectations. The instrumental approach considers connections between stakeholder management, corporate objectives, and individual parties' needs. For instance, the relationship between managers, customers, staff, and suppliers will determine the ways in which those companies conduct themselves. The normative approach guides the ways norms are followed in stakeholder management. While there are different justifications for these three aspects of Stakeholder theory, many scholars believe the theory offers practical approaches and moral standards for managers. Stakeholder theory combines three attributes: power, legitimacy, and urgency in order to state who the stakeholders are that managers must pay attention to and how those parties should be treated.

Friedman and Miles (2002) developed the notion of Stakeholder theory from previous studies then modified it to respond to social changes occurring for various reasons over time. They argue that different stakeholders influence organizations in different ways because of the different structures of organizations, contractual relationships and available institutional support (Friedman & Miles, 2002). Recent literature that develops Stakeholder theory discusses the difference between parties that organizations have obligations to pay attention to, and those that influence organization (Freeman & Phillips, 2003). Organizations are regarded as cooperative systems (Lando, Boyd, & Hanlon, 1938). They are formed by different stakeholders who have common goals (Axelrod, Mitchell, Thomas, Bennett, & Bruderer, 1995). These relationships enable individual firms to reduce the uncertainty of the environment (Kraatz, 1998).

In the area of finance, Stakeholder theory has been mentioned frequently since the early 1990s in capital market research and corporate governance studies. According to Donaldson and Preston (1995), corporate governance is one of the key areas that emphasizes corporate structure, duty, and responsibility of all parties in companies. As different parties in companies or organizations have their own duties and aspirations, paying attention to various groups is important to satisfy the needs of both individuals and the organization. According to the theory, directors of

companies should manage firms so that benefits are provided to all stakeholders, not only for one particular group (Sharpe, 1964).

There are some principles regarding good corporate governance. For instance, financial disclosure is critical for increasing stock value. Information asymmetry creates reluctance and hesitation about investment, so financial statements should be revealed to the public. Stakeholder engagement is positively associated with corporate performance. This engagement contributes to trustworthiness, respect for other parties and the entire corporation through conversation and association (Andriof, Waddock, Husted, & Rahman, 2017). Stakeholder engagement also promotes information-sharing among stakeholders (Manetti, 2011). Corporate governance encourages responsibility among stakeholders, enhances organisational competitiveness, and adds value to enterprises and society in the long term (Shahin & Zairi, 2007; Van den Berghe & Louche, 2005). Good corporate governance minimises agency problems. It acts as a monitoring device to recheck whether agents consider the benefits of stakeholders more than themselves, consequently generating positive benefits for a firm's performance (Anand, 2008).

In this study, Stakeholder theory is an important element of research in relation to networking and interconnection. In terms of external stakeholders, micro- and small firms need to have contact with many parties: customers, business partners, banks and financial institutions, suppliers, distributors, wholesalers, and manufacturers. Also, enterprises automatically connect with the environment and society as they are also social units. Their business activities and transactions with other entities eventually have some impact on society and the environment. For internal stakeholders, the relationships with employees and family members are critical to the success of firms. Like large and multinational firms, interconnection between micro- and small firms and other entities aims to reduce information asymmetry and share resources, and can be achieved faster if every stakeholder engages in those plans. However, in larger firms, the commitment can be delayed if stakeholder involvement requires formal contracts and agreements with other parties. The difference in cultures between large and small firms can affect corporate management and stakeholder engagement (Gibb, 2000). Stakeholder engagement for micro- and small business tends to be less formal, more flexible, and simple as their relationships depend on trust and personal agreement (Jenkins, 2004). In

critical situations, problems and difficulties can be solved faster when there are close ties between stakeholders. Frequency of association enables business owners to recognise when problems are happening on a practical level (Ang, 1991).

In the context of symbiosis, Stakeholder theory argues for the equality of every party in a network in relation to receiving mutual benefits from social involvement. Free riding can minimise stakeholder engagement; however, if benefits are widely offered to every party, synergic cooperation will have a long term positive impact on a firm's performance. Stakeholder theory appears to have made an important contribution to empirical study and discussion rather than to theory building. It provides a financial rationale for discussion on networking.

3.2.4 Agency theory

Agency theory explains a relationship between two parties; principal and agent. In capital market investment, agents hired as managers, directors or Chief Executive Officers (CEOs) of companies have duties and responsibilities in managing companies and maximising benefits for principals (investors who are regarded as the owners of companies). If agents run companies in the sense of maximising their own wealth, a conflict of interest can occur (Jensen & Meckling, 1976). McColgan (2001) discussed the agency problem which links to moral hazard (agents tend to operate businesses for maximising their own benefits), earning retention (agents tend to use internal capital, namely retained earnings rather than external finance), time horizon (agents prefer to invest in short-term projects as they consider only benefits received during their working period), and risk aversion (agents tend to invest in low-risk projects as they try to avoid the loss in running high-risk activities even if it could provide the opportunity for higher return). Agency problems occur because of asymmetric information or imperfect information. This can be seen clearly in the capital market where directors tend to have more information and understand internal situations better than investors (Eisenhardt, 1989).

Not only occurring in listed firms, some scholars argue the conflict of interest also happens in any entities where the aims of two different parties are inconsonant. Agency theory is also mentioned in relationship studies as including family business relations, commercial relations and interfirm relations. Agency conflict

can link to variations in business relationships and be used to explain how to better build relationships with other entities to reduce costs and increase benefits.

In some business network studies, the principal-agency framework works with various theories. Wong, Gygax and Wang (2015) combine the Optimal contracting theory with Agency theory, and concluded that interfirm relationships positively link with the relationships between several board members. Although this group of people have responsibility in maximizing the shareholder's value, minimizing the cost of agency problems is equivalently challenging (Grossman & Hart, 1983). While conflict of interest is widely found in public firms, it is questioned whether this problem also occurs in interfirm networks. This is further explored by some scholars. Barringer and Harrison (2000) reviewed the six forms of inter-organizational relationships: joint ventures, networks, consortia, alliances, trade associations, and interlocking directorates. They referred to Han, Wilson, and Dant's (1993) study which mentioned the aggravation of agency conflicts between entrepreneurs and monopolized business partners. They further noted that the creation of interconnections among different business entities increases the degree of agency conflict as this is not only related to principals and agents, but it is also associated with the third parties in networks.

Opposing this view, some scholars claim that the Stewardship theory can better explain interfirm relationships. Davia, Schoorman and Donaldson (1997) argued managers/agents tend to engage in the interactivities which satisfy principals as these also serve their own interest.

From a socio-financial perspective, Stakeholder theory, Agency theory and Stewardship theory are conjointly debated and used to explain various types of inter-organizational relationship. This is based on the nature of organization as one of the cooperative systems (Lando et al., 1938).

3.2.5 Signalling theory

Signalling theory was first discussed by the economist Michael Spence in 1973. Traditional finance theory states 'the perfect capital market assumption' is that all information will be transferred to the capital market equally and therefore every investor can access information equally with no transaction cost (Fisher, 1930). However, it is noted that no perfect capital market exists in reality as information

is asymmetrical (Holmes, Hutchinson, Forsaith, Gibson, & McMahon, 2003). However, signals can act as transmitters to reduce asymmetric information between two parties (Spence, 2002). Information asymmetries happen when “different people know different things” (Stiglitz, 2002).

According to Connelly et al. (2011), four key primary elements in Signalling theory are the signaller, signal, receiver and signalling environment. Signallers are the insiders who have information which is not accessed by outsiders or persons who provide and transfer signals to others (Spence, 1973). Signallers can be people such as job recruiters, business owners, or employees (Ehrhart & Ziegert, 2005; Hochwarter, Ferris, Zinko, Arnell, & James, 2007; Ramaswami, Dreher, Bretz, & Wiethoff, 2010), or intangible signallers such as products and firms (Connelly et al., 2011). The outcome of signalling transmission depends on various factors. One of the key elements relates to how honest signallers are about transmitting signs to receivers without any manipulation of information (Durcikova & Gray, 2009). Receivers can interpret the meaning of signals differently, depending on the types of signallers and whether they are high-quality or low-quality signallers (Ndofor & Levitas, 2004). If signallers are reliable, they will send signals that reflect the real current situation, so that receivers can interpret the meaning accurately.

In the context of symbiosis, signallers play important roles in information sharing. Trading and industrial associations, professional groups, and other unions formed to provide individual members with material and immaterial support are information providers. They could be regarded as network centres among members. Signals are noticeable signs that are sent from signallers to receivers. According to the literature, signalling transference works on a cost-effective basis. In order to transmit some signs to outsiders, signallers have to assess whether the cost of signalling transference is less than the benefits received from that action. Signals can be either strong or weak (Gulati & Higgins, 2003), visible or invisible, clear or obscure (Warner, Fairbank, & Steensma, 2006), of high intensity or without impact (Gao, Darroch, Mather, & MacGregor, 2008). These factors affect both the process of signalling transmission and interpretation, as imprecise signals can confuse receivers and convey the wrong message. Many scholars focus on signal frequency and signal consistency to alleviate these problems and reduce information asymmetry (Fischer & Reuber, 2007; Gao et al., 2008; Janney & Folta, 2003). The

theory emphasizes interconnection among enterprises and association among business owners as these relate to signalling transference. According to Hill (1990), connection between two businesses generates anticipated constructive effect on network identity; it sends harmonious signals to other parties which demonstrate the voluntariness of their relationships.

Receivers are the outsiders who do not have information, but receive information from signallers. In the capital market, investors, shareholders and debt holders can be regarded as receivers (Basuroy, Desai, & Talukdar, 2006; Elliott, Prevost, & Rao, 2009). Internal information regarding the financial situation, dividend yield, and strategic management plans are provided to receivers through annual reports. Investment and reinvestment will occur after receivers have information (Healy & Palepu, 1993). According to Gulati and Higgins (2003), in order to receive the benefits of signalling transference, receivers have to pay attention to and look for signals. The information will not be transmitted if receivers are not looking for particular signs, especially in the case of weak and unclear signs which are difficult to notice (Ilmola & Kuusi, 2006). Also, different receivers interpret signals differently (Perkins & Hendry, 2005), so different receivers acquire benefits from signals differently.

According to network studies, receivers gain different impacts from different types of relationships. Weak tie theory highlights the benefits of sharing in a heterogeneous network (Granovetter, 1973), while Krackhardt (2003) supports the 'strength of strong ties'. Structure-hole theory relates to signalling transference as signals are transferred through individual entities in different networks depending on gaps between each entity (Burt, 1992). In this case, enterprises connecting with different groups or containing many structure holes gain more benefits from signal transference and information-sharing than business networks with fewer structure holes that are found when individual businesses have strong-tie relationships with homogeneous entities. While there is debate as to whether weak- or strong-tied relationships in networks generate better benefits, Signalling theory is adopted for theory building regarding different types of networks that are differently associated with a firm's performance.

The other two elements of Signalling theory are feedback and the signalling environment. After receiving signals, receivers can send countersignals back to

signallers in order to develop signalling effectiveness (Gupta, Govindarajan, & Malhotra, 1999). This can happen either within or between organizations (Lester, Certo, Dalton, Dalton, & Cannella, 2006). Environmental distortion in the form of unwillingness of receivers to receive signals can affect signalling transmission, and result in an ineffective signalling process. In the context of network connection, geographic proximity, local culture and entrepreneurial personal relationships enable signals to be transferred. Businesses located in the same area gain benefits from information-sharing faster than those located farther away (Romijn & Albu, 2002).

To conclude, Signalling theory is mentioned extensively in financial and capital market research, and highlights information asymmetry. A number of scholars adopt this theory to explain information transference in different types of networks. This study adopts this theory for hypothesizing different types of connection and their impact on a firm's performance. This study also emphasizes the signalling role of trade credit involved in interfirm relations and relationships between MSMEs and banks.

3.2.6 Social network theory: Sociological finance perspective

Aristotle, a Greek philosopher, stated that "Man is by nature a social animal" and that it is a human necessity to associate with others, connect, and interact. The idea of businesses as standalone enterprises has evolved over time. The significance of the social network approach for a study of business symbiosis and MSMEs performance relates to the shared understanding that transactions and associations between two people affect business performance. In the social network approach, networks are comprised of many actors with many types of relationships. Behaviours and interpersonal connections among people or a group of people reflect the norms, morals, and social cultures of those associations. The concept is foundational, and adopted and applied in many areas of social science such as education, criminology, psychology, and technology. The concept provides a mechanism to understand relationships and actions between actors in networks through their actions. Although scholars adopt this theory and apply it differently, many scholars identify key elements used to estimate relationships among actors

that involve density, centrality, linkages and connectedness among different units in networks.

The social network approach in finance helps researchers to understand the effect of network structure and network formation which could be associated with financial performance. In micro-finance institutions, cooperation among financial institutions or banks can be beneficial because of risk sharing (Allen & Babus, 2009). In the capital market, some researchers adopt this concept to investigate the relationship between mutual fund managers and corporate board members. It is found that board monitoring performance is associated with interpersonal relationships between CEOs and directors who studied at the same education institutions. The social network approach is adopted to explain relationships and transactions among businesses which impact on financial performance. Some scholars adopt this concept to explain different types of relationships categorised by strength of relationship between entities which can play an important role in business performance. Granovatter (1973) argues that weak-tied relationships enable businesses to operate with no redundant information while Krackhardt (2003) argues that strong-tied relationships provide explicit information and give more benefits. Burt (1992) proposes Structural hole theory which exists between different actors when they are both connected to the same other actor. This theory has prompted scholars to explore whether some enterprises can benefit in terms of resource and information through connections with others.

As sustainability is critical for all businesses, there is considerable research that adopts this concept to examine business networks in various business cycles, and consider what types of networks are important and what they require at different periods (Terpstra & Olson, 1993). Networks between family members and friends are crucial for business formation as many of them act as financial supporters (Bhidé, 2003; Larson & Starr, 1993). However, during the expansion period, individual businesses require support from an external group of people, so inter-organizational networks are important (Borg, 1991). Some scholars apply this approach to investigate entrepreneurial characteristics in terms of gender, age and education which relate to interpersonal connection with others. Formality of interaction and different types of connection are one of the areas in which scholars apply Social network theory.

Social network approach has been related to some key theories noted in this study: Transaction cost, Resource dependency, Signalling, and Stakeholder. Resources are critical for businesses, but micro- and small firms have more difficulty in accessing them. As business performance depends on resources from the external environment, cooperation is important in order to access more resources, new customers, and market distributions which enable firms' long-term sustainability (Butler & Sohod, 1995; Pfeffer & Salancik, 2003). Interconnection between businesses and interpersonal association between business owners are associated with cost reduction (Coase, 1937; Williamson, 1981). Trading associations, professional networks, and some particular organizations could be hubs to provide information to their members. Enterprises which respond quickly to those signals can adapt to the demands of current situations. According to Stakeholder theory, the problem of freeriding can be avoided if all units in a network receive benefits from interconnection (Freeman & Reed, 1983). The discussion of this concept provides insight into business performance and some notion of the nature of symbiotic relationship among business units which can help to understand interactions between these elements.

3.3 Literature

3.3.1 Business symbiosis

'Symbiosis' is a Greek word which means 'living together' Symbiosis is defined as the relationship between mutual units in a collaborative environment. It was first used in the biological field by a German biologist in 1879 to explain a number of living relationships between members of two different species (Dimijian, 2000). It is suggested that symbiosis is a common adaptation of enterprises for positive impacts (Astley & Fombrun, 1983). Symbiosis from a business perspective is defined as "an enterprising effort by multiple parties, each of which benefit from the joint effort, such that added value is created" (Dana, Etemad, & Wright, 2008, p. 110).

The terms 'symbiotic relationship' and 'network' have a common foundation as they relate to interaction among different units. The root of network analysis is found in anthropology, sociology and social psychology. Anthropology focuses on various aspects of humans within past and present societies to understand interaction

between people through their behaviours, beliefs, norms, and cultures. Anthropological studies note that reciprocity is generated from transactions between two groups of people in order to receive long term benefits (Malinowski, 1922). This science was further developed into anthropology economics which focuses on the economic impact generated from different associations among humans (Hann & Hart, 2010). Sociology is the study of social behaviour, patterns of human interaction and association among people which affect their thoughts, feelings, and behaviours (Abrams & Hogg, 2006).

In the business context, a number of scholars build on these ideas; however, they emphasize how business transactions and activities generate mutual benefits for businesses and societies. Non-financial and financial indicators are used to evaluate how those transactions and interactivities generate any advantages. The concept of symbiosis is suited to numerous business areas, and there is an emerging literature in the field. Industrial symbiosis focuses on the exchange of energy and materials among industrial processes in an effort to increase value and reduce environmental impacts. For example, in the electricity industry, some enterprises reuse another company's waste in order to reduce production costs (Brand & Bruijn, 1999). By doing this, firms have symbiotic activities such as by-product exchanges, utility and service sharing (Chertow, 2007; Chertow, Ashton, & Espinosa, 2008). In the marketing area, symbiotic marketing is defined as "an alliance of resources or programs between two or more independent organisations designed to increase the market potential of each other" (Adler, 1966, p. 60).

3.3.2 Finance perspective on symbiotic relationships

From a financial perspective, every aspect of the small business activities has elements of signalling, information asymmetry, agency problem, risk hedging, diversification, leverage, free-rider, trade-off, and equilibrium pricing.

Previous studies argued that any business activities that incorporate signalling transference indicate the components of networking, connection and relationships between different entities. These signals, in either a direct or indirect form, indicate how individual parties in the community associate with each other. For instance, participation of business owners in social communities, trade associations, professional organizations, sport clubs or informal personal network groups show

how symbiotic relationships in that community appear. Paying membership fees, donations and contributions to the community through financial and non-financial services indicate a willingness to be a part of that society (Spence, Schmidpeter, & Habisch, 2003; Worthington, Ram, & Jones, 2006). In small business finance, crowdfunding offers an investment opportunity to business owners not only for obtaining financial support from other entities, but also signalling interest to others regarding products and services in the network (Schwienbacher, 2015). This investment behaviour is seen as a signal of trust within the network (Cassar & Rigdon, 2011). The consequence of signalling transference is obvious. Business owners who interact with others have more opportunity to receive information via business transactions which leads to an improvement in firm growth and survival rates, although vague signals through excessive network engagement can have negative effects on business performance, particularly on survival and growth (John, 2007).

Capital market theory indicates there is no perfect market in the real world, as the acquisition of information by different parties is unequal. In the capital market, information asymmetry occurs when managers or directors of companies and outside investors have an opportunity to receive discordant information (Merton, 1987). In small business networks, people who take the role of representatives of trading associations have an opportunity to receive information in some aspects better than others who are normal members. Many associations are run to support multi-stakeholders in terms of information, consultation, and other services depending on their aims and objectives (Fransen & Kolk, 2007).

Some scholars argue that this can lead to agency problems when different parties have different goals or purposes. Hambrick and Mason (1984), in their discussion of functional tasks, comment that in some trading associations, directors who take roles in management of an organisation are appointed from normal members. This group of people understands conditions and the basic requirements of other members, so they can suggest a form of administration which is relevant for the whole community. The stability of the social ties between this group of people and other members of the organization varies depending on their tenure in network management (Cao, Maruping, & Takeuchi, 2006). Duchin and Sosyura (2013)

argue that their strong links have positive effects on investment efficiency and network or organizational value.

Some scholars argue that the central representatives tend to generate corporate rules to create good corporate governance to counteract the conflict of interest caused by some representatives (El-Khatib, Fogel, & Jandik, 2015). Westphal and Stern (2006) mention that organizational representatives or network leaders tend to obtain a positive response from the majority stakeholders in order to secure their positions in the organization although these opinions do not align with those of other leaders. This can impact negatively on the performance of the organization (Park, Westphal, & Stern, 2015).

The power of the group as a whole can lead to agency conflict if they seize this moment and try to turn it to their advantage. The tension tends to be worse if effort is expended in the associations in ways which can give more benefits to their businesses. For instance, the directors may choose to conceal some information from other members, and allow themselves to gain all benefits from that information. They may have less interest in improving the overall performance of the association and pay less attention to contributing to other entities' performance. Additionally, in many trading organizations, the executive agents are external groups whose incentives do not correspond to the organization's performance or the benefits of the overall membership. The consequence of this conflict of interest could demotivate other members in terms of synergy. Those who do not receive many benefits from being part of the group may withdraw from these clubs.

Agency problems in capital markets and in MSMEs networks occur in similar ways. Jensen and Meckling (1976) discuss explanations for moral hazard and agency conflicts. A moral hazard can occur when a particular group of people think about their individual benefits rather than the overall performance of the whole network. In this case, rules and regulations of the group could be generated to offer advantages to some people rather than to all members. Wathne and Heide (2000) discuss moral hazard in relation to opportunism in interfirm relationships. Their study mentions opportunism among business partners as creating trading difficulties. In business transactions with a high risk of opportunism, many resources will be spent. This increases transaction and monitoring costs which then decreases the productivity of all parties (Luo, 2006).

The causes of opportunism and agency problems in interfirm relationships are similar. Goal disparity among different entities leads to agency conflicts in business relationships, then results in either cooperative or opportunistic behaviour (Child, Faulkner, & Tallman, 2005). Commitments and joint activities in business networking are specified based on the expected net return which members anticipate while recognising uncertainties. According to Wathne and Heide (2000), if the return from synergic cooperation is increased, all entities will be motivated to hold the contract or maintain business networking.

The intensity of conflicts between different parties could be higher when information is unverifiable or difficult to obtain. This drives firms to take action to secure their interests as their trust in relationships is undermined. A high level of control assumed by some parties makes coordination of resource sharing between different entities more challenging. Olson (1990) suggests disagreements between personal interest and collective interest are generated. It is suggested that people who join a business networking group prefer current benefits rather than the future benefits for the public. Further, a low level of mutual trust between individual entities creates the feeling that networking and connection with others cannot generate the best outcomes. No capacity to communicate or to enter into binding agreement is found in MSMEs having lower power to negotiate with large enterprises. A number of MSMEs do not arrange corporate governance as a monitoring and enforcing mechanism to avoid over-investment and overuse of public resources.

The cost associated with these situations include expenses for changing control by some parties. Regarding diversification of power, exchanging new team members so that everybody has chances to take roles in managing the groups is one solution (Baysinger & Hoskisson, 1990). Shleifer and Vishny (1997) argue that strong corporate governance plays an important role in solving the agency problem. Some scholars suggest that incentive fees should vary according to the performance of a network or the satisfaction of members to motivate them to work and develop overall performance for all stakeholders (Martin, Wiseman, & Gomez-Mejia, 2016).

Adopting the concept of symbiosis, MSMEs can hedge against risks through different inter-firm activities. It is noticed that many professional associations are organised to provide information and recommendations to their members.

Greenwood, Suddaby and Hinings (2002) state that belonging to a professional association helps many MSMEs deal with legitimating issues and affirming regulatory mechanisms, particularly, those who run professional services, such as lawyers, financial planners, accountants and business advisers, operate business under regulations and laws. The uncertainties occurring during business activities contain both systematic and unsystematic risks which affect individual enterprises' performance (Hallikas, Karvinen, Pulkkinen, Virolainen, & Tuominen, 2004). Although support from networking organizations enables MSMEs to reduce unsystematic risks caused by internal factors inside companies, systematic risks generated from external factors are still critical to operation. Therefore, it is important to manage and diversify risks so the enterprise's return is still maintained. Ford, Gadde, Hakansson and Snehota (2002, p. 21) mentioned that risk hedging relates to "action, reaction, re-reaction based on a company's network pictures, its own and other's networking and the outcome of this". Using the private rules of the most powerful entity in a business relationship provides power for other enterprises in the network when interacting with the stronger party (Rindt & Mouzas, 2015).

MSMEs can not only diversify risks, but can also diversify returns from connecting with different entities. Networking promotes trading opportunities. Its impacts depend on how firms develop and maintain relationships over time (Eberhard & Craig, 2013). The strength of business relationships among several MSMEs influences their international diversification behaviour (Zimmerman, Barsky, & Brouthers, 2009). The interactions between MSMEs motivates business owners to share resources and support collective activities in order to expand market distribution (Jack, 2005). Trust and loyalty play important roles in this diversification (Collins & Clark, 2003). In terms of business-bank relations, strong relationships between banks and SMEs can reduce a firm's credit constraints, and provide intermediation services to support business activities (Mancusi, Vezzulli, Frazzoni, Rotondi, & Sobrero, 2018). Detragiache, Garella and Guiso (2000) suggest that having relationships with multiple banks can reduce liquidity risks and ensure more stable credit rather than building a relationship with one bank. MSMEs can also diversify service options when they are in contact with different lenders. MSMEs can leverage the different interest rates offered by a number of banks for refinancing so as to achieve maximum advantage.

Many MSMEs' business owners leverage additional advantages from business cooperation in terms of bargaining and negotiation power. Their trade-off between collective return and independence in making decisions is diminished. In a way that is similar to arbitrage, some business owners invest time and energy in building and maintaining relationships with others in order to cultivate gains from those interactions. Some business owners express gratitude to their business partners via different types of incentives in order to maintain relationships by overlooking associated costs. Many banks develop social connections to convey information and services to target customers through joining local network groups. These interactions indicate stronger social relationships (Bono & McCullough, 2006).

Although many business owners adopt the concept of symbiosis to enhance firm performance, the problem of free-riders can be a challenge. In financial economics, the free-rider problem is a situation in which some people receive the same benefits from resources, goods and services from others without paying or making any contribution for those resources (Baumol, 1952). There are consequences for the whole organization and community when some people put in less effort and share the profit based on others' exertion. The profit sharing 'game' and the considerations of market failure indicate this problem. Although it is better that all entities contribute to improving the performance of the group, the performance of a business network will be lower in a large network composed of many entities. Moreover, a long term relationship among entities creates various strategies resulting in a non-cooperative 'supergame' (Martin & Douglas, 1996). In business symbiosis, the motivation or driving force of individual business owners could be reduced when they do not make any gains from the reduction of individual effort. Martin and Douglas (1996) also mention that profit sharing maybe desirable when all entities are able to motivate and monitor each other effectively. In particular, when information relating to business activities is transferred, individual businesses have more opportunity to reduce time and costs.

According to Grossman and Hart (1980), the free rider problem may be generated when shareholders anticipate that shares will be improved. As the decision on tendering the shares to raiders is made by shareholders who tender their shares to the takeover firm, they can free ride on the raiders' improvement of the corporation. A small group of shareholders hold their shares in order to receive the benefits of

firm improvement. A similar situation can be found in business networks and corporations when some members are reluctant to take any responsibilities while waiting to collect the benefits from others' actions. According to the literature, a remedy for this free rider problem can be achieved by establishing a constitution that emphasises stakeholder responsibilities and reward for their efforts (Luo, 2006). The intensity of the free riding problem depends on the components and characteristics of each entity as well as the ethics and trustworthiness of stakeholders. According to Gravovetter (2005), the free riding problem is found in dense and cohesive social networks rather than in sparse networks. In close tie networks, where all entities have close links to each other, people maintain their relationships based on trust. However, people in a larger group with lower network density have limited emotional ties and the ability to interact with others depends on how many social ties they can manage.

In a capital market, the concept of efficient frontier explains the relationship between expected return and risk. This is when an increase in expected return aligns with an increased level of risk (Markowitz, 1952). For MSMEs, increasing enterprise returns as well as reducing potential risk is possible when they adopt the concept of symbiosis in their business activities, particularly to reduce transaction costs. Transaction costs in business can be varied depending on the degree and uncertainty of business activities (Hobbs, 1996) and the frequency of interaction (Williamson, 1979). In interfirm relationships, transaction costs decrease if the contracts between businesses are less tight. This can be seen in the relationships between franchisors and franchisees where the transaction cost varies depending on the completeness of their trading contracts (Solis - Rodriguez & Gonzalez - Diaz, 2012). In lending relationships, repayment patterns, plans and forms of lending are easily observed among bankers and business owners who have strong personal connections. This leads to a decrease in transaction costs for both parties.

According to Myers (1977), enterprises using loans from banks can receive the benefits of tax reductions. However, they concurrently face an increase in financial distress costs or bankruptcy costs. If an enterprise creates a higher level of debt, the risk of taking a loan can outweigh its advantages and reduce their credit trustworthiness from the investors' perspective. Similarly, in MSMEs, many business owners trade-off between the reduction of transaction costs and the money

spent in each business process. Many business owners are willing to pay a fee to be members of trading associations or professional groups as it gives them more opportunity to make connections with other business owners. This enables information, know-how and resources to be shared and transferred in the networks. Further, being part of some association offers opportunities for enterprises to hedge against risks which individual businesses may face. Many legal companies in New Zealand belong to the New Zealand Law Society and receive professional guidelines for dealing with customer complaints. Networking offers additional advantages for MSMEs in various ways. However, some business owners who spend too much time making connections or attending many network activities can experience the opposite results when they do not have time to improve their internal management. Some enterprises prefer to work cooperatively with competitive firms rather than completely compete with each other. Trading-off between diversifying risks of operating as MSMEs and diversifying potential return from networking with competitors can lead to evolution and development in management.

Equilibrium pricing in economics relates to the optimum price between supply and demand. Finance scholars explain equilibrium differently. Sharpe (1964, p. 436) argues that equilibrium relates to “a simple linear relationship between the expected return and standard deviation of return for efficient combinations of risky assets.” Although the two disciplines have differing perspectives, this concept can also be used in the context of business symbiosis. Cooperation among retailers in order to negotiate fair prices with suppliers can be beneficial when both parties agree to the prices. This equilibrium agreement plays an important role in building and maintaining trading relationships, enabling contracts between two parties to be sustained. In addition to vertical relationships between supplier and retailer enterprises, equilibrium agreement can be found in horizontal business relationships. Commonly seen in franchise relationships, franchisees are in charge of setting rules, regulations and product or service prices which franchisers are required to follow. In cooperation relationships, setting fair prices under the mutual agreement can reduce price wars between competitive firms.

3.3.3 Impacts of symbiotic relationships on risk, return, and value of MSMEs

The idea of business as a standalone enterprise has evolved over time. Commercial integration, technological integration, economics, political and social influences contribute to an evolving understanding of risk, return and value in MSMEs. From a financial perspective, benefits of business connections are associated with risk and return components, normally relating to money inflow and outflow. Compared with large firms, small firms tend to have limited technology, employees and production capacity to export their products to the global market (Binks, Ennew, & Reed, 1992; Miesenbock, 1988). Also, MSMEs have limited ability to compete with multinational companies (Dana, 2001b). Previous studies investigate how small firms receive added value from interconnections with others and solve problems related to the limitations of firm size. For example, in order to reduce uncertainty in the market, small shoe companies can shift their position as competitors of larger firms in the shoe industry in order to provide shoe-making components. This symbiotic collaboration can add value to both parties by lowering costs, reducing time to the market, and avoiding potential risks to the small-sized firms' benefits (Dana et al., 2008). Some scholars mention symbiotic ownership, referring to the joint ownership of firms established by international investors from different industries, noting that symbiotic relationships among different owners can impact on firm performance in terms of profitability and market growth.

Both direct and indirect effects of interconnections and network relationships are mentioned in numerous studies. Ashton (2011) uses a case study to investigate how a cluster of several manufacturing firms obtains reciprocal benefits in terms of sharing utilities. It was found that not only can these firms save costs by sharing production factors such as water and electricity, but also that they can improve the environment at the same time by reducing waste. In this scenario, manufacturing firms can derive direct benefits from this interaction and the indirect benefits of by-product exchange. For small businesses, the concept of symbiosis is adopted as a strategic tool which can improve their survival rate, goodwill, growth potential, and reduce potential risk caused by the limitations of firm size (Banwo, Jianguo, & Onokala, 2015).

3.3.4 Financial gains under the same concept

Astley and Fombrun (1983) argue that there are four types of collective strategies in business networks: confederate, agglomerate, conjugate and organic. 'Confederate' refers to when the same entities directly cooperate with each other for reaching their joint objectives. 'Agglomerate' describes when the same entities are dependent on common resources, but they associate indirectly with each other. 'Conjugate' refers to different entities which directly associate with others because their core activities can compensate for the limitations of each other. 'Organic' refers to different entities which indirectly associate with each other because they are part of the same community or association. While confederate and agglomerate are commensal interdependence, conjugate and organic are symbiotic forms of interdependence. The study by Astley and Fombrun (1983) explains these four terms and addresses the importance of collective aspects of inter-organization. However, it does not focus on the impacts of the collective strategies on organizational performance.

The term 'symbiosis' is slightly fluid, but in general symbiosis refers to "mutual dependence between unlike elements and suggests that different members may benefit from the presence of others through symbiosis" (Aldrich & Martinez, 2001, p. 36). In relation to the same concept, scholars use different terminologies to explain business relationships.

'Interfirm alliances' are defined as the agreements between two or more independent companies who cooperate in business activities. Technology and resources can be shared by network members, so these can reduce some management cost and increase firm performances at the same time (Auster, 1994). The sharing of resources through networks has some risks associated with cooperation. Mazzarol, Limnios and Reboud (2013) expand on the conceptual framework of small firm alliances. They note that that the requirement of external resources and environmental uncertainty in small firms prompts co-operative actions with other businesses in order to increase ability to access resources, information and knowledge, as well as increasing power to negotiate with suppliers.

'Coexistence' is the term explaining the relationship between competitive businesses that know each other very well, but do not directly interact with each

other. They tend to run their business in peaceful coexistence and trust and norms are strong in coexistence. The power of this relationship depends mainly on the stronger enterprises, but the business goals of individual firms are independent. As individual enterprises run their own business separately, the growth of business depends on internal and external factors. Internal factors involve management strategies, financial capital, marketing strategies and human resource management. External factors include economic growth and political problems that can affect the financial health of MSMEs. Business risks can occur as the information may not flow easily as individual businesses seldom interact. Product innovation may not occur in some companies because of the limited information exchanged between individual enterprises. Firms can suffer from high costs through not knowing how to minimise the cost of production and expenditure.

‘Cooperation’ involves a relationship when individuals and/or entities associate with each other (Jussila, Byrne, & Tuominen, 2012). This relationship is formed by individuals or business members who are operating in the same industries, face similar challenges, and encounter similar opportunities (Street & Cameron, 2007). In this type of relationship, individual enterprises normally share knowledge, information and resources with each other in either a formal or informal manner (Rickenbach, 2009). Molm (1994) suggests that the more members there are in a network, the higher the possibility of information sharing. While formal characteristics can be shown in strategic alliances, informal networks can be built through shared social norms and trust which regulate the administration of power among the competitors. It is uncommon to see conflict between individual entities as they have common goals. Many studies recognise that this kind of relationship, especially personal networking (Álvarez, Marin, & Fonfría, 2009; Birley, 1985; Ostgaard & Birley, 1994), can help small businesses to access markets, knowledge and technology, increase business growth and market competitiveness (García-Teruel & Martínez-Solano, 2007).

While cooperative relationships can increase the value of firms (Dana, 1998; Lee & Mulford, 1990), there are some negative issues in terms of potentially losing control (Street & Cameron, 2007) or losing a traditional approach to wealth management (Dana, 2001b). Also, internal information and some business strategies can be leaked when cooperating firms are direct competitors (Quintana-

Garcia & Benavides-Velasco, 2004). A previous study investigated the linkages between cooperative relationships among competitors, and found that there is positive relationship between cooperation of a number of key competitors and a firm's performance. However, the disadvantages outweigh advantages if there are too many competitors (Ritala, Hallikas, & Sissonen, 2008). If there are too many competitors, this can create conflict, argument and eventually dissolve the cooperative relationship (Das & Teng, 2000; Park & Russo, 1996).

The term 'coopetition' involves a combination of cooperation and competition. Bengtsson and Kock (1999) define coopetition as a situation when each enterprise cooperates with their competitors. They argue that a coopetitive relationship can bring more advantages than cooperation and competition. For example, small firms can enter the global market (Hanna & Walsh, 2002). In terms of coopetition, conflict between business entities does not commonly happen as they tend to collaborate with each other to receive mutual benefits from the connection. Some formal agreement, such as a value chain agreement, can be created by the mutual dependence of social members.

There are some conflicts when individual businesses compete with each other. Those actors who have more strength and power in the business can be the market leaders. A number of enterprises can receive benefits from a competitive relationship. Firms can receive more income, increase their returns and reduce financial costs and business expenditure. However, this relationship is different from a cooperative relationship because individual firms can choose whether they should compete or cooperate, depending on the nature of the current situation. The risks of coopetition seem to be similar to the risks from competitive relationships. Information, knowledge and key strategies can be leaked to other business competitors. The cost of resolving this problem may not be as much as trying to run a business without association with other enterprises.

3.3.5 Links between entrepreneurial relationships and business relationships

Social network theory stands apart from other methodological theories as it focuses on the social context and behaviour of relationships among actors rather than on the rational choices individual actors make (Durland & Fredericks, 2005). For business owners in many Asian countries, building interpersonal relationships is associated

with business networks and corporations at the enterprise level. Countries use different terms, *Guanxi* (China), *Kankei* (Japan) and *Inmak* (Korea), to explain relational networks (Hitt, Lee, & Yucel, 2002). Sandiford and Marshall (2000) observed a number of Chinese firms, and find that traditional relationships, *Guanxi*, often have a positive impact on cost reduction (Zhou, Wu, & Luo, 2007), and firm performance, in terms of sales and growth (Park & Luo, 2001). Some Chinese businesses gradually receive opportunities to exchange benefits, information, and social activities with others by taking business partners to lunch or dinner. The benefits are not only for an individual enterprise but also offer reciprocal advantages to many stakeholders in the business community. The business relationships in many Asian firms involve shared culture, norms and beliefs. By contrast, many western firms tend to connect with each other based on transactions, not social ties (Hitt et al., 2002). Many Western business owners follow the rules and commitments of alliances rather than sensitivity to business partners' needs (Hitt, Dacin, Levitas, Arregle, & Borza, 2000).

Previous studies demonstrate that the type of networks that business owners participate in plays an important role in their firms' performance (Maurer & Ebers, 2006). While the information is transferred in entrepreneurial networks, Granovetter (1973) argues that weak-tied relationships within heterogeneous entities provide more beneficial information than strong-tied relationships that are found in family members and friendship networks, particularly for start-up businesses (Burt, 2000; Renzulli, Aldrich, & Moody, 2000). Strong-tied relationships can be seen among business entities who share a similar approach to operating businesses, for instance, businesses in the same type of industry. Businesses can receive mutual advantages not only from weak-tied networks, but also from strong-tied relationships. Connection with other businesses has been shown to be associated with performance of firms (Zhu, Lowe, & Barnes, 2007). This prompts the question of whether the variables regarding connections with businesses in the same and different industries, and information transference are associated with net profit of firms.

Previous studies also mentioned network intensity measured by frequency of interaction among entities and where higher frequency of interaction is positively associated with a firm's survival. A firm's performance can be increased when

business owners participate more with others; but, excessive interaction can be counter-productive for performance (John, 2007). However, compared to business owners who have lower interaction frequency, those who interact frequently with others tend to experience higher levels of net profit.

3.3.6 Signalling transference between business - bank relations and interfirm relations

Signalling transference does not only explain the situations in the capital market, but can be established through small business activities, particularly in the symbiotic environment. The literature demonstrates that connections with banks are associated with performance of firms (Kirschenmann & Norden, 2012). Previous studies observe that MSMEs which have strong-tied relationships with banks, financial institutions, formal and informal creditors, are more likely to access credit. Banks tend to offer capital to those they know and whose background, business plans and future projects are credible (Diamond, 1984). Financial institutions concerned with lending or buying financial products allow banks and lenders to see corporate cash flows and financial operations (Petersen & Rajan, 1994). Although some problems in relation to non-performing loans or bad debts could occur if banks rely excessively on their connections with businesses (Setser, 2006), the literature suggests small firms that are connected with banks through engaging in a variety of bank transactions tend to survive and experience positive growth.

Signalling theory is also adopted to explain trade credit occurring in trading relationships between seller firms, buyer firms and banks (Gama, Mateus, & Teixeira, 2010). Trade credit enables firms which cannot get financial support from informed banks to secure their finance (Giannetti, Burkart, & Ellingsen, 2011; Nilsen, 2002). Supplier firms sometimes have more information about their buyer firms than banks because of close trading relationships (Jain, 2001). In a close interfirm relationship, suppliers can access information faster and cheaper than banks (Petersen & Rajan, 1997). The signals involving ordering period and the ability of firms to take the benefit of early payment discount can be noticed during the trading transaction (Biais & Gollier, 1997; Smith, 1987). In interfirm relations, trade credit provided by seller firms can signal buyer firms about the quality of products (Long, Malitz, & Ravid, 1993). McMillan and Woodruff (1999) state the

amount of trade credit increases over the interfirm relationships. In this situation, banks may not be willing to offer financial support to buyer firms as banks could face a problem caused by information asymmetry (Rajan, 1992). The consequence of this can be that borrower firms face adverse selection problems with banks (Giannetti et al., 2011). Signals are transferred between interfirm relationships and banks either directly or indirectly, then are associated with the performance of MSMEs.

3.3.6.1 Mediating effect of business-bank relations on MSMEs' performance

Although the concept of symbiosis and networking have been elaborated over time, empirical findings relating to symbiotic relationships indicate some weaknesses. Many papers demonstrate the impacts of relationships between businesses and other entities, such as banks, trade associations, and professionals, on a firm's performance (external/internal). However, in reality, connections in one entity could affect connections with other entities, thereby producing different impacts on the entire business outcome.

Some studies mention that connections between businesses and banks or other financial institutions are critical for both banks and businesses. Close relationships offer the opportunity for banks to access soft information including business owners' characteristics and business activities (Petersen & Rajan, 2002). This enables banks to ascertain the financial health of firms, which is important for accessing bank loans (Petersen & Rajan, 1994). Banks can reduce bad debt that results from firms' inability to repay loans. Strong connections with banks could provide investment opportunities and offer the opportunity to access appropriate interest rates for enterprises (Degryse & Van Cayseele, 2000; Scott & Dunkelberg, 1999; Uzzi, 1999). Closed-connections with banks are beneficial for businesses as they can reduce agency costs (Howorth & Moro, 2006). Businesses can reduce expenses and time taken in preparing documents when they want to access finance from banks. Benefits of close ties can be found on a personal level, for instance, receiving special services and treatment. Connections with banks can occur over time when enterprises access financial products or services. The strength of the tie will differ depending on the number of banks with which businesses are connected (Berger, Miller, Petersen, Rajan, & Stein, 2005) and the duration of the relationship (Degryse & Van Cayseele, 2000).

Interactions among businesses can also affect business performance through interaction with banks. Many scholars discuss the positive effects of business connections, and some note the advantages of having strong connections with banks for enhancing business performance. However, interactions among businesses could also affect business performance through interaction with banks. According to Signalling theory (Spence, 2002), strong relationships between business partners can provide banks with a positive signal regarding social capital and increase the creditworthiness of individual firms. Trading relationships between seller companies and buyer companies can provide signals to banks about the creditworthiness of the latter (Biais & Gollier, 1997). In European countries, businesses join Mutual Guarantee Institutes (MGI) which provide personal and real estate guarantees to banks that offer the opportunity for them to negotiate appropriate interest rates charged on loans, so decreasing credit costs (Columba, Gambacorta, & Mistrulli, 2010). The connections provide more opportunities for their members to acquire bank loans and gain business opportunities (Fan, 2002). Small businesses in Vietnam are more likely to access bank loans if they have close relationships with government offices (Ngoc & Nguyen, 2009). Due to information asymmetry between the borrower and the banker (Jensen & Meckling, 1976), banks tend to seek advice from official organizations for reliable information about individual enterprises (Nguyen, Le, & Freeman, 2006). Trust is an important element for a bank's decision whether finance should be provided. The information about businesses from business partners is beneficial to a bank in making a lending decision (Ferrary, 2003; Uzzi, 1999), particularly in small firm networks. Many studies found that these connections also impact on the relationships with banks and affect the entire corporate performance. Based on direct and indirect effects, the first hypothesis is generated:

H₁: The change in MSMEs' net profit is associated with strong interfirm relationships via strong relationships between businesses and banks.

3.3.6.2 Mediating effect of interfirm relations on MSMEs' performance

By contrast, connections between businesses mediate direct effects between bank connections and a firm's performance. For businesses in the start-up phase, information is important for business owners to understand the market (Jenssen & Koenig, 2002). Although receiving financial support from banks can increase

liquidity and investment opportunity, interacting with other businesses, particularly with businesses which have previously operated in the market, can give additional benefits to young firms which have operated for a short period. Bank-business relationships that involve a high level of trust increase creditworthiness of firms, allowing them to access financial support from banks (Binks & Ennew, 1997). This positive signal increases trading opportunities, particularly for retail firms, to strengthen current business partnerships and connect more with other suppliers. The ability to access the capital market from a financial intermediary can give confidence to suppliers as it signals the potential payment of buyers in the trade relationships (Bolton & Scharfstein, 1996). In the trading process, supplier companies can observe the volume of orders to see the trading ability of buyers (Smith, 1987). These strong relationships enable suppliers to gather the information through faster and inexpensive means (Cunat, 2007). This also allows buyers to obtain the benefits of credit terms and trade discounts (Niskanen & Niskanen, 2006). This strengthens trade relationships between two parties as it allows small business retailers to hold cash for daily transactions, and to save transaction costs which tend to be higher for several payments than once only payments (Ferris, 1981; Wilson & Summers, 2002). Credit terms offer the opportunity for buyer firms to check the quality of products before the payments (Lee Y & Sotowe, 1993), enabling supplier firms to redistribute the products from non-paying buyers to other high risk firms (Huyghebaert, 2006). This transparency in trading transactions using credit terms to guarantee products' quality is important for long term relationships between businesses, especially if the sellers are small firms (Long et al., 1993).

Strong relationships between businesses and banks enable firms to access some services, for instance the use of Letter of Credit (L/C), factoring, fixed asset lending and leasing (De la Torre, Pería, & Schmukler, 2010) which can increase operation ability, facilitate trading processes and trade agreements with business partners. According to Klapper (2006), creditworthiness empowers firms to use assignment of account receivables as the collateral to access financial support from banks. Small firms with low creditworthiness with banks can sell their creditworthy accounts receivable at a discount and receive immediate cash from buyers. Reverse factoring provides benefits to inter-firm relationships. Factoring is offered by banks to enable large-sized firms to foster relationships with small firms with good quality

customers. This not only offers working capital to large firms, but also allows them to build the credit history of the small firms which will be beneficial for future lending from banks. Those account receivables sold to a firm's account payables can guarantee the payments, and enable firms to manage cash flow. Sufficient cash flow and good overdraft management allow firms to maintain trade contracts and enhance trustworthiness with business partners which is indirectly beneficial to the performance of firms. As the firm's performance is associated with relationships between businesses which are mediated by the effect of connections between businesses and banks, the second hypothesis is generated:

H₂: The change in MSMEs' net profit is associated with strong relationships between businesses and banks via strong interfirm relationships.

3.4 Previous studies about impacts of symbiotic relationships on business performance: Systematic review and literature gaps

This section identifies gaps in the literature which are addressed in this study. From the finance perspective, how business symbiosis adds financial gain to MSMEs is systematically reviewed. It is important to examine inclusion and exclusion areas which each study applies as it gives the scope which papers relate to the objective of each study. As this study aims to add a contribution to prior studies, a systematic review is provided.

3.4.1 Frame of reference

In line with the aims of this research, this study reviews previous studies relating to the concept of symbiosis and the way symbiotic relationships enhance business performance, particularly the elements of risk and return in MSMEs. Through a systematic review of the literature, the main trends in previous studies can be identified. This study focuses on the impacts of business symbiosis from a financial perspective and reviews papers which focus on the following topics:

- The elements of risk and return to MSMEs affected by symbiotic relationships, networking, connections or association between several MSMEs and other entities;
- Relationships between MSMEs and banks or financial institutions;
- Financial impacts/gains associated with the concept of symbiosis;

- Interfirm relations (within the same industry and across different industries);
- Entrepreneurial relationships which link to business connections and business network creation;
- Entrepreneurial characteristics associated with networking;
- Corporate attributes associated with business connections; and
- Network factors which affect business performance.

3.4.2 Criteria for literature selection and search strategy

This study focuses on the impacts of symbiotic relationships on MSMEs' performance. Consequently, large firms such as multinational, international firms are excluded, recognising that ways of connecting and the purposes for cooperation between large enterprises and MSMEs are different. MSMEs tend to have connections with different entities to reduce costs and expenses, and minimise potential risks; however, larger and multinational firms prefer to cooperate with others in order to increase returns. This study does not consider the impact of symbiotic relationships on the performance of international firms as a majority of MSMEs face more challenges and limited capability at the international level than large enterprises (Vahlne & Johanson, 2017). Although the definition of MSMEs differs across the globe, this study includes all relevant studies which examine the impacts of business symbiosis on the performance of MSMEs.

This study adopted several techniques to locate relevant literature. Firstly, various computerized databases (ABI/INFORM Complete, Emerald, Science Direct (Elsevier), Scopus, ProQuest Management, Google Scholar, and JSTOR) were used to search for relevant articles including dissertations, theses, and conference papers relating to the framework of this study. The study also investigated the unpublished papers of Social Science Research Network (SSRN). A variety of combination keywords relating to symbiotic relationships and business performance of MSMEs (Table 3-1) were used to search for relevant studies. The total related studies is 2,738 articles. However, by examining titles and abstracts, only 166 studies were reviewed. After reading the full texts, only 58 studies are applicable.

Table 3-1: Search terms

Terminologies relating to business performance		
Financial indicators	Non-financial indicators	
Cash flow	Alliance performance	
Corporate sales	Alliance success	
Firm sales	Asset growth/ changes in assets	
Gross profit	Employee growth/ change in number of employees	
Income	Financial management knowledge acquired	
Market share growth	Firm survival	
Net income	Human resource management knowledge acquired	
Net profit	Market distribution	
Net profit growth	Market shares	
Profit	Marketing knowledge acquired	
Profitability	Speed of market entry	
Return on Asset	Alliance performance	
Return on Cash Flow		
Return on Investment		
Return on sales		
Sales growth		
Sales per unit		
Sales ratio		
Terminologies associated with a finance perspective		
Risk	Return	Arbitrage
Risk minimisation	Return maximisation	Leverage
Risk hedging/ hedge against risk	Diversification	Insider/ outsider
Signalling	Transaction	Information asymmetry

Agency costs	Liquidity	Uncertainty
Agency conflict	Trade-off	Corporate governance
Stakeholder	Credit trustworthy	Free rider
Terminologies under the concept of business symbiosis		
Alliances	Cooperation	Network
Association	Corporate linkages	Network capability
Behavioural integration	Firm network	Network cohesion
Bond ties	Formal contact	Network heterogeneity
Bridge ties	Friends in business	Network strength
Business network	Generalized reciprocity	Network structure
Business partner	Goal congruence	Networking
Business symbiosis	Heterogeneous network	Social capital
Collaboration	Homogeneous network	Strong ties
Collaborative network	Horizontal alliance	Supplier involvement
Compatible goal	Informal contact	Symbiotic relationship
Competition	Integration	Tie intensity
Connection	Interfirm	Tie strength
Cooperate arrangement	Joint venture	Trusting relationship
Coopetition	Location proximity	Weak ties

3.4.3 Exclusion criteria

- International alliances, international performance
- Only performance without explaining which indicators are measured
- Other factors (except those relating to the concept of symbiosis) affecting firm performance
- Entrepreneurial orientation
- Economic impacts
- Innovation
- Organizational network
- Relationships between SMEs and customers

- Relationships between employers and employees
- Firm networks across countries/ firm network at the international level
- Relationships between SMEs and large firms

A systematic review of the literature was undertaken to identify any gaps in previous studies and areas for further investigation. The review aimed to evaluate the validity and credibility of the methods, samples, and findings of prior research. After employing different keywords relating to the main topic of this study, abstracts of individual studies were analysed according to the framework of relevant areas and the inclusion criteria. Only previous studies which were consistent with the aims of this study were systematically reviewed as they could be used to clarify the research questions of the study. Different features of each article are classified and coded according to categories and subcategories (See Appendix A).

The first classification demonstrates the area analysed in the identified studies and shows the focus on the concept of symbiosis in different economic backgrounds. The context of the countries is categorised in terms of developed and developing countries, including emerging economies. The studies that do not clearly indicate the research context were coded as ‘non-applicable’. The second classification refers to geographical region of the research countries: United States of America, Asia, Oceania (Australia and New Zealand), Europe, and Africa (South and North). The third classification demonstrates the objectives of the studies, categorised into two types; empirical and non-empirical. Empirical studies are those built on first hand collection of data and analysis of findings by different research methods. In contrast, non-empirical research involves studies based on conceptual discussion or literature without any analytical results.

The fourth classification indicates the main theories used in the different studies. Both financial and non-financial theories are mentioned in a number of research articles relating to networks, interfirm relationships and business cooperation. The fifth classification refers to the type of data used in the studies. Secondary data is data extracted from collected sources while primary data is the data from real samples obtained through questionnaires, surveys, or interviews. The sixth classification relates to the time period for the data. With cross-sectional data, the studies focus on one particular period of time: with longitudinal data, a study

analyses networks or symbiotic relationships across different periods. The seventh classification presents the main subject of a study. This criterion examines the main areas of an individual study, particularly the area affected by adopting the concept of symbiosis. This classification is divided by different aspects in terms of finance, sustainability, entrepreneurship, management and innovation.

The eighth classification concerns the method used to analyse data in a study. Quantitative research methods include regression, Structural Equation Modelling (SEM), Partial Least Square Structural Equation Modelling (PLS-SEM) and others. Qualitative methods include thematic analysis, grounded theory analysis, and other methods dealing with non-statistical data. A mixed method refers to a study which applies both numeric and non-numeric data analysis techniques. The ninth classification focuses on the main types of relationships which a study addresses. It can be a relationship at the entrepreneur level, enterprise level, or a relationship between a business and banks. A relationship at the entrepreneurial level focuses on the degree of interpersonal interaction which directly links to value co-creation in enterprises (Ferguson, Schattke, & Paulin, 2016). Relationship at the enterprise level includes interfirm networks, joint ventures, and alliances (Humphries & Gibbs, 2016). Business and bank relationships focus on the linkages between a business and banks in terms of lending relationships (Cenni, Monferrà, Salotti, Sangiorgi, & Torluccio, 2015), non-profit lending (Santikian, 2014), cost of bank services (Ongena, Tümer-Alkan, & Vermeer, 2011), the ability of bankers to understand the MSMEs' specific needs (Vegholm, 2011), the number of banks (Berger et al., 2005), cross-selling of bank products, and duration of the relationship (Degryse & Van Cayseele, 2000).

The tenth classification explains whether a study considers mediators that affect the relationships between dependent and independent variables. This can be seen in the studies applying SEM and PLS-SEM to analyse the constructs (Hair Jr, Hult, Ringle, & Sarstedt, 2016). Business performance can be directly impacted by business network factors; however, it can be indirectly impacted on by mediators such as entrepreneurial orientation (Zacca, Dayan, & Ahrens, 2015), innovation (Prange & Pinho, 2017), and network ability. The eleventh classification presents the main impacts of symbiotic relationships on business performance, of which there are two: financial and non-financial. Financial impacts deal directly with sales, income,

revenue, profit, costs and expenses. Non-financial effects involve technology and employment, export and internationalization, marketing, growth, information, knowledge and resources, entrepreneurship, strategy and management. The last classification explains the criteria used to measure or evaluate the relationships between several entities. Some studies use network scores: degree centrality, eigenvector centrality and betweenness centrality, to present these relationships (Ahuja, 2000; Castro & Roldan, 2013; Koka & Prescott, 2002). Entities having high degree centrality have direct relationships with others, enabling them to access a wide range of knowledge (Tsai, 2001) while entities with high betweenness centrality have more power to transfer information to other entities in the network (Burt, 1992). Soh, Mahmood and Mitchell (2004) argue that entities with high eigenvector centrality have a higher possibility of accessing knowledge from others. Additionally, many scholars, (e.g. Watson, (2007) use frequency of interaction type of entity as relationship indicators.

3.4.4 Literature gaps

Regarding a systematic review, a number of studies focus on developed countries, especially countries in Europe. However, globally MSMEs face similar difficulties due to the limitation of firm size. Therefore, investigating how this concept is applied throughout the world is important. Economic conditions, external environments and internal factors in MSMEs located in developed countries and those in developing countries are different, so that their use of networks is dissimilar (Ciravegna, Lopez, & Kundu, 2014; Khanna & Palepu, 2010). Correspondingly, there may be different impacts on business performance. Although many studies focus on the benefits of business symbiosis in developed countries, and geographic regions, only a few studies concentrate on the countries in Oceania such as Australia and New Zealand. This indicates a gap that needs to be investigated further.

Literature gap 1: How the relationship between business symbiosis and MSMEs impacts on business performance in New Zealand.

Most articles are empirical studies which analyse either primary or secondary data. These explore how the performance of SMEs and MSMEs is impacted by different terminology relating to the concept of symbiosis. A few studies discuss the conceptual background and literature review without any empirical tests. Among

various empirical studies are three main cases relating to the concept of symbiosis and performance of MSMEs. Many scholars specify network attributes as the independent variables and use different types of performance indicators as the dependent variables. However, some scholars use network attributes as dependent variables and investigate how they are associated with business owner characteristics and firm attributes. Some papers focus on the mediating effects of network attributes and how they act as moderators. In all three cases, definitions, composition and measurement processes for each term are explained in different ways by scholars (see Table 3-2).

Table 3-2: Terminology under the concept of symbiosis

Terminology	Definitions/ how to measure/ composition	Authors
Degree centrality	Number of partner firms	(Tan, Zhang, & Wang, 2015)
Entrepreneurial network	Number of hours per week for contacting each other about business matters and the number of hours for developing new contacts	(Ahlin, Drnovšek, & Hisrich, 2014).
Network centrality	Position in the network	(Surin, Wahab, & Halil, 2012)
	Description of activities to attract network partners	(Sepulveda & Gabrielsson, 2013)
Network configuration	Intensity and extent of networking activities of trade	(Dubois, 2015)
Network density	Frequency of contact	(Tan et al., 2015)
Network diversity	Number of different categories for which the firm had at least one contact	(Parida, Westerberg, Ylinenpää, & Roininen, 2010)
Network duration	Time of cooperation	(Gu, Jiang, & Wang, 2016)
Network range	Type of contact: formal and informal	(John, 2007)
Network size	Number of contacts	(Gu et al., 2016; Parida et al., 2010; Semrau & Werner, 2012;

		Semrau & Werner, 2014)
Relationship quality	Time spent and the number of hours used to maintain and develop network contacts	(Semrau & Werner, 2012; Semrau & Werner, 2014).
Social network	Measured by size, density and activity as the independent variable to examine the effects on financial and non-financial performance	(Surin, Halil, Edward, & Mahmud, 2012).
Strength of relationship	Description of importance and influence level of external relationships	
Structural holes	Extent to which a network members' contacts are redundant.	(Tan et al., 2015)
Network	Being a member of organization	(Inmyxai & Takahashi, 2010)
Network relationship	Comprised of five factors: sharing knowledge, accelerating innovation, reducing transaction costs, & gaining better reputation	(Lin & Lin, 2016)
Network structure	Composed of structural holes and centrality	(Naudé, Zaefarian, Tavani, Neghabi, & Zaefarian, 2014)
Inter-firm collaborations	Composed of domestic upstream collaboration, international upstream collaboration, domestic downstream collaboration, international downstream collaboration	(Kang & Park, 2012)
Interpersonal network	Composed of formal relationships (with accountants, banks, Chamber of Commerce, trade association), and informal relationships (with family, friends and colleagues)	(Idris & Saridakis, 2017)
Coordination	Planning and controlling of business activities	(Bengesi & Le Roux, 2014).
Relational skills	Degree to which networking partners are able to strengthen close ties	(Bengesi & Le Roux, 2014)
Network intensity	Extent to which the firm networks with other firms	(Wincent, 2005)

Entrepreneurial social competence	Capability of entrepreneurs to express themselves in building social relationships	(Ismail, 2012)
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Many scholars adopt different theories in their studies relating to networking and performance of MSMEs. Resource-based theory emphasizes how firms use heterogeneous capabilities to enhance additional values from each other (Mahoney & Pandian, 1992). Network theories, including theories relating to the strength of weak ties and strong ties, are mentioned by many scholars. Finance theories are not commonly incorporated into the context of symbiosis. Some finance theories, such as Signalling and Stakeholder theories, are commonly applied in capital market research, but very few are found in micro- and small-sized firm studies. Signals can be transferred in MSMEs networks and enable MSMEs to share and exchange information and can be seen in lending relationships when soft information accessed from the interactions between bankers and business owners acts as a signal indicating the financial health of MSMEs (Liberti & Petersen, 2017). Signalling theory applied in the context of business symbiosis suggests that trade credit can generate signalling transference between sellers and bankers (Biais & Gollier, 1997). Agency model explains that trade credit increases corporate investment and return; however, it decreases business owners' motivation to use the benefits of cash payment (Burkart & Ellingsen, 2004). Stakeholder theory emphasizes that the benefits from networking should be accessed by all parties in an association. Free rider problems and conflict of interest among stakeholders could be managed by having good corporate governance. Although, currently, some finance theories are incorporated in studies relating to networks, adapting them to network studies of MSMEs is an area to be explored.

Literature gap 2: How finance theories are applied to explain impacts of symbiotic relationships on MSMEs' performance.

The types of primary and secondary data analysed depend on the objectives of each study. Normally, MSMEs are not required to present financial statements to the public, so the performance of a firm is assessed internally. The impact of symbiotic relationships, particularly relationships among business owners, frequency and scope of contact can be investigated easily by asking participants directly. Many studies analyse the primary data accessed from survey responses by running

regression to see how independent variables are associated with dependent variables.

SEM and PLS-SEM are also used as analytical tools. In these cases, network attributes can be independent variables and dependent variables, yet firm performance indicators will be placed on opposite sides. Also, variables representing network attributes can be tested as mediators or a moderators in PLS-SEM. Some scholars conduct surveys and interviews at the same time, using closed- and open-ended questions. There is no study conducting in-depth interviews from primary data sources, then analysing it by quantitative methods. It was found that related articles on studies that used in-depth interviews aimed to contribute to the subject conceptually and systematically review literature. There are some studies analysing the secondary data by using bivariate and multivariate analysis such as hierarchical multiple regression, probit model and logit model. As mixed method studies using regression analysis, structural models and qualitative analysis are quite rare, this gap can be identified as:

Literature gap 3: Can mixed methods research, using both quantitative and qualitative analysis, provide precise information about the impacts of symbiotic relationships on the elements of risk and return of MSMEs?

A number of studies evaluate the relationships between network attributes and firm performance by using cross-sectional data and focus on those in a certain period of time. The weakness of using cross-sectional data to examine impacts of network factors on firm performance relates to causality issues (Reese & Aldrich, 1988). The impacts of personal interactions, enterprise connections and network activities can be seen more clearly over time (Havnes & Senneseth, 2001); therefore, longitudinal data can deal with this limitation (Bowen, Rostami, & Steel, 2010) as it provides a wider range, degree of freedom and sample variability (Hsiao, 2007). However, accessing this type of data can be a time-consuming and expensive process. Many MSMEs are unlisted firms that are not required to provide annual reports to the public, so obtaining longitudinal data is less feasible.

Scholars using quantitative techniques to analyse cross-sectional data may face some challenges relating to antecedents and outcomes when examining business symbiosis and changes in firm performance. Many studies that use qualitative

analytical methods aim to find how and why networking and connections enhance return and risk of enterprises, and how trust among business owners builds and maintains business relationships. Qualitative analytical techniques are used to examine more details and to answer ‘why’ and ‘how’ questions which may clarify issue relating to causality. The literature gap here is:

Literature gap 4: How can qualitative analysis techniques help researchers to make a decision about antecedents and outcomes when discussing symbiotic relationships and the changes in firm performance indicators?

When discussing symbiotic relationships and related terminologies, different studies focus on different aspects. After systematically reviewing the literature, it is noted there are two main types of relationship focused on in order to answer the research questions in this study. The first is symbiotic relationships at the level of enterprises. This involves connections between several firms or among industries and includes connections between enterprises and other entities such as banks and financial institutions. The second type is an entrepreneurial relationship which focuses mainly on personal connections between individuals. This also applies to relationships between business owners and bankers. Personal relationships between people can be maintained through trustworthiness (Brunetto & Farr - Wharton, 2007). Although these two relationships have different compositions, the frequency of interaction, type of involved entities, size of network, strength of ties, and duration of connection are normally used as network indicators.

In order to create more understanding about networking and relationships, many scholars adopt computer software to evaluate relationships between entities. Much of this software is free programs which have been developed for many purposes. For example, SocioViz is an analytics tool for social researchers and marketers. Pajek is used for analysis and visualization of large networks containing many vertices. Gephi is commonly used to draw community linkages, and small world networks and can calculate eigenvector centrality, betweenness centrality, eccentricity and closeness centrality. Some statistical indicators: network diameter, average clustering coefficient, graph density and connected components, provide an overall picture of networks and connections.

Recently, PLS-SEM has been widely applied in many studies investigating the impacts of networks on firm performance. Many scholars use questionnaires to ask about connections and relationships among entities. Then, respondents give their responses using a Likert scale. While network statistics can give precise pictures about symbiotic relationships and reduce bias regarding self-evaluation, few studies apply these statistics and use them to examine impacts on firm performance, especially in the financial area. This indicates the following gap:

Literature gap 5: How can network statistics be used to explain precise outcomes in studies aiming to examine the impacts of symbiotic relationships on MSMEs performance?

Many studies investigate the impacts of networking and interfirm relations on firm performance. After systematically reviewing the relevant literature, it is noted that many articles focus on how networking and connections can improve marketing, management, export and innovation performance. However, only a few studies discuss the results from a financial perspective and focus on the components of MSMEs' risk and return. While in many finance articles relationships between MSMEs and banks are commonly mentioned, particularly lending relationships, few studies investigate how these connections directly affect firm profit or create any mediated effects on it. This indicates the following gap:

Literature gap 6: There is a need for finance studies to emphasise the impacts of symbiotic relationships on firm profit and its elements.

3.5 Chapter conclusion

This chapter identifies the theories adopted in this study. Both finance and non-finance theories are applied by scholars to explain the impacts of symbiotic relationships on risk, return and value of MSMEs. This chapter also presents how symbiotic relationships in the entrepreneur and the enterprise levels affect firm performance, particularly from a finance perspective. Finance theory, Signalling theory, indicates the research hypothesis which is evaluated in the analysis chapter (see Chapter 7). A systematic review of previous studies is presented in the last section of the chapter. Systematic reviews provide the means for researchers to review previous studies relating to their topics. Having reviewed the prior studies, the chapter presents the literature gaps which are addressed in this study.

Chapter 4: Research framework

4.1 Introduction

This chapter presents the conceptual framework of this study, the research propositions, and scope of symbiotic relationships. The conceptual framework explains the research propositions and the scope of this study that focuses on inter-firms relationships and relationships between businesses and banks or financial intermediaries. The scope of symbiotic relationships in the study also includes personal connections which link to inter-firm connections. The research objectives and research questions created after reviewing literature and previous studies are discussed in the next section. The methodology framework used to address these research objectives and to answer research questions is described. The chosen research paradigm demonstrates the researcher's worldview and relates it to the employment of a mixed method approach in this study. The chapter also elaborates on the ways in which the ideas of cooperation and networking are developed in this study, and the potential contribution of this investigation to the financial field. The chapter sets out the sequence of the subsequent chapters, and explains why fieldwork can address the gaps of simulation models. A clear research framework provides the basis for understanding the structure of the study in relation to samples, variables, and analytical method.

4.2 Conceptual framework

4.2.1 Research propositions

The propositions, or hypotheses, will be addressed statistically using several tests. The concept of symbiosis explains the relationship between multiple units in order to receive benefits from the joint effort (Dana et al., 2008). In order to exist in a business community, individual MSMEs associate with others or engage in activities. According to Bengtsson and Kock (2000), individual enterprises which are regarded as competitive firms associate and have relationships with others in

different forms of coexistence: cooperation, competition and cooptation. As small businesses normally have limited resources, they have to build relationships with other entities to receive benefits from these associations. For example, individual small enterprises from the same locations or the same industries cluster together in order to share common technologies and customers, enhance operational efficiency, or raise returns on capital investment (Delgado, Porter, & Stern, 2010). Another external factor which may motivate enterprises to pursue a symbiotic relationship is sporting events. When sporting events happen, individual entities are interdependent (Buhalis & Spada, 2000). It seems likely that there is potential to nurture symbiosis among micro-, small and medium enterprises (MSMEs) in the Cambridge environs.

An alternative view is that it is difficult to create symbiotic relationships among MSMEs, especially a cooperative relationship among MSMEs from the same industries. As enterprises from the same industries or similar businesses often have similar goals, the same target groups of customers, they tend not to share resources, knowledge and information. Moreover, conflict of interest may occur among different enterprises because of arm's-length relationships which indicate a weak relationship among entities involved (Meyer, Mudambi, & Narula, 2011). The free rider problem, particularly in co-operative social relationships, may reduce the likelihood of symbiotic relationships emerging (Rydin & Pennington, 2000). Some particular personal behaviours can lead to distrust among individuals which may devalue the relationships in a symbiotic environment (Rokkan & Buvik, 2003), therefore, symbiosis among MSMEs may not be easy to nurture. The arguments mentioned earlier are used to generate the following proposition:

P1: There is potential to nurture symbiosis among MSMEs.

The returns of businesses can be viewed from various perspectives. From a financial perspective, total return is the total gain or loss on an investment. Returns might be viewed as net profit after tax or as a metric such as Return on Assets (ROA). The actual measure that MSMEs owners use is less important than the concept of wanting to have returns without too much risk.

There are some links between enterprises' returns and symbiosis. In the real business world, various entities interact with each other in different forms. Also,

some entities form particular groups for various reasons, particularly for gaining additional benefits and increasing the chance of receiving more opportunities in terms of knowledge, know-how and information (Hertog, 2000). In Cambridge, a number of enterprises have joined the Chamber of Commerce as members. They receive information related to local businesses and the national economy through various channels such as meetings, training programmes and newsletters. These can be beneficial for enterprises because individual firms can update their current business situations in various ways. Additionally, the members of the Chamber will have a chance to build networking opportunities, promote companies and products, and receive training from experts. As a result, the possibility of increasing return is higher than for those who do not have such relationships with other entities, and those who do not join any business associations. Small business owners can increase their knowledge when they associate with other firms' owners (Naudé, 2014). This can also boost firms' performances, increase sales growth and returns (Kohtamäki, Partanen, Parida, & Wincent, 2013). Some firms can expand their market share from the domestic market to the international market by networking with others (Johanson & Mattsson, 2015). One of the obvious advantages of interacting in a symbiotic environment with other firms is potential cost reduction. Many firms group together for the benefits of reducing expenditure (Dussauge, Garrette, & Mitchell, 2010) and gaining resources (Garcia & Velasco, 2002). When costs or expenditure are reduced, the returns of a business tend to increase.

Opponents argue that symbiotic relationships have a negative impact upon the returns of MSMEs. Although there are positive effects of symbiotic relationships, some scholars argue that the negative effects far outweigh the positive (Ashton, 2011), especially when a number of enterprises are grouped for specific purposes. Conflicts of interest can occur among entities when cooperatively running businesses (Kochan et al., 2003). Conflicts of interest normally coexist in business relationships (Elg, 2002). Stress and Cameron (2007) and Dana (2001a) suggest that there are some negative effects of symbiotic relationships in terms of losing control and the traditional role of wealth management. These do not create direct impacts to enterprises' returns, but they can generate indirect effects which consequently result in decreasing firms' returns. Based on the arguments in the literature this proposition is formulated:

P2: Symbiotic relationships can increase returns of MSMEs.

Risk is defined as the variation in returns received from an investment (Campbell & Viceira, 2005). Risks in small businesses can be divided into two types: systematic and unsystematic (Sharpe, 1964). The former is market risk or undiversifiable risk; the latter is diversifiable risk. Systematic risk is caused by a volatile economy or unstable market (Helbing, 2010). Unsystematic risk is the risk generated by operating management in different industries or firms. It is believed that this type of risk can be avoided because it is caused by firms' internal factors (endogenous factors). Examining basic types of risk, it seems that both large and small businesses can face both systematic and unsystematic risks; also a level of intensity and a higher possibility of a volatile income such as ROA (Fatemi & Luft, 2002). Many small businesses in America face bankruptcy because of lack of technology, inadequate professional personnel and lack of financial planning (Bradley & Cowdery, 2004). Unable to pay back both principal and interest, they may face bankruptcy problems which will affect enterprise performances and a country's economy (Hart, 2000).

Neither large firms, nor small businesses, can eliminate risks; however, risks can be reduced and diversified (Frino, Hill, & Chen, 2015). Many enterprises have their own strategies to avoid and reduce potential risks. Some business owners prefer to use their own capital rather than credit from banks for their own equity. Business owners have to pay interest when a bank loan is required. This is one example of where cooperative strategies can be used to avoid and reduce individual risk. To reduce systematic risks, as information flows through the networks or symbiotic environment, business owners can work with other firms and pool their risks which are then reduced through diversification. In terms of unsystematic risks, firms can reduce the risk of bankruptcy by reducing costs and expenditure. This discussion supports the view that symbiosis can reduce risks to MSMEs.

The opposite view that symbiotic relationships cannot reduce risks to MSMEs is also argued by some scholars. Some important information could be leaked to enterprises in symbiotic relationships (Quintana-Garcia & Benavides-Velasco, 2004). In these relationships, individual enterprises normally share knowledge, information and resources with each other in either formal or informal ways. Therefore, it is possible that key corporate strategies may be imitated by

competitors and result in corporate crises such as losing sales, returns and customers. According to this view, the disadvantages of symbiotic relationships outweigh advantages because risks may occur through symbiosis. These can affect not only the current corporate performance, but long-term achievements. The contrary view that symbiosis can reduce risks of MSMEs, is used to form the following proposition:

P3: Symbiotic relationships can decrease risks of MSMEs.

An enterprise's value from a financial perspective refers to a business market value or fair value. Typically, smaller businesses are valued by reference to financial and non-financial indicators (Jarvis, Curran, Kitching, & Lightfoot, 2000). In terms of financial indicators, the value of small businesses is reflected in financial ratios grouped into five categories: liquidity, activity, debt, profitability, and market ratio (Frino et al., 2015). Non-financial indicators can be analysed by looking at subjective performances such as product quality, customer satisfaction, and market share (Banker, Potter, & Srinivasan, 2000).

Several previous studies mention that symbiosis can add value to enterprises, including MSMEs. Numerous reciprocal benefits are added when MSMEs associate with each other in a symbiotic environment (Etemad, Wright, & Dana, 2001). Symbiosis may generate values to businesses at both personal and corporate levels. A firm's value can be increased because of personal relationships among enterprise owners (Sparrowe, Liden, & Kraimer, 2001). This represents value that is added to the nation and society (Lepak, Smith, & Taylor, 2007). Knowledge and information are shared among the network, so business owners can consider new information to improve their management. Symbiosis within clusters can offer opportunities for businesses to assess the value of new information, so businesses can assimilate it. In some business communities, MSMEs' values can be enhanced by favourable exogenous influences. Local events or sporting competitions are potentially dynamic forces that stimulate entities to associate with each other in a symbiotic environment. Central organisers and local stakeholders will cooperate in order to run events. When events or special occasions occur, firms which have the same target groups can cooperatively advertise their products in order to reduce advertising costs. Some entities can act as hubs or transformers for disseminating information in symbiotic environments. For example, in New Zealand, Visitor

Information Centres (i-SITE) are the hub for giving information to visitors about individual towns, famous places for travelling, restaurants, and accommodation (Tourism Industry Association, 2016). Individual shops can be recommended to visitors, which will increase sales, income and the number of customers from people who visit the town. A networking and business association in the business community can be a driver of globalisation for both individual small businesses and the national economy (Dana, 2001a).

There are some negative relationships between the value of MSMEs and symbiotic relationships. According to some previous studies, in symbiotic relationship, negative impacts outweigh positive effects (Ritala et al., 2008), resulting in no incremental value. Adding value to the whole business community, including individual MSMEs, may be a challenge. As information can flow through entities or some elite clusters, the strategies of individual firms can be revealed to others (Quintana-Garcia & Benavides-Velasco, 2004). Consequently, the value of firms may drop. Some scholars argue that value can be added to the collaboration between small and large firms (Etemad et al., 2001), and multinational enterprises (Meyer et al., 2011), because some small businesses need to collaborate with large firms to survive. A number of small companies convert themselves from competitors of large firms to becoming suppliers. Small firms have to build relationships with larger enterprises, so they can gain advantages from this change. The value added through networks in a symbiotic environment can enable small firms to improve their performance (Bonaccorsi, 1992). However, adding value to MSMEs will be challenging depending on the nature of the ties between entities. Information can flow easily in weak-tied symbiotic relationships, but it is possible to experience information overload. It is still unclear what factors stimulate MSMEs to increase the value of firms. Based on the arguments, the proposition is generated:

P4: Symbiotic relationships can add value to MSMEs.

4.2.2 Scope of symbiotic relationships in this study

This study focuses on how symbiotic relationships affect the business performance of MSMEs, particularly in terms of risk and return components. It addresses the connections among businesses within the same and across different industries, and the relationships between businesses and banks. Ibarra, Kilduff and Tsai (2005),

suggest that studying networks should enhance understanding at both the individual and organizational levels and this study not only focuses on business networks and the connections between several enterprises, but also examines entrepreneurial relationships involving interactivities and how business owners in Cambridge interact and associate with each other. Corporate networks and entrepreneurial relationships can be created by interpersonal relationships between corporate owners (Ceci & Iubatti, 2012). The ways these people interact and associate with others depend on the characteristics of each person (Johannisson, 1986; Konsti - Laakso, Pihkala, & Kraus, 2012). Also, there are various ways which individual firms are connected. Connections depend on how they share individual values and gain mutual benefits (Gulati, 2007; Lavie, 2006). These corporate connections can explain linkages and business ties at the industrial level.

In the context of Cambridge, New Zealand, symbiotic relationships are defined differently from other studies. It is important and necessary to understand the general symbiotic environment of this town (Jack & Anderson, 2002). Furthermore, detailed information relating to personal ties between business owners is essential for understanding the motivation for interconnections at both the entrepreneurial and enterprise levels. Figure 4-1 displays the scope of this study.

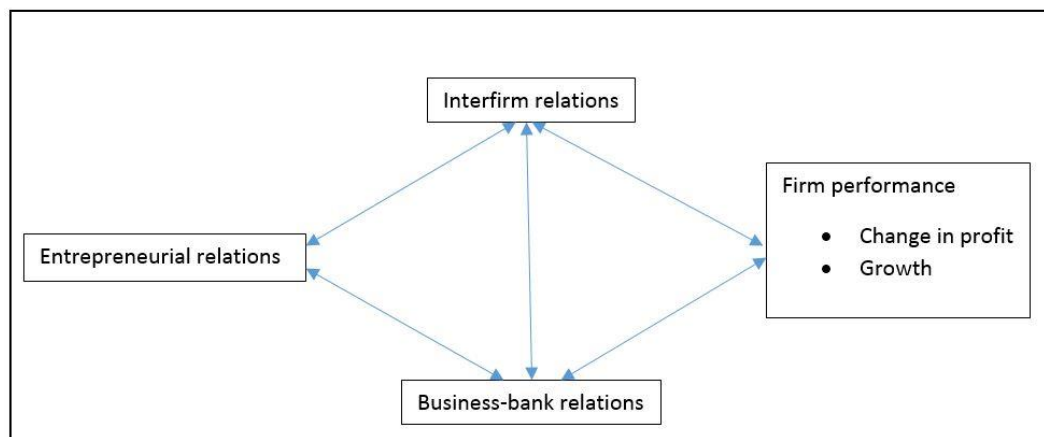


Figure 4-1: Scope of symbiotic relationship in this study

Figure 4-1, based on previous studies, shows how personal relationships between business owners can generate enterprise interconnections (Hite, 2005; Manolova, Manev, & Gyoshev, 2010) and relationships between firms and banks (Silver & Berggren, 2010). Conversely, business ties between individual firms can create personal relationships among the owners (Gulati, Lavie, & Madhavan, 2011; Hoang

& Antoncic, 2003). Strong relationships between businesses and banks relate to personal connections among business owners (Brick & Palia, 2007). Entrepreneurial relations, interfirm relations and business-bank relations can affect corporate performance. This study involves a simulation study and fieldwork which provide sufficient data and evidence for the analysis and for a reasonable interpretation.

4.3 Methodology framework

A research paradigm illustrates a researcher’s worldview and, together with the research concept, shapes how the researcher designs research to fulfil the research objectives. The research paradigm specifies how different research approaches, quantitative, qualitative and mixed methods, are adopted. Creswell (2014) identifies four types of worldview adopted in research: postpositivism, constructivism, transformatism and pragmatism (see Figure 4-2).

Postpositivism	Constructivism
-Determination -Reductionism -Empirical observation and measurement -Theory verification	-Understanding -Multiple participant meanings -Social and historical construction -Theory generation
Transformatism	Pragmatism
-Political -Power and justice oriented -Collaborative -Change-oriented	-Consequences of actions -Problem-centred -Pluralistic -Real-world practice oriented

Figure 4-2: Four worldviews

Source: Research design: Qualitative, quantitative, and mixed methods approaches (Creswell, 2014)

According to Creswell (2014), postpositivism can be called positivist, postpositivist research, and empirical science research. It is adopted in a majority of quantitative studies as it explains the relationships between causes and effects of phenomena. Normally, research informed by a postpositivist worldview aims to contribute to empirical findings which already exist in the world by developing different hypothetical frameworks. Different variables are created based on the particular

areas that are the focus of the research before being tested by various statistical tools. Postpositivist research aims to test theories rather than generating theories as it is believed that knowledge is changeable depending on different situations. Postpositivist research relates to the process of making claims and refining the findings based on what has already been found in previous studies. It investigates the causal relationships of variables, and pays attention to validity and reliability of research in order to avoid potential bias (Phillips & Burbules, 2000).

By contrast, constructivist research in social research focuses on how people understand the world in which they live. It is mainly used in qualitative research that aims to create new knowledge and generate theories within particular contexts. The research approach starts with broad ideas and a range of questions rather than narrowing down to particular concepts. Previous literature and existing theories are used to develop broad research propositions. The analytical approach considers how context and participants construct the meaning of a situation. Therefore, constructivist researchers pay attention to the interaction between participants and others, and how participants respond to research questions before interpreting the findings from researchers' experience (Crotty, 1998). The transformative worldview is adopted by critical theorists who investigate experiences of particular groups of people that have been criticized or demeaned (Mertens, 2010). This perspective may also examine policies, rules and regulations that operate in certain situations and affect the lives and experiences of these people. Transformative researchers initially begin with the key focus of the study, then enable participants to construct the research approach, find solutions, and gain outcomes from the studies.

This study employs a mixed method research approach informed by a pragmatic worldview to investigate the impacts of symbiotic relationships on MSMES' performance. A pragmatic researcher focuses on problems, and allows flexible methods and techniques that are incorporated to solve those problems (Creswell, 2014). Researchers informed by this worldview believe that quantitative and qualitative data combined give a better understanding of research problems. This flexible approach offers more opportunity for researchers to answer both the 'what' and the 'how' questions of the research. In basic mixed method designs, there are three approaches: convergent parallel, explanatory sequential, and exploratory

sequential. Regarding advanced mixed methods designs, there are three types of approaches: embedded, transformative, and multiphase.

Mixed method research involves both quantitative and qualitative data analysis. There is no particular approach for a mixed method study as quantitative and qualitative data will be evaluated separately, but they will be eventually merged, connected, and embedded. Merging data is used when comparing two types of data. Researchers can report quantitative findings and use qualitative findings to confirm or refute them. Connecting data is used when two types of data are combined. Qualitative data is transformed to quantitative measures. Researchers can embed or join data by presenting both qualitative and quantitative data which link to the same research questions. Many researchers adopt a mixed method research approach in recognition of the limitations of both quantitative and qualitative research, and to give the findings more validity. A mixed method approach provides the opportunity to answer research questions from different points of view. Mixed method researchers can develop better measurements by starting with a qualitative approach, then using that data to create questionnaires or surveys based on the real data, not literature or existing theories. They can also start with quantitative analysis which normally presents findings in the form of statistics and numeric indicators, following this with qualitative data collection such as in-depth interviews, focus groups, and observation. The detailed information is used to explain the statistical results, and provide more insight in relation to the research questions.

This study adopts a concurrent embedded mixed methods design in which quantitative data and qualitative data are collected simultaneously but analysed individually. This method is the primary method leading the study. A secondary method is then used to support the process to seek information from different perspectives and broader views. This is illustrated by Figure 4-3.

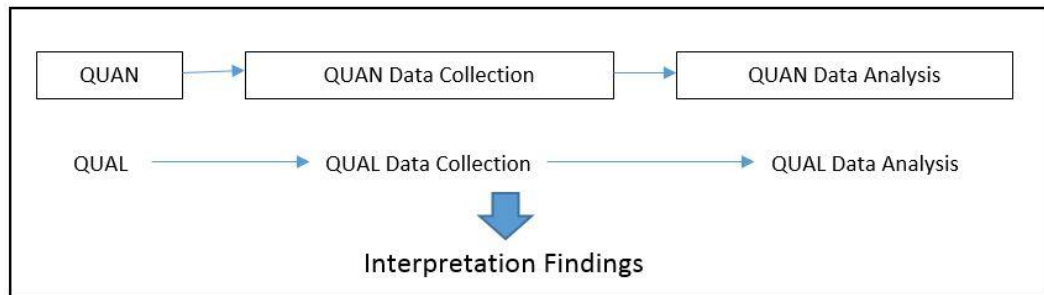


Figure 4-3: Concurrent Embedded Mixed Methods

For this method, the type of data collection requires strong quantitative and qualitative foundations. Data may not be compared side by side as they are unequalled in nature. Therefore, the study uses the findings from qualitative analysis to stress different views to answer research questions. To increase the validity, the samples for quantitative and qualitative analysis are the same as this design aims to collect more detail to explain the results from both approaches. The quantitative and qualitative data is analysed separately. As a quantitative method guides the study, questions for accessing qualitative data are broad, yet within the scope of research questions. Not only existing theories and previous literature are used as the scope of qualitative data analysis, but the new findings from open-ended questions are also analysed. Interpretation draws on both quantitative and qualitative analysis. However, the study shows insights into how the results from qualitative analysis explain the findings of quantitative analysis.

This study aims to examine the impacts of symbiotic relationships on risk, return, and value of MSMEs. The research investigation draws on previous studies and existing theories to specify how connections between different businesses and the interactions between business owners enable firms to increase returns, and reduce costs and expenses. The secondary data from the New Zealand Business Benchmarking Survey provided by the Institute of Business Research at the University of Waikato was used to run a simulation to evaluate the potential net profit of firms. The simulation is used to indicate the potential performance of MSMEs across industries under the same concept of symbiosis. However, in order to examine the impacts of symbiotic relationship among MSMEs, real data is needed. The second main part of this study involves collecting the primary data from the field. Questionnaires were developed after reviewing literature and conducting a pilot study in order to survey potential participants who operate

MSMEs in Cambridge. This study concurrently conducts semi-structured interviews with the same samples to investigate more details regarding ‘how’ and ‘why’ symbiotic relationships enable individual MSMEs to enhance financial gains. The interpretation and discussion occurs within the framework of risk and return and various finance theories. This portrays a symbiotic relationship and its impacts on financial gains of MSMEs, and solid findings of the whole study.

4.3.1 Research methodology

The research has two main parts: a simulation study and fieldwork. The first part involves quantitative study which uses financial modelling to simulate the potential performance of MSMEs, namely net profit. The Monte Carlo method was applied to estimate the performance of MSMEs, then give the probability distributions of potential net profit depending on industries. Input factors for running the simulation were specified after reviewing the related literature. Secondary data used were from the New Zealand Business Benchmarking Survey. The results from conducting the simulation indicated the potential value of industrial net profit. However, in order to understand the actual situation as to how associating and having business connections impact the components of risk and return of MSMEs, a field study was required.

The second part of this research involved a fieldwork study. The study uses a large sample of MSMEs in Cambridge for conducting a number of surveys. The main objective of this part is understanding the key determinants and the uncertain factors which devalue corporate performance. Furthermore, this part of the study investigates the important drivers predicting interfirm relationships and the relationships between businesses and banks. The primary data from field work provides the real parameters for examining relationships between several businesses, and between businesses and banks. Analysis of the 200 survey responses relates to running Ordered Logistic Regression (Ologit) and Partial Least Square Structural Equation Modelling (PLS-SEM). The path efficiencies inform the extent of relationships between each group; between MSMEs operated within the same industries, between MSMEs operated across different industries, and between MSMEs and banks, are associated with changes in profit and firm growth.

However, in order to understand the reasons for those interactions, detailed information was required.

This fieldwork also involved semi-structured interviews. MSME owners were concurrently asked to answer some open-ended questions associated with insights about connections and networking. The goal of the interviews was to ascertain more detailed information about the relationship between single businesses and other related entities such as banks, the Chamber of Commerce, and other business associations. Qualitative data analysis techniques used with a large number of samples provides a comprehensive tool to understand networking at both entrepreneur and firm levels. The responses from the business owners could give some signals to the policy makers and the local authorities as to which events or fairs should be given more attention, and which elite clusters should be allocated more funds to support them. The reasons MSMEs in Cambridge associate or refuse to contact other businesses were analysed before making the summary. Some impacts from the local events and inter-activities among the business owners in the symbiotic environment were investigated as these can be regarded as the exogenous factors impacting on a firm's performance. Working in the field can demonstrate the real key drivers of business, but also give the reasons for their interaction. Qualitative analysis in this research was chosen to increase the probability of obtaining robust results. As this study analyses empirical findings from a financial perspective, social interaction among the business owners was mainly not discussed and explained from the perspectives of humanity, psychology and philosophy. Rather, this study uses those concepts to develop field work assumptions and support or argue some findings.

4.4 Conclusion

This chapter illustrates the framework of this study. It adopts the pragmatist view that is widely used in a number of mixed method studies. In order to answer the major research question as to how symbiotic relationships among MSMEs generate added value, both statistical analysis and qualitative data analysis were seen to be necessary. Particularly, this study focuses on symbiotic relationships among MSMEs in Cambridge, New Zealand, therefore a qualitative approach can make empirical findings clearer as well as making the interpretation of quantitative

analysis results logical and sensible (Neergaard, Shaw, & Carter, 2005; Zeleny, 2001). This chapter provides four research propositions and demonstrates the scope of symbiosis emphasized in the entire study. The following chapter describes the adoption of a Monte Carlo simulation to evaluate the effects of symbiotic relationships on firms' performance.

Chapter 5: Demonstration of Potential Gains

5.1 Introduction

This chapter addresses the question of how the concept of symbiosis is associated with business performance, particularly in terms of the risk and return elements of micro-, small, and medium enterprises (MSMEs). The chapter explains three different analysis approaches: sensitivity, scenario, and simulation, which can be used to evaluate potential gains from business symbiosis. In particular, the chapter stresses the application of the Monte Carlo method in estimating the potential net profit of businesses operating in three different industries: coffee lounges; backpackers and hostels; and gift, specialty, and novelty shops. The chapter then outlines a business performance scenario in these three industries. Based on a review of the literature and related theories, a rationale is given for the way interactivity among business owners in a symbiotic environment increases return and reduces risk. Direct and indirect effects on business performance are found in both formal business relationships and informal associations among business owners. These effects can be seen in the reduction of transaction costs, delivery, and advertising expenses; reduction in the cost of obtaining information and production; increase in the number of customers and of sales; and in opportunities to sustain business in the long term.

This chapter begins with a discussion of the background of the sample used in the evaluation process. It also discusses why these three industries were selected for examining the potential gains that accrue from symbiosis. It then provides an explanation of the three approaches, especially the Monte Carlo simulation technique which was used to investigate the potential net profit of MSMEs. The next section explains how simulation works, and the analytical process used to evaluate MSME profit. Finally, empirical results, as well as some of the limitations of the simulation model, are discussed.

5.2 MSMEs' uncertainties and the concept of symbiosis

For the New Zealand economy, not only is the agricultural industry of vital importance but equally so are tourism and hospitality industry businesses, such as accommodation, restaurants and bars. In 2016, 3.34 million visitors travelled to New Zealand, representing an 11 percent increase from 2015 (Ministry of Business Innovation and Employment, 2015b; Statistics New Zealand, 2015a). Every year, businesses, particularly in accommodation and souvenir retailing, earn substantial income from visitors from around the world. From 2009 to 2015, regional visitor spending increased 72.59 percent in the accommodation sector and 3.04 percent in the food and beverage segment (Statistics New Zealand, 2016). The main income of these businesses depends directly on the number of visitors.

Between 2013 and 2014, the growing number of enterprises accounted for 2.3 percent of all New Zealand enterprises and the increasing number of employees in the accommodation and food service sector accounted for 2.68 percent of all employment in New Zealand (Statistics New Zealand, 2015b). The bright future of businesses in the accommodation sector is reflected in the upward trend in guest night bookings, increasing 3 percent from 2014 to 2015, and 12 percent from 2015 to 2016 (Ministry of Business Innovation and Employment, 2015a). The influx of visitors and increased consumer demand in those years also boosted returns for restaurants, bars, and coffee lounges. In New Zealand, the number of cafés and restaurants increased 2.4 percent from 2003 to 2013. From 2002 to 2012, growth in the number of cafes and restaurants contributed 1.7 percent to GDP (Whiteford, Seventer, & Patterson, 2014).

The performance of these businesses fluctuates because of the uncertainty of visitor numbers, seasonal effects and other indeterminate factors. In New Zealand, many businesses in tourism and hospitality tend to earn more money during the high travelling season, December to February, whereas sales are lower from June to August. Seasonal change leads to instability in business performance in terms of sales growth and net profit (Camara, 2004). The situation is similar for souvenir retail shops, which are also affected by seasonal influences as their major income depends directly on the number of visitors, indicating a direct link between the variation of seasons and the number of visitors (Butler, 1994). It would be helpful for businesses to know the key factors affecting their future net profit. It is also

important to discern the likely performance of each industry, so that individual firms can understand their current situation and improve their management, as well as cooperating among themselves so that they are sustained in the long term.

The potential performance of businesses can be affected by various factors. This study, however, focuses only on factors relating to three industries: coffee lounges, backpacker hotels, and gift, specialty and novelty shops. It is found that the impact of a symbiotic relationship on firm performance varies depending on the type of industry and business circumstances. These limitations need further evaluation.

Although some literature and previous studies mention these links, they discuss only what seems logically reasonable without any statistical evidence. Financial modelling can be one option to make a stronger contribution to the concept of the symbiotic relationship. The Monte Carlo approach can be employed for estimating firm performance, as it gives a clear picture and can show businesses how to perform better, especially when working symbiotically. Scholars can create precise scenarios of potential firm performance by doing fieldwork, and using real parameters and probability distributions to simulate the likely performance of businesses. Fieldwork allows researchers to identify coactivity, ties, key nodes, and the relationship between businesses, and allows them to understand the real ranges of uncertain variables which cause unstable firm performance. Such fieldwork can also enable investigators to recognise how business symbiosis affects the components of risk and return. This study can be viewed as a pilot case showing how financial modelling determines and emphasises the benefits of a symbiotic relationship among small businesses.

5.3 Different approaches used for evaluating potential gains

5.3.1 Sensitivity analysis

A sensitivity analysis is defined as “the study of how uncertainty in the output of the model (numerical or otherwise) can be apportioned to different sources of uncertainty in the model input” (Saltelli, Tarantola, Campolongo, & Ratto, 2004, p. 579). This analysis is used to evaluate how dependent variables are changed by independent variables under certain sets of assumptions. It is also called 'uncertainty analysis' and is applied to assess uncertainty in the output model (Saltelli et al., 2008). In the business area, this technique can be used to help business owners make

decisions about various projects when uncertainties in costs and incomes are involved, and help in reducing the variability of perceived outcomes from project investment (Forlani & Mullins, 2002). In finance, sensitivity analysis is commonly used to examine the net present value (NPV) of projects when interest rate, inflation rate and other economic factors change (Biddle, Hilary, & Verdi, 2009).

Previous studies have adopted sensitivity analysis to evaluate the potential gains for businesses from interfirm relations and networking. Longinidis and Georgiadis (2011) found that this analysis enables supply chain managers to determine how financial performance changes when fluctuating economic activities are generated by networking between supply chain managers and their suppliers. Lockamy and McCormack (2010) used sensitivity analysis to examine risk possibilities and potential revenue gained from networking between business owners and suppliers. They explained that a firm's revenue can be affected when its interactivities depend highly on supply partners who have high risk-taking attitudes. Singh and Mitchell (2005) applied sensitivity analysis to investigate how collaboration between several firms enhances corporate sales growth. The study notes that as a result of increased sales, corporations with incumbent partners enable newcomers to interact with a wider circle of associates.

Although sensitivity analysis is widely applied in many business areas, Deubilet et al. (1985) identify some limitations of this technique, declaring that it is not appropriate when many independent variables change at the same time, and the results of sensitivity analysis cannot signal which option is the best. Decision-making still depends on individuals.

5.3.2 Scenario analysis

Scenario analysis is one of the techniques used to evaluate financial performance affected by uncertainty. In contrast to sensitivity analysis, the results of scenario analysis depend on a set of indicators or evidence specified at the outset (Vose, 2008). The technique is used to examine possible future events by considering possible outcomes (MacKay & McKiernan, 2006; Shumadine, 2005). According to Cornelius, Van de Putte and Romani (2005), forecasts are usually constructed on the assumption that tomorrow's world will be much like today's. As long as this is the case and there are no critical discontinuities, forecasts perform reasonably well.

However, eventually the world does change in a major way, which renders forecasts wrong when it hurts most.

Scenario results can be presented in various forms, such as best case, base case (most likely case), and worst case (de Kluyver, 1980). In finance and economics, this technique is applied to examine potential situations occurring as a result of change in economic factors. For instance, the best-case scenario of economic development is normally generated under the assumption of rapid economic growth, whereas the worst-case scenario is formed under the slow growth assumption.

Scenario analysis can be applied using both qualitative and quantitative means. The study by Swart, Raskin and Robinson (2004) explains that qualitative methodology considers various factors influencing the future to build a narrative. In contrast, the quantitative method relies on mathematical models and numeric indicators and is often used for predictive purposes, despite its limitations. Financial indicators and economic factors change over time, so the accuracy of prediction may decline. Influencing indicators and circumstances are not always accessible (Pecotich, Pressley, & Roth, 1996) and a variety of information is required to generate a realistic scenario (Savvides, 1994).

5.3.3 Simulation analysis: The Monte Carlo simulation approach

The Monte Carlo simulation approach is widely applied in the financial area (Jackson, Rutsohn, & Grayson, 2001). It is recognised as the technique to use for estimating income, cost, risk and uncertainty caused by varying inputs in different scenarios. Boinske (2003) discussed the use of the Monte Carlo technique in personal finance and mentioned the benefits of this approach for personal financial planning. In the investment area, the Monte Carlo simulation method can be used to model potential return from a long term investment (Kelliher & Mahoney, 2000) and for project planning (Hacura, Jadamus-Hacura, & Kocot, 2001).

This application is also found in cost management. Project managers can apply the method to better understand their project budget and estimate the final budget and assess costs (Smith, 1994). The obvious application of the Monte Carlo approach is found in risk assessment and uncertainty appraisal (Kallio, 2010; Sawilowsky, 2003). The simple basic principle of this method is to generate random samplings

produced by different input variables (French & Gabrielli, 2004) and presented in the form of probability distribution (Evans, 1992; Lorance & Wendling, 2001).

Previous studies have found that the Monte Carlo technique can be used to estimate the performance of small firms. A small number of studies evaluate the concept of symbiosis and apply financial models to estimate potential performance resulting from the adoption of this principle. The key factors in measuring accurate potential performance deal with the process of specifying probability distributions and input parameters (Mayes, 2015). Numerous factors cause fluctuations in firm value and these can be used as input variables for estimating potential performance.

Using the Monte Carlo method, an accurate measure of potential performance is the result of the appropriate probability distributions and the precise range of input parameters (French & Gabrielli, 2004). Selecting a probability distribution is a debated topic among scholars. There are several approaches in defining probability distributions: pragmatic, data-driven, and scientific (Rees, 2008).

Pragmatic methods rely on simple parameters, such as minimum, most likely, and maximum typical distribution. The data-driven method uses historical data in selecting probability distributions. This approach can be used when the dataset is not smooth or when it is not known how the datasets were generated. Scientific approaches require statistical knowledge to understand how processes generate a particular type of distribution.

Although many scholars claim that the scientific approach gives the most accurate results, this study uses the data-driven method, as it is believed that past business performance signals the value of future performance (Charnes, 2007). To obtain the most accurate results, a correlation coefficient between input variables is required. Ignorance as to how input determinants correlate with each other can lead to mis-assessment of risk and therefore to an incorrect outcome (David, 1997).

In this study, it is assumed that symbiotic relationships among businesses, particularly those in three industries (coffee lounges, backpackers and hostels, and gift, specialty, and novelty shops) can enhance business performance. These assumptions can be stated as:

- A1: A symbiotic relationship has a positive effect on the element of return;
- and

A2: A symbiotic relationship has a negative effect on the element of risk, particularly in terms of the cost of goods sold and corporate expenses.

The next section outlines the research methodology followed in this study and discusses the data employed, the process of specifying parameters and probability distributions used in the Monte Carlo approach.

5.3.3.1 Methodology

The Monte Carlo method involves generating a random number of outputs from selected inputs, then presenting the results in the form of a probability distribution (Kallio, 2010; Lorenz, Trück, & Lützkendorf, 2006; Peleskei, Dorca, Munteanu, & Munteanu, 2015; Sawilowsky, 2003). The first part of this section shows the data and samples used for the analysis. The second describes the process of running the simulation. The empirical results are presented in histograms and other statistical forms.

5.3.3.2 Data and samples

Generally, the difficulty of analysing small business performance arises mainly from data limitations, this is not a problem in this study because the Monte Carlo method can work with limited data (Peleskei et al., 2015). This study aims to explore the application of the Monte Carlo approach in estimating firm performance. Accordingly, for the most part synthetic data were created to show the likelihood of net profit when changing the input parameters. The small amount of data is sufficient for the purpose of analysis. Building the financial model with historical data is critical, as the correlation between input variables can be specified (Charnes, 2007). The correlation coefficient should be analysed in order to avoid the problem of multicollinearity (Grewel, Joseph, & Baumgar, 2004; Mason & Perreault, 1991). The main source of information is secondary data from the New Zealand Business Benchmarking Survey provided by the Institute of Business Research at the University of Waikato. The study uses financial statistics from 2013, presented in three quartiles; 25th, 50th, and 75th. These data also show average statistics for each industry together with the financial data of the three best businesses. Another source of data was the Management Resource Centre (MRC) at the University of Waikato. These financial statistics show individual samples of businesses from each industry, divided by the Business Industrial Code (BIC).

5.3.3.3 Aggregate industry sample using MRC financial data

In order to demonstrate potential gains from symbiotic relationships among MSMEs, three main approaches are widely used: sensitivity analysis, scenario analysis, and simulation. This study uses secondary data from the New Zealand Benchmarking Survey for running simulations. The Institute provided financial statistics for New Zealand enterprises for 2013. The data were used to determine the distribution for each variable. The report shows the aggregate results for all businesses within each classification and these are presented by percentiles (results for the 25th, 50th and 75th) (Institute for Business Research, 2014). The data were the most recent available at that time. Some scholars, (Locke & Boulanaour, 2009; Vos & Roulston, 2008; Vos & Shen, 2007) use this type of data for their studies.

The population for this study was selected on the basis of the Business Classification Code (BusiCode). Whereas a three digit coding system was used in the years 1998-2000, in most cases the Custom Class codes were used for 2001-2005, and from 2006 onwards the ANZSIC2006 classification system (Institute for Business Research, 2014) was employed. Accordingly, this study selects its samples according to the ANZSIC2006 classification system.

In order to aggregate industry samples, the average values from financial data in each year were calculated. The average values used for simulation model samples for each year differed. A major issue for secondary data collection investigating firm performance relates to sample survivorship bias. This bias can occur when some samples are selected, and not others. Normally, in a performance study, overlooking non-surviving firms which do not exist at a certain period of time could lead to erroneous interpretation (Brown, Goetzmann, Ibbotson, & Ross, 1992; Stock & Watson, 2007). Although this study adopts the Monte Carlo approach for simulating the potential profit of businesses in different industries, it does not suffer from sample survivorship bias. In order to evaluate how varied financial data and potential gains can be generated from adopting the concept of symbiosis and to generate precise results, this study uses data from the years 2006-2014 and includes all firms as the population to run simulation.

5.3.3.4 Analysis

With the Monte Carlo method, the range of parameters and probability distributions are critical elements for obtaining accurate results (French & Gabrielli, 2004; Kwak & Ingall, 2007; Zakhary, Atiya, El-Shishiny, & Gayar, 2011). After reviewing previous studies and other literature, the input variables were specified. It was found that the concept of symbiosis has some impact on these determinants. The input parameters for running a Monte Carlo simulation were specified and selected from the financial income statement.

It is presumed that the fluctuating net profit of a business is caused by 11 uncertain factors and these were used as the input variables: income; cost of goods sold; wages, employee and labour expenses; administration expenses; advertising and promotion expenses; interest expenses; occupancy expenses; plant and equipment expenses; phone, fax and communication expenses; vehicle expenses; and; other expenses. The output variable is the net profit of each industry.

This study specifies the range of parameters by calculating the differences in financial statistics between the 50th and the 75th percentiles. Then, the study addresses the assumption that a symbiotic relationship among businesses leads to an increase in firm income as well as a decrease in expenses and the cost of goods sold. It is presumed that a symbiotic relationship among businesses offers the opportunity for them to increase their income from 0 percent to the maximum percentage for each variable in the three industries. These maximum numbers represent the difference between the 50th and 75th percentiles. Conversely, a symbiotic relationship among small firms can reduce expenses and the cost of goods sold from 0 percent to the minimum percentage. These minimum numbers also represent the difference between the 50th and the 75th percentiles. The maximum parameters for each variable were calculated by using the upper limit of those differences: the minimum parameters by using the lower limit of each variable. Table 5-1, 5-2 and 5-3 shows input variables and the ranges of parameters in three industries.

Table 5-1: Input variables and the range of parameters of Coffee lounge industry

Input variables	Range of parameters	MRC data	Min	Max	Mean
Income	zero to 16%	375,034.00	375,034.00	435,039.44	405,036.72
Cost of goods sold	zero to -23%	163,664.84	126,021.92	163,664.84	144,843.38
Wage expenses	zero to -33%	98,408.92	65,933.98	98,408.92	82,171.45
Administration expenses	zero to 27%	7,688.20	5,612.38	7,688.20	6,650.29
Advertising expenses	zero to -59%	1,537.64	630.43	1,537.64	1,084.04
Interest expenses	zero to -80%	30,002.72	6,000.54	30,002.72	18,001.63
Occupancy expenses	zero to -14%	39,753.60	34,188.10	39,753.60	36,970.85
Plant & equipment expenses	zero to -20%	10,125.92	8,100.73	10,125.92	9,113.33
Phone & fax expenses	zero to -26%	2,175.20	1,609.65	2,175.20	1,892.42
Vehicle	zero to -59%	2,475.22	1,014.84	2,475.22	1,745.03
Other expenses	zero to -51%	5,588.01	2,738.12	5,588.01	4,163.06

Table 5-2: Input variables and the range of parameters for the Backpackers and hostels industry

Input variables	Range of parameters	MRC data	Min	Max	Mean
Income	0%-123%	189,561.00	189,561.00	422,721.03	306,141.02
Cost of goods sold	zero to -80%	13,269.27	2,653.85	13,269.27	7,961.56
Wage expenses	zero to -66%	45,361.95	15,423.06	45,361.95	30,392.50
Administration expenses	zero to -62%	10,084.65	3,832.17	10,084.65	6,958.41
Advertising expenses	zero to -25%	2,653.85	1,990.39	2,653.85	2,322.12
Interest expenses	zero to -100%	2,274.73	0	2,274.73	1,137.37
Occupancy expenses	zero to -61%	75,559.01	29,468.02	75,559.01	52,513.52
Plant & equipment expenses	zero to -23%	6,672.55	5,137.86	6,672.55	5,905.20
Phone & fax expenses	zero to -32%	3,563.75	2,423.35	3,563.75	2,993.55
Vehicle expenses	zero to -28%	5,743.70	4,135.46	5,743.70	4,939.58
Other expenses	zero to -71%	6,956.89	2,017.50	6,956.89	4,487.19

Table 5-3: Input variables and the range of parameters for the Gift, specialty & novelty industry

Input variables	Range of parameters	MRC data	Min	Max	Mean
Income	zero to 63%	416,018.00	416,018.00	678,109.34	547,063.67
Cost of goods sold	zero to -14%	226,272.19	194,594.08	226,272.19	210,433.14
Wage expenses	zero to -95%	48,050.08	2,402.50	48,050.08	25,226.29
Administration expenses	zero to -35%	8,486.77	5,516.40	8,486.77	7,001.58
Advertising expenses	zero to -90%	2,953.73	295.37	2,953.73	1,624.55
Interest expenses	zero to -76%	3,952.17	948.52	3,952.17	2,450.35
Occupancy expenses	zero to -24%	42,142.62	32,028.39	42,142.62	37,085.51
Plant & equipment expenses	zero to -45%	3,036.93	1,670.31	3,036.93	2,353.62
Phone & fax expenses	zero to -28%	2,787.32	2,006.87	2,787.32	2,397.10
Vehicle expenses	zero to -91%	2,662.52	239.63	2,662.52	1,451.07
Other expenses	zero to -42%	9,152.40	5,308.39	9,152.40	7,230.39

Specifying probability distribution is a controversial topic in a Monte Carlo study which uses a scientific approach in order to select the appropriate probability distributions. The scientific method combines both subjective and objective processes in order to specify probability distributions (Charnes, 2007; Chau, 1995). The subjective process involves using theories and reviewing similar cases from previous research (Yang, 2005), then deciding which probability distributions are appropriate to use in this approach.

This method also considers the opinion of experts regarding future trends and potential factors affecting business performance. However, some critics argue that the method is unrealistic, since it does not base itself on current situations, which vary among individual businesses. Furthermore, it is argued that selecting probability distributions for forecasting business performance based on professional judgement is an idiosyncratic method.

Consequently, this study has adopted an objective means for selecting the probability distributions of uncertain variables, using historical data to determine which probability distributions explain the occurrence of business performance. Using a data-driven approach, a set of historical data is used to create the distribution (Rees, 2008). This is more reliable than taking a largely subjective approach because some numerical data are measurable.

The probability distributions used for running the simulation were selected using the data-driven approach. Historical data from 2006-2014 were used to run the goodness of fit test. Goodness of fit statistics, derived from the Akaike information criterion (AIC), the Bayesian information criterion (BIC), the Anderson-Darling test (A-D), the chi-square test, and the Kolmogorov-Smirnov test, indicate how well a potential distribution matches the distribution of the sample data (Palisade Corporation, 2015). This process was carried out using the fitting functions of the @Risk computer software. There are many statistical measurements for testing the fit of real data with probability distributions. These criteria compare real data with the expected data and give the statistical parameters for those fits.

AIC is used to find the discrepancy between a fitted candidate model and the true model. It is recommended that it be used with large-sample data rather than with small-sample applications, as it tends to fit with incompatible distributions (Shang, 2008). Munk, Stockis, Valeinis, and Giese (2011) argue that BIC, A-D, the chi-square test, and the Kolmogorov-Smirnov test are not suitable for non-parametric data.

This study uses AIC and BIC to check the goodness of fit since these two can simultaneously compare multiple nested or non-nested models, and assess model selection uncertainty to estimate model parameters using all available models (Posada & Buckley, 2004). AIC and BIC statistics are calculated from the log-likelihood function and take into account the number of parameters of the fitted distribution (Palisade Corporation, 2015).

The best fit distributions that resulted from the fitting function were ignored as those distributions cannot be seen in estimating the potential performance of a small firm. Actually, in the coffee lounge industry, the best fit score for wage expenses was the pareto distribution. This distribution normally explains the number of events

occurring in a fixed area of opportunity and is widely used in financial time series and insurance data (Embrechts, Kluppelberg, & Mikosch, 2013). The result from the goodness of fit test shows that the best fit for interest expenses is the exponential distribution. However, according to the theory, the exponential distribution is generally used to model continuous random non-negative variables (Charnes, 2007). Consequently, the study did not use the exponential distribution as the interest rate cannot be negative.

In order to make a reasonable judgment, this study focused on the second and third ranks of goodness of fit results for all input variables. The nature of those variables was carefully considered. Although the goodness of fit scores are high, income and expenses cannot be negative, so normal distribution, logistic distribution, and lognormal distribution cannot be used for running a simulation. Based on the ranking score of AIC and BIC statistics together with a reasonable judgment regarding the nature of each variable, it was found that the uniform and triangular distributions were the most appropriate distributions to use in this study. Table 5-4 indicates the probability distributions selected for running a Monte Carlo simulation.

Table 5-4: Probability distributions for each input determinant

Uncertain factor (input variable)	Probability distribution		
	Backpackers & hostels	Coffee lounges	Gift, specialty/ novelty shops
Income	Uniform	Uniform	Uniform
Cost of goods sold	Triangular	Triangular	Triangular
Wages – employees & labour expenses	Uniform	Triangular	Triangular
Administration expenses	Uniform	Triangular	Uniform
Advertising & promotion expenses	Triangular	Triangular	Uniform
Interest expenses	Triangular	Triangular	Uniform
Occupancy expenses	Triangular	Uniform	Uniform
Plant & equipment expenses	Uniform	Uniform	Triangular

Phone, fax & communication expenses	Uniform	Triangular	Uniform
Vehicle expenses	Uniform	Uniform	Triangular
Other expenses	Uniform	Uniform	Triangular

To generate the correct correlation between inputs, historical data from 2006-2014 were used to estimate the correlation coefficients. These correlation coefficients were analysed again using @Risk software's 'check matrix consistency' command, useful for detecting invalid correlations. It allows weights for individual coefficients to be manually adjusted from 0 to 100. The 'define correlation' function was then used to add input variables containing the probability distributions. This function allows the user to change the correlation coefficients, so the coefficients which had been estimated were placed at the beginning into this correlation matrix. Again, the 'check matrix consistency' command was used to adjust invalid values, then the 'RiskCorrmat' function was used to generate valid correlation coefficients. These valid coefficients for the uncertain variables were added before simulating businesses' potential net profit.

After specifying all probability distributions, input parameters, and adding correlation coefficients, the simulation was run with 5,000 iterations to generate the probability of net profit. The results were shown in the percentile range. The integer number with upper and lower bounds of net profit varied, depending on each input factor. The results from sensitivity analysis show which factors exert the largest and smallest effects on the entire net profit of each industry.

5.3.3.5 Empirical findings and discussion

This study examines how a symbiotic relationship affects business performance and evaluates the application of the Monte Carlo method in estimating firm performance. A review of the literature found that a symbiotic relationship among businesses influences the components of risk and return. When adopting the concept of symbiosis, there were changes both upward and downward for income, cost, and the various types of expenses. It also found that despite the limited data, the Monte Carlo method can be applied to estimate the likelihood of net profit, even with

small-sized businesses. Figures 5-1, 5-2 and 5-3 show the potential net profit (NP) of three industries represented by the histograms.

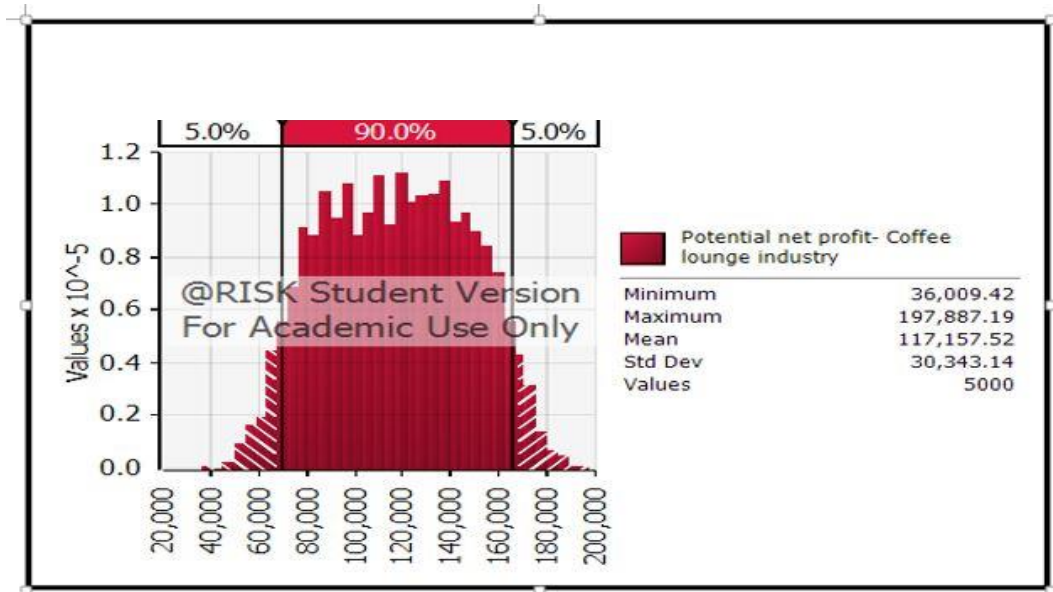


Figure 5-1: Potential net profit: Coffee lounge industry

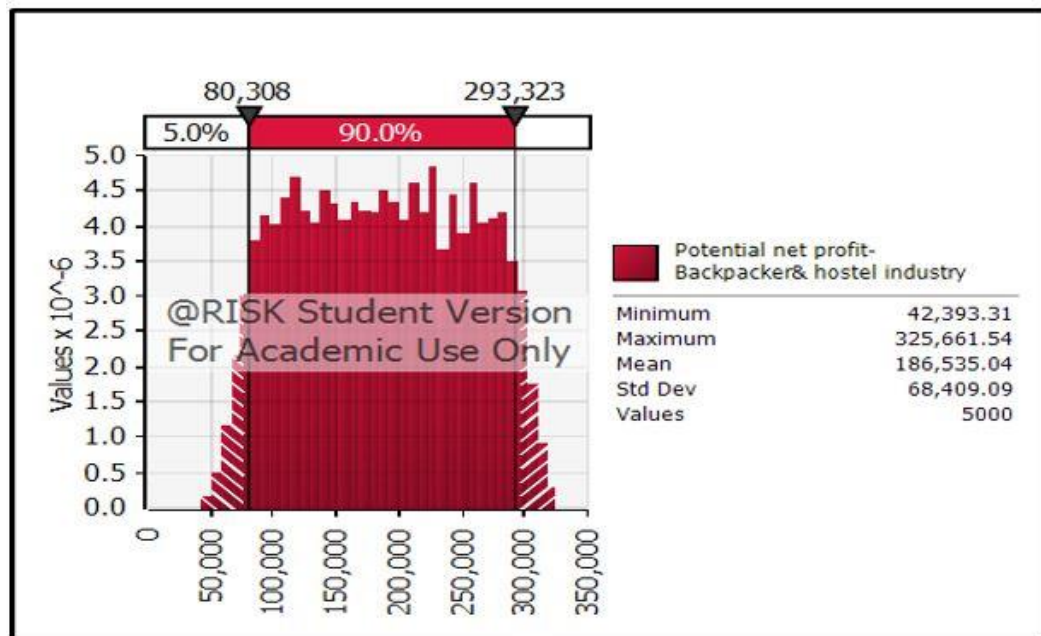


Figure 5-2: Potential net profit: Backpacker and hostel industry

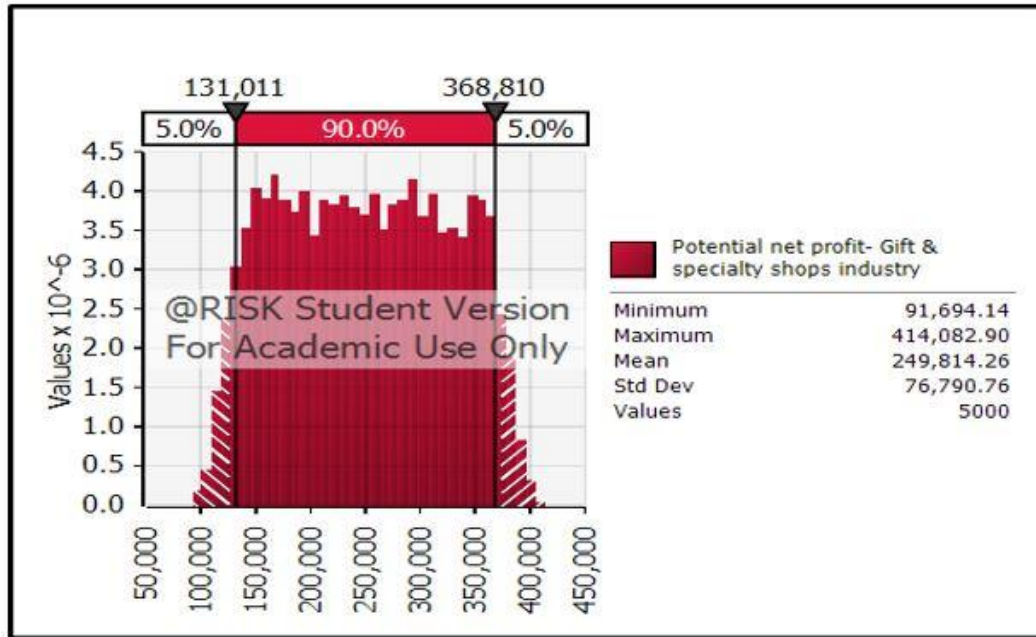


Figure 5-3: Potential net profit: Gift and specialty shops industry

The empirical findings show that the probability of negative net profit in the coffee lounge, backpackers and hostels, and gift, specialty and novelty shop industries was 0 percent (no figures here). Tables 5-5 and 5-6 present precise results.

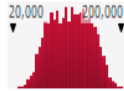


Table 5-5: Descriptive statistics for three industries

Statistics	Industry		
	Coffee lounges	Backpackers & hostels	Gift, specialty & novelty shops
Minimum	36,009.42	42,393.31	91,694.14
Maximum	197,887.19	325,661.54	414,082.90
Mean	117,157.52	186,535.04	249,814.26
Std. Dev	30,343.14	68,409.09	76,790.76
Variance	920706297.6	4679803215	5896820973
Skewness	0.00088691	0.000660823	0.016286477
Kurtosis	2.091640637	1.880240753	1.859004953
Median	117,428.32	187,024.08	249,656.99
Mode	139,043.84	255,592.20	243,113.43
Left X	69,343.33	80,308.02	131,011.12

Left P	5%	5%	5%
Right X	165,358.54	293,322.76	368,809.55
Right P	95%	95%	95%
Diff X	96,015.21	213,014.74	237,798.43
Diff P	90%	90%	90%
#Errors	0	0	0
Filter Min	Off	Off	Off
Filter Max	Off	Off	Off

Table 5-5 presents descriptive statistics and shows that the variation in net profit for the Coffee lounge, Backpackers and hostels, and Gift, specialty and novelty shop industries was \$36,009-\$197,887, \$42,393-\$325,661, and \$91,694-\$414,082, respectively.

Table 5-6: Variation in net profit for three industries

Industry: Potential net profit	Graph	Min	Mean	Max	5%	95%
Coffee lounge		36,009.42	117,157.50	197,887.20	69,343.33	165,358.50
Backpackers & hostels		42,393.30	186,535.00	325,661.50	80,308.02	293,322.80
Gift & specialty shops		91,694.13	249,814.30	414,082.90	131,011.10	368,809.60

According to the histograms on Table 5-6, the potential net profit of businesses in the coffee lounge industry was similar to the normal-shaped distribution, in contrast to the potential net profit in the other two industries, which was similar to the uniform-shaped distribution. Some results in the three industries cannot be compared since different types of industries have different natures and characteristics (Boter, 1996; Degryse, Goeij, & Kappert, 2012; Luttmer, 2007). However, considering the shape of the histograms, it seems that businesses in the backpackers and hostels industry and those in the gift, specialty and novelty shop

industry were more likely to experience a fluctuating net profit than those in the coffee lounge industry.

For modelling purposes, in relation to the potential gain from a symbiotic relationship, the results indicate that the flat-shaped distribution will generate more gain than the normal-shaped distribution. The shape of the histograms suggests that people are more likely to spend money at backpackers, hostels, gift shops, and novelty stores at all ranges of product and service prices. Therefore, it can be assumed that these industries are more likely to earn a wider range of net profit than coffee lounges.

From the histograms, at the low end of net profit, the number of businesses in the backpacker and hostel industry and in the gift, speciality and novelty industry was higher than in the coffee lounge industry. High customer demand and flexibility in purchasing may offer an opportunity for businesses to earn income (Kindleberger, 1937), and for those in the backpackers and hostels, and gift, specialty and novelty industries to make a profit (Swanson, 2004).

Seasonal demand has always been a critical issue for the tourism industry (Ateljevic, 2007; Ateljevic & Doorne, 2004), as fluctuations in purchasing power can cause variations in corporate income and net profit (Deaton, 1989). A small discount from backpackers, hostels, gift shops, or souvenir stores may motivate people to spend money on their products and services. Some may prefer rooms which are economical, for example rooms with shared bathrooms or rooms with six beds rather than a single bedroom. As a result, backpackers and hostels can make a profit at any range of the room rate. The figures in the histograms give an indication of the likely performance for each industry. The shape of the histogram suggests possible firm performance in the future and signals each industrial indicator.

However, at the low end of net profit, there is only a small number of businesses in the coffee lounge industry compared to the low end of net profit for the other two industries. According to the probability distribution of the coffee lounge industry, a smaller number of businesses have a very low or very high net profit compared to those in the other two industries. As the two tails of the histogram in Figure 5-1 are longer than those in Figures 5-2 and 5-3, it can be concluded that businesses in the coffee lounge industry tend to face greater challenges in earning high net profits.

It can be assumed that if the price of coffee and other beverages sold in coffee stores increases, customers may not be willing to pay. As a result, coffee lounges may earn less at a certain range of product price, a finding which is indicated by the two long-tailed histograms. A decreasing number of customers may result in decreasing net profit. However, the number of customers and corporate earnings are not the only important factors affecting firm performance. Earning more income from having more customers but seeing a decrease in net profit may not be a satisfactory result for business owners and may arise from the high cost of goods sold and excessive expenses.

In this case, adopting the concept of symbiosis and strengthening a symbiotic relationship with other businesses may need to be considered. More analysis and field work are important for understanding the real factors for boosting net profit, especially if aiming to discover the effects of a symbiotic relationship on corporate risk and return in some particular area or with a particular business network. This study provides the justification for empirical testing, drawing on the literature from previous studies to suggest what the connection might be.

For business owners to understand themselves and other businesses, looking at the industrial percentile is important. The differences in percentile presented in Table 5-7 inform the potential position of businesses in each industry.

Table 5-7: A comparison of percentiles between three industries

Industry	Coffee lounges		Backpackers & hostels		Gift, specialty & novelty shops	
	Net profit	Differences	Net profit	Differences	Net profit	Differences
1.00%	56,618.1		62,321.7		114,577.8	
2.50%	63,939.1	13%	72,170.0	16%	122,050.9	7%
5.00%	69,343.3	8%	80,308.0	11%	131,011.1	7%
10.00%	76,809.8	11%	93,719.4	17%	146,075.3	11%
20.00%	87,225.1	14%	116,479.6	24%	170,889.0	17%
25.00%	92,456.4	6%	127,788.8	10%	183,148.9	7%
50.00%	117,428.3	27%	187,024.0	46%	249,656.9	36%
75.00%	141,247.1	20%	244,398.5	31%	314,630.4	26%
80.00%	146,300.0	4%	256,400.9	5%	328,274.2	4%
90.00%	158,004.3	8%	280,420.1	9%	355,641.1	8%
95.00%	165,358.5	5%	293,322.7	5%	368,809.5	4%
97.50%	170,995.7	3%	301,309.0	3%	379,153.9	3%
99.00%	176,418.9	3%	309,365.4	3%	387,486.5	2%

Table 5-7 shows that for the overall figures for the industries concerned, the differences in the low percentile range (between 1st and 5th percentiles) are higher than the differences in the high percentile range (between 95th and 99th percentiles). Moving the position of a business to the middle range for the whole industry (from 25th to 50th percentile) seems to be easiest for businesses in the coffee lounge industry (only 27% change) while this seems to be the most difficult for those in the backpackers and hostels industry (46% change).

The differences in the low percentile range (between 1st and 5th percentiles) of the gift, specialty and novelty shop industry are lower compared to those in the other two industries. It can be assumed that moving a business to a higher position is easiest for those in the gift, specialty and novelty industry. It is also easier for businesses in the high percentile range (between 95th and 99th percentiles) to raise themselves to the position of the higher performing firms. This may be because the

differences in the high percentile range (between 95th and 99th percentile) are the lowest among the three industries.

These factors are relevant to variations in income and expenses, as a result of constantly fluctuating net profit. In the three industries, various factors affect the components of risk and return. Regarding the intensity of input factors, Figures 5-4, 5-5 and 5-6 clearly show the key determinants causing variation in potential net profit.

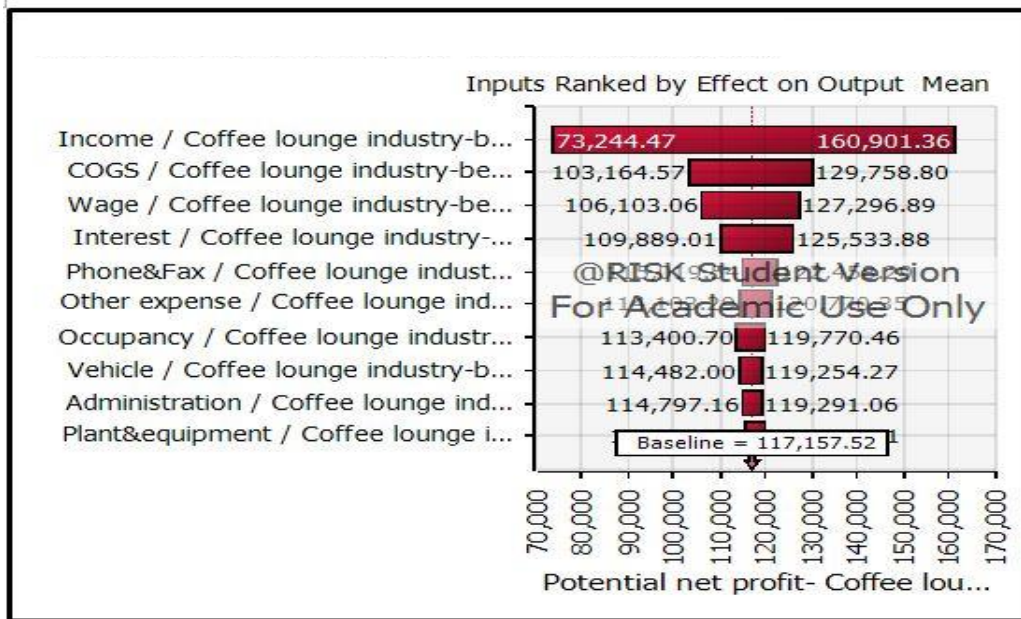


Figure 5-4: Potential net profit: Coffee lounge industry

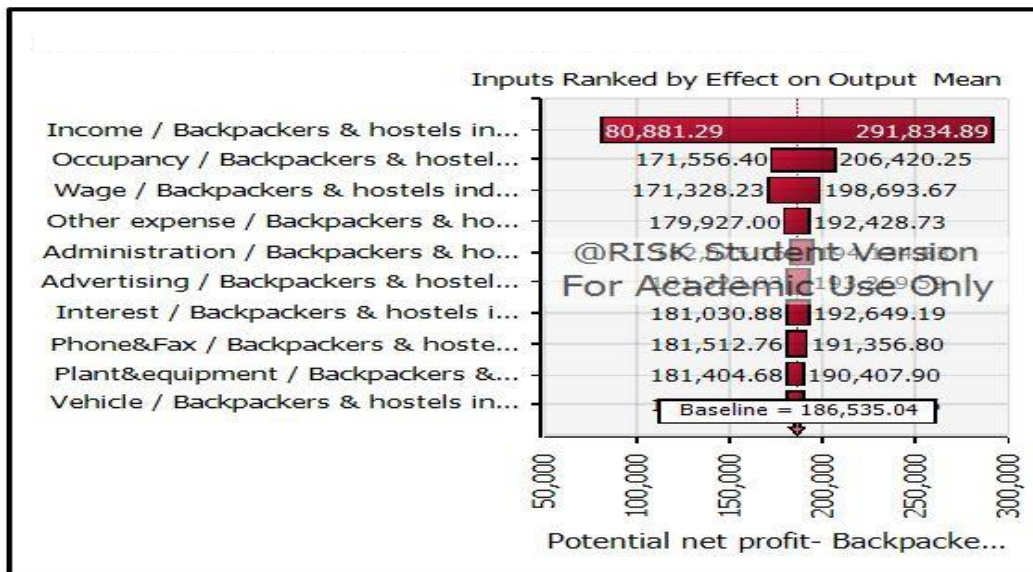


Figure 5-5: Potential net profit- Backpacker and hostel industry

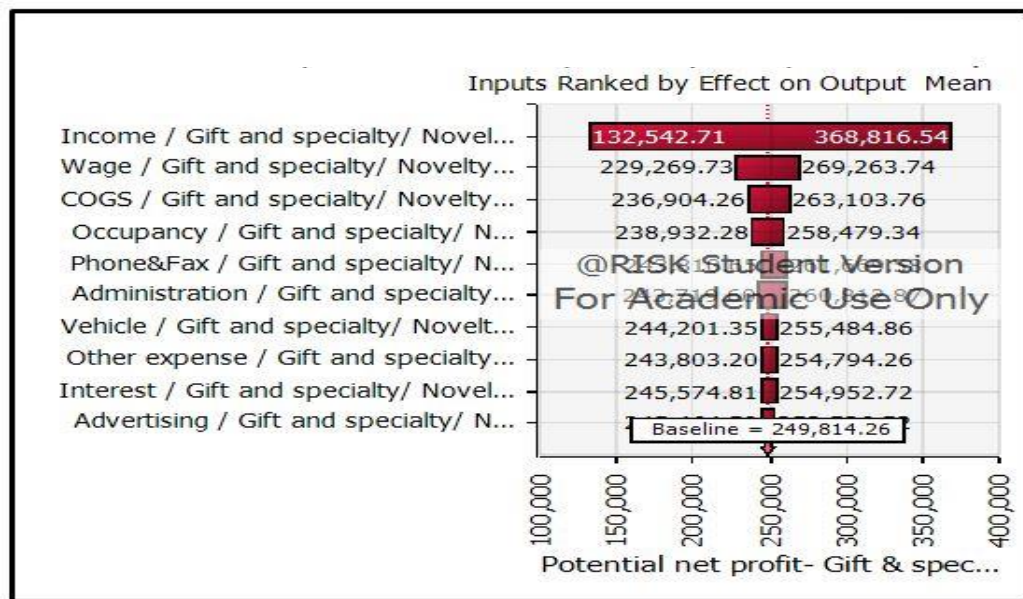


Figure 5-6: Potential net profit: Gift and specialty shops industry

Figures 5-4, 5-5 and 5-6 show that uncertain income had the biggest impact on the net profit of businesses operating in the three industries. In the backpackers and hostels industry, the second key factor causing fluctuation in business performance was occupancy expenses, followed by wage expenses. The least significant determinant causing the smallest variation in net profit was vehicle expenses.

In the coffee lounge industry, the cost of goods sold and wage expenses were also critical factors which may decrease net profit in the future, whereas plant and equipment expenses were the least important factor affecting variations in net profit. Wage expenses and the cost of goods sold were the second and third most important factors causing uncertainty, while advertising expenses were the least important in the gift, specialty, and novelty shop industry. It is essential to identify the key factors causing net profit instability, so that individual business owners can join forces with other businesses in order to survive in the long term. It is worth paying attention to these determinants, because they can then be used as a litmus test to enhance overall corporate performance.

The key point in creating a financial model has to do with probability distribution. Previous studies have defined these probability distributions and regularly explain how to select them for running the Monte Carlo simulation. Although this study assumes the probability distribution from the historical data, subjective judgment

and professional experience (Yang, 2005), Hurley (1998) argues that some probability distributions may not be realistic for some parameters.

In many cases, normal distribution seems appropriate to describe the unit sales of products if the probability of sales growth is high but not below zero (Mayes, 2015). Normal distribution is generally used to explain uncertain variables, such as rate of inflation, future gas prices (Mun, 2006), property valuation (Mallinson & French, 2000), and corporate revenue (Jackson et al., 2001). Triangular distribution can be chosen for the product price since the minimum, maximum, and the most likely price of products can be identified (French & Gabrielli, 2004). Uniform distribution can be chosen for the variable cost since this can be varied over a wide range (Shaked & Sutton, 1983) while some research suggests that beta, triangular and lognormal distributions give the best fit for the cost data (Peleskei et al., 2015).

The literature notes that different types of probability distribution are used to explain some business performance variables in order to simulate likely business performance. Different distributions were used to estimate the net profit of businesses in this study. The empirical results show potential net profit differed noticeably, depending on distributions. In order to determine whether the differences in the results in this study were statistically significant when changing the probability distributions, variance analysis (ANOVA) was undertaken. The results are presented in Table 5-8.

Table 5-8: Means of business performance variables calculated from different types of probability distribution

Variables	Best fit distribution	Uniform distribution	Triangular distribution	<i>F</i> -test statistics	<i>P</i> -value	
Income	Uniform	428,812.33	405,131.82	408,976.78	1414.7925***	0.000
COGS	Triangular	146,156.93	138,835.20	148,513.49	1.07770	0.9999
Wage	Uniform	88,431.78	90,700.24	88,527.99	4.74700	0.9999
Interest	Uniform	14,387.85	23,597.95	18,266.66	1.08580	0.9999
Phone & fax	Triangular	1,825.07	1,900.03	1,877.41	3.10350	0.9999
Other expenses	Triangular	3,639.97	5,200.84	4,251.85	0.00000	0.9999
Occupancy	Triangular	38,406.65	36,835.84	35,866.00	0.00000	0.9999
Vehicle	Uniform	1,490.17	1,976.09	1,316.33	0.22630	0.6342
Admin	Uniform	7,148.62	6,618.91	6,469.75	9.95520	0.9999
Plant & equipment	Uniform	8,984.11	8,170.64	9,580.41	0.00010	0.9998
Advertising	Uniform	1,163.08	1,104.09	1,044.36	0.00100	0.9989

The ANOVA results in Table 5-8, shed light on the differences in means of business performance factors when changing different probability distributions. From the 'fitting command' of @Risk, the best fit distributions for individual variables were selected, either the uniform or triangular distribution. According to Mayes and Shank (2015), the uniform distribution can be selected when unit sale, price of products, cost and expenses vary, ranging widely from the minimal to maximal values. They also mentioned that corporate expenses can be identified from the historical data of each business, giving the minimum, most likely, and maximum values. In this case, the triangular distribution is an appropriate choice for running the simulation. Using the data from the coffee lounge industry, the means of variables selected from different distributions were compared.

As independent variables for running the Monte Carlo simulation, this study uses the input variables. The results from ANOVA show that only income was statistically highly significant at the 1 percent level. The simulation output, specifically net profit, was considered the dependent variable for the ANOVA test.

Although the means of some business performance variables were not significantly different, the potential net profits simulated from the application of the Monte Carlo method varied when using different types of distribution, and the p -value emphasized these differences. As indicated, selecting various types of probability distribution gives a statistically different value. To simulate business performance, it is important to get the correct distributions. Carrying out fieldwork will provide the opportunity to obtain more information concerning the various drivers of the distribution of business performance variables.

As mentioned earlier, although the choice of input parameters and probability distributions is critical for simulating firm performance, applying the relevant financial tools, building a financial model, and developing the concept of symbiosis from the literature may make a large contribution in the area of finance. This is the main objective of this study.

It can be seen that the adoption of the concept of symbiosis and simulating potential performance are critical for businesses. The danger of taking this simple approach is overselling the benefits of creating symbiotic relationships, if people do not achieve as much as they expect. If business owners cooperate, associate, and interact with each other but see only small increases in performance, it may be difficult to sell the idea of symbiosis. With the Monte Carlo approach, it is a challenge to simulate accurate firm performance, since defining the probability distributions and specifying parameters are of critical importance (French & Gabrielli, 2004; Zakhary et al., 2011). Merging the idea of symbiosis with the simulation method is the key to this study and needs to be further evaluated with real parameters which can be collected in the field.

5.3.3.6 Summary and limitations of simulation technique

This study mainly examines the effect of a symbiotic relationship on firm performance in terms of risk and return. By building a financial model, an analysis can be made of the probabilities in corporate performance when adopting the idea of symbiosis. The main objective of this study is to explore the application of the Monte Carlo method in estimating the potential net profit of businesses, particularly those in three industries: coffee lounges; backpackers and hostels; and gift, specialty and novelty shops. The literature and theories relating to the effect of

symbiotic relationships were reviewed, then a financial model was built to understand the likely outcome in firm performance.

A symbiotic relationship between businesses, and association, interaction and interactivity among business owners is likely to influence the components of risk and return. Both formal and informal relationships among business owners and other involved entities directly and indirectly affect firm performance. Sharing advertising expenses and delivery and transaction costs, reducing the cost of searching for information, acquiring more customers as a result of business partners' recommendations, earning more income, access to resources, and strengthening firms' potential are all shared advantages that flow from adopting the idea of symbiosis in a practical way.

The study makes certain assumptions, specifically, that a symbiotic relationship helps firms to increase their income and decrease both the cost of goods sold and expenses. The data used has come from the New Zealand Business Benchmarking Survey, provided by the Management Resource Centre, and from the Institute of Business Research at the University of Waikato. By using a data-driven approach, these secondary data sources are used to specify input parameters for running the simulation. By using the 'fitting distribution' command built into the @Risk computer software, generating a bootstrap with 5,000 iterations, the study also specifies correlation coefficients in order to avoid the problem of multicollinearity and defined probability distributions. Synthesizing some data to demonstrate how the model will work before carrying out the fieldwork is important for future studies, particularly those which aim to estimate firm performance, since this is affected by correlation among businesses.

In order to select the most appropriate probability distribution for running the simulation, careful consideration was given to each uncertain variable to assess whether or not it was appropriate for use. It was found that in the three industries, income cannot be explained by the normal logistic distributions, as these two probability distributions give negative income. The pareto, exponential, and weibull distributions can be used to explain the income of the three industries, but they were not the best fit as the maximum number was presented as infinity. The result from the fitting function shows that the lognormal distribution cannot explain the income of the gift, specialty and novelty shop industry at all. For the cost of goods sold for

the three industries, the normal and logistic distributions cannot be used, as they give a negative number. This presents an unrealistic situation, since the cost of goods sold and other expenses cannot be negative. In this study, both income and all kinds of expenditures can be explained by the uniform and triangular distributions. As mentioned in many studies, these two probability distributions are widely used to describe cost and expenditure in business.

According to the Monte Carlo simulation results, the empirical findings show the probability of firm performance of businesses in the three industries. The histograms give the upper and lower bounds of net profit, with the possibility of having negative net profit in each industry. From the overall picture, it was found that there was no possibility for businesses in the three industries to finish with a negative net profit. Income is the most important factor behind variations in net profit. The cost of goods sold, occupancy expenses, and wage expenses also have a major effect on firm performance. The fluctuation in plant and equipment expenses was the least important factor in the coffee lounge industry, whereas vehicle and advertising expenses had the least effect on the potential net profit of backpackers and hostels, and gift, specialty and novelty shops, respectively. Like the uniform-shaped distribution, the histograms tend to present a wider range of net profit compared to those with a normal-shaped distribution. It can be concluded that the Monte Carlo method is applicable and can provide indications for businesses regarding future performance.

Although the Monte Carlo approach is helpful for estimating the performance of businesses, it has some limitations related to probability distribution and input parameters. There is no agreement on how to select probability distributions, so the differing selection criteria may yield different results. This study has specified only 11 input factors for running the simulation. The results might be more accurate and reliable if more indicators could be considered (Carmines & Zeller, 1979).

However, this study does not stipulate which probability distributions are the best fit for predicting business success in our three business cases. Even the estimated potential net profit is simply a result that shows the critical importance of the financial model to be built, especially if wanting to determine whether or not the concept of symbiosis should be adopted by the business community. Rather, the theories incorporating the concept of symbiosis have been merged with the

simulation study in order to carry out further implementation and evaluation in the financial field. This study provides justification for the empirical test which draws on the literature to suggest the nature of the connection between the concept of symbiosis and firm performance. Further field work can establish how important they are (see Chapters 6, 7, 8). More importantly, it will be worthwhile if business owners apply the idea of working together, cooperating, associating among themselves in symbiotic ways in their own practice, then receiving mutual benefits and being sustained in the long term.

5.4 Conclusion to the chapter

The most important aim in this chapter has been to clarify the research question: how can a good signalling model be created in order to improve the risk and return position of MSMEs? Information is provided about MSMEs, particularly the overall picture of New Zealand MSMEs. As a majority of them face uncertain situations, it is important to realize the key factors causing fluctuating business performance. More importantly, it is significant to discover how different techniques can be applied to forecast financial gains which are affected when adopting the concept of symbiosis.

To understand what the effect of symbiotic relationships among small businesses may be, a financial model should be created. According to Charnes (2007), creating financial models of potential performance can be initiated by making the best guess at the most likely value for each of the key factors affected by the symbiotic relationships, then building a spreadsheet model to calculate the output resulting from those values. This 'what-if' analysis displays the sensitivity of outputs one at a time. One limitation of this method is that there are no estimated probabilities for an alternative range of inputs since these are static values. Consequently, the outputs are calculated from those fixed numbers (Khindanova, 2013).

Another way to examine how uncertain factors affect firm performance is to use scenario analysis. This procedure generates a best/worst case scenario: best case, most likely case, and worst case for each input variable. To calculate the best case scenario, all uncertain values can be specified by using the best value (Charnes, 2007; Mckee, 2014). Alternatively, the worst situation can be analysed by using the worst value for all indicators and using the base value of the input factors to

calculate the most likely scenario. The output of the analysis will be presented within the range of possibilities. Both what-if and scenario analyses are generally used to examine the effect of uncertain factors. However, it is argued that these methods create some difficulties in calculating the probability of outputs when all inputs are varied at the same time. In summary, neither what-if nor scenario analyses can determine the likelihood of output values which fall between the extreme points (Brealey, Myers, & Allen, 2011; Charnes, 2007).

Several scholars assert that the Monte Carlo approach can deal with these limitations. Therefore, this chapter focuses on this technique, and uses it to evaluate the potential profit of firms in three industries: the coffee lounge industry, the backpackers and hostel industry, and the gift, specialty and novelty shop industry. The chapter focuses mainly on merging the concept of symbiosis with a financial model, then evaluating the result from a financial perspective. Although the simulation results show different models of potential gains in different industries, the empirical findings from running simulations point to the importance of collecting real data from fieldwork. The next chapter demonstrates the survey instrument and gives an explanation of the fieldwork undertaken in this study.

Chapter 6: Survey instrument and fieldwork analysis

6.1 Introduction

This chapter describes the survey instrument and fieldwork analysis: data collection process and methodology. Fieldwork is important for investigating the impacts of symbiotic relationships on the performance of micro-, small and medium enterprises (MSMEs) which can complement the findings obtained through the use of simulation models (see Chapter 5). The survey instrument informs sampling procedures and samples from the fieldwork study. This is followed by a description of how primary data are prepared for analysis, and an explanation of the diagnostic tests appropriate for this type of data. The chapter provides an explanation of the variables used for bivariate and multivariate analysis. In contrast with some previous research, this study uses real samples from the field to specify control variables which can enhance the validity of empirical results. In the chapter, various data analysis techniques are explained.

The selection of methodology, analytic approach are discussed in detail in Chapters 4 and 5.

6.2 Data Collection Process

6.2.1 Sampling procedure and sample size

The total of 1,071 MSMEs in the Cambridge area comes from the number of MSMEs in Cambridge North (213), Cambridge West (267) and Cambridge centre (591) (See Appendix B). By applying Yamane technique, at six percent of margin of error, the samples are 220 MSMEs (Yamane, 1967). From the fieldwork, the 200 samples from face-to-face surveys were available to investigate the impacts of symbiotic relationships on the changes in MSMEs' net profit and firm growth. The investigation uses a cluster sampling technique in which the total sample is separated into several industrial (division) clusters. A simple random technique was selected, and the respondents were MSME owners who operate businesses in

different industries categorized by ANZSIC³. The sampling area is Cambridge, New Zealand. As a small town, location proximity and the support from local trade associations and network groups enable many business owners to become acquainted with each other (New Zealand Chambers of Commerce, 2017). The local economy drives the growth of MSMEs in the town directly. The assumption is that this environment can indirectly motivate local business owners to leverage the benefits of interconnection between different entities. It enables the MSMEs to connect and cooperate as business partners.

The data collection used questionnaires which were approved by the University of Waikato Ethics Committee, and the survey was open from 9 February to 3 May 2017. It consists of closed- and open-ended questions which aim to ascertain lists of names or industries to which individual firms are connected, the number of banks with businesses contacts, duration of bank relationships, and advantages of interrelationships among different entities (See Appendix C). Some previous studies mention that the higher the density of connections among business owners, the higher the survival rate of the firm (Rank, 2015), therefore this study uses the frequency of entrepreneurial interactions as reflective indicators for interfirm relationships. This is in line with the study of Rejeb-Khachlouf, Mezghani and Quélin (2011) who use the frequency of interaction to define the strength of business ties.

6.2.2 Administration

Administration of the study explains how fieldwork study proceeds. It is divided into three sections; before data collection, during data collection and after data collection.

³ According to ANZSIC, our samples are firms operating in different industries; 1. Manufacturing, 2. Electricity, Gas, Water and Waste Services, 3. Construction, 4. Wholesale Trade, 5. Retail Trade, 6. Accommodation and Food Services, 7. Transport, Postal and Warehousing, 8. Information Media and Telecommunications, 9. Financial and Insurance Services, 10. Rental, Hiring and Real Estate Services, 11. Professional, Scientific and Technical Services, 12. Health Care and Social Assistance, 13. Arts and Recreation Services, and 14. Other services (Repair and Maintenance, and Personal Services).

6.2.2.1 Process: Before data collection

Before data collection, administration is important for attracting potential participants and eliminating ethical problems. A chief executive officer and team members of Cambridge Chamber of Commerce were contacted for recruiting research participants. The research project and data collecting process was introduced during the official meetings, enabling the members to better understand this study. Attending events and workshops arranged by the Chamber provided a friendly environment for meeting with its members, allowing, a researcher and some members of the Chamber to exchange name cards. This provided an opportunity for a researcher make contacts and appointments with the members for data collection in the later stage. With the assistance of Cambridge Chamber of Commerce, emails including the explanation of this study and consent forms were sent to every member. This reduced the rejections from potential participants when a researcher walked into the shops, enabling data collecting to work effectively.

A pilot test was made before the primary data was collected in order to check the validity of questions. The questionnaires were distributed to students studying at the University of Waikato and the business owners who run MSMEs in Hamilton. Some questions containing vague meanings were changed to make them clearer, while still following the research objectives.

For ethical approval, the researcher is required to give an explanation of the research and to obtain participants' informed consent without coercion. Participants' privacy and confidentiality are managed during the whole process in order to minimize risks to participants. The research project was granted Ethical Approval by the Waikato Management School Ethics Committee on 10 May 2016 (See Appendix D). Ethical concerns were addressed through additional documentation: cover letter, information sheet, and participant consent form.

6.2.2.2 Process: During data collection

Face-to-face interviews using questionnaires were started after a researcher received confirmation from potential participants via telephone and email. Some participants were interviewed without any such contact, as this group of people were familiar with the research project through attending the events and meetings arranged by Cambridge Chamber of Commerce. For others, the introduction to the

study began when approached in the shop by a researcher who introduced themselves. Participants were given the information sheets and consent forms to sign before the interview. For closed-ended questions, participants were asked to give the answers one by one, then a researcher noted answers on the survey forms. The participants were also asked to give explanations for open-ended question responses. In this part, a researcher paid more attention to making the conversation flow. The conversations between a researcher and participants were recorded throughout the whole process, except where participants were reluctant.

6.2.2.3 Process: After data collection

After the interviews, all consent forms and survey answers including participant information were collected in to Excel sheets before being coded into variables. Through accessing the members of Cambridge Chamber of Commerce, the response rate was high (200 completed questionnaires out of 223).

6.2.3 Data cleaning

Secondary and the primary data need to be checked before analysis. Data cleaning is very important in order to generate high quality data. The data cleaning and editing in this study comprises seven steps: verify and enrich data, export-import data, merge data sets, rebuild missing data, standardize data, normalize data, and de-duplicate data.

Step 1: Verify and enrich data

Identification checking (ID checking)

ID checking is the first step in the data cleaning process. This step is to check the duplication of survey responses and to eliminate repeated identification numbers in the survey (Hernández & Stolfo, 1998). Each survey response has a different ID number, and this can increase the validity and the reliability of the primary data. ID checking helps to protect miscoding data, including the wrong ID number, and mismatching ID. The ID checking process in this study used the computer program SPSS, using the command 'Aggregate' to count the ID numbers in the survey. After running 'Frequency', if 'N_break' shows a value more than 1, it means there are repeated survey responses. In this case, ID survey number needs rechecking against

the questionnaires. However, the value being equal to 1, the survey responses are different from each other, and ready for the statistical analysis.

Random check for missing data

The aim of this step is to check the whole data set. This study uses SPSS command 'Random sample of case' and specifies approximately 10 percent of all cases. If the report shows a low percentage of missing data, it means that the quality of the data set is high. However, if the percentage of missing data is high, each survey response needs to be rechecked. It is recommended to repeat this process until a data set of high quality is attained. Missing data also includes abnormal data which are distributed in non-normal ways. The SPSS command 'Frequencies' can be used to check this. A good quality data set should show normal distribution (bell-shaped curve) (Field, 2009). After randomly checking each survey response, if some responses have considerable missing data, these items should be deleted from the data set. It is important to recheck missing data as a high percentage of missing data leads to small samples that can be used for analysis.

Step 2: Export-Import data

This study imported survey responses to the computer programs SPSS and STATA for statistical analysis. It used the command 'Aggregate' to export data.

Step 3: Merge data

If survey responses are coded and imported to a computer program by different people, these data have to be merged before being analysed. In order to merge variables, each survey response should be arranged from minimum to maximum numbers. The command 'Merge file' requires the same names of variables and ID number of survey cases. Incomplete merging leads to missing systems in the data set.

Step 4: Rebuild missing data

Some missing data can be rebuilt by replacing them with other values. It is recommended that missing data can be replaced by the average value of those variables, the average value of the upper and lower cases, or the median. Alternatively, missing data can be replaced by the average values of other variables. For instance,

if missing data relates to the age of a participant, this data can be replaced by the average age of other participants who have the same education level.

Step 5: Standardize data

In cases where the survey responses have different scales or measurement units, they can have different maximum, minimum and average scores. Not changing the responses to the same unit can cause misinterpretation in analysis. In order to solve this problem, Z-score can be used to replace those values with different measurement units.

Step 6: Normalize data

It is important to do the normality test, especially for parametric statistics. This is for checking whether the data is normally distributed. High skewness and kurtosis of non-normally distributed data can lead to misinterpreting the associations and significance of the tests. There are several ways to check the normalization of continuous data, for example, Shapiro-Wilk test, Histogram, Normal Q-Q plot, and Box plot (Lomax & Hahs-Vaughn, 2013). Checking skewness and kurtosis of a data set is one of the methods for checking data normality (Bowman & Shenton, 1975; D'Agostino & Pearson, 1973). If these two indicators are equal to zero, then the data are normally distributed. However, if the indicators are more than three, then the data is not normally distributed. If the data are highly skewed they can be transformed by using negative reciprocal root, log, square, square root and cube (Bernard, 2013). In order to test normality of categorical data, the frequency of each category should not be too different. If some categories have significantly less frequency, this group should be combined with other categories. The frequency of each category should be close to the average value. It is recommended to delete some questions which generate too high a level of frequency as there is no variance in those data (Zhou, 1996).

Normality testing also includes checking for outliers. Outliers can generate inaccurate results (Stock & Watson, 2007) and have inordinate effects on statistical analysis. Outliers can be checked by plotting a Boxplot graph, and a Scatter/dot graph to see how the data is distributed (Berkman & Reise, 2011).

Step 7: De-Duplicate data

It is normal that data collected are overwhelming. In order to select data for analysis, some data need to be de-duplicated. This process includes recoding, computing and aggregating. There are different techniques for this, for example creating dummy variables, taking log, using quadratic terms, square root and cube.

6.2.4 Assumptions and diagnosis tests

This study uses several tests to check the quality of the data. Before statistical analysis, a number of assumptions were tested: collinearity/ multicollinearity, normality, and homoscedasticity. The study describes several tests used to check these assumptions.

Collinearity and multicollinearity

There are similarities when talking about collinearity and multicollinearity. The former occurs when one independent variable highly correlates with another. However, the latter occurs when more than one independent variable highly correlates with other independent variables. In multivariate analysis, especially before running regression, it is important to test whether independent variables correlate highly with others. Ignoring the collinearity and multicollinearity among variables could lead to misinterpreting the results.

This study uses correlation coefficient > 0.80 to indicate collinearity and multicollinearity between independent variables as the sample number is small (Berry & Feldman, 1985). VIF more than 2 is also used to specify multicollinearity after multivariate analysis (Morris & Lieberman, 2012; Tabachnick & Fidell, 2007), particularly in PLS-SEM (see Chapter 7).

Normality

Normality of data can be tested by the Shapiro-Wilk test, Histogram, Normal Q-Q plot, Box plot, skewness and kurtosis. However, the primary data used in this study is categorical data. Although this study uses ordered logistic regression which does not require the linearity and normality assumption of independent variables, the frequency of each category was checked. Some categories with low frequency of samples were merged with upper level categories to enable sensible interpretation.

Homoscedasticity

Homoscedasticity explains when the variance of an error term is constant. The unequal variance of an error term generates heteroscedasticity which normally occurs in cross sectional data collected by observing outcomes at the same time (Stock & Watson, 2007). There are several reasons for heteroscedasticity. A change in external factors can affect internal factors. For example, an increase in the minimum wage offers more opportunity to people to spend money, and as a result increases the error of variance. The development of data collecting techniques reduces errors and the variance of error. There are a number of methods used to check heteroscedasticity of data: Breusch-Pagan test (Breusch & Pagan, 1979), and Goldfeld and Quandt's test (Carapeto & Holt, 2003; Goldfeld & Quandt, 1965). This study adopted the Breusch-Pagan test to check the primary data under the null hypothesis of constant variance. If the test shows a p -value less than 0.05, the null hypothesis is rejected. This shows that data is heteroscedastic.

6.3 Methodology

This section explains the methodology adopted in this study. It begins with the description of variables and explains how each variable is specified. Using closed-ended questions and open-ended questions, the participants' responses are transformed as dependent variables and independent variables. This section presents how control variables are specified, then, explains data analysis technique applied for evaluating the findings.

6.3.1 Variables

Table 6-1: Description of variables

Variables	Description and method of measurement	Acronym
Dependent variable		
Change in net profit	Change in net profit of a firm in the last 12 months of 2016. 1=Makes a loss 2=Makes no profit 3=Gains some profits 4= Gains significant profits	NP

Growth of firm	Changes in the number of employees in the last 12 months of 2016. 1= Decrease 2= No change 3= Increase	GROWTH
<hr/>		
Explanatory variables		
<hr/>		
Characteristics of business owners		
<hr/>		
Age of business owner	Age of the business owner who control a business. 1=less than 40 2= 41-60 3= More than 60	OWNER_ AGE
Gender of business owner	Gender of the business owner who controls a business. Dichotomous variable in which GENDER is equal to 1, the owner is male; 0, otherwise	GENDER
Nationality	Nationality of business owners. Dummy variable, 1 if an business owner is local; 0, otherwise *Local means business owners are New Zealanders	NATION
<hr/>		
Firm attributes		
<hr/>		
Age of firm	Measured by the number of years that it has been operating. 1=Less than 1 year 2= 1-5 years 3= 6-10 years 4= 11-20 years 5= More than 20 years	FIRM_ AGE
Size of firm	Number of both full-time and past-time staff currently hired for running the business. 1 =Less than 5 employees (micro) 2=6-9 employees (small) 3= More than 9 employees (medium)	SIZE
Sector	Main activity of a business. 1= Service	SEC

	2= Non-service	
Location	Geographical location of individual businesses. Dummy variable, 1 if an enterprise is located in the town centre; 0, otherwise	LOC

Symbiotic relationship variables

Connection with banks	Relationships with banks and financial institutions. Relationships include bank transactions which relate to: (a) Daily bank transactions (b) Loan and financial support (c) Financial products and services Participants were asked whether they have these transactions with banks or financial institutions for business purposes. Dummy variable, 1 if participants have at least one activity out of three; 0, otherwise	CON_BANK
Connection with businesses across different industries	Defined as business connections with firms operating across different industries in order to increase a firm's performance. Dummy variable, it equals to 1 if connections with businesses across the different types; 0, otherwise	CON_DIFF
Connections with businesses within the same industry	Defined as the business connections with firms operating within the same industry in order to increase firm performance. Dummy variable, it equals to 1 if connections with businesses within the same type; 0, otherwise	CON_SAME
Frequency of interaction with firms across different industries	Defined as interactions with other business owners operating firms across different industries for business purposes in order to increase firm performance. 1= Never 2= Occasionally (1-4 times/ month) 3= Frequently (more than 4 times/ month)	FREQ_DIFF
Frequency of interaction with firms within the same industries	Defined as interactions with other business owners operating firms within the same industry for business purposes in order to increase firm performance. 1= Never 2= Occasionally (1-4 times/ month)	FREQ_SAME

	3= Frequently (more than 4 times/ month)	
Industrial association	<p>Number of industrial associations which businesses belong to as members.</p> <p>1= 1 association</p> <p>2= 2-3 associations</p> <p>3= More than 3 associations</p> <p>4= Not a member of any association</p>	INDUS_ASSO
Social ability/ skills	<p>Ability to associate with other business owners which affect the performance of the firm.</p> <p>Contains four attributes:</p> <ul style="list-style-type: none"> (a) Social perceptiveness (ability to identify others' emotions and intentions) (b) Impression management (the skill to create the impression on others while connecting with them) (c) Persuasion and social influence (the ability to motivate or change others' opinions or attitudes) (d) Social adaptability (ability to adapt to current situations) <p>Participants were asked if they think they have these skills which have positive impacts on firm performance.</p> <p>Dummy variable, 1 if participants have at least one out of four attributes; 0, otherwise</p>	SOCIAL
Attendance	<p>Explains activities which participants attend.</p> <p>Contains four activities:</p> <ul style="list-style-type: none"> (a) Workshops (b) Training (c) Trade fairs (d) Seminars <p>Participants were asked if they attend these activities.</p> <p>Dummy variable, 1 if participants attend at least one out of four activities; 0, otherwise</p>	ATTEND
Franchise	<p>Operating a business under the regulations or rules of headquarter as a franchisee or following wholesalers as a retailer.</p> <p>Dummy variable, 1 if a business is operated as a franchisee, or if a firm follows the rules or regulations of parent companies or wholesalers as a retailer; 0, otherwise</p>	FRANCHISE

Word of Mouth	<p>Explains referrals among businesses in networks.</p> <p>Contains two attributes:</p> <ul style="list-style-type: none"> (a) Receives referrals from other businesses (b) Gives referrals to other businesses <p>Participants were asked if they receive some referrals from other businesses which are beneficial to their firm's performance, or if they refer their customers to other businesses regarding business activities.</p> <p>Dummy variable, 1 if participants have at least one attribute; 0, otherwise</p>	WOM
Information	<p>Indicates transference of information among business owners in networks and through industrial associations, including the transference of news and regulations created by local authorities and associations which affect the performance of a firm.</p> <p>Contains two attributes:</p> <ul style="list-style-type: none"> (a) Receives information/ news from other businesses (b) Gives information/news to other businesses <p>Dummy variable, 1 if participants have at least one attributes; 0, otherwise.</p>	INFO
Exogenous factors		
Bypass	<p>Represents the Waikato expressway.</p> <p>Participants were asked whether Waikato expressway affects their:</p> <ul style="list-style-type: none"> (a) Income (b) Sales (c) Costs and expenses (d) Number of customers (e) Market distribution <p>Dummy variable, 1 if Waikato expressway affects at least one out of five choices; 0, otherwise</p>	BYPASS
Events	<p>Local or sport events/ fairs occurring in Cambridge which affect the performance of a firm.</p> <p>Participants were asked whether local or sport events/ fairs affect their:</p> <ul style="list-style-type: none"> (a) Income (b) Sales 	EVENTS

-
- (c) Cost and expenses
 - (d) Number of customers
 - (e) Market distribution

Dummy variable, 1 if local or sport events/ fairs affect at least one out of five choices; 0, otherwise

Table 6-1 presents the description of variables. In order to reduce the selection-based endogeneity probability, this study carefully selects the homogeneous samples. Using Cambridge as the case study, the samples of this study are business owners who are members of Cambridge Chamber of Commerce (CCC). This group of people operate MSMEs and have some similarities in terms of networking behaviour and interactivities. Reducing information asymmetry through synergic working as a part of the business community is their main driver to become the members of CCC. Many research studies investigate impacts of business networks in the broad environmental context such as country and international levels; however, such studies demonstrate very little of how signals and information are transferred in specific contexts and cultures. Interpersonal communication also allows a researcher to modify their approach to asking questions from a direct to an indirect approach in order to collect all the answers.

6.3.1.1 Dependent variables

This study uses two indicators to demonstrate a firm's performance: a change in net profit and its growth. These indicators are accessed from self-administered responses showing the participants' perception regarding their business performance. Although many scholars use Return on Equity (ROE) and Return on Asset (ROA) to indicate a firm's performance in large and listed companies, these two indicators are not recorded in many MSMEs in Cambridge. As many are not required to publish financial statements and they do not operate by allocating shareholder equities, the change in net profit and a firm's growth are appropriate for this study. The change in net profit is the categorical variable which is ranked in ordinal scales: making some loss, making no profit, gaining some profits, gaining significant profit.

This study considers the change in net profit over the year 2016 as this year contains a number of significant points. First, the completion of the Waikato expressway in December 2015 had both positive and negative impacts on micro-and small

businesses. Secondly, the reconstruction of the St Andrew's Anglican Church located at the intersection of Hamilton-Victoria-Lake Streets at the roundabout made the traffic flow but caused some loss to the shops around that area during the construction. The iconic pink church on Victoria Street was taken over and converted into a café and restaurant, the Good George Brewery, and became the new symbol of the town and attracted many travellers to stop and spend money in Cambridge. The Cambridge Chamber of Commerce promoted the project 'Love Cambridge' which represents a group of business owners who run businesses in Cambridge and work together cooperatively, and the Chamber retailers' group combining independent stores to promote Cambridge as a destination for a shopping experience.

In addition to changes in net profit, this study uses changes in the number of employees to demonstrate a firm's growth. Growth of a firm can be measured by changes in assets and changes in the number of staff employed during a particular period (Becchetti & Trovato, 2012). In reality, total assets are not recorded by many MSMEs' owners. However, business owners know if they are hiring more staff or decreasing the number of their employees. When firms enlarge their branches, increase their size, launch more products and increase sales volume, they require more staff. However, when their sales drop or when their profit decreases, many of them reduce staff numbers to save costs and expenses. Therefore, this study uses these changes to demonstrate a firm's growth and to indicate firm performance, and the participants were asked whether the number of staff hired had changed in the past 12 months or since they had started operating businesses.

6.3.1.2 Independent variables

Variables relating to Owner Characteristics

This study uses three independent variables to explain characteristics of business owners: age of business owner (OWNER_AGE); gender of business owner who has the main control (GENDER); and nationality (NATION).

Variables relating to firm attributes

This study uses four indicators as independent variables: the number of years that a business owner has been operating a business (FIRM_AGE); firm size (SIZE), number of employees (full-time & part-time) currently working in a firm; main

activity of a business (SEC), categorised into service and non-service sector where the latter comprises manufacturing firms and trading businesses; and location of a firm (LOC), within or beyond Cambridge's town centre.

Variables relating to symbiotic relationships

Some variables indicate the range and intensity of networks (John, 2007). Network range is measured by connections with other businesses within the same industries (CON_SAME), across different industries (CON_DIFF), and the industrial associations which businesses belong to. Network intensity is demonstrated by the frequency of interaction with other businesses within the same industries (FREQ_SAME), and with businesses across different industries (FREQ_DIFF). Regarding network range and intensity of personal connection, business owners were asked whether their businesses have connections with others for business purposes (Bengesi & Le Roux, 2014), and frequency of their interaction with other businesses. The self-conducting data approach provides an opportunity to explore those connections.

The variable CON_BANK explains whether a firm has some interactions or transactions with banks or financial institutes for business purposes. The participants were asked whether such connections offer benefits for their firm's performance. Mitchell and Ranharam (1994) mentioned that connections with banks and financial institutes for small businesses can take the form of raising a loan, buying financial products, purchasing a variety of financial services, and maintaining cheque and savings accounts. Banks and other creditors can monitor cash flow of small businesses by checking on bank transactions. Previous studies argue that the strength of relationships between small businesses and banks is measured by the number of bank contacts in daily business transactions (Ongena & Smith, 2000). If a business contacts many banks for business purposes, the relationship with those banks will be weaker than those having connection with only few banks. Farinha and Santos (2002) argued that having a single relationship with just one bank increases a bank's monopolistic power which leads to difficulty in seeking financial support from other financial institutes. MSMEs contacting several banks can face adverse selection and moral hazard problems (Detragiache et al., 2000). Whether several contacts or few, the relationships between businesses

and banks will be stronger if business owners attain some financial services from banks (Fararah & Al-Swidi, 2013).

The variable *INDUS_ASSO* represents the number of industrial associations to which firms belong as members. Inmyxai and Takahashi (2010) argue that being part of trade or industrial associations indicates networking. Many MSME owners trade-off between the times spent in social networking and financial gains received from investing time in self-operated businesses.

The variable, *SOCIAL_ABI* represents social abilities or skills for associating with other business owners for business purposes which affect a firm's performance. Social skills are important elements for individuals to interact with others. Personal characteristics, such as effective communication skills, are important for developing network relationships (Johannisson, 1988). After reviewing the literature regarding symbiotic relationships, the study focuses on the social abilities of business owners that offer advantages for their businesses. Baion and Marfeman (2000) found that there are four social skills which are important for networking: social perceptiveness, the ability to identify others' emotions and intentions; impression management, the skill to create an impression on others while connecting with them; persuasion and social influence, the ability to motivate or change others' opinions or attitudes in relation to a desired goal; and social adaptability, an ability to adapt to the current situation.

The next variable is *ATTEND*, involving participation in workshops, training, formal meetings and seminars organized by particular groups, clubs, associations, organizations, or corporations. The literature argues that participation in these activities is critical for the formation of networks, and can help to build relationships with external groups of people (Carroll & Teo, 1996; Dodd, 1997; Donckels & Lambrecht, 1995; Szarka, 1990). Scholars suggest that this participation allows business owners to exchange and access information with different people, further increasing opportunities to find business partners, contractors, intermediaries, and clients (Premaratne, 2002). The business owners were asked whether they had attended any workshops, training or meetings with any groups or associations in the last 12 months. The results were various, but this study only focuses on attendance which had positive and direct impacts on financial gains. The positive impacts on a firm's performance could lead to an increase in income, number of customers, or

marketing channels. The benefits could help firms to reduce associated costs and expenses in businesses.

The variable WOM (word of mouth) relates to information passed from person to person by oral communication, indicating relationships among different entities in the symbiotic environment. It can provide signals to other parties of opportunities and uncertainties in business networks, and from a financial perspective, word of mouth from one buyer can increase the number of customers through referrals (File, Judd, & Prince, 1992; Kumar, Petersen, & Leone, 2010). Insiders with more information on certain points can transfer this to outsiders who may have limited knowledge about products and services. Word of mouth is one of the important elements in transferring news and information in symbiotic relationships among businesses, particularly in weak-tied relationships (Rogers. E. M, 1995). Brown and Reingen (1987) support Granovetter's (1973) view that the strength of weak ties in unclose relationships between individuals tends to generate the spread of word of mouth communication in a network. Regarding the costs and expenses of running a business, referrals from one person to another is a cost-free way of advertising and promoting products and services (Burke, 1996). This study focuses on the referrals generated from business owner to business owner in the network. Word of mouth in business networks is associated with the network intensity among businesses in Cambridge as the higher the frequency of referral, the higher the network intensity.

The variable FRANCHISE indicates businesses that work under the control of headquarters or follow wholesalers' regulations that affect the performance of a firm. Another factor that can impact on a firm's performance is information (INFO). Information is important for running business. MSMEs tend to have higher costs of accessing information than larger firms. However, previous studies state that networking is positively associated with cost-effective information access (Hanson & Blake, 2009).

Exogenous variables

The variable, BYPASS represents the Waikato expressway. It is one of the signals indicating the development of economic growth. Many MSME owners in Cambridge face uncertainties from the existence of the expressway. Some choose

to hedge against fluctuating return by building connections with other local business owners; however, some invest money in renovating business sites and improving the quality of products. While the latter tends to follow the concept of high risk, high return, the former applies the concept of symbiosis to leverage the mutual benefits. Either way, the impacts of this bypass are evident. Therefore, participants were asked whether the Waikato expressway affected their incomes, sales, costs and expenses, customer numbers, market distribution.

Due to the information asymmetry, local MSMEs may lose the opportunity to increase financial gains if they do not actively seek information about local events, and trade fairs. Active investors are more likely to look for the opportunities which can increase their business value, updating information about upcoming events so they can optimise their resources. This study uses the variable EVENTS to represent local and sporting events/fairs occurring in Cambridge. Participants were asked whether local or sport events/ fairs occurring in Cambridge affect their incomes, sales, costs and expenses, customer numbers, and market distribution.

6.3.1.3 Control variables

The following section discusses ideas that have emerged from previous studies regarding different types of interaction among business owners, and links among businesses that can affect the performance of firms. This study uses 200 samples collected in the field work in order to specify the confounding variables affecting the relationships between independent variables and the net profit of a firm (Chow, 2006). The frequency of interaction with businesses across different industries was examined to check the differences of these frequencies when looking at the gender and age range of business owners. This study also investigates whether businesses operating in different sectors, and the number of years during which businesses were operating is associated with network intensity, as these can affect performance of firm differently.

Age of business owner

The first variable which can affect a firm's performance is the age of an business owner, which Premaratne (2002) argues has a significant effect on entrepreneurial social networks. Business owners in the different age ranges interact with others differently, and this can impact on the performance of a firm (Greve & Salaff, 2003).

In networking, young business owners tend to participate in closed networks of family and friends as open networks that include more diverse entities are limited (Turner & An Nguyen, 2005). They are more likely to socialise with business owners other than older-aged business owners, as the younger generation are risk seekers and more open to finding new opportunities from outsiders. Apparently, younger people are enthusiastic about being involved in all areas of business activities which can increase opportunities to operate businesses successfully (Karima & Peter, 2012), therefore many are keen to participate in workshops or training organized by the groups or industrial associations to which they belong. Older people have smaller entrepreneurial social networks than younger people. Young business owners have less work experience, so they need to discuss their business matters when they have social networks. They tend to use technologies to contact others which shows some signals regarding how active they are. Some previous studies note that older business owners tend not to participate in networks or socialise with other business owners. They are risk averse and more conservative in financial decision-making. Physical challenges experienced by many older people have a strong negative impact on every kind of activity, including social interactions, which can limit frequency of social participation (Aleksej, Ineke, & Thomas, 2002; House, Landis, & Umberson, 1998) and the opportunity to access beneficial information for enhancing a firm's performance.

In contrast, younger business owners tend to have more limited networks than older groups. As young business owners have operated businesses for a shorter time, they know fewer business owners with whom to exchange ideas or mutual help to achieve business purposes. Donckels and Lambrecht (1997) stated that young business owners who had operated businesses for less than 10 years are more likely to attend seminars or workshops. Older business owners like to participate in informal and casual meetings rather than formal associations.

Table 6-2 shows the frequency of interaction with businesses across different industries is different. This study found that the business owners who were less than 40 years old have a lower frequency of interaction with the business owners from the different industrial types while those who were more than 60 have a higher frequency of interaction. The *P*-value is 0.0751 for the association between the age of a business owner and the frequency of interaction in firms across different

industries. This *P*- value is lower than 0.10, so the null hypothesis is accepted (Bernard, 2013; Field, 2009). This indicates that there is a significant difference between the age and frequency of interaction with firms across different industries, at 10 percent significance level. Therefore, the variable, age of a business owner, can be used as a control variable.

Table 6-2: Participation response: Network intensity among businesses from different industries

Variables	Frequency of interaction with businesses from <i>different</i> types of industries			Chi sq. (sig)
	Never	Occasionally	Frequently	
<i>Business owner characteristics</i>				
<i>Age</i>				
Less than 40 (n=61)	36.1%	23.0%	41.0%	0.1261* (0.0751)
41-60 (n=94)	16.0%	31.9%	52.1%	
More than 60 (n=45)	22.2%	24.4%	53.3%	
<i>Gender</i>				
Male (n=89)	25.2%	24.3%	50.5%	-0.0048 (0.9460)
Female (n=111)	21.3%	31.5%	47.2%	
<i>Nationality</i>				
Local (n=170)	23.5%	27.1%	49.4%	0.0134 (0.8503)
Foreigners (n=30)	23.3%	30.0%	46.7%	
<i>Firm attributes</i>				
<i>Age of firm</i>				
Less than 1 year (n=9)	33.3%	22.2%	44.4%	0.1199* (0.0909)
1-5 years (n=30)	30.0%	30.0%	40.0%	
6-10 years (n=62)	19.4%	35.5%	45.2%	
11-20 years (n= 56)	23.2%	30.4%	46.4%	
More than 20 years (n= 43)	23.0%	28.0%	49.0%	

Firm size				
Less than 5 employees (n=130)	27.7%	26.9%	45.4%	0.1395** (0.0488)
6-9 employees (n=27)	22.2%	29.6%	48.1%	
10-19 employees (n=43)	11.6%	27.9%	60.5%	
Sector				
Service (n=105)	20%	30.5%	48.5%	0.0192 (0.7872)
Non-service (n=95)	26.3%	24.2%	49.5%	
Location				
In the city (n=116)	22.4%	29.3%	48.3%	0.0000 (1.0000)
Out of the city (n=84)	25.0%	25.0%	50.0%	

Note: *Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

Gender of business owner

Some scholars (Swamy, Knack, Lee, & Azfar, 2001) mention unequal ethical and moral standards in financial circumstances that female business owners face. Gender difference is not only linked to their financial decision-making, but also relates to networking behaviours and firm performance. The second potential control variable is the gender of a business owner.

Many studies state the differences in gender behavioural characteristics and examine the roles of males and females. In the past, many females had responsibility for domestic duties, such as childcare and household work, which can result in having fewer networks than males (Cromie & Birley, 1992). It has been found that networks among female business owners are different from those among male business owners (Popielarz, 1999; Runyan, Huddleston, & Swinney, 2006), and female networks tend to be limited, mainly among females and their families or friends (Munch, McPherson, & Smith-Lovin, 1997). Many female business owners use their spouses as their first advisors, with families and friends as the second sources (Orhan, 2001). Female business owners are more likely to include their family members and kin in their networks while male business owners tend to associate with external specialists (Greve & Salaff, 2003). The reasons networking among female business owners is more limited than that of male business owners

is because of role models in social networks. Female owners are less likely to be acquainted with others (Klyver & Grant, 2010) and lack suitable and effective social networks (Benschop, 2009), so they tend to receive less benefit for enhancing firm performance and for financial decision-making.

In contrast, a number of male business owners consider external sources, such as professional experts, financial planners and advisers, as the first source to acquire information, then use their spouses as the second source. Shayegheh and Thomas (2010) argued that male business owners have broader networks than female business owners who tend to socialise with others in private environments. Many businesses can increase their sales, profits, and reduce costs and expenses after receiving advice from professionals, such as accountants and lawyers, who have specialist knowledge. In their approaches to interaction, male business owners tend to be direct while females tend to be indirect. Straightforward conversation can be beneficial as it is precisely focussed on the point, especially for cooperatively solving business problems on a daily basis and sharing information.

The associations among female business owners are more likely to build authenticity, honesty, care and sympathy with many females contributing these skills from the relationships between their mothers (Chodorow, 1978) while males tend to self-determination. Therefore, networks among female business owners offer a sense of connection and generate emotional support which can exist over a long period. In contemporary times, many females undertake the main role in running a business, so they have more opportunities to participate in networks or meet other business owners.

After initial testing, results show that the frequency of interaction among businesses is not associated with gender (see Table 6-2). Therefore, a variable representing gender of business owner was included as an independent variable. The percentage of personal interaction among MSME owners in Cambridge is similar in both genders for several reasons. It could be because of the awareness of information asymmetry found in imperfect market conditions. Business owners could realise that signals transferred from interactivities and social connections can help them to anticipate uncertain situations and to plan for diversifying those risks through symbiotic conditions. Another reason could be that most of the sample participants are members of Cambridge Chamber of Commerce, so they tend to know each other

better than those who are not. Trust among different stakeholders drives synergic working in both genders.

Nationality

Nationality is a variable which may be controlled in a regression model. Previous studies suggest that people from the same background culture tend to associate with each other, and that closer relationships exist among business owners who have studied at the same educational institutions. McPherson, Smith-Lovin and Cook (2001) found that a high frequency of contact is found among similar people rather than people who are heterogeneous. They used the term 'Homophily' to signify this. People from different nationalities have various cultures to share with others, so can receive demographic opportunities from those connections (Fischer, 1982). Louch (2000) found confidence about connection is higher among people who come from the same environmental background than those who do not share any similarities. In a business start-up period, many business owners face challenges in operating businesses, particularly in overseas countries. Many countries have boundaries in terms of taxes and regulations which non-local business owners have to face. Some business owners use the benefits of network connections to help them with these matters, especially connections between ethnically similar people. These relationships could begin at the personal level, then build to a business level. Many newcomers rely on people who have been operating businesses in that area previously.

From the sample, it is found that local and non-local business owners have the same intensity of interaction with others. Therefore, nationality cannot be used as the control variable, so it is included in the regression model. The reasons frequency of connection does not associate with the nationality of business owners could be because of the convenience in interacting with each other. Cambridge, as one of the high economic growth towns, has many foreigners moving in to operate businesses. Diverse community backgrounds, yet under an English cultural environment, enable both local and non-local business owners to engage with each other easily. Location proximity in this small town offers the opportunity to every business owner to interact and make personal connections with each other.

Age of firm

A firm's age is a variable which could be a complicating factor. Scholars highlight some interesting points relating to firm age and performance. Networking in firms can change over time when business owners gain more information and experience (Sullivan Mort & Weerawardena, 2006).

Previous studies state that social networks are helpful for young firms to develop their performance and reputation, and access information and resources (Lechner, Dowling, & Welppe, 2006). Both young and old firms require networking, which is equally important for both groups (Brüderl & Preisendörfer, 1998). However, networking tends to be more critical for young firms as young businesses are more likely to seek more advice from external advisors in the early stage (Stuart & Sorenson, 2003) as external sources give low-cost links to critical resources, especially when there are strong ties between entities (Starr & MacMillan, 1990). The close relationships between young firms (less than 3 years in operation) can generate greater profitability than the connections between older firms (Aldrich, Rosen, & Woodward, 1987). However, networking becomes less important when business owners move from establishment to growth and maturity (Brush, 2006).

However, some studies mention young recently established firms are less likely to have business partners than old well-established firms as those have more financial stability. Business owners who manage their businesses for a long time tend to connect with other businesses as partners, and have stronger connections than those who have managed businesses for a shorter time.

Old firms which have operated for more than 20 years have the highest percentage of regular associations with other firms across different industries, at 49 percent; while young firms which have run for less than one year have the highest percentage of no interaction, at 33.3 percent (see Table 6-2). As the frequency of interaction with other businesses is different depending on firm age, the variable representing firm age was eliminated from the regression model.

Firm size

Compared with large firms, small businesses with a smaller number of employees benefit more from external information accessed by networking with other entities, particularly the benefits gained from regional knowledge networks (Almeida & B.

Kogut, 1997). Mark (2004) also found that the impact of networking is important for micro-manufacturing firms having 1-4 employees. However, for non-manufacturing firms, networking is critical for medium enterprises hiring 5-19 employees, and large firms that have more than 100 employees.

There is a relationship between firm size, and range and intensity of network. Interconnection among top managers and people outside an organization is important for accessing relevant information (Fischer & Reuber, 2003), and has competitive advantages for firms (Barney, 1991). However, opportunity for participation could depend on the number of staff. Donckels and Lambrecht (1997) found that business owners operating large businesses with many employees participate more in seminars than those operating small firms. The trade-off between investing their own time for networking and spending more time in decision-making tasks may not be risky and create financial burdens as they have sufficient manpower to work for them. Many business owners have less time for participation and social connections with others if they do not have any employees. These owners are in charge and have to perform all duties in small companies, so, the level of participation and interaction with other business owners is lower.

Although some studies argue that having time to socialise is not associated with the number of employees but depends on individual interest, the 200-strong sample shows that interaction among businesses changes over time. Micro-firms hiring fewer than five employees have highest percentage of no interaction with other firms across industries, at 27.7 percent (see Table 6-2). The study found that different-sized firms have different intensities of association with other businesses across different industries. The samples show firm size can be used as a control variable.

Sector

Many studies mention firm performance is associated with business sectors, as connections between businesses in the trading sector and the service businesses can be different. Donckels and Lambrecht (1997) found that business owners operating service businesses have a higher frequency of seminar attendance than those operating trading and manufacturing businesses. They also found that for receiving advice, business owners who operate service enterprises have less contact with

family members and relatives as they are more likely to contact external advisors in the early stages of business operation. A service business can be increased more quickly than in operating manufacturing and trading businesses, so the frequency of interaction with other entities, particularly in weak-tied relationships, is different. Generally, business owners are familiar with other owners in the same type of business, particularly businesses located in the same area which receive some reciprocal benefits from geographic proximity (Hoekman, K. Frenken, & F. Van Oort, 2009; Weterings, 2005). While business owners whose businesses are located on the same street could have more interaction with others during business hours, the business owners who run service businesses tend to have less chance to interact with other business owners, particularly home-based firms which do not require physical sites. Home-based service businesses may gain fewer benefits of face-to-face interaction with other business owners. This could affect the rapidity with which trust is built, as trust can be created faster when individual parties have higher frequency of interaction (Gilly & Torre, 2000). Many business owners in service businesses and those running businesses at home contact others for business purposes via an intermediary, such as the telephone. Informal interaction in terms of dropping into other shops can make the ties between individual entities stronger, and result in all kind of benefits for businesses (Uzzi, 1996).

There are different types of entities associated with businesses in trading and service sectors. While businesses in trading sectors normally contact wholesalers, vendors, retailers, and middle men, these connections seem to be fewer in service business. In trading relationships between supplier companies and buyer companies, trade credit plays a more important role for business transactions, financial plans and financial access.

In firm growth and organizational development, human factors differ according to industry types. Businesses have different characteristics and various management styles, so their relationships with other firms across different industries vary. For example, cooperation between tour companies and hotels offer mutual benefits in terms of increasing income and customer numbers (Novelli, Schmitz, & Spencer, 2006). There are reciprocal benefits that arise from the cooperation between restaurants and tour companies when businesses in both industries work together to increase their earnings. In the case of some tour companies, tour guides collect a

commission or fringe benefits from the restaurants after bringing in tourists, while the restaurants can increase customer numbers and sales (Dahles, 2002). It has been found that connections among businesses within the same industry positively relate to firm performance. This is found in pharmacy businesses having connections with external health advisors which can increase their firm performance (Kent, 1994). The frequency of contact or the intensity of interaction is various, depending on different types of businesses. Whether homogenous or heterogeneous relationships, a diversification of market distribution and returns can be found when firms cooperate with each other.

The sample shows that businesses in service and non-service sectors have a similar intensity of interactions with other firms (see Table 6-2) as there is no statistical significant difference between sectors and the frequency of interaction with businesses across different industries. Therefore, sector cannot be used as a control variable, and it is included in the regression model. The similarity of frequency of personal interactions between business owners operating businesses in service and non-service sectors is probably because they operate businesses under similar economic conditions. When the local economy is improved because of incoming visitors from other areas, particularly during the local fairs and events, both service and non-service business owners have equal opportunities to accumulate profit and retain their earnings. This similarity affects the available time for social interaction of every business owners. When the town faces threats, for instance during the bypass building and road construction, both service and non-service business also experienced similar impacts which could stimulate business owners to interact with each other to diversify risk associated with this.

Location

Location is the last variable checked to examine whether it could be used as a control variable as many scholars mention the benefits of geographical proximity for small firms. While distance between firms can associate with their interactivities, distance between firms and banks or financial institutes affect financial transactions (Degryse & Ongena, 2005). However, there is no statistical significance between the frequencies of interaction among firms across different industries, the result of Chi-square test shows high p -values of 1.0 (see Table 6-2). This means business owners who operated businesses in the town centre and those beyond the town

centre have the same intensity of interaction. Therefore, the variable representing location was included as one of the independent variables in a regression model.

The similar frequency of connection among business owners operating firms in the town and those operating out of the town could reflect the equality to be developed under similar regional policies. Waipa District Council set Cambridge as one of the growth cells and developed many areas around the town. This offers the opportunity for improvement to MSMEs operated both in and beyond the town centre. Financial decisions made by local authorities to develop their local economy create similar impacts for every individual enterprise. This indirectly relates to social connections between business owners. The time for making social contacts and having business connections for leveraging mutual benefits and hedging against risks is associated with the scenario of the town.

6.3.2 Data analysis techniques

6.3.2.1 Descriptive analysis of data

Descriptive analysis of data is a univariate analysis technique. Descriptive statistics describe the data and make them more suitable for further analysis. Descriptive statistics can be used to check whether the data is distributed normally. They are useful as they inform the quality and significance of data. This technique seeks three types of indicator: frequency (indicates the percentage of data); central tendency (measured by mean, median and mode); and measurement of variation) presented by range, quartile, deviation and standard deviation (Bernard, 2013; Field, 2009). Normally, central tendency and measurement of variation are used together to investigate outliers or extreme cases which are not useful for the analysis.

6.3.2.2 Inferential analysis of data

Inferential analysis of data includes bivariate and multivariate analysis techniques used to investigate the relationships between dependent and independent variables (Bryman, 2012). This study used cross tabulation, chi-square, Spearman correlation, pair-wise correlation, and ANOVA for bivariate analysis. Ologit and PLS-SEM were used for multivariate analysis.

Cross tabulation

Cross tabulation analysis, or contingent table analysis, is a flexible method for analysis of any pair of variables. It is similar to a frequency table; however, a contingent table allows two variables to be analysed concurrently. A contingent table shows the relationships between those variables in the form of a percentage or frequency (Bryman, 2012). Normally, chi-square is used with cross tabulation to identify the statistical significances between dependent and independent variables. If there are no relationships between variables (the variables are independent), the results of a statistical test will be 'non-significant'. In this case, the null hypothesis is accepted which means there is no relationship between variables (Qualtrics, 2011).

Chi-square

This analysis is used with three main purposes: to inform the quality of the fit between frequency of variables in one group and their expected values; to test for homogeneity between nominal scale data with two sets of different information; and to test relationships between two groups of variables. It informs how one group of factors is associated with another group. If the result shows significant relationships, there are no relationships between two groups of variables. In order to use chi-square, variables should be nominal or ordinal scale data. It requires these two groups of data to be independent of each other. Chi-square has some limitations. It is sensitive to the size of the sample. If the size is large, a relationship between these two sets of variables is normally found. Moreover, chi-square cannot inform the effect of associations between variables. It does not show which factors impact other factors.

In this study, chi-square is used to investigate whether the frequency of business interaction is different depending on characteristics of the business owner. For example, under the null hypothesis, the frequency of business interaction does not associate with age of business owner. If chi-square shows a significant result, the frequency of interaction is different among business owners in different age ranges. Then age range can be used as the control variable for regression analysis (see Chapter 7).

Spearman correlation

Spearman correlation coefficients inform the associations or relationships between two variables. Unlike Pearson correlation coefficients, Spearman rank correlation coefficients are used with non-parametric data with interval and ordinal scale data. This statistic does not require data to be normally distributed as it deals with monotone association between variables (Hauke & Kossowski, 2011).

Pair-wise correlation

Pair-wise correlation or (semi-) partial correlation is used to identify the association of all pairs of two random variables. This technique can be applied with interval or ratio scaled data (Bernard, 2013). Pair-wise correlation coefficient informs the strength of relationships as it indicates how one variable depends on another variable. It can be used after multicollinearity between two variables is found, then one variable needs to be eliminated. By doing this, another variable with higher pair-wise correlation coefficient is selected and put in the model for further analysis.

Analysis of Variance (ANOVA)

ANOVA or F-test is a technique to analyse the difference of average values in more than two groups of a sample population. The result shows at least one pair of data is significant; however, it cannot inform which pair of data is not significant. Normally, Post Hoc Multiple Comparisons are used to detect which data pair is not significant. This study uses ANOVA as a robustness check to investigate whether the mean values of the potential profit (see Chapter 5) are different among businesses operating in the three industries.

Order Logistic Regression (Ologit)

Ordered logistic regression can be called ordinal regression, or Ologit. This type of analysis is similar to logistic regression in which dependent variables are binary/dichotomous. Ologit is used to test the relationships between independent variables and dependent variables which are in the form of a category. It estimates ordered log odds (logit) regression coefficients. The significant model shows p -value less than 0.05 which mean the coefficient is not equal to zero. Positive log odds indicates the possibility of dependent variables moving to an upper category while the negative log odds show the probability of dependent variables moving to

a lower category (Harrell, 2001). The analysis also presents the goodness of fit of the model. Ologit model relies on Pseudo R-square which can be tested by Cox and Snell, Nagelkerke, and McFadden (Menard, 2002). These indicators inform how accurate the model is in percentage terms.

Partial Least Square Structural Equation Modelling (PLS-SEM)

PLS-SEM is the second generation of multivariate data analysis developed from the first-generation technique including correlation analysis, regression analysis, and analysis of variance (Hair Jr et al., 2016). The difference between the first-generation and the second-generation multivariate analysis is that the former is used to evaluate relationships between dependent variables and independent variables. However, normally unobserved factors can act as mediators and moderators which can directly and indirectly affect relationships between input and output variables (Baron & Kenny, 1986; Karimi & Meyer, 2014). Additionally, some variables which cannot be measured directly, latent variables (constructs), can facilitate measurement error if applying first-generation multivariate analysis. Therefore, the advanced technique which incorporates unobserved variables measured indirectly by indicative variables was developed (Alavifar, Karimimalayer, & Anuar, 2012; Guarino, 2004).

There are four types of second-generation multivariate analysis: Covariance Based Structure Modelling Equation (CB-SEM), Generalized Structure Component Analysis (GSCA), PLS-SEM, and Universal Structured Modelling (USM). PLS-SEM focuses on evaluating the variance in dependent variables and is widely applied in exploratory research. The technique can deal with mediation causing variation of 'true' result. This technique does not require assumptions about data distribution and large samples (Vinzi, Chin, Henseler, & Wang, 2010), and can work well with non-parametric statistics. When data displays non-normal distribution, PLS-SEM can be an option instead of CB-SEM (Reinartz, Haenlein, & Henseler, 2009; Temme, Kreis, & Hildebrandt, 2006).

There are two-sub models in PLS-SEM: inner and outer. An inner model indicates relationships between independent and dependent latent variables. Some researchers use 'structural model' to explain these relationships. The outer model specifies the relationships between latent variables and their manifest indicators.

The outer model, also called a measurement model, identifies how manifest variables explain each latent variable. There are two types of measurement models: formative and reflective. The formative type is used when latent variables are formed by their observed variables, and requires theoretical support explaining for why it is measured by these indicators. In contrast, the reflective type is used when measurement indicators are highly correlated, so each indicator can completely replace the other. Each latent variable is modelled based on multiple reflective indicators. This type of model is also used in CB-SEM as it shows how precisely a construct is explained by measurement indicators (Coltman, Devinney, Midgley, & Venaik, 2008).

A number of studies using PLS-SEM use responses in the form of Likert scales for measurement indicators. However, Likert scales data be unrealistic when the participants try to answer questions in the way that they guess researchers are looking for, or try to develop ‘making-sense’ answers causing un-real correlations (Gardner, Cummings, Dunham, & Pierce, 1998; Williams, Cote, & Buckley, 1989). Therefore, researchers in some areas use discrete-scale points that give greater statistical power in moderated regression analysis (Aguinis, 1995; Russell & Bobko, 1992). In order to avoid the errors caused by biased responses, this study uses various types of data (continuous, binary and category) as the indicators of each construct. PLS-SEM works well with ordinal scales with equidistant data (Mooi & Sarstedt, 2011). Categorical data is acceptable if categorical variables are coded carefully with the same distances between categories 1 and 2 and between categories 3 and 4 because they behave like an interval scale (Hair Jr et al., 2016). Rather than using a single item variable, it can be argued that using multiple-item measurements could offer more validity in explaining a latent variable. However, the reliability of a single-item variable can be estimated (Loo, 2002). Poon, Leung, and Lee (2002) identified the difficulty of creating many different items measuring the same construct, particularly if the construct is simple and single-faceted data.

6.3.2.3 Specification tests

Test for endogeneity and causality

Endogeneity occurs through the effect of independent variables on error term. This problem makes it difficult to identify whether an independent variable (X) impacts

on a dependent variable (Y). This problem is similar to causality and reverse causality which relates to whether X variables affect Y variables or vice versa. Omitted variables and measurement error can cause endogeneity and causality. However, these problems can be detected by using a Smith and Blundell test and Durbin-Wu-Hausman test (Cameron & Trivedi, 2010). A Smith and Blundell test provides a simple test of weak endogeneity in limited dependent variables (Smith & Blundell, 1986). The test can be done under the null hypothesis where models are specified with all independent variables as exogenous. Normally, the Independent power and the exclusion restriction of an instrument are tested before applying the Smith and Blundell test.

6.4 Chapter conclusion

This chapter discusses the fieldwork analysis technique needed for further evaluation of how symbiotic relationships relate to business performance of MSMEs. Previous studies use various methods to investigate how symbiotic relationships associate business performance at both entrepreneurial and enterprise level. Bivariate and multivariate analyses are widely adopted as they can examine the associations between several variables. Before the analysis process, it is important to organize and prepare the data. This chapter explains the preparation of each step in detail. In contrast to previous research, this study starts fieldwork analysis by using Ologit. In order to specify control variables and to avoid selection bias, variables relating business owner characteristics and firm attributes were checked for whether they associate with variables relating to symbiotic relationships. Reasons regarding these associations were explained. The chapter also introduced PLS-SEM which was applied to evaluate the mediating effects between symbiotic relationships in several entities. These two analytical approaches help to answer research questions: Which entities offer dynamic force to MSMEs? What is exchanged by actors or players in a symbiotic community? Which factors affect risk and return of MSMEs? The findings of the fieldwork analysis are presented in the next chapter.

Chapter 7 Analysis and Fieldwork Findings

7.1 Introduction

This chapter presents the empirical findings of the fieldwork evaluated by univariate, bivariate and multivariate analysis. It starts with an explanation of descriptive statistics followed by cross tabulation. The ensuing sections present the empirical results of a bivariate analysis technique, spearman correlation, and pairwise correlation; followed by the empirical findings of Order Logistic Regression (Ologit). This part discusses the limitations of Ologit, a first generation of a multivariate analysis approach. Although results from Ologit inform how business symbiotic factors associate with the change in MSMEs' net profit, causalities are the main concern. To check these problems, Recursive bivariate probit was applied. From the finance theory, the signal transference in small business activities suggests the potential links between interfirm relations and relationships between MSMEs and financial institutes. This hypothetical understanding was tested and interpreted in this chapter by adopting Partial Least Square Structural Equation Modelling (PLS-SEM) to further examine these issues, and to highlight the findings from Ologit and investigate the mediating effects between latent variables. This part explains each construct, measurement of models, and presents the limitations of PLS-SEM which links to the importance of analysing data from semi-structure interview. Using various analysis techniques provides the opportunity to further understand how symbiotic relationships affect the components of risk and return of MSMEs. The evaluation of the financial perspective of impacts of symbiotic relationships on the element of risk and return were discussed in relation to minimization of financing costs and maximization of financial return. This is beneficial for finance managers, business owners, loan providers and other stakeholders, including finance researchers, to make a contribution on financial-decision and theoretical understanding in the finance area. The chapter conclusion is presented in the last section.

7.2 Empirical results of univariate analysis

Table 7-1: Descriptive statistics

Variables	Category	Number	Mean	Std. dev	Min	Max
<i>Dependent variable</i>						
Change in net profit (NP)	1=Makes a loss	200	2.68	.91	1	4
	2=Makes no profit					
	3=Gains some profits					
	4= Gains significant profits					
Firm growth (GROWTH)	1= Decrease	200	2.00	.75	1	3
	2= No change					
	3= Increase					
<i>Explanatory variables</i>						
Characteristics of business owners						
Age of business owner (OWNER_ AGE)	1=less than 40	200	1.92	.72	1	3
	2= 41-60					
	3= More than 60					
Gender of business owner (GENDER)	1= Male	200	.44	.49	0	1
	0= Female					
Nationality of business owners (NATION)	1= New Zealander	200	.85	.35	0	1
	0= Non-new Zealander					
Firm attributes						
Firm age (FIRM_ AGE)	1=Less than 1 year	200	3.47	1.12	1	5
	2= 1-5 years					
	3= 6-10 years					
	4= 11-20 years					
	5= More than 20 years					
Firm size (SIZE)	1 =Fewer than 5 employees (micro)	200	1.56	.82	1	3

	2=6-9 employees (small)					
	3=More than 9 employees (medium)					
Sector (SEC)	1= Service	200	.52	.05	0	1
	2= Non-service (Manufacturer & trading)					
Location (LOC)	1= town centre	200	.58	.49	0	1
	0= beyond town centre					
<hr/>						
Symbiotic relationship aspect						
<hr/>						
The number of industrial association which firms belong to as members (INDUS_ASSO)	1= 1 association	200	2.42	1.26	1	4
	2= 2-3 associations					
	3= More than 3 associations					
	4= Not a member of any association					
Connection with banks (CON_BANK)	1= Having connection	200	.73	.44	0	1
	0 = Having no connection					
Connection with businesses across different industries (CON_DIFF)	1= Having connection	200	.77	.42	0	1
	0 = Having no connection					
Connections with businesses within the same industry (CON_SAME)	1= Having connection	200	.52	.50	0	1
	0 = Having no connection					
Frequency of interaction with firms across different industries (FREQ_DIFF)	1= Never	200	2.25	.81	1	3
	2= Occasionally (1-4 times/ month)					
	3= Frequently (more than 4 times/ month)					
Frequency of interaction with firms within the	1= Never	200	1.84	.88	1	3

same industries (FREQ_SAME)	2= Occasionally (1-4 times/ month)
	3= Frequently (more than 4 times/ month)

7.2.1 Descriptive statistics

The analysis commences with descriptive analysis. Table 7-1 shows the overall change in net profit of firms has high standard deviation indicating significant variability of the change in net profit. The mean value of the change in net profit indicates that the performance of many companies varies between those that make no profit and those achieving some profits. Regarding firm growth, the majority of MSMEs in Cambridge experience no change in firm growth.

Regarding characteristics of business owners in Cambridge, the majority varies between those younger than 40 years and those older than 41-60 years: 44 percent are male and 56 percent are female. In terms of business owner nationality, 85 percent are local and 15 percent are non-local.

With reference to firm attributes, the firm ages are spread over a wide range of values from less than one year to more than 20 years of operation. The majority of businesses in Cambridge have been operating for 6 to 20 years, with the majority being small firms hiring 6 to 9 staff. The sample shows that 52 percent of firms are operated in service sectors and 48 percent are non-service firms. It shows 58 percent of MSMEs are located in the town centre, 42 percent are located outside the town centre. This is consistent with the report of Ministry of Economics and Development (2011) which states the highest number of New Zealand MSMEs is found in the urban rather than rural areas.

In connection with symbiotic relationships, the majority of businesses belong to more than two industrial associations as members. The majority of MSMEs have connections with banks and businesses operating across different industries at 73 percent and 77 percent, respectively. The findings show that around 50 percent of MSMEs have connections with businesses operating within the same industry. In terms of frequency of interaction within the same industry, many associate with others 1-4 times per month, and some interact with others more than 4 times per month. A similar intensity of interaction is found across different industries.

Participants' responses show that (See Appendix H), during the year 2016, 48 percent of the micro- and small firms in Cambridge gained profit, 14 percent experienced loss, and 21 percent made no profit over 12 months of that year.

The driving forces of financial performance involve the characteristics of business owner. Financial decision-planning can vary, depending on the age of the firm directors. This relates to the necessity motivating entrepreneurial activities, and financial perspective (McMullen, Bagby, & Palich, 2008). It was found that the highest percentage in gaining significant profit is found in the firms run by owners who are 41 to 60 years old, firms operated by business owners younger than 40 years old had the highest loss-making percentage. The lowest loss-making percentage, of as well as the lowest significant profit percentage is found in firms operated by business owners more than 60 years old.

Financial performance is affected by the gender of board of directors (Erhardt, Werbel, & Shrader, 2003) because of the risk assessment behaviours between genders (Hallahan, Faff, & McKenzie, 2004). Firms operated by males had the highest significant profit percentage, yet also experienced the highest percentage of loss. It is found that the highest significant profit percentages are found in firms operated by local people, while those operated by non-local people had the highest no profit and loss-making percentages.

The highest percentage gaining significant profit was found in firms which had operated for more than 20 years. Firms which had operated for less than one year had the highest no profit and loss-making percentages. This is consistent with Mason's (2006) study which mentions that 80 percent of New Zealand firms fail in the first year. These firms did not make significant profit. Thornhill and Ami (2003) explained that young firms tend to face difficulty in generating positive cash flow due to lack of resources and capital. Many young firms have problems in accessing capital from the public due to instability of finance (Coluzzi, Ferrando, & Martinez-Carrascal, 2015), affecting investors' interest in supporting small firms.

The key findings show that the lowest percentage in gaining significant net profit is found in the micro-firms hiring fewer than five employees. These firms had the highest no profit and loss-making percentages. This is consistent with Peacock's study (2000) which reports that small firms experience higher failure rate than large

firms. The highest percentage of significant net profit is found in the medium-sized firms hiring 10-19 employees. These firms are in the lowest percentage in experiencing loss.

Regarding the main activity of firms, the highest percentage gaining significant profit is found in firms operating in the service sector. However, these firms also experienced the highest percentage of making loss compared to those operating in the non-service segment.

As regards symbiotic relationship variables, not being a member of any industrial association positively relates to the reduction in net profit while being a member of more than three industrial associations positively relates to an increase in net profit. This could be because the information available in the networks with many agents provides supportive economic conditions, beneficial to MSMEs. The findings show that the highest percentage in gaining profit was found in firms which have connections with banks, and those having connections with other firms within the same and across different industries. The highest loss-making percentages are found in firms having no connections with banks or other firms.

The highest percentage experiencing significant profit is found in franchise firms and firms which work under the regulations of headquarters or wholesalers. The highest percentage facing no profit and a loss was found in the independent firms. There are possible explanations for this. As franchise relationships involve contracts and network components, the variation in financial plans and investment decisions are more stable than those run independently. Franchise firms tend to receive capital, knowledge and resources which enable them to grow faster (Stanworth, Purdy, Price, & Zafiris, 1998).

In terms of the intensity of interaction among business owners, firms operated by the owners who do not interact with others operating businesses within the same industries have the highest percentage in making no profit or a loss. The highest percentage in gaining significant profit is found in those operated by the owners who frequently (more than four times per month) interact with others. The situation is the same when looking at the interaction among business owners across different industries. This confirms signals can be better transferred when different stakeholders are willing to invest their time to gain economic outcome.

A firm's performance can also be measured by an increase in the number of employees. The business owners' financial decision is made by anticipating the market through different types of signal. Firms that experience growth tend to employ more staff as manpower is needed for expanding market distribution, increasing productivity and investing in new projects (Delmar, 2006). The financial decision-making sign is the relation between uncertainty and expected return: the trade-off between wage expenses and return generated from having sufficient human resource. If the expected return generated from sufficient staff outweighs the payment, business owners tend to invest in this human capital. However, if the cash flow spent surpasses the income from having sufficient staff in business activities, business owners may not risk paying.

In survey responses regarding the growth of firms (See Appendix H), key findings are that 43 percent reported that there was no change in the number of staff hired during that period. Regarding the age of business owners, firms operated by business owners more than 60 years old had the highest percentage in decreasing growth rate whereas firms operated by a younger group aged between 41 and 60 had the highest percentage in increasing growth rate. Male controlled firms faced a higher decreasing growth rate than those operated by females. Firms operated by local business owners have higher percentages in increasing growth rate; firms run by non-local business owners have the highest percentage of decreasing growth rate.

Young firms which have been operating for less than one year have the highest percentages of growth. The highest percentages in facing decreased growth are found in medium-sized firms: the small-sized firms experienced the highest percentages of increasing growth. This is inconsistent with the study by Gill, Biger, Pai and Bhutani (2000) who found the stability of cash flow in larger firms lead to lower failure rate.

Through symbiotic relationship variables, it was found that not being a member of any industrial associations positively relates to the reduction in firm growth while being a member of more than three industrial associations positively relates to an increase in firm growth. Firms with connections to banks or financial institutions experienced increasing growth rate, unlike those without any connections. The sample shows that firms run by the owners who occasionally (1-4 times/ month) associate with others across different industries had a higher percentage of

increased firm growth. Having no connections with other businesses operating across the different industries positively relates to the reduction in firm growth while having connections positively relates to an increase in firm growth.

7.3 Empirical results of bivariate analysis

Bivariate analysis provides an insightful introduction of non-statistics evaluated in this study. The analysis enables researchers to examine whether variables suffer from multicollinearity where independent variables are highly correlated with each other. Survey research normally faces endogeneity when independent variables associate with the error terms. It is critical to access all responses from samples as they are difficult to observe. The three problems omitted variable, causality, and measurement error can lead to endogeneity problems for which Ordinary Least Squares (OLS) cannot provide BLUE (Best Linear Unbiased Estimator). Therefore, the regression results are invalid. Therefore, in this study bivariate analysis techniques, Spearman correlation and Pair-wise correlation, were applied to initially test whether variables have these problems.

7.3.1 Spearman correlation

Spearman correlation analysis is used to test the associate relationship between several variables with interval or ordinal scales. Unlike Pearson's correlation, Spearman correlation analysis technique does not require the normality of variables since they are nonparametric statistics. In this study two assumptions, multicollinearity and proportional odd ratio, were checked before running regression analysis. By using Stata, Spearman's rank correlation coefficients between all variables were checked to discover whether any independent variable highly correlated with others. If the correlation coefficient is higher than 0.80, multicollinearity exists (Allison, 1999; Berry & Feldman, 1985).

Spearman correlation coefficients (See Appendix I) indicate a multicollinearity problem between some independent variables. The high correlation coefficient indicates two pairs of variables which indicate multicollinearity: firstly between the variable indicating connections with firms within the same industry (CON_SAME), and the variable presenting no interaction with other firms within the same industry (FREQ_SAME1); secondly, between the variable indicating the connections with firms across different industries (CON_DIFF) and the variable presenting no

interaction with firms across different industries (FREQ_DIFF1). This is not a surprise result as the high frequency of interaction with several business owners could further relate to their business connections. This means the higher the frequency of business owners' personal associations, the higher the opportunity for their businesses to cooperate and connect with others.

Although they are highly correlated, in this case it is normal. The variables, CON_SAME and CON_DIFF, are dichotomous variables which contain “Yes” and “No” answers, so firms which have no connection with others were coded as “Never” for the frequency of interaction. This can result in 100 percent negative correlation. In order to achieve the robust results, one variable of each pair should be removed from regression model.

7.3.2 Pair-wise correlation

Pair-wise correlation is a bivariate analysis technique used to compare each pair of means. The study uses Pair-wise correlation to investigate which variables should be removed. It is better to keep independent variables which highly correlate with dependent variable (the change in net profit). The pair-wise correlation coefficients are presented in Table 7-2.

Table 7-2: Pair-wise correlation

Independent variables	Correlation coefficients
Symbiotic relationship variables	
Connection with businesses operating across different industries	0.1421*
Connection with businesses operating within the same industry	0.2050*
Frequency of interaction with businesses operating across different industries	0.2330*
Frequency of interaction with businesses operating within the same industry	0.1869*

Table 7-2 shows that between CON_SAME and FREQ_SAME, CON_SAME has the higher correlation coefficient. Therefore, CON_SAME was selected for running regression. The -1.0-correlation coefficient between variables means they can

replace each other completely. It is found that the correlation coefficient of CON_DIFF was lower than FREQ_DIFF. Although CON_DIFF should be eliminated, it was selected for running regression. As this study aims to investigate how network range (the type of connection) associates with the change in MSMEs' net profit, putting CON_DIFF into regression model enables researchers observe how it associates with the change in net profit. The frequency of interaction among business owners across different industries (FREQ_DIFF) was then categorised into FREQ_DIFF1 (never), FREQ_DIFF2 (occasionally) and FREQ_DIFF3 (frequently) before running Ologit, so eliminating FREQ_DIFF1 can fix the problem of multicollinearity. By doing that, researchers can still observe how frequency of interaction with business owners running firms across different industries associates with the change in net profit.

7.4 Empirical results of multivariate analysis

Multivariate analysis techniques used in this study are Ologit and PLS-SEM. Ologit was used to find which variables associate with the change in net profit and growth of MSMEs. Variables relating business owner characteristics, firm attributes and symbiotic relationships were examined for whether they positively or negatively associate with the change in net profit and firm growth. The study uses the Recursive probit model to examine the reverse causalities between the change in net profit and symbiosis variables. The extent of symbiotic relationships varies and can be further explained by using diverse indicators. Then, this study applies PLS-SEM for highlighting the findings from Ologit. As PLS-SEM is suitable for analysing causal models containing one way direction between variables rather than causal loop model (Hair, Ringle, & Sarstedt, 2011), adopting this technique provides insight for the researcher regarding the causality concern. PLS-SEM was also used to check the mediating effects between variables, which is important for theoretical interpretation.

7.4.1 Ordered Logistic Regression (Ologit)

As the dependent variable is categorical data (not continuous) with interval scales, and the explanatory variables are categorical and dichotomous, OLS cannot be used

as a linear regression will not achieve the best linear unbiased distribution. Also the typical assumptions of homoscedasticity and normality of errors from OLS are violated when the outcome is dichotomous (O'Connell, 2006). Logistic regression (logit) fits with binary dependent variables which have the value of 0 and 1, therefore this method cannot be used in this study. Although multinomial regression is suitable for polychromous dependent variables, it requires variables with nominal scales in which all categories are equally divided. Therefore, Ologit and Ordered Probit (Oprobit) is an appropriate method. This study uses the Ologit model as the independent variables do have to be normally distributed. Also, this technique does not require the linearity and normality assumption of independent variables. For validity modelling, the variance of dependent variables was checked for constancy with the effects of the independent variables. The Breusch-Pagan test was used to test for heteroscedasticity of the dataset. The result was not significant at the 5% level as the p -value is 0.0545, therefore the null hypothesis of homoscedasticity was not rejected (Breusch & Pagan, 1979).

7.4.1.1 *Order logistic regression models*

Order logistic regression was developed from the logit model which uses various independent variables to estimate the probability of outcome variables. The proportion of odd ratio in Ologit estimates the probability of being at or below a particular level of response variables in the Ologit model. Ologit coefficients are equal to the chance of being at or below a category divided by the probability of being above that category:

$$Odds (Y \leq j) = \frac{p(Y \leq j)}{p(Y > j)}$$

The probability of being at or below a category $p(Y \leq j)$ is a cumulative probability as it equals the sum of the probabilities of all categories at or below that category:

$$p(Y \leq J) = p(Y = 1) + p(Y = 2) + \dots, P(Y = j) \quad \text{when } j = 1, 2, J$$

Previous studies use Ologit to investigate factors impacting on a firm's performance (Hauff, Alewell, & Hansen, 2014; Muscettola, 2014).

It is assumed that all independent variables associate with the change in net profit of firm, and is demonstrated as:

$$\begin{aligned} \text{PERFORM (The change in firm profit, firm growth)} = & \text{OWNER_AGE} + \\ & \text{GENDER} + \text{NATION} + \text{FIRM_AGE} + \text{FIRM_SIZE} + \text{SECTOR} + \text{LOC} + \\ & \text{CON_BANK} + \text{CON_SAME} + \text{CON_DIFF} + \text{FREQ_SAME} + \text{FREQ_DIFF} \\ & + \text{SOCIAL_ABI} + \text{ATTEND} + \text{FRANCHISE} + \text{WOM} + \text{INFO} + \text{EVENT} + \\ & \text{BYPASS} \end{aligned}$$

Regression results vary depending on independent variables selected as the input data. For running Ologit, five models with different independent variables were created in order to identify the associations of each variable and the performance of a firm in terms of profit and growth. The aim was to examine whether there were any changes regarding input variables, particularly whether there were variables representing symbiotic relationships among businesses associated with performance of firms. Model 1 considers business owner characteristics and firm attributes. Model 2 considers variables relating to symbiotic relationship. Model 3 includes exogenous factors indicating the existent of the bypass and local events. All variables were selected in Model 4 except control variables; age of business owner, age of firm, and firm size. Exogenous factors were added again in Model 5 to identify any changes in other variables.

Table 7-3: Ordered logistic results: Factors affecting the change in net profit of firms⁴

Model Specification					
Variable	model1	model2	model3	model4	model5
<i>Business owner characteristics</i>					
Age					
1). <=20 years old	0.182 (0.381)	0.431 (0.398)	0.266 (0.407)		
2). 21-40 years old	0.132 (0.350)	0.168 (0.363)	0.176 (0.368)		
Gender					
Gender (Male=1)	0.253 (0.275)	-0.0657 (0.299)	-0.0156 (0.307)	-0.184 (0.288)	-0.177 (0.294)
Nationality					
Nationality (Local=1)	0.223 (0.394)	0.339 (0.463)	0.230 (0.472)	0.372 (0.443)	0.299 (0.448)
<i>Firm attributes</i>					
Age					

⁴ Referent group for age of entrepreneur is over 60 years old.

Referent group for firm age is the firms which have been operating for more than 20 years.

Referent group for firm size is medium-sized businesses having 10-19 employees.

Referent group for frequency of interaction with entrepreneurs operating firms across different industries is having frequent interaction.

Referent group for frequency of interaction with entrepreneurs operating firms within the same industry is having frequent interaction.

Referent group for the number of industrial associations is businesses which do not belong to any industrial association as members.

*Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

1). <=1 year	-2.540*** (0.723)	-2.596*** (0.785)	-2.787*** (0.782)		
2). 1-5 years	-0.232 (0.475)	0.331 (0.517)	0.279 (0.523)		
3). 6-10 years	-0.889** (0.394)	-0.744* (0.421)	-0.788* (0.425)		
4). 11-20 years	-0.154 (0.392)	-0.0743 (0.424)	-0.0783 (0.427)		
Size					
1). Micro-	-1.599*** (0.368)	-1.282*** (0.395)	-1.379*** (0.398)		
2). Small	-0.789 (0.486)	-0.560 (0.518)	-0.805 (0.530)		
Sector					
Sector (Service=1)	0.106 (0.292)	-0.00361 (0.325)	0.164 (0.336)	-0.105 (0.310)	-0.0212 (0.317)
Location					
Location (in the city=1)	0.157 (0.289)	0.216 (0.312)	0.216 (0.311)	0.157 (0.291)	0.129 (0.292)
<i>Symbiotic relationship aspect</i>					
Range of symbiotic relationship					
Connections with bank (Yes=1)		0.617* (0.363)	0.714* (0.368)	0.741** (0.336)	0.807** (0.340)
Connections with businesses across different industries (Yes=1)		0.903** (0.396)	0.931** (0.397)	0.831** (0.370)	0.879** (0.371)
Connections with businesses within		0.693** (0.348)	0.684* (0.358)	0.752** (0.333)	0.775** (0.341)

the same industry (Yes=1)				
Number of industrial associations which firms are belong to as members				
1). 1 association	-0.263 (0.398)	-0.252 (0.405)	-0.269 (0.384)	-0.263 (0.390)
2). 2-3 associations	0.267 (0.477)	0.315 (0.484)	0.533 (0.464)	0.573 (0.470)
3). > 3 associations	0.613 (0.496)	0.674 (0.500)	0.659 (0.468)	0.720 (0.473)
Frequency of interaction with business owners operating firms across different industries				
Occasional interaction	-0.808** (0.366)	-0.984*** (0.376)	-0.741** (0.347)	-0.840** (0.355)
Frequency of interaction with business owners operating firms within the same industry				
Occasional interaction	-0.118 (0.411)	-0.107 (0.416)	-0.0867 (0.399)	-0.107 (0.403)
Social ability/ skills (Yes=1)	-0.680* (0.401)	-0.532 (0.415)	-0.341 (0.382)	-0.231 (0.397)
Attendance at workshops/ training (Yes=1)	-0.774** (0.369)	-0.618 (0.382)	-0.706** (0.353)	-0.649* (0.364)
Franchise (Yes=1)	0.784* (0.413)	0.857** (0.414)	0.818** (0.407)	0.854** (0.406)
Word of mouth (Yes=1)	-0.106 (0.684)	-0.264 (0.695)	-0.277 (0.657)	-0.427 (0.667)
Information transferral (Yes=1)	0.362 (0.347)	0.510 (0.355)	0.464 (0.322)	0.539* (0.327)
Exogenous factors				
Existence of the bypass (Yes=1)		0.698* (0.414)		0.474 (0.384)

Existence of events (Yes=1)			0.147 (0.445)		0.0515 (0.420)
Constant cut1	-3.131*** (0.715)	-1.820* (1.010)	-1.562 (1.023)	-0.578 (0.794)	-0.362 (0.814)
Constant cut2	-1.770** (0.691)	-0.326 (0.999)	-0.0482 (1.012)	0.778 (0.791)	1.001 (0.812)
Constant cut3	0.758 (0.681)	2.537** (1.018)	2.895*** (1.040)	3.385*** (0.825)	3.643*** (0.852)
LR chi2	39.83	72.63	78.29	43.58	46.31
Pro > Chi2	0.0001	0.0000	0.0000	0.0004	0.0004
Pseudo R2	0.0793	0.1445	0.1558	0.0867	0.0921
Observations	200	200	200	200	200

Table 7-3 shows the overall picture of Ologit results. Regarding the change in net profit of firms, Model 1 shows that firm age and firm size associate with the change in net profit. Compared to firms that have been operating for more than 20 years, young firms operating for less than one year are less likely to have higher levels of net profit, while firms operating for 6-10 years are more likely to experience that. Compared to the medium-sized firms, micro-firms are less likely to increase their net profit. Regarding symbiotic relationship variables, Model 2 indicates that the range of networks is important to firm performance. Connections with banks or financial institutions, with businesses within the same industry, and with businesses across different industries are important factors associated with the change in net profit. While being members of industrial associations did not associate with the change in net profit of firms, the frequency of interaction with business owners operating firms across different industries is critical. Ologit results show occasional interaction with owners of heterogeneous firms is unbeneficial as this decreases the possibility of having a higher level of net profit compared to those with frequent interaction. It was found that social abilities/ skills of business owners and workshops/ training attendance are negatively associated with the change in net profit. When exogenous factors, the existence of bypass and the existence of events,

are added in Model 3, it is found social abilities and workshops/ training attendance are no longer critical to firm performance. The existence of the bypass is positively associated with firm performance as it increases the probability for firms to be in the higher category of the change in net profit (Making loss→Making no profit, Making no profit→Gaining some profits, Gaining some profits→Gaining significant profit). After controlling for the age of business owner, firm age, and firm size in Model 4, the key variables indicating symbiotic relationships remain the same.

Business owner characteristics and firm attributes are not associated with the change in firms' net profit. The odd ratio is used to explain Ologit results which can be interpreted by $100*[OR-1]$. According to symbiotic relationship variables, compared to firms having no connections with banks or financial institutions, those having connections with banks or financial institutions increase the odds of being in the higher category of change in net profit. Compared to firms having no connections with others operating across different industries, those having these connections are more likely to have a higher level of profit. Also, firms that have connections with homogenous firms within the same industries are more likely to experience a higher net profit. Although the connection with firms across different industries is positively associated with a firm's performance, occasional interactions (1-4 times per month) with business owners operating firms across different industries result in decreased net profit. Attendance at workshops or training negatively associate with net profit of a firm. It is noted that firms operated by business owners who attend workshops or training are less likely to increase net profit. However, firms operating as a franchisee are more likely to increase net profit.

Table 7-4: Ordered logistic results: Factors affecting growth of firms⁵

Model Specification					
Variable	model1	model2	model3	model4	model5
<i>Business owner characteristic</i>					
Age					
1). <=20 years old	0.367 (0.385)	0.481 (0.402)	0.304 (0.410)		
2). 21-40 years old	0.919** (0.358)	0.848** (0.372)	0.876** (0.373)		
Gender					
Gender (Male=1)	-0.270 (0.274)	-0.366 (0.297)	-0.331 (0.304)	-0.456 (0.289)	-0.431 (0.296)
Nationality					
Nationality (Local=1)	0.413 (0.419)	0.345 (0.479)	0.208 (0.490)	0.267 (0.461)	0.155 (0.473)
<i>Firm attributes</i>					
Age					
1). <=1 year	0.186 (0.709)	0.194 (0.755)	0.0657 (0.794)		

⁵ Referent group for age of entrepreneur is over 60 years old.

Referent group for firm age is firms which have been operating for more than 20 years.

Referent group for firm size is medium-sized businesses having 10-19 employees.

Referent group for frequency of interaction with entrepreneurs operating firms across different industries is having frequent interaction.

Referent group for frequency of interaction with entrepreneurs operating firms within the same industry is having frequent interaction.

Referent group for the number of industrial associations is businesses which do not belong to any industrial association as members.

*Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

2). 1-5 years	0.0236 (0.469)	-0.112 (0.502)	-0.182 (0.508)		
3). 6-10 years	-0.329 (0.384)	-0.462 (0.412)	-0.509 (0.415)		
4). 11-20 years	-0.0375 (0.385)	-0.0737 (0.416)	-0.0976 (0.417)		
Size					
1). Micro-	0.0944 (0.343)	0.358 (0.386)	0.287 (0.388)		
2). Small	0.451 (0.472)	0.407 (0.529)	0.170 (0.537)		
Sector					
Sector (Service=1)	0.431 (0.292)	0.288 (0.319)	0.492 (0.334)	0.292 (0.311)	0.451 (0.322)
Location					
Location (in the city=1)	-0.258 (0.288)	-0.415 (0.308)	-0.480 (0.311)	-0.261 (0.291)	-0.343 (0.295)
<i>Symbiotic relationship aspect</i>					
Range of symbiotic relationship					
Connections with bank (Yes=1)		0.286 (0.356)	0.385 (0.361)	0.327 (0.336)	0.417 (0.341)
Connections with businesses across different industries (Yes=1)		0.260 (0.376)	0.310 (0.386)	0.238 (0.368)	0.318 (0.376)
Connections with businesses within the same industry (Yes=1)		-0.919*** (0.350)	-0.916** (0.358)	- 0.910*** (0.339)	-0.861** (0.346)
Number of industrial association which firms are belong to as members					

1). 1 association	-0.181 (0.388)	-0.210 (0.394)	-0.0834 (0.376)	-0.0919 (0.382)
2). 2-3 associations	0.120 (0.484)	0.189 (0.494)	0.0871 (0.467)	0.193 (0.476)
3). > 3 associations	0.818* (0.494)	0.921* (0.499)	0.864* (0.465)	1.014** (0.474)
Frequency of interaction with business owners operating firms across different industries				
Occasional interaction	0.703** (0.358)	0.616* (0.360)	0.660* (0.344)	0.588* (0.347)
Frequency of interaction with business owners operating firms within the same industry				
Occasional interaction	0.939** (0.412)	0.914** (0.415)	0.959** (0.399)	0.899** (0.403)
Social ability/ skills (Yes=1)	0.634 (0.415)	0.826* (0.436)	0.585 (0.395)	0.809* (0.418)
Attendance at workshops/ training (Yes=1)	0.179 (0.371)	0.368 (0.385)	0.190 (0.353)	0.308 (0.364)
Franchise (Yes=1)	0.262 (0.410)	0.286 (0.411)	0.213 (0.403)	0.238 (0.404)
Word of mouth (Yes=1)	-0.558 (0.702)	-0.739 (0.697)	-0.779 (0.667)	-1.010 (0.678)
Information transferral (Yes=1)	-0.468 (0.342)	-0.333 (0.350)	-0.530* (0.321)	-0.441 (0.327)
Exogenous factors				
Existence of the bypass (Yes=1)		0.896** (0.416)		0.788* (0.402)
Existence of events (Yes=1)		0.0153 (0.440)		0.0385 (0.431)
Constant cut1	-0.108 (0.686)	-0.508 (1.024)	-0.207 (1.036)	-1.365* (0.817)
				-0.982 (0.850)

Constant cut2	1.883*** (0.700)	1.686 (1.032)	2.049* (1.050)	0.755 (0.815)	1.189 (0.855)
LR chi2	16.65	42.27	49.54	33.72	40.14
Pro > Chi2	0.1632	0.0168	0.0051	0.0091	0.0031
Pseudo R2	0.0387	0.0982	0.1151	0.0783	0.0932
Observations	200	200	200	200	200

Table 7-4 shows that in terms of firm growth, Model 1 shows how age of business owners is associated with growth of firm. Compared to firms operated by business owners aged more than 60 years, firms operated by 21-40-year-olds increase the probability of growth. After adding symbiotic relationship variables in Model 2, connections with businesses within the same industry negatively associate with firm growth as the connections decrease the probability of growth. Being members of more than three industrial associations positively associates with firm growth. The result shows network intensity is important for growth of firms. Compared to firms that frequent interact, those occasional interactions (1-4 times per month) with business owners operating firms across different industries and within the same industry are more likely to increase growth probability. Model 3 shows the existence of the Waikato expressway positively associates with a firm's growth. Also, social abilities and skills of business owners positively associate with a firm's growth as it increases the probability of experiencing higher growth. When controlling for age of business owners, firm age and firm size in Model 4, the connections with other firms within the same industries negatively associate with firm growth probability. Being members of more than three industrial associations is positively associated with firm growth. Infrequent interaction with other firms across different industries, and those within the same industry tend to increase growth probability.

7.4.1.2 Marginal effect

Marginal effect informs the opportunity for net profit at each level. This probability can be measured when each independent variable increases from its mean value

while other independent variables remain constant. Marginal effects of independent variables are presented in Tables 7-5 and 7-7.

Table 7-5: Marginal effects of independent factors on the change in net profit of firms

Ordered Logit Model 4						
Dependent variables	Mean	SD	Make some loss	Make no profit	Gain some profit	Gain significant profit
<i>Change in net profit of firm</i>						
Business owner characteristics						
Gender (Male=1)	.445	.498	.020	.015	-.012	-.023
Nationality (Local=1)	.850	.358	-.041	-.031	.025	.046
Firm attributes						
Sector (Service=1)	.525	.501	.011	.009	-.007	-.013
Location (In the city=1)	.580	.495	-.017	-.013	.011	.019
Symbiotic relationship variables						
Connections with banks**	.735	.442	-.081	-.061	.050	.092
Connections with firms operating across different industries**	.77	.422	-.091	-.069	.056	.104
Connections with firms operating within the same industries**	.525	.501	-.082	-.062	.051	.094
Number of industrial associations						
1). 1 association	.360	.481	.029	.022	-.018	-.034
2). 2-3 associations	.165	.372	-.058	-.044	.036	.066

3). >3 associations	.165	.372	-.072	-.055	.045	.082
Frequency of interaction with firms operating across different industries						
Occasional interaction**	.280	.450	.081	.061	-.050	-.092
Frequency of interaction with firms operated within the same industries						
Occasional interaction	.205	.405	.009	.007	-.006	-.011
Social ability	.195	.397	.037	.028	-.023	-.042
Attendance at workshops**	.285	.453	.077	.059	-.048	-.088
Franchise**	.160	.368	-.089	-.068	.055	.102
Word of mouth	.950	.218	.030	.023	-.019	-.034
Information transference*	.430	.496	-.051	-.038	.031	.058

As illustrated in Table 7-5, connection with firms across different industries is the most critical factor impacting on the changes in net profit. If connections with firms across different industries increase by 1 unit, they are 9.1 percent less likely to make losses, and 6.9 percent less likely to experience no profit. The connections increase the probability of gaining profit and significant profit by 5.6 percent and 10.4 percent, respectively. Frequency of connections with firms operating within the same industry indicate similar associations, yet the probability of decreasing loss and increasing profit are smaller than with connections among heterogeneous firms. Connections with banks and financial institutions also positively associate with the change in net profit as these decrease the probability of decreasing loss, yet increase the chance of increasing net profit. Connections with firms across different industries associate negatively with a firm's profit as infrequent interactions decrease the probability of gaining profit. Operating as a franchisee reduces the chance of experiencing loss by 8.9 percent, but increases the probability of gaining significant profit by 10.2 percent.

Table 7-6: Probability of change in net profit

Dependent variables		Probability
Change in net profit	Make some loss	10.90%
	Make no profit	21.28%
	Gain some profit	54.37%
	Gain significant profit	13.43%

Table 7-6 indicates the general probability of net profit in each category. When all independent variables are changed from their mean values by one unit, businesses in Cambridge have 10.90 percent probability of experiencing some loss, 21.28 percent probability of making no profit, 54.37 percent probability of gaining some profits and 13.43 percent probability of gaining significant profit.

Table 7-7: Marginal effect of independent factors on firm growth

		Ordered Logit Model 4			
Dependent variables	Mean	SD	Decrease	No change	Increase
<i>Growth of firm</i>					
Business owner characteristics					
Gender (Male=1)	.445	.498	.083	-.001	-.082
Nationality (Local=1)	.850	.358	-.048	.001	.048
Firm attributes					
Sector (Service=1)	.525	.501	-.053	.001	.052
Location (In the city=1)	.580	.495	.047	-.001	-.047
Symbiotic relationship variables					
Connections with banks	.735	.442	-.059	.001	.059
Connections with firms operating across different industries	.770	.422	-.043	.001	.043
Connections with firms operating within the same	.525	.501	.165	-.002	-.163

industries***

Number of industrial associations					
1). 1 association	.360	.481	.015	-.000	-.015
2). 2-3 associations	.165	.372	-.016	.000	.016
3). >3 associations*	.165	.372	-.156	.002	.155

Frequency of interaction with firms operating across different industries					
Occasional interaction*	.280	.450	-.119	.001	.118

Frequency of interaction with firms operating within the same industries					
Occasional interaction**	.205	.405	-.174	.002	.172
Social ability	.195	.397	-.106	.001	.105
Attendance at workshops	.285	.453	-.034	.000	.034
Franchise	.160	.368	-.038	.000	.038
Word of mouth	.950	.218	.141	-.001	-.139
Information transference*	.430	.496	.096	-.001	-.095

Table 7-7 shows the frequency of interaction with business owners operating firms within the same industries is the most critical factor associated with the growth of a firm. This factor decreases the probability of a decline in growth by 17.4 percent, but increases the probability of having higher growth by 17.2 percent. Regarding the industrial associations, being members of more than three industrial associations is positively associated with a firm's growth; it decreases the probability of a decline in growth by 15.6 percent, but it increases the probability of having high growth by 15.5 percent.

Comparing the effects of interaction of businesses operating within the same industry with the impact of the interaction of those operating across different industries, occasionally interacting with homogenous firms is more important for firm growth as shown by the marginal effects. Information transference increases the chances of a decline in growth, but decreases the probability of having high growth, by around 9.5 percent.

Table 7-8: Probability of MSMEs' growth

	Dependent variables	Probability
Growth	Decrease	25.36%
	No change	48.53%
	Increase	26.10%

Table 7-8 shows when all independent variables are changed from their mean values by one unit, businesses in Cambridge have 25.36 percent probability of a decrease in growth, and 26.10 percent probability of increasing growth. No change in growth is highest probability found in the sample.

7.4.1.3 Ordered Logistic Regression results and discussion

The section above presents the empirical findings analysed by Ologit. The 200 survey responses indicate that change in net profit is positively associated with variables representing symbiotic relationships, for instance, connections with firms within the same and those across different industries. The results show that belonging to industrial associations and information transference are associated with growth of firms. Compared to firms which do not belong to any industrial associations, firms that belong to more than three industrial associations as members are more likely to increase their growth. The result is similar to many previous studies that demonstrate the benefits of joining trade associations and professional groups.

This also associates with the trade-off between costs and gains from participation in networking. Small business owners are attempting to leverage mutual returns from networking to compensate the opportunity costs incurred by spending time in their business sites to improve internal management systems. Businesses look for services from social associations which respond to individual members with specific needs and demands (Bennett, 2000). Many business owners participate in specific groups because of collective activities that are undertaken on behalf of all, or the majority of members. If the benefits of collective activities are offered to all members, the motivation to maintain membership of those networks may be enhanced. According to stakeholder theory, free riding problems in associations

could be eliminated if the norms and objectives of associations are set up to provide advantages to all members. These internal controls in the organizations are also beneficial in reducing agency conflict between different parties (Agrawal & Knoeber, 1996).

The research findings support Transaction cost theory that indicates participating in trade networks can lower key transaction costs and reduce corporate risks (Doner & Schneider, 2000). Although there is no literature that suggests the appropriate number of social associations in which businesses should participate, for businesses in Cambridge it was found that participating in more than three trade groups could be beneficial to their growth.

The results show connections with banks or other financial institutions, and connections with businesses across different industries and those operating within the same industry are positively associated with a change in profit. Firms having these relationships tend to increase their net profits. Having interconnections with other entities enable firms to diversify return to different market channels. The outcomes of this are clear in firms operated by active investing business owners who seek to improve the corporate performance through merger and acquisition (Bena & Li, 2014). This finding is consistent with Stem, Arzzlanian and Elfring's (2014) study which found that network diversity among small firms had a strong positive relationship with performance. The findings of this study support literature that discusses the financial gains from having weak-tied relationships which are the connections with businesses across different industries or with external advisors who work in different areas. It is observed that weak-tied relationships are important for new firms which have financial instability; however, strong-tied relationships with businesses within the same industries or with other entities that already know each other are valuable for firms which have been operating for a longer period.

Regarding relationship with banks, the findings are consistent with some previous studies that report on the positive impacts of having relationships with banks or other financial institutions. Connections with banks increase the level of trust which can result in offering lower interest rates and other business support (Uzzi, 1996).

Lenders tend to hedge against default risk by offering financial support to high credit trustworthy firms having good financial health. This financial condition could be detected when lenders or bankers have close connections with business owners. These interactions enable creditors to understand financial decision-making policy and to diagnose financial constraints of the firms. Information about personal information including credit rating, violations of debt, reduction of dividend, and wage payment can signal lenders about a state of financial distress of firms (Baldwin & Scott, 1983).

Consistent with many studies, the research found an association between operating a business as a franchisee and the growth of a firm as franchisers provide financial support and knowledge to franchisees (Stanworth et al., 1998). Training that is arranged for branches could be positively associated with a firm's performance. It enables knowledge and resources to be transferred between parent companies and subsidiaries. Some retail companies which follow regulations and strategies from wholesale enterprises that distribute products could reduce advertisement expenses which lead to increased firm growth. Signals noticed from business transactions can be beneficial to both parent firms and their subsidiaries to anticipate threats and prepare for uncertain economic conditions.

Ologit results indicate that business owner characteristics and firm attributes are not associated with changes in profit and growth of firms. However, previous studies observe that these factors could be associated with firm performance. Firms that have operated for under one year are less likely to gain a higher level of net profit. This could be explained by the many young firms having limited capabilities to generate cash flow (Thornhill & Ami, 2003). Many young firms are less likely to gain benefit from networking than old firms having stronger financial capability (John, 2007). Hite and Hesterly (2001) note that close relationships in business networks are valuable to young firms, while some researchers disagree and suggest that loose relationships among entities provide more necessary resources (Burt, 1992; Elfring & Hulsink, 2007). Some studies indicate that young business owners who are risk taker investors tend to experience higher levels of net profit compared to the older generation (Sapienza & C.M. Grimm, 1997). This is partly because

differing financial behaviours of investment in different aged groups of business owners (Cronqvist, Siegel, & Yu, 2015). Reynolds, Camp and Hay (2002) note that younger business owners tend to be more active than older groups, particularly in business creation, which could enhance their contribution to business performance.

The results of the current study show a negative relationship between the change in net profit and attendance at workshops and training by business owners. This finding is inconsistent with much research which reports on the benefits of attending workshops and training organized by trading associations. Dyer and Nobeoka (2000) state that the competence of business owners who join networks is increased and the cost of information searching decreases, adding value to performance. The adverse outcomes may be because of obtaining value from network participation could depend on the individual (Shane & Venkataraman, 2000). Business owners may lose opportunities and time to increase income if they participate in too many workshops and this may result in decreasing returns. The findings in this study are inconsistent with some previous studies as information transference is negatively associated with growth of firms. This may be because the sample is businesses operating in Cambridge, a small town. Information transference could be beneficial for entities in larger networks that have formal transmitters. Larger networks could accelerate a diffusion of information on corporate policies to become action plans (Daily & Dalton, 1994).

7.4.1.4 Robustness check: Recursive bivariate probit Model

The Recursive bivariate probit technique was applied as the robustness test in this study as the interfirm relations occurring in the current year could be related to a firm's net profit in the previous year. The firm growth of the previous year could also associate with the connections between a firm and banks in the current year. These associations stress the causality issue. Causality is one of the causes of endogeneity which should be treated. Instrumental variable regression (IV regression) cannot be used in this case as the dependent variables (the change in net profit and firm growth) are not continuous variables, so Recursive bivariate probit model was adopted.

The Bivariate probit model is a natural extension of probit regression model, where the distributions of the two equations are assumed to be correlated in the same spirit as the seemingly unrelated regression model (Greene, 2012). The recursive version of the bivariate probit allows researchers to estimate the effect of interest while accounting for unobserved confounders (Maddala, 1983). The general specification is:

$$Y_t = a + b * X_t + u_t$$

$$\text{where } X_t = c + d * Y_{t-1} + v_t$$

A recursive model is found when an independent variable (X_t) is impacted by a lagged dependent variable (Y_{t-1}) (Ieva, Marra, Paganoni, & Radice, 2014). In this study, ‘ Y_t ’ demonstrates the change in net profit of MSMEs (NP) and firm growth (GROWTH) whereas ‘ X_t ’ explains the variables relating to symbiotic relationships, namely connection with banks (CON_BANK), and connection with businesses across different industries (CON_DIFF).

A dependent variable ‘the change in net profit’ was categorised into binary variables; gaining profit and making loss. The dependent variable ‘firm growth’ was classified into increased growth and decreased growth. The factors indicating business owner characteristics, firm attributes and those relating to symbiotic relationships (CON_BANK and CON_DIFF) were entered into the Recursive bivariate probit as the independent variables.

After causality checking, a recursive model was found. The result shows that the change in net profit was statistically significantly associated with interfirm connections across different industries. Concurrently, connections between firms across different industries were statistically significantly associated with the change in net profit. Also, the result shows that firm growth was statistically significantly associated with connections between a firm and banks. Concurrently, relationships between a firm and banks were statistically significantly associated with firm growth.

These findings confirm the causalities between dependent variables and independent variables. Although this situation is normally found in the survey

research, it leads to the difficulty in concluding which situations happen first between symbiotic relationship actions and the changes in firm performance.

7.4.1.5 Limitation of a fieldwork analysis by Ologit

This fieldwork analysis has some limitations. Firstly, the size of the sample is limited as this fieldwork investigated many MSMEs registered as members of CCC. The impacts of the symbiotic relationship on financial performance could be more precise if including those who are non-members. Also, although symbiotic relationships of businesses could be evaluated effectively through focusing on networks located in one particular area, the factors associated with corporate performance could be different. The range and types of businesses, the characteristics of the town and local cultures, and the kinds of interaction between business owners could be different. This variety, range, and intensity of networks could impact on business performance differently. Secondly, this study focuses on the performance of firms in 2015, the year the Waikato expressway was officially opened. Although positive and negative impacts of this could be found in some MSMEs, the impact on businesses may only be more fully understood over a longer period of time. Many studies use data collected from small samples to see their linkages in more detail. The performance of MSMEs could be examined by other indicators such as sales level, ROE, ROA, and survival.

Future studies could respond to these gaps by considering these indicators in order to provide a more extensive picture of corporate performance. A longer period of time and focusing on a small number of samples could collect more in-depth detail about those networks and more opportunity to examine other related variables which could be included in the regression model. Therefore, PLS-SEM was applied in the following section.

7.4.2 Partial Least Square Structural Equation Modelling (PLS-SEM)

PLS-SEM was used for analysing primary data from fieldwork. PLS-SEM is an appropriate model for investigating latent variables which are difficult to define. Also, PLS-SEM can measure the mediating effects between several constructs. This method can be used to highlight further the results of Ologit. Most importantly, this

study addresses the Signalling theory which stresses signals which can be transferred from one business networking with another, then affect the performance of MSMEs. Indicative variables used in PLS-SEM are in line with previous studies which use these indicators to explain similar constructs. The study discusses the findings from a finance perspective which stresses how symbiotic relationships affect the elements of risk and return for MSMEs.

7.4.2.1 Constructs

In order to analyse the data from the field work using PLS-SEM, this section uses the same dataset as analysed by Ologit. It uses a survey with open-ended questions to access data relating to business connections and relationships. The questions focused on personal relationships between several business owners and business connections at the firm level; however, those connections were categorized by industry level. To access the network range of MSMEs across industries, the participants were asked to name three businesses which they normally contact for business purposes. The network analysis approach was initially applied to calculate in-degree, out-degree, and eigenvector centrality between industries. These indicators give solid signals regarding the relationships between several entities in the networks.

Regarding industrial connections, our model has four main constructs. The exogenous latent variables are interfirm relations (relationships between businesses within the same industry; and relationships between businesses across different industries) and business-bank relations (relationships between businesses and banks). The endogenous latent variable indicating firm performance is the change in net profit. This in line with Homburg and Pflesser's (2000) study which uses this single item of profitability to explain firm performance. Ping (2003) and Petrescu (2013) argued that a concrete construct, corporate revenue, can be measured through a single item. Path coefficients between these constructs show how much the variance of latent variables is being explained by the other latent variables. Under the uncertain economic conditions, firm performance can be directly and indirectly impacted by various business actions. Table 7-9 shows the focus constructs in this study.

Table 7-9: Latent variables

Constructs	
Endogenous latent variable	Change in net profit
Exogenous latent variables	Interfirm relations-within the same industry
	Interfirm relations-across industries
	Business-bank relations

7.4.2.2 *Measures/ indicators*

In this model, the inner model demonstrates the relationships between the change in net profit and interfirm relations (within the same industry and across different industries), and between the change in net profit and business-bank relations. For the outer model, this study uses a formative type of measurement model to explain the relationships between constructs and their indicators. A formative model was used for demonstrating bank relations (Tung & Carlson, 2013). Signalling transference can be found not only in the interfirm networks or the relationship between businesses and banks, but also through the cross-connections between these two groups. For a strong conclusion for how symbiotic relationships affect MSMEs' performance, paying attention to what indicative variables demonstrate signalling transference between the two groups is important.

The measurement indicators used in this study are the scores from the network analysis approach. Social Network Analysis (SNA) is one of the methods used to understand the relationship between nodes, units, actors and to measure the ties between these connections (Kilduff & Tsai, 2003; Prell, 2012; Wasserman & Faust, 1994). This study adopts SNA to examine the relationship among individual firms operating symbiotically in Cambridge (See Appendix J). Studies about business network analysis identify some key concepts in terms of actors and relational ties. Actors are sometimes called vertices or nodes to explain how social entities are linked together according to certain factors (Prell, 2012). The actors in this study are the individual MSMEs located in Cambridge, New Zealand which have some connections or interactions with each other in various ways for business purposes. Actors can be linked to one another by relational ties with a variety of meanings

and be specified differently among a set of actors (Prell, 2012; Wasserman & Faust, 1994).

Results from GEPHI show statistics for each business group: in-degree (demonstrating the number of target groups which have been connected), out-degree (demonstrating the number of sources which connect to others; the higher that the number of out degree is, the higher connection with others), and eigenvector (measuring the importance of a node in a network based on a node's connections). This type of continuous data was also used by Castro and Roldan (2013), and Oswald, Edward and Wahab (2017) to run PLS-SEM. Similar indicators were used as binary data for running PLS-SEM in Nawinna and Venable's (2016) study. PLS-SEM works well with ordinal scales with equidistant data (Mooi & Sarstedt, 2011), and can also handle nominal, interval and ratio scales (Fornell & Bookstein, 1982; Haenlein & Kaplan, 2004; Reinartz et al., 2009). Therefore, both continuous data and binary data are applied for the indicator variables of each construct. The change in MSMEs' net profit is categorised into five categories: made significant loss, made some loss, made no profit, gained some profit, and gained significant profit. This is consistent with the studies of Irving (1995), and Homburg and Pflesser (2000) who use the same indicator to define firm performance. Table 7-10 shows indicators which explain each construct.

Table 7-10: Indicators for formative measurement model constructs

Constructs	Indicators	Definitions	Sources of measurement
Firm performance	Change in profit	Overall net profit of a firm over 12 months of 2015.	Questionnaires: Self-administered response.
Interfirm relation-within industry	Eigenvector centrality	Importance of enterprises in a network based on their connections	Questionnaires: Scores from GEPHI calculated from name-generating responses.
	Out-degree score within industry	Number of enterprises which connect to others operating within the same industry.	Questionnaires: Scores from GEPHI calculated from name-generating responses.
	Interactivity within industry	Business transactions among enterprises within the same industry.	Questionnaires: Self-administered response.

Interfirm relations across industries	Out-degree score across industries	Number of enterprises which connect to others across industries.	Questionnaires: Scores from GEPHI calculated from name-generating responses.
	In-degree score across industries	Demonstrates the number of target enterprises which have been connected across industries.	Questionnaires: Scores from GEPHI calculated from name-generating responses.
	Interactivity across industries	Business transactions among enterprise across industries.	Questionnaires: Self-administered response.
Business-bank relations	One bank connection	Lending relationship between a firm and a bank.	Questionnaires: Self-administered response.
	Business purpose transaction	Informs banking transactions among enterprises.	Questionnaires: Self-administered response.

7.4.2.3 Measurement model

The assessment of the measurement model for formative indicators in PLS-SEM is based on convergent validity, collinearity, and significance and relevance of the formative indicators (Hair Jr et al., 2016). Convergent validity explains whether indicators of formative latent variables correlate highly with reflective indicators of the same constructs (Bearden, Netemeyer, & Haws, 2011; Bruner, James, & Hensel, 2001). A review of previous studies found the relationships between businesses and banks had occurred since businesses started operations. The strength of ties depended on the period of time during which businesses have accessed banks' products and services (Degryse & Ongena, 2005). The social connections between borrowers and lenders enable firms to reduce the borrowing costs (Engelberg, Gao, & Parsons, 2012). Therefore, this study uses the number of years that a business has been a customer of the bank to explain business-bank relations which is in line with the studies of Palmatier, Dant, Grewal and Evans (2006) and Reguera-Alvarado, Blanco-Olover and Martin-Ruiz (2016). Involvement in terms of accessing online banking (Gerrard & Barton Cunningham, 2003; Jayawardhena & Foley, 2000), financial plans (Rajaobelina & Bergeron, 2009), and financial products and services (Tung & Carlson, 2013) can demonstrate the concentration of relationships between banks and businesses (De la Torre et al., 2010). These

transactions affect the element of risk and return of MSMEs. MSMEs can reduce the bank transaction costs through the development of financial technologies (Frame & White, 2014). Redundancy analysis was applied in order to check path coefficients between indicators of formative latent variables and indicators of reflective latent variables.

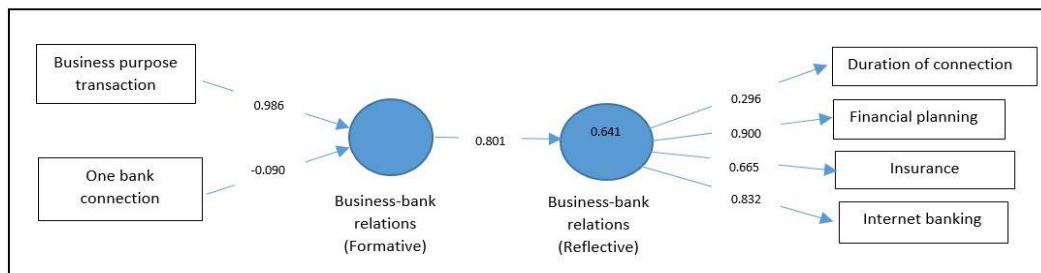


Figure 7-1: Convergent validity of business-bank relations

Figure 7-1 traces the path coefficient between business-bank relations (formative) and business-bank relations (reflective) of 0.801 which is high (minimum magnitude of 0.8). Therefore, it is concluded that the formative indicators of business-bank relations contribute at a sufficient level to its intended construct (Chin, 1998). This demonstrates the convergent validity of the indicator variable explaining contact with banks for business purposes or bank transactions and the indicator variable explaining one bank connection as the component predictor of business-bank relations.

The convergent validity of inter-firm relations (within the same industry and across industries) was also checked. According to prior studies, interfirm relations can be strengthened by the frequency and the number of contacts between people (Granovetter, 1973; Strobl & Peters, 2003). Therefore, for interfirm relations, the frequency of entrepreneurial interaction was used as the reflective indicator. Redundancy analysis results show convergent validity of inter-firm relations as the path coefficient between formative and reflective indicators are 0.916 for the construct inter-firm relations within the same industry, and 0.847 for the construct inter-firm relations across different industries (see Figures 7-2 and 7-3).

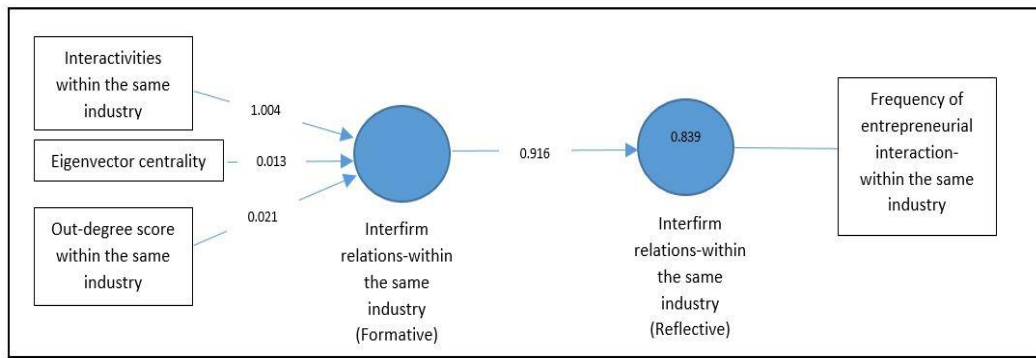


Figure 7-2: Convergent validity of interfirm relations (within the same industry)

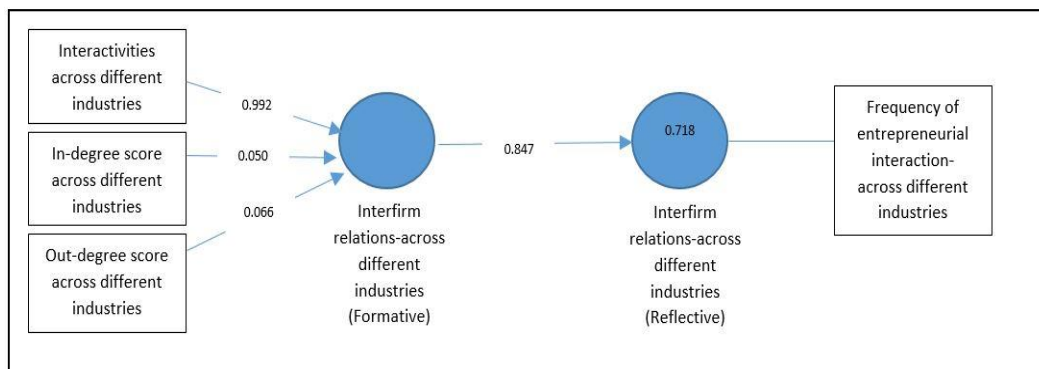


Figure 7-3: Convergent validity of interfirm relations (across different industries)

For Figures 7-1, 7-2 and 7-3, the formative measurement models were checked for any collinearity. While reflective indicators should be highly correlated with each other, formative indicators can act as redundant indicators impacting on the estimation of weight and statistical significance, as the consequence of invalid results. The variance inflation factor (VIF) and Tolerance value of our formative indicators explain the collinearity issue. The Tolerance values are higher than 0.2 and VIF values are lower than 5, therefore there is no collinearity problem between indicative variables (Hair et al., 2011).

Regarding the significance and relevance of the formative indicators, outer weights of each formative indicator were examined to consider the importance of indicators in forming the constructs. The result shows that connection with one bank is an important indicator demonstrating the relationship between businesses and banks (outer weight is 0.942, P Value = 0.000). The results from Smart-PLS (See Appendix K) show that all indicators were retained as outer loadings are more than

0.5. Some indicators which have outer loadings less than 0.5, but are significant in the outer model, are also retained. (Hair Jr et al., 2016).

7.4.2.4 Structural model

Structural model (inner model) presents the path coefficients between constructs. It informs the effect between exogenous latent variables and endogenous latent variables, and between the exogenous latent variables themselves (see Table 7-11).

Table 7-11: Path coefficients between constructs

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Business-bank relations > Change in net profit	-0.252	-0.248	0.093	2.707	0.007
Interfirm relation - across industries > Change in net profit	-0.063	-0.035	0.104	0.602	0.547
Interfirm relation - across industries > Business-bank relations	0.237	0.125	0.231	1.026	0.305
Interfirm relation within industry > Change in net profit	0.089	0.076	0.105	0.849	0.396
Interfirm relation - within industry > Business-bank relations	0.172	0.124	0.159	1.083	0.280

Table 7-11 demonstrates that the relationships between businesses and banks have the strongest effect on the change in MSMEs' net profit (path coefficient of -0.252, t Statistics = 2.707). The statistical negative effect shows that the higher the level of connections with one bank, the lower the change is in net profit. This could be because MSMEs in Cambridge are non-growth-oriented firms which aim to be sustained rather than invest in big projects, so large, long-term loans are quite rare. They tend to use internal finance sources, including retained earnings and cash, rather than external sources of finance, debt. This capital structure could associate

with the firm performance and obligation to access capital from financial institutes (Brealey, Leland, & Pyle, 1977). Although business owners can gain benefits of tax reduction from debt financing, this advantage is found only at the beginning (Israel, 1991; Lin & Chang, 2011).

A further possible explanation is that MSMEs contacting banks for loans are required to provide more information and collateral which increases high agency costs and can result in negative business performance. This is consistent with some studies arguing that unclear financial statements can generate higher transaction costs (Berger & Frame, 2007). Banks in Cambridge are branches for headquarters. Although headquarters and their branches share similar characteristics, some policies and competitive strategies are different (Heard, Menezes, & Rambaldi, 2017). The complexity of obtaining loan approvals is greater in branches than at headquarters. Businesses must provide enough information as inadequate information can increase transaction costs (Berger & Udell, 2002).

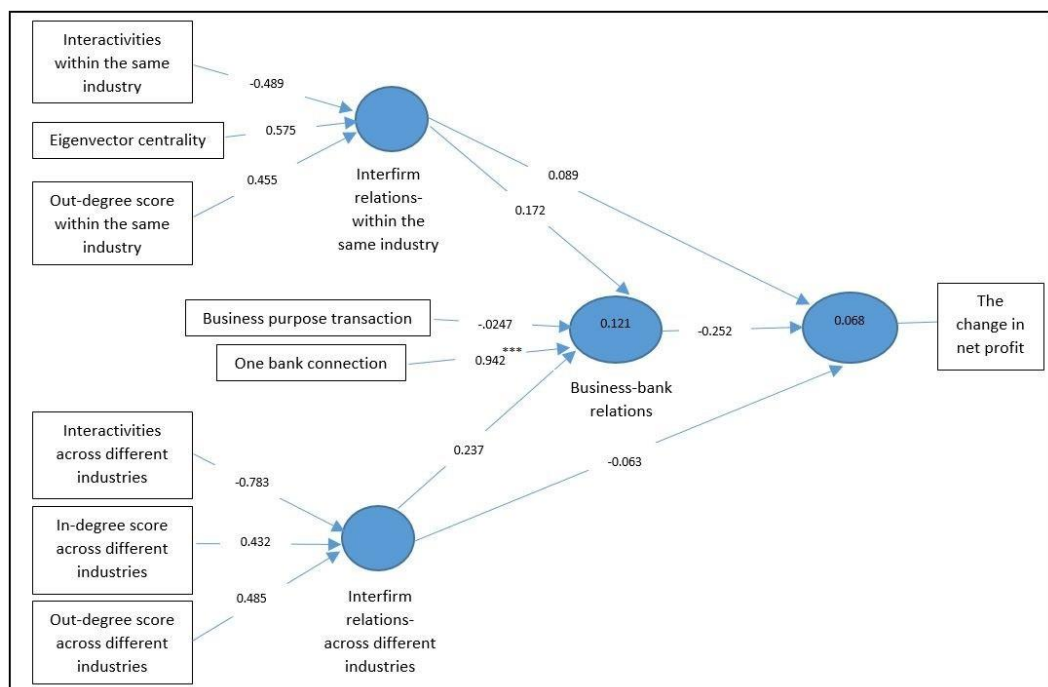


Figure 7-4: Structural model

Figure 7-4 provides a clearer picture of the inner model (structural model). The statistical findings show significantly that change in net profit was not associated with business relationships, both among businesses operating in the same industry

and those which operate in different industries (t Statistics = 0.849 and 0.602, respectively). Tolerance value and VIF value were checked, and the findings show no collinearity among constructs in the overall picture. The coefficient of determination (R^2) indicates how the accuracy of the model is predicted by constructs. R^2 of 0.068 for the change in net profit means that relationships among businesses, and relationships between businesses and banks explain 6.8 percent of the variance in the change in net profit. Relationships between businesses operating in the same and different industries explain 12.1 percent of the variance of relationships between businesses and banks. Although it is arguably about the acceptable level of R^2 , the low R^2 can be regarded as a high value which can be accepted in some areas, particularly in exploratory research (Henseler, Ringle, & Sarstedt, 2012). Similarly to previous research, this is understandable for the research examining business relationship (Mitrega & Pfajfar, 2015; Ritter & Geersbro, 2011). This percentage of the deviation gives signals regarding how effectively the indicative variables predict the change in net profit.

MSMEs adopt the concept of symbiosis to leverage potential gains from networking. However, their interactions could be in the form of relationships that are maintained at arm's length and lack intimacy. These connections do not involve any formal contracts yet occur because of geographical proximity. At the firm level, businesses could be connected with other firms operating in the same industries due to inadequate products or services. However, firms were connected to others operating in different industries because of potential and additional benefits to be gained through interaction with others.

Personal connection between business owners is high with a high frequency of interaction. This could limit business owners' attention and time for business operations and customers. These findings are consistent with Batjargal's (2003) study which found network heterophily in Russian companies and interactions among various firms indicate no significant effect on business owners' profit margins. As Cambridge MSMEs' are non-growth-oriented firms, they may tend to use networks for sustainability and to gaining financial freedom in the long term.

Previous studies in small firms in Australia found that networking has a positive impact on firm survival, but not ROE (Brüderl & Preisendörfer, 1998; John, 2007).

7.4.2.5 Mediated effects

The one of main objectives in using PLS-SEM is to examine whether relationships among entities in one group are associated with a firm's performance via relationships among entities in other groups acting as mediators (relationships in one group are interfirm relations, and business-banks relations the other). The two hypotheses H_1 and H_2 formulated in Chapter 3 were checked in this chapter.

To examine the effect of a mediator, the direct effect between exogenous latent variables and endogenous latent variables should be significant (Hair Jr et al., 2016). Although this condition could be ignored, the effects of a mediator can be seen clearly when correlations between constructs are strong (Zhao, Lynch Jr, & Chen, 2010). Regarding the structural model, there is no significant direct effect of relationships between businesses operating in the same industry on changes in net profit (path coefficient of 0.089, t Statistics = 0.849). Also, there is no significant effect of relationships between businesses operating in different industries on the change in net profit (path coefficient of -0.063, t Statistics = 0.602).

According to indirect effects of constructs evaluated by PLS-SEM, there is no direct association between interfirm relations and change in net profit. Correspondingly, the first hypothesis that relationships with banks mediate the effect of relationships among businesses on a firm's performance is not supported. Although previous studies state the benefits of trust between suppliers and retailers (Gounaris, 2005), these strong relationships between MSMEs in Cambridge were not found. This could be because discount and credit terms given to some businesses, particularly those operating in hospitality industries, are smaller compared to benefits acquired from large companies which provide more financial incentive than small firms. Many retail businesses could contact large-sized firms located in bigger towns such as Auckland, Wellington, Christchurch, or even overseas suppliers. They can gain benefits in terms of price reduction and credit term reduction (Ganesan, 1994; Yue, Austin, Wang, & Huang, 2006) which allow them to run business without using bank overdrafts and short-term loans.

According to total effects accessed by PLS-SEM, despite significant direct effects of having relationships with banks on performance of a firm (path coefficient of -0.252, t Statistics = 2.707), there were no significant effects of business-bank relations and interfirm relations within industries and across industries on the change in net profit as path coefficients are 0.275 and 0.311, respectively, indicate (see Figures 7-5, and 7-6). Therefore, the second hypothesis that relationships among businesses mediate the effect of relationships between businesses and banks on changes in net profit is not supported.

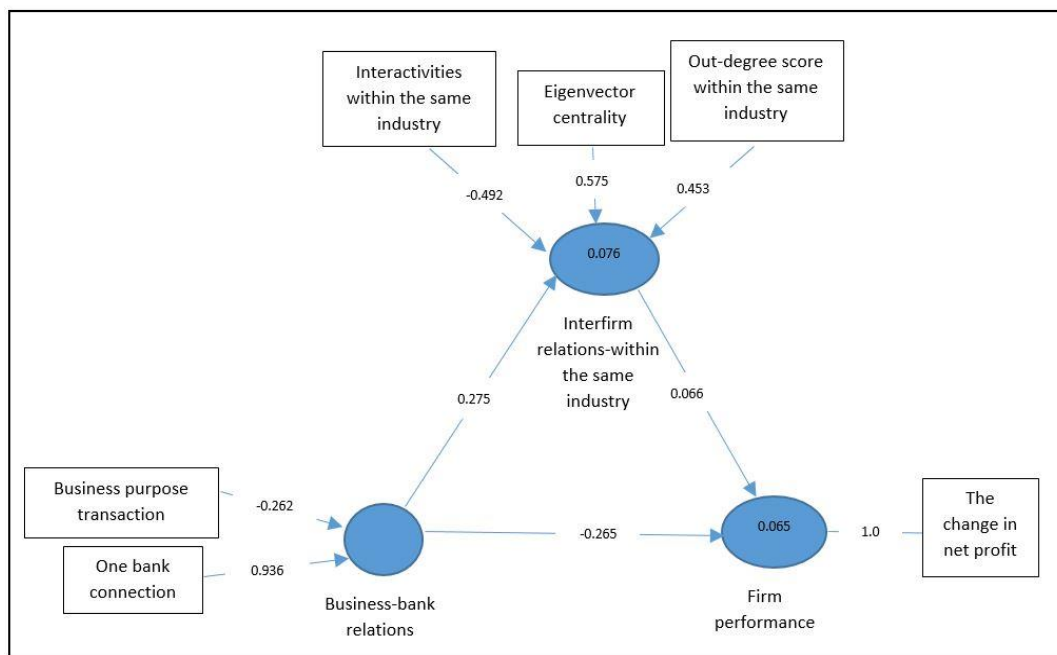


Figure 7-5: Path coefficients between a bank-business relation and a business-business relation (within the same industry)

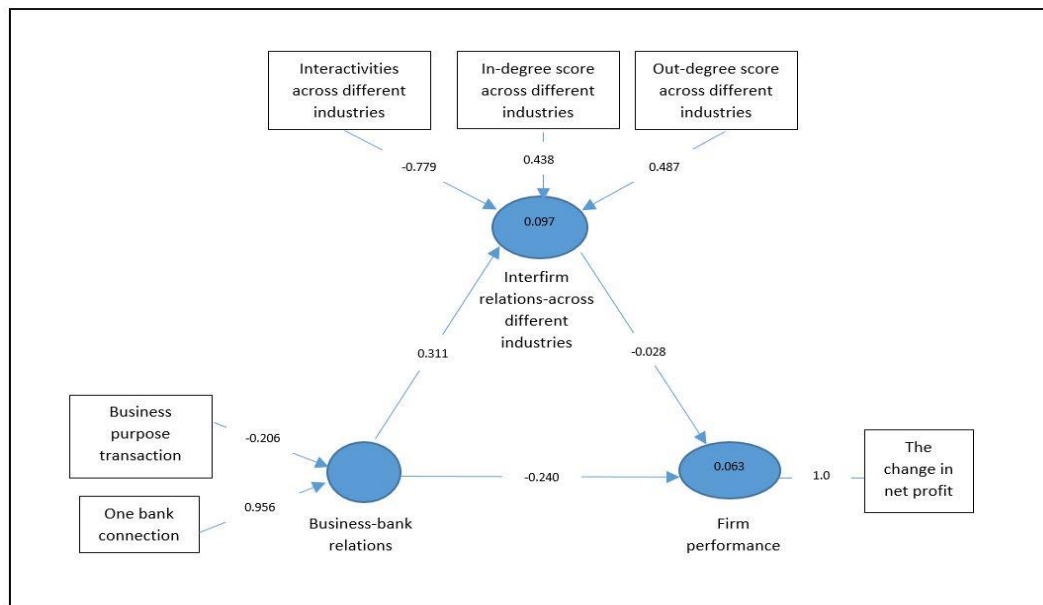


Figure 7-6: Path coefficients between a bank-business relation and a business-business relation (across different industries)

An explanation for this could be that because MSMEs in Cambridge are non-growth-oriented, aiming for sustainability rather than investing in large projects. Many of them are not required to have formal contracts with a financial guarantee from banks. Also, the connections between MSMEs and banks in Cambridge occur during daily transactions through internet banking, electronic funds transfer at point of sale (EFTPOS), and automated teller machines (ATM). This financial innovation plays an important role for small firms in gaining performance benefits from various financial tools (Brunswick & Vanhaverbeke, 2015). Regarding lending relationships, short-term loans are used for merchandise inventory, machinery, shop decoration and renovation, not for project investment. Therefore, this does not support building interfirm relations.

7.4.2.6 PLS-SEM results, discussion and limitations

This study adopts PLS-SEM to highlight the findings from Ologit, and to examine mediated effects of relationships among different entities on a firm’s performance. The structural model explains the relationships between the change in net profit and interfirm relations, and between the change in net profit and the relationships between businesses and banks. Connection scores of interfirm relations were accessed from network analysis.

It was found that a single relationship with a bank is the important factor explaining business-bank relations in Cambridge. The statistically negative effect shows that the higher the level of connections with one bank, the lower the change in net profit. This may be because of the holdup problem generated when a single bank has the monopoly (Farinha & Santos, 2002). Jean-Baptiste (2005) argues maintaining close and long-term relationships with just one bank could lead to lending constraints from other financial institutions because of information asymmetry. Maintaining a single leading relationship could reduce the bargaining power of the company to attain a reasonable interest rate (Rajan, 1992) and makes the refinancing process more difficult (Detragiache et al., 2000). Its impacts can be seen in the reduction of firm profit. As connections between banks and MSMEs in Cambridge mainly involve daily transactions, and not long-term lending relationships for big investment purposes, growth in net profit can be reduced in a competitive economic environment.

The findings also show that the relationships among businesses in the same and across industries were not associated with changes in net profit. Regarding mediating effects, there is no association between the two constructs of business-bank relations and interfirm relations. Although the Signalling theory is initially used to draw the concept of links between interfirm relations and business-bank relations, there are no mediating effects which associate with the change in profit. The results of Ologit address some probable explanations. This could relate to characteristics of non-growth oriented firms and attributes of business relationships. Many MSMEs in Cambridge are retail businesses which may have strong connections with big suppliers in other big towns of New Zealand, but not within Cambridge. The benefits in terms of discount and credit terms are received from those suppliers, enabling MSMEs to use less financial support from banks. Interfirm relationships tend to occur due to location proximity. Although there are personal interactions between business owners, these connections might not play much of a role in enhancing a firm's net profit.

This study builds a structural model and discusses the findings in relation to the research objectives and literature. However, PLS-SEM cannot test models with

causality as it lacks an over-identification test (Rönkkö & Evermann, 2013) which means PLS-SEM cannot test whether, if the change in net profit of MSMEs decreases, business owners will cooperate with other businesses to reduce costs and expenditures. The deterioration in business performance may cause the high frequency of interactions between business owners as they have more time for social interaction. Interacting with many business partners and making agreements in terms of sharing costs, expenditures and human resources could be a reaction after a firm's net profit declines. Also, PLS-SEM cannot detect the endogeneity between variables as it is used to estimate statistical associations between measurement variables and predictive variables (Cheung, Myers, & Mentzer, 2011; McIntosh, Edwards, & Antonakis, 2014). PLS-SEM is inappropriate for application in a model with endogeneity concerns (Larcker & Rusticus, 2010) as PLS-SEM is only applicable for a recursive model in which there are no causal loops in analyses (Goh, Ali, & Rasli, 2014; Hair et al., 2011). These gaps in the model need to be addressed, and in this study qualitative analysis method was applied and is discussed in the next step.

7.5 Chapter conclusion

This chapter presents the empirical findings analysed by univariate, bivariate and multivariate analysis techniques. Descriptive statistics show the overall picture of MSMEs in Cambridge analysed through using 200 surveys. The results of Ologit demonstrate the key factors associated with firm profit and firm growth. It is found that variables relating to symbiotic relationships associate differently with changes in profit and the growth of firms. Recursive bivariate probit was applied as the robustness test, and its result confirms causalities between variables. Although Ologit and PLS-SEM were used to find the relationships between independent variables and dependent variables, their results cannot be compared. This is because PLS-SEM is mainly used to examine mediated effects between interfirm relations and business-bank relations. PLS-SEM is a suitable method to deal with latent variables as the components of each construct can be explained by indicative variables. Both Ologit and PLS-SEM results indicate magnitude and directions between variables; however, they cannot show causes and reasons underlying the

associations. These are the gaps of econometric models which link to the necessity for further analysis recommended in the following chapter.

Chapter 8: Insights of Symbiotic Relationship: How it relates to Risk, Return and Values

8.1 Introduction

This chapter discusses the empirical findings of the qualitative analysis undertaken. The results of multivariate analysis in Chapter 7 show the factors associated with the performance of micro-, small and medium enterprises (MSMEs). However, how and why networking and connections enable MSMEs to enhance their performance need further exploration, to identify the rationale for connections (Brüderl & Preisendörfer, 1998) and clarify the construction of symbiotic relationships. To make businesses sustainable, an understanding of the value of signal transference and how symbiosis can reduce risk and increase returns is important for business owners, business associations, and local and national government.

This chapter focuses on how and why symbiosis contributes to financial gains in MSMEs. A unique feature is the use of a financial framework to consider the positive contribution of symbiosis to individual firms. Using qualitative research methods, data is gathered from individual businesses operating in different industries through interviews selected by a purposive sample technique. This approach is widely used for examining the content of networks and how different entities interconnect (Jack, Dodd, & Anderson, 2004; Lechner & Dowling, 2003). This chapter examines semi-structured interviews with open-ended questions used to explore real situations in the business community. Of particular interest is how businesses transact with other businesses at the local community level. Thematic analysis was adopted for data analysis and produced clear findings.

This chapter begins with how to develop interview tools, demonstrating the methodology used for qualitative analysis. This section describes how samples were selected and outlines the process of thematic analysis. Then, empirical results and discussions are presented, followed by a chapter conclusion.

8.2 Development of research tools

In order to maximise the value of information gathered from interviews, the initial step is to decide what questions to ask. For these interviews, open-ended questions were created based on the main research questions. Following correct interview techniques and processes, and ethical considerations are also important. Questions and potential samples were sent to the Ethical Committee of the University of Waikato in the first stage; these were approved on 10th May 2016. A pilot study was undertaken prior to the process of data collection. To develop interview questions that are readily understood, several evaluation criteria were used to ensure reliability and validity.

8.2.1 Techniques to improve quality of the interviews

Semi-structured interviews were used for data collection. Open-ended questions, requiring more than a yes/no answer were asked. Semi-structured interviews were chosen as these can provide a deeper understanding of social phenomena. In this technique, the interviewer does not give specific answer choices, but provides an opportunity for the interviewee to offer an opinion and elaborate upon answers in more detail (Rubin, 2012). Some questions may be omitted depending on the immediate situation and the flow of conversation (Saunders, Lewis, & Thornhill, 2009). This interview technique is helpful for obtaining data, particularly primary data. The strength of this interview process is that it not only allows interviewees to talk deeply and freely, but also offers opportunities for interviewers to observe the behaviours of participants. Nuanced data like this cannot be collected from questionnaires or from secondary data sources. The conversations between the two parties can be recorded and replayed for analysis. Another consideration is that a one-to-one interview is helpful when investigating sensitive or personal topics (Guest, Namey, & Mitchell, 2013). Establishing a friendly environment in an interview can help to reduce interviewee nervousness about talking with interviewers once a conversational flow is created (Wilson & H. Lloyd Goodall, 1991).

According to Rubin (2012), in order to obtain quality data from interviews, interviewers must to pay attention to points such as immediacy and authenticity,

balance and thoroughness, credibility and accuracy, richness and detail (Rubin, 2012). For immediacy and authenticity, it is suggested that researchers interview people who have first-hand experience, and those who can provide current information relating to the research topics. In this study, interviewees were current members of Cambridge Chamber of Commerce (CCC). This included people working with banks or financial institutions, and people working at CCC. Current members of the Chamber can provide immediate and authentic information regarding interactivity and current performance of their businesses.

In relation to balance, interviewers are advised to collect data from different groups of people to obtain different points of view regarding the same topics. For example, in this study business owners whose businesses are operating in the same industry were interviewed. Different information from different groups will give broad information resulting in rich data. For thoroughness, researchers could follow up with new perspectives and explore alternative data when conducting further interviews. This can help researchers fill gaps and access missing information. Regarding richness and detail, researchers should be able to probe when answers from interviewees seem to be too narrow or too general. Asking for more examples or explanations is one technique to improve the richness of the data. Additionally, asking for business background information to specific questions regarding symbiosis, risk and return of enterprises allowed researchers to stay focussed on the main questions of the study.

8.2.2 Ethical approval

Before collecting data, ethical approval was granted. This study follows the guidelines produced by the University of Waikato Ethics Committee. Two documents need to be given to research participant before the interviews. Firstly, a cover letter and information sheet needs to be provided for participants informing them about the study (see Appendix E). The cover letter informs participants about what types of data need to be collected; their right to refuse to answer any particular question; and their right to withdraw from the study at any time. Consent forms need to be given to participants (see Appendix F) to confirm that they are happy to be involved in the interview process. However, they have the right to choose if they

prefer not to sign. For this study, no participants withdrew from the interview process. However, one participant did not want to be audio recorded, so notes were taken to record this conversation. For transcription and analysis, real names were kept. Participants' identities are to be kept confidential; except for the purposes of reporting to an individual. The digital and written records, and other identifiable materials are kept carefully and only the researcher can access them.

8.2.3 Preliminary study (Pilot study)

A preliminary study for this research was made before the primary data were collected through surveys and interviews. A pilot study is significant for several reasons. Firstly, Yin (2012) argues a pilot study is used to refine the conceptual framework; it is beneficial in developing a “substantive frame in consultation with members of its primary audience” (Weiss, 1995, p. 16); and assists in clarifying which questions should be asked to collect useful responses for answering the research questions. Secondly, a pilot study is helpful for reflecting on the usability of the questions (Connelly, 2006), helping to ensure that surveys or interview questions are well structured (Bryman, 2012). Surveys and interview questions can be tested to establish whether they make sense or should be developed (Easterby-Smith, Thorpe, & Lowe, 2002). At this point, participants can take part in this process and help to refine and verify questions (Harvey, 2011) which is more important than self-correction by interviewers (Bryman, 2012). Researchers can gather different answers from interviewees which are critical for the analysis. Therefore, a pilot can help researchers to adjust questions to be either more specific or broader. Third, a pilot study provides researchers some experience regarding time-management, problem-solving and flexibility in developing conversation.

The main objective of this study is to investigate the impacts of symbiotic relationships on firm performance of MSMEs in Cambridge. The process of developing questions is critical for conducting interviews (Teijlingen & Hundley, 2002) in order for researchers to optimise the possibilities for obtaining valuable data. It concurrently conducts surveys and semi-structured interviews, then adopts quantitative and qualitative analysis techniques for analysis. Literature regarding the concept of symbiosis and how this concept is adopted to enhance performance

of firms was also reviewed. To understand the components of risk and return affecting corporate performance, questions have been kept broad. The interview questions were reviewed by a research panel and the CEO of the Cambridge Chamber of Commerce. The rationale was to enhance understanding of the context of Cambridge to assist a smooth interview process. The CEO suggested some changes to questions for clarification, and provided recommendations and suggestions on who should be asked. Final interview questions were confirmed after all parties agreed. This process helped to increase the validity of the research tools and the scope of the analysis.

Several problems occurred in the course of the pilot study. The first related to the difficulty of understanding the research context. This happened when interview participants were not the main target sample, for instance, students and people who do not operate businesses. They are not able to tell how business relationships with other business owners help them to grow returns and reduce expenses. A related problem occurred when a question explanation tended to guide the interviewees' ideas. For instance, the participants did not understand how to answer questions about business connections. When interviewers gave example answers, many interviewees responded in ways that were similar to those examples. To present favourable images of themselves, many interviewees responded that they have business relationships with others. The researcher paid attention to this, so questions and examples were asked carefully in the real interviews. When using qualitative research methods, overlooking these reactions can undermine the validity and reliability of the research. Validity is related to how accurately the content is reported by researchers (Johnson, 1997), while reliability demonstrates how measurements of research tools generate similar findings (Golafshani, 2003). The validity of answers can be undermined if the interactions among business owners are directed by the interviewers. The result from analysing inaccurate data cannot demonstrate insights about interactions among business owners, and their impact in the real situation.

8.2.4 Quality evaluation

This section presents key criteria for a quality study. It first indicates the key criteria for reliability and validity of research widely mentioned in prior studies. Secondly, it describes in more detail the strategies which researchers need to use to meet these criteria.

8.2.4.1 Evaluation criteria

Lincoln and Guba (1985) identify two types of criteria for accessing qualitative studies: authenticity and trustworthiness. Authenticity is indicated by various criteria: fairness, ontological, educative, catalytic and tactical. Trustworthiness comprises four equivalent criteria: creditability, transferability, dependability, and confirmability. 'Credibility' means that findings present respondents information without any contamination of ideas from other groups and the self-interpretation of researchers. Lincoln and Guba refer to two techniques for accessing creditability.

The first is respondent validation or member validation. The aim of this technique is to confirm what respondents provide and what researchers perceive. Adopting this technique, findings or responses from participants are returned for confirmation. This is beneficial as additional information can be collected from respondents. However, potential risks can occur when respondents want to contest or censor the findings.

The second is triangulation. Adopting this technique, researchers can use more than one method in the data collection process (Webb, Campbell, Schwartz, & Sechrest, 1966). The same phenomena can be investigated by several observers, and be framed by different theoretical concepts (Denzin, 1970). Researchers can use unobtrusive methods which directly avoid interactions with respondents in order to study some phenomena (Denzin, 1970). Simple observation is one technique by which researchers can obtain data without incorporating themselves into situations (Webb et al., 1966). Some secondary data accessed through documents and record can also be used for triangulation (Lee, 2000).

An equivalent criterion of trustworthiness is 'transferability'. Transferability is indicated when the data are rich or provide full details. The responses from

participants should provide thick descriptions which can be used to interpret real phenomena in particular situations (Geertz, 1973). Another criterion is dependability. Researchers are advised to maintain complete records in the research processes, including records of the construction of research problems, selection of data and samples, interview transcripts and interpretation of data analysis. It is important that these documents can be accessed by a research panel for justification or further discussion. The last criterion for accessing trustworthiness of research is 'confirmability'. This criterion relates to the faithfulness of researchers in conducting research with objectivity so that the study interpretation is faithful to existing phenomena (Leininger, 1994).

8.2.4.2 Strategies for validity and trustworthiness

Onwuegbuzie and Leech (2007) suggest various techniques for accessing the intrinsic value of qualitative research. This study employs six techniques: triangulation, leaving an audit trail, theoretical sampling, eliminating spurious relations, referential adequacy, and rich and thick descriptions. The detailed description of each technique is provided in the following sections.

(1) Triangulation

Triangulation is a technique for obtaining rich data (Jick, 1979) and enriching the creditability of the research (Bryman, 2012) by involving different methods for investigating the same phenomenon (Denzin, 1970; Lincoln & Guba, 1985). In this study, various methods were adopted to investigate the impacts of symbiotic relationships on MSMEs' performance. Business owners operating businesses in various industries were selected as samples, then categorised by industrial stratification. This assisted the researcher to identify whether business owners who operate the same type of business provide convergent responses, but differ from those operating businesses across different industries (Curran & Blackburn, 1994). The use of triangulation was for evaluating whether enterprise connections among businesses operating within the same industry are similar. This was indicated by the lists of name given by business owners when asked about their business connections. For triangulation, this study adopts both financial frameworks and network theory to evaluate the mutual advantages of business connections in terms of return and

risk. Financial literature suggests that firm performance can be improved by enhancing returns and decreasing costs and expenses. Signalling theory indicates that information can be transferred in symbiotic environments. Networking theory supports this view and indicates the potential values of networks and connections between several businesses and other entities. The use of various perspectives to interpret the results of a study enhances the value of extensiveness of the research outcomes. To achieve triangulation, the researcher participated in multiple meetings and events organised by CCC to observe the interactions between business owners in Cambridge. This participation offered an opportunity to observe their business connections and enrich the data. For example, at the open house of one enterprise, the name of its business partners and their mutual action plans were announced.

(2) Leaving an audit trail

In order to assure the auditability of the whole study, all documents were kept in two ways. Firstly, details of samples, interview question outline, interview schedules and the list of meetings a researcher attended were kept (Appendix G). Secondly, raw data (interview files and transcriptions), instrumental development information (pilot form and responses from the preliminary study), and data reconstruction and synthesis products (coding, findings and interpretations) have been accessible to the supervisory panel during the research process.

(3) Theoretical sampling

Researchers can select samples based on where the data have led them (Newman & Benz, 1998). Theories and existing literature inform researchers as to what data should be collected, but the samples can be flexible and changed during data gathering in the field (Goetz & LeCompte, 1984). This study initially aimed to investigate how connections and cooperation among MSMEs enhance their returns and risk positions. Previous studies suggest that a number of micro- and small enterprises adopt the concept of symbiosis by cooperating and supporting each other. However, after entering the field to interview business owners, they commented on the associations with other entities such as banks, CCC, and i-SITE (the Visitor Information Centres). Correspondingly, the researcher increased the sample by interviewing bankers and people who work at the Chamber and at

Cambridge i-SITE to provide supportive and corroborative interpretations of prior theory.

(4) Eliminating spurious relations

Although some previous studies state that the frequency of interactions of business owners and the strength of business relationships between several enterprises offer positive benefits for firm performance, researchers did not avoid the possibility of contrary relationships. During the interviews, participants were asked whether unfavourable business performance lead them to associate or network with others. Participants were asked whether profitable performance decreased their interactions with other business owners or halted interactivity connections with other businesses. The structural relationships between impacts of connections or networks and factors generating these impacts were summarised and sent to the supervisory panel to recheck with the interview transcriptions.

(5) Referential adequacy

This study kept all supportive materials, for instance, interview files and transcriptions, thereby enabling the researcher to recall and make comparisons when further data analysis was needed.

(6) Rich and thick description

This technique is used to increase the creditability of the research. It informs how the data or interview responses interpret findings (Onwuegbuzie & Leech, 2007). In this study, interview transcriptions were used to demonstrate completed information of what participants said. Note-taking by a researcher recorded detailed information relating to the study context, particularly during meetings among members of the Chamber and events arranged. This provides supportive information which minimises personal bias of researcher during data analysis. For example, during an interview, one participant mentioned that his business had strong connections with other firms. This information was supported when this participant publicly named his business partners, interactivities and cooperation plans during an open house of his business. Rich and thick description technique can be used to confirm or contradict the emerging theories (Becker, 1970).

8.3 Methodology

8.3.1 Data and sample selection

Business owners who operate MSMEs in Cambridge were chosen as the participants for interview. This study concurrently conducted questionnaires and interviewed participants using open-ended questions. Responses were selected for analysis from participants who answered open-ended questions, particularly those giving more details about their business connections. Overall, 100 out of 200 respondents commented on open-ended questions. This study also investigated relationships between MSMEs and banks, so one of the bankers was interviewed. Thematic analysis was used to analyse these responses.

8.3.2 Thematic Analysis

Thematic analysis has been widely used for analysing qualitative data: texts, chapters, articles, or interview transcripts (Fereday & Muir-Cochrane; Hayes, 1997; Patton, 2002; Tuckett, 2005). This method was used to extract detailed information from the semi-structured interviews. Although participants were asked questions relating to the research questions and the aims of study, the data seem to be overwhelming. In order to identify symbiotic relationships in Cambridge look like, it is important to adhere to the theories used and the conceptual framework of the thesis. The analysis aimed to identify what business owners offer about their networks and relationships with others. Both manifest information expressed directly and latent meanings beneath the surface of their explanations were analysed. Thematic analysis guides the process for coding vague sentences, and suggests how to link several codes to themes and report on them systematically (Braun & Clarke, 2006). This method allows researchers to use flexible procedures with the data and employ both inductive and deductive approaches. An inductive approach can be called a data-driven method as codes and themes emerge from the raw data: a deductive approach or theory-driven method codes raw data based on theories, concepts or existing ideas.

This study uses both techniques to analyse the insights of respondents. As the intention was to understand the attributes of interfirm networks and business-bank

relations, the types of connection between different entities, strength of ties between enterprises, and interaction among enterprises were the focus of the analysis. For an inductive approach, the study considers the new information emerging from the raw data. It is critical for the researcher to pay attention to facts which have not been considered before in the conceptual framework, and those which are neglected in the theoretical background in order to discover new knowledge. Coding data is based on participants' narratives as their experiences and philosophy provide insights into business symbiosis in Cambridge. As the study investigated the impacts of symbiotic relationships in Cambridge, characteristics of the town, policy, plans and principles created by local authorities were also considered in the coding process.

For a deductive approach, the study draws on theoretical constructs from financial framework and theories as well as social network framework relating to density, centrality and betweenness (Burt, 1992) and strength of tie (Burt, 1992; Granovetter, 1973). Reviewing Transaction cost theory, data relating to information transference (Williamson, 1985), cost reduction (Bygrave & Minniti, 2000), and bank transactions (Petersen & Rajan, 1994) were considered. Regarding Resource dependence theory, external environment (Hillman et al., 2009), competitive connection and industrial associations (Butler & Sohod, 1995), financial and mental support (Larson & Starr, 1993) were considered. The study reviewed Stakeholder theory to generate coding relating to stakeholders (Mitchell, Agle, & Wood, 1997), enterprises and business owner characteristics (Donaldson & Preston, 1995), and sustainability (Shahin & Zairi, 2007; Van den Berghe & Louche, 2005). Signalling theory was adopted for coded data relating to information as asymmetry (Holmes et al., 2003), signaller, signal, receiver, feedback, and signalling environment (Connelly et al., 2011).

Braun and Clarke's (2006) six phases used to analyse qualitative data in a thematic analysis approach are adopted to analyse interview transcripts in this study.

Phase 1: Familiarising yourself with the data

This process is used for familiarizing the researcher with the content of a dataset and checking whether interview responses are relevant. Reading through the

interview transcripts critically and carefully and considering the meanings that may underlie the dataset by considering what participants are trying to convey, and what assumptions could be made is important. At this stage, some techniques (note-taking, annotating transcripts, highlighting, and writing comments on transcripts) are helpful for recording interesting points for use in the subsequent stage of analysis.

Phase 2: Generating initial codes

Coding is the initial stage of qualitative data analysis. Codes demonstrate a summary of the data in both their semantic and latent meanings, therefore, indicating how data is construed (Basit, 2003). By analysing the underlying meanings, some codes emerge after interpretation of the data content. Hard-copy data can be coded manually; however, in keeping with advanced technological techniques, a computer software programme was used in this process. After reading through the whole dataset, some interesting words, sentences or paragraphs relating to research questions from participants should be coded. After generating the first codes, the researcher continues reading the data until recognising other information which relate to the research questions. At this point, it should be considered whether that data contains similar concepts to the first code. If it holds different meanings, a second code should be generated. During the coding stage, some coded data could be modified if more relevant to other concepts.

In an inductive approach, data coding is driven by the data content, not by literature content. In this study, for example, one sub-category 'Conflicts of interest' elaborates on internal behaviours of human beings. Displeasure among business owners in business networks can hinder their cooperation. Therefore, the study codes words and sentences which are relevant to disagreement, contradiction, and disparity of various transactions and interactivities among entities in networks. These can be justified directly and indirectly based on interview responses.

This study used a computer software programme, Nvivo, for coding all interview transcripts. The codes were generated by adopting a deductive approach, based on research questions and related literature. For example, by adopting Resource

dependence theory, 'competitive connection' was coded into one of the categories explaining interfirm networks (Butler & Sohod, 1995). After reviewing Signalling theory, it was found that sender, signal, receiver, and feedback are critical factors for businesses as they relate to how information is transferred. Connections between business owners from several industries are built and maintained by trust, therefore 'Trust' a category was created, using interview transcripts to support this. The study also focuses on words, sentences and paragraphs of some participants who did not use the term trust explicitly, but they convey attitudes relevant to the concept.

Phase 3: Searching for themes

This process involves placing, combining and merging existing categories into themes. It is important to examine categories which contain similar concepts or ideas. As some categories may overlap, identifying broad topics before determining underlying topics is a good strategy. There are several techniques for combining categories into themes. One is drawing maps between existing categories and seeing how those categories answer research questions. Another considers how themes work together and tell the story from the data. The important point to remember is the coherence of the story rather than reporting everything mentioned by participants. There is no strict rule as to how many themes are appropriate for answering one research question. This depends on the number of categories, and the depth and complexity of the research question.

Phase 4: Reviewing potential themes

This process aims to recheck whether the existing themes answer the research questions. This involves checking whether current categories explain the existing themes, and those themes relate to the data. Some themes may need to be reviewed if they do not provide a response to the research questions. If themes do not capture the dataset or are too broad or too narrow, they may need to be discarded or relocated. In this case, it is important to recheck categories or recode data in order to remove unrelated information, and correlate data.

Phase 5: Defining and naming themes

It is important to review the current themes and consider whether they can be used to answer research questions. This process involves checking the overlap with, and repetition of, other themes. Some themes may contain subthemes explaining the concept of big themes in different aspects. In this case, there needs to be rechecking whether there is sufficient data in those subthemes, and whether they cover the main themes. Thematic analysis allows researchers to reflect on descriptive data and interpretative data. The former relates to informing explanatory data; the latter requires interpreting the meanings underlying the data. The interpretive approach requires critical analytic thinking which could be separately presented in the discussion section. The most important technique for defining and naming themes is the interconnections between themes and the entire data based on research questions.

Phase 6: Producing the reports

In qualitative data analysis, as compared to quantitative methods, it is critical for researchers to write and analyse data concurrently. Reporting the findings can progress from informal writing to formal writing. Notes and memos can help researchers to form a story which fully explains the data based on the analysis. This involves not only reporting data, but requires researchers to develop an argument. Researchers can start from one theme, then use that theme to build a coherent narrative. One theme need not be built from other theme, but the story must be clear, chronological, and consistent with real data.

8.4 Empirical results

Findings from the semi-structure interviews provide detailed information regarding why and how symbiotic relationships enable MSMEs in Cambridge to enhance financial gains. In relation to the ‘why’ questions, the interviews provide insights into the positive impacts of networking and connections among several MSMEs, and between MSMEs and banks. Within a risk and return framework, these symbiotic relationships facilitate individual businesses in the town to increase returns and to reduce costs and expenses of running businesses. Additionally, the

study shows the rationale of these interactions. Several factors supporting or maintaining business networks are found.

8.4.1 Positive impacts of symbiotic relationships

From the empirical findings, symbiotic relationships can be divided into two main types: interfirm relations (relationships between several MSMEs) and business-bank relations (relationships between businesses and banks). In the case of interfirm relations, positive impacts included three key areas: cost reduction, return creation, and value formulation. Examples from the interview are provided as illustrations of these different types of benefits.

8.4.1.1 Cost reduction:

He [an owner of a seller company] always given me a discount because we get them all the time, every week. Pretty much from maybe a few months, he's given us a **better price** because we order regularly.

[Do they deliver to your shop for free?]

Yes, he **doesn't charge the delivery costs** or anything like that. He just couriers it to us but he **pays for the courier**, so we just pay for the coffee. If we have maintenance on the coffee machine, ... all that sort of stuff he pays for. We **don't pay for any maintenance or repair for the machine**, he pays for that. (Interview #21)

I **get the credit terms** of shops which we like to buy ingredient. I like to go to buy ingredients at the same shop, so they give **some discount, free delivery**, and credit term [7days] for me. (Interview #42)

8.4.1.2 Return creation:

The important part of the community is business. ... if everybody in Cambridge are supporting the local businesses by buying products and using the services within Cambridge then that **money circulates within Cambridge**. It also attracts if we **keep the businesses in Cambridge viable and profitable**, then it means that we've got a healthy society and a more balanced age and experience across the community. (Interview #31)

8.4.1.3 Value formulation:

We help each other to look for some safeguard; thief. (Interview #3)

I run restaurant and the next door run the restaurant too. We have different type of food, we may look each other as competitors, but actually not. When I lack of something, ... **I can borrow from them.** And they do the same. We actually **help each other.** It is a temporary solution for critical period. (Interview #2)

I can pop up to the next door shop and talk. I do that many times, so now we become good friends. Sometimes when I have no customers, I just go to talk with them. **Sort of share.** And when they said they have no customer too, then I feel relax. So this mean it is not only your shop is quiet, but other shop have the same problem. It **really help your feeling.** (Interview #1)

Many business owners, especially those who operate retail businesses, have good relationships with their suppliers who sell products, materials, and ingredients. Many retailers receive discounts and purchase at wholesale prices, especially when they order in advance or purchase in large amounts. Some of them not only receive free delivery, but also acquire free products from suppliers to sell. A lengthy credit period provides liquidity and cash flow to retail firms. These relationships enable retail firms to reduce the cost of maintenance. It was found that the big suppliers are firms operating in other cities: Hamilton, Auckland, and Rotorua. The benefits from having business relationships in terms of discounts, special prices and trade credit facilitate MSMEs in reducing restocking fees, operating and advertisement expenses. Similarly, these advantages are found in manufacturing firms (see Table 8-1).

Table 8-1: Positive impacts of symbiotic relationships on the performance of MSMEs

Increase elements of return	Reduce elements of risk
Increase opportunity to: <ul style="list-style-type: none"> • cooperate with experts • increase sales and customer numbers • receive information and to attend training or workshops • enlarge market share and distribution. 	Reduce : <ul style="list-style-type: none"> • advertising expenses • cost of goods sold • delivery expenses • transaction costs • maintenance costs and restocking fee financial costs • through good trade credit conditions

Many participants commented that running businesses in a symbiotic environment adds value to their businesses. Values refer to intangible assets, and direct

advantages received from business networks and connections which positively affect the performance of firms. The findings support the framework of risk and return where, under market conditions, firms can maximize rate of return with a certain level of risk, and minimize the level of risk for every level of return (Bradley, Jarrell, & Kim, 1984). The benefits of business connections regarding cost reduction were observed more in retail businesses and manufacturing firms, those relating to return creation were commented on by service business owners.

In the case of business-bank relations, positive impacts included three sets of items: financial access, financial services, and the opportunity of building business partnerships.

8.4.1.4 Financial access:

We will choose bank which charges least. The bank will charge less if we use their credit service for a long time. (Interview #20)

Because we have to use their money, I get the **special offer such as good interest rate** for investment or buy a house. They came to my shop and gave name cards, recommended themselves, gave me some pamphlets, then explained about it. Like I can choose business rental option if I want to buy a new coffee machine. I can pay monthly rental or whatever stated in the contract. Or, **I can use a bank overdraft**. (Interview #2)

Close-tied relationships between MSMEs and banks were normally found in Cambridge. These relationships were created through interactions between bankers and business owners: lending, visiting work premises, and running workshops. These activities enable bankers to collect soft information on financial status, business owners' attitudes, investment plans, and management skills of owners which are hard to detect (Baas & Schrooten, 2006). The findings are consistent with previous studies. Vegholm (2011) stated that the relationships between bankers and MSME owners depend on how bankers understand MSMEs' specific needs. Many participants, particularly the members of CCC, noted that they received practical solutions about accessing bank financial support. However, non-members receive only general information. In this regard, one non-member observed that he received "nothing except basic information". This could be because business owners who are members of CCC have more opportunities to meet bankers during monthly

meetings, so they can convey their needs, signal their performance or receive banking information to access finance (Ang, 1991).

8.4.1.5 Financial services:

Banks normally **arrange some workshops** for small business owners. Some months we [a banker] arrange workshops for newcomers, so we will invite customers who have just set up in businesses. If we arrange the workshop, let's say 'how to use Xero [an accounting program] to manage cash flow', people who attend will be entrepreneurs who are already operating businesses for quite some time...

[The workshops are run by banks?]

Sometimes we run by ourselves, but many times we cooperate with the Chamber. (A banker)

Normally, lending relationships relate to other interactivities as well. I have duties to give some suggestions, **teach them how to plan and manage cash flow**. The most difficult thing is telling them 'Your businesses aren't gonna be work or it is not gonna be improved if you are still doing this.' But we have to tell them. We see their statements. We see all transactions they did. We see how they operate businesses. (A banker)

When I ring ANZ, I ring up and go: 'Hi, it's Alex, can you do this for me?' I don't have to say my birth date, I don't have to say anything – they know who I am, it's cool, it's really easy. 'Can I have another credit card?' 'Sure.' (Interview #69)

Financial services here provide the opportunity to business owners to access workshops run by banks for helping MSMEs improve their financial management skills. According to James (1987), the differences between banks and other lenders is that banks provide some special services in conjunction with their lending activities. According to Transaction cost theory, MSMEs can use technology and knowledge received from joining banking activities and mentoring programs to minimize transaction costs and increase firm performance (Ang, 1991). Some business owners who obtained a large number of bank loans were treated very well when dealing with banking transactions. The quick services offered by bankers give business owners more time to concentrate on their businesses.

8.4.1.6 The opportunity of building with business partners and customers:

I arrange debt funding. So arrange funding for businesses which means we get two types, with finance from the finance companies and then loans by the banks. I'm a mortgage and finance broker for businesses... if the business owners are business. They're busy working hard on their business and they say to me 'I want to upgrade my coffee machine. It's going to cost me \$20,000 can you arrange finance? Can you do that job for me?' and I say 'Cool, I will do that job for you so that you can stay on your business...'

[How do you choose which source of which bank or which financial institution?]

It's really just from understanding who is good. Within a bank I probably know four or five guys, and one or two particular would be particularly good old friends. Then across the banks, they will do slightly different things. Some banks are really good in property, some are really good in business lending, some just aren't very good, period.

[So if you know a lot of people it will be good for your business?]

Yes, that's right. I mean I've been banking for 20 years. I have heaps of relationships... It's really just from understanding who is good. I've been working with Jane at ASB. She's a good operator, so I know she's a good one. (Interview #7)

We have relationships with all of the banks... Sometimes **we would send people, customers, to the bank and sometimes the bank would send customers to us**... Sometimes the bank sends us mortgage instructions, so we prepare the documents for someone to buy a house. (Interview #88)

Having good connections with banks enables businesses to build more networks and increase their customer numbers. Interviews show relationships between banks and businesses are in the form of vertical networking and diagonal interconnections. In this case, enterprises provide some positive opportunities for banks' performance. Simultaneously, banks also provide benefits for business performance (Braun & Hollick, 2006). This synergic association offers mutual advantages. The cooperation between businesses and banks could not occur if core activities and business objectives of banks and firms were not aligned with each other.

In Cambridge, a number of businesses contact banks for a range of business purposes. In terms of business partners, some businesses gain benefits from connecting with banks as business partners. There are advantages of supportive

relationships between banks and businesses operating as financial brokers, lawyers, and accountants. Also, real estate companies enhance their performance by interacting with banks as business partners.

8.4.2 Factors supporting/ maintaining symbiotic relationships

Within this theme, this study identifies seven elements in the data: location proximity; non-growth-oriented firms; two-way directions of relationships; trustworthiness; growth-cell town; dense embeddedness relationship; and good corporate governance. These factors demonstrate the reasons symbiotic relationships enable MSMEs to enhance financial gains.

8.4.2.1 Location proximity

Cambridge is not very big. So many **business owners they know each other very well**. This is the beauty of small town. You cannot experience this in Hamilton. There are so many businesses and they compete each other very hard, but here we try to help each other. If someone come to me and ask where I can buy the Kebab, I will tell them there is one good kebab shop next to the bank. ... Not because I know the owner very well, but here is small. You nearly know every shop. (Interview #13)

People always think of Cambridge as money street, you know where the shops are. If you just go 200 metres down the hill it's light industrial. You can get anything. It's great. I went there once, I needed to go to a plumber, I needed to go to a boat shop, I needed to go to my account, and I needed to go to the mechanic, I needed to go to the pool shop. I didn't need to move my car, **I walked between those places and was literally a 100 metres**. I got my car, got my pool chemical, went and got the batteries for my car, went to my plumber. It's tremendous. All those things, if you live in Auckland, you will be driving miles. Again because **everything is close**, your accountant, your lawyer, doctor, café, supermarket, so you don't have to drive from one place to another... **If I walk down the street, I know a lot of those business owners** just from being patients here or me being customer there or cause their kids went to school together. This is a very interesting town to study. It's big enough to have its own economy and being part of a larger economy, but it's not like Hamilton where there're special regions within it. It's just a one town. **Chances are the seven degree of separation here in Cambridge**. It's that small. (Interview #79)

A high density of micro- and small firms is found in Cambridge central, while others are located in Cambridge West and South. The majority of businesses in Cambridge are micro- and small firms. Many businesses, such as restaurants, cafés, retail shops, traveling and real estate services, and banks and financial institutions, are located on Victoria, Queen, Duke, and Alpha Streets, while the majority of accommodation is located outside the town. The industrial zone, consisting of medium-sized firms, is located at Hautapu, Carters Flat, and Matos Segedin Drive. From the interviews, proximity of location links positively to mutual recognition among business owners operating businesses in those areas. This recognition leads to referrals from one shop to another which benefits many entities. Frequency of contact with other business owners is associated with their mutual recognition, and directly affects firms' long term profit and growth. Proximity allows information and news to be transferred and enables business owners to better receive signals from business symbiosis. These findings are consistent with the studies of Varadarajan and Deniel (1986), Velenturf and Jensen (2016) and Allen et al. (2016).

8.4.2.2 Non-growth-oriented firms:

It's that small. A lot of small businesses in town are called **lifestyle businesses. They're not making any money, they're making minimum wage.** It's not like most of those businesses in town are going to become big businesses. They're going to employ the person and give them the same money as another job. That's a peoples' choice. They want to be their own boss. They want to have a thrift shop or a little restaurant or a little café. They're not going to make a million dollars but they're going to live their dreams. I think there're a lot of that in Cambridge and a lot of them don't make it. Businesses fail. If you fail in Cambridge, you will fail anywhere because you've got the people, you've got that money. It's a wealthy town. (Interview #79)

The findings have shown that many enterprises in Cambridge are non-growth-oriented firms which are operated by business owners who aim to maximise control of business by avoiding formal contracts with co-owners, business partners, or diversified shareholders. The contracts among small non-growth-oriented firms are normally started because of trust and because those business owners have known each other for a long time (Holmes & Zimmer, 1994). This is different from growth-oriented businesses where business owners are more likely to strengthen their

relationships with other businesses by engaging in long-term and formal contracts in order to expand their businesses and increase wealth maximisation.

From participants' responses, these MSME owners do not aim to expand their businesses to an international level or compete aggressively with others to increase their wealth. Rather, they aim to maintain a flow of money within the town and support business sustainability. Many of them start businesses because of passion and the intention to fulfil their ambitions.

8.4.2.3 Two-way direction of relationships

If we recommend the lawyer and the person that sees the lawyer needs an accountant then they'd say, 'Hey come and see Dion.' What goes around comes around. If you're nice to one person, they will refer back. **So you don't get commission, but hopefully you get a good referrals.**

[Do you get a lot of referrals from some of them?]

Well they should really. Obviously if I keep referring somebody and they don't refer back, I might sort of go 'Hey I'm not going to keep doing it.' It can't be a one way street. (Interview #64)

We used to give discounts to the funeral parlour, but they have sort of chosen the florist that they want to go to. We maybe get one funeral a month now, so we don't give them a discount anymore.

[But before you did give them a discount because they normally come to you.]

Yeah, so the funeral parlour that used to use us went through a change of ownership and he decided to go with someone else. We just had to make the call like, if you're not going to use us then we're not going to give you the discount. (Interview #13)

Interviews confirm mutual benefits should be generated for all parties in business relations. Participants commented this is how to have sustainable business relationships where, long term, all businesses can grow together. Adopting the ideas of symbiosis from biology introduced by Abmadjian and Parace (1986) to the study of business networks, the interviews show the business owners' preference for mutual rather than parasitic relationships. In a mutual relationship all parties receive benefits. In a parasitic relationship, only one party benefits while other entities lose benefits. 'Commensal relationships' were still found between several MSMEs in

Cambridge. These relationships can be seen in interactions among MSMEs where one party benefits while other entities are neither advantaged nor disadvantaged. Using Signalling theory, the three types of symbiosis, mutualism, commensalism and parasitism inform the real relations among MSMEs in Cambridge. Interactivity, back and forth referrals, and information-sharing demonstrate that mutual and commensal relationships are the main drivers of this business community.

8.4.2.4 Trustworthiness

This is where in terms of the Chamber of Commerce and the work that you're doing, it's really important to me because I like to stay connected with experts and people I can trust. Because clients that I have, I have really good relationships with and they will take my advice on which expert they should go and see. **If I can't provide the support myself, I'm giving them connections to people that I trust** that will give them the right support and advice.

[How do you know those experts?]

Through the chamber, through using them myself, through having done work with them for a client as joint work, having gone to assist them and their business. So I get to see whether or not I can trust them in terms of what they're offering. (Interview #31)

With some of our suppliers, we have cut out and stay with people who give us really good service and we trust. So it's all about trust. Those ones, you have more of personal relationships. They build on that, so I have made cost savings that way. Where they'd let me know what's the good seller. Because I always pay my bills on time, I'm never late so they'll give me advantages. That's how I make money. They'd say 'Look, if you buy all that range, we will give you a discount.' (Interview #22)

The interviewee responses indicate that trust is one of the important elements in building and maintaining relationships between business owners in Cambridge. Personal relationships containing a high level of trust create the possibility for the parties to work together in numerous business activities. Additionally, trustworthiness had direct links to mentally supportive relationships among business owners which was indirectly associated with firm performance. Several business owners claimed that trust between them increased the speed of transactions, and created more opportunities for them to increase their customer numbers and enhance their firms' performance. Although the benefits of trust are not shown by

numeric indicators, for some service businesses which cooperate with other service businesses, getting work done quickly is important for their management. Fast service can satisfy current customers and increases the opportunity for servicing potential new customers.

Trust is also generated when business owners join trade associations or professional networks. Business owners who work as lawyers, accountants, financial planners, and brokers are required to register as members of their respective associations. By law, it is compulsory to have registration. For professional service businesses, being members of professional associations is critical and empowers them to increase trust from potential customers.

To sum up, business owners in Cambridge referred to trust positively. There are some similarities and differences between service and retail businesses regarding the benefits of trust. Business owners in Cambridge pay attention to building and maintaining trust in their relationships with other business owners, and with their customers. Participants referred to trust as a critical element in symbiotic networks as it builds and strengthens relationships between people, offering benefits for business operation and performance (See Table 8-2).

Table 8-2: Insights about trust

Trust in service businesses	Trust in trading businesses
<p>Relationships among business</p> <ul style="list-style-type: none"> • Trust enables quick operation processes (which can satisfy customers). • Trustworthiness depends on the frequency of contact and interaction. 	<p>Relationships among businesses</p> <ul style="list-style-type: none"> • Trustworthiness can be maintained by on-time payment in trade relationships. • Trustworthy suppliers are critical for retailers to reduce risks in purchasing over-priced products, yet increase the opportunity to receive credit terms. • Trade associations can be places which allow business owners to meet and build trust among memberships.
<p>Relationships between business owners and customers</p> <ul style="list-style-type: none"> • Trust provides opportunities for businesses to increase and maintain customer numbers. • Being members of professional associations offer firms opportunities to increase credibility and trustworthiness. 	<p>Relationships between business owners and customers</p> <ul style="list-style-type: none"> • Trust links with the opportunities to increase and maintain customer numbers.

8.4.2.5 *Growth-cell town:*

This is a very interesting town to study. It's big enough to have its own economy and being part of a larger economy. **Cambridge residential is booming, so all the builders are really busy.** I think it's really just **Cambridge going forward.** I think some areas of Cambridge is the fastest growing in the country.

[Why do you think Cambridge is going really fast like that?]

Lots of reasons, good connections to everywhere else. It's a great place for families. We've got great schools. It's a great place to move to from overseas... It's very good for business here, mainly small business. We have good broadband, we've got new fibre. So in the street down the road here, the guy there just started a business he's got 50 people coding for him. It's going to be a big business. Quite innovation people have come here. (Interview #79)

Cambridge is one of the high growth towns in New Zealand. According to Waipa District Council (2017), it is predicted that the number of people living in Cambridge will increase from 17,300 to 25,000 over the next 25-30 years. The

development in terms of rezoning the industrial area at Hautapu as well as rezoning residential areas in Cambridge North, Cambridge Park, and around St Kilda Road is anticipated to be finished by 2027. A central fund has been allocated to develop infrastructure and improve the Cambridge bypass, and Cambridge wastewater treatment; construction of a Cambridge town pool began in late 2016. The redevelopment of Cambridge swimming pool is expected to finish in 2019. These plans suggest a bright future for the town, not only for the local economy, but also in relation to the standard of living. Currently, the number of local businesses is noticeably increasing. There is an increasing number of cafés and restaurants in Victoria Street, a big hotel on Hamilton Road, and a variety of sport and recreation businesses are examples which demonstrate how fast the town has developed.

8.4.2.6 Dense embeddedness relationship

I always need to have good connections with doctors to refer back and forth for skin disorder, for broken bones, for nerve damage, those sort of things. Then I have to have a good connection with a hairdresser. Hairdressers just benefit us, they don't really help as much across the board in my beauty clinic, but because we have ball clients and wedding clients. We have packages where you can come in and then you have your fingers and your toes done and we also have option of hairdressers being our clinic. You can have it all done and dusted in our clinic, then it saves the clients travelling across and travelling time. The chiropractic is good. The physiotherapist is good. The podiatrist is really good. I need to have a closer relationship with more of my medical-based experts than really my hair because we can also do hair. We're intending to introduce a hairdresser at the clinic now, so it'd be a **one stop shop and make everything easier**. It's not cost worthy for us to have a podiatrist in our clinic as well which could quite quickly assist us. Other professionals like nurses that are doing Botox and dermal fillers, **those complement our business as well**. We're more like a café owner, just more having a connection with people we can actually share. You probably see, out the front I have face kebab, that's a café owner she's just out the back. Although we have nothing in common, she's a client of mine and I am a client of hers. Then it also **makes both our clientele exposure just a little bit broader**. We can advertise on our premises for her. If someone comes in and ask where the kebab is and I'll say just go across the road. Lots of times you get family situation they want to know when they get hungry and then we'd say 'Do you want Turkish food? Cause you can just hop around the back and its delicious food. **We can vouch for that** and if you just say you're coming from us she'd probably chuck in a glass of free wine or something like that. We've previously done coffee vouchers that we

purchased from her. When we have people come to us that have been referred to us through a friend of theirs then we give them vouchers. We've purchased the coffee so it's paid for, they can just provide the coffee to the two clients that **refer each other**. (Interview #36)

Many participants stated that embedded relationships are important for enhancing financial gains. Interview responses indicated these relationships were in the form of either informal agreements or formal contracts. The connections between heterogenous entities (weak-tied relationships) are between several MSMEs operating across different industries. Homogenous relationships (strong-tied relationships) are between several MSMEs operating within the same industry. A number of participants stated that financial gains can be generated when businesses have connections with others in different industries. They have more opportunities to reduce costs and expenses and increase customer bases. Trading off between mutual benefits and losing business strategies seem less likely when businesses have interactions with others in different areas of work. Symbiotic relationships among heterogeneous firms enable information to be transferred easily. The study also found connections between firms in the same industry, but the benefits are smaller than those between different firms. This finding supports the strength of weak ties proposed by Granovetter (1973), and is consistent with previous studies such as the studies of Watson (2007), Semrau and Werner (2012). The interviews show that the wider the network relations, the higher the chances are of gaining additional advantages. These findings are consistent with McFadyen and Cannella's (2004) study, as MSMEs in Cambridge leverage specific benefits from having relationships with both strong ties (among MSMEs in the same industry) and weak ties (with MSMEs in different industries).

8.4.2.7 Good corporate governance

Success for the Chamber would mean a thriving business community supporting our growing town... Success would be enabling and supporting a business environment that includes a strong foundation of existing business, ample new opportunities and room for growth... To achieve this, Chamber needs strong governance, clear strategic direction and well-resourced operations. (Interview #38) (Cambridge Chamber of Commerce, 2018c)

Many MSMEs in Cambridge are members of a trade association, the Cambridge Chamber of Commerce (CCC), which is run to support local MSMEs. As a hub of business networks, CCC provides business tools, advice, and news, and arranges a variety of activities for all members in order to grow successful businesses. The constitution of the incorporated Chamber is clear and has been officially published. This includes various matters regarding the organization, boards and members. The boards of operation are selected annually from current members from different industry backgrounds. External nominees are co-opted to minimize conflict of interest. All decision-making activities relating to the performance of the Chamber and its members are undertaken by a majority of the committee. Regarding new rules and policies, the Chamber will announce proposals in the local newspaper, then use the process of voting to make final decisions (Cambridge Chamber of Commerce, 2018b). Maintaining good corporate governance provides all members with equal opportunities to leverage the benefits of symbiotic environment and information transference.

Regarding ‘how’ questions (How do symbiotic relationships enable MSMEs to enhance financial gains?), a majority of the interviewees identify four types of signal in business symbiosis which are the main ways of enhancing financial gains for individual businesses: donation, referral, participation in trade associations, and personal interactions.

8.4.3 Signals of symbiotic relationships

8.4.3.1 Donation

I was a sponsor of bike competition last year. **I sponsored some fund.** It is not because I am one of their members, so I have to do this. But **I love to do.** Maybe it can make a bit contributions to them. I don’t know. However, that is good for me now. I have more customers. Some is the club members, some is others who saw my shop name on vinyl at the competition, so they came. That’s bonus. (Interview #31)

The findings demonstrate that many business owners have a sense of support. They prefer to give money that will circulate in the town and contribute to society. They mentioned the sustainability of their businesses interactions that will be related to the growth of community. Adopting Stakeholder theory, this explains the wealth of

individual firms relates to their corporate social responsibility (Friedman, 1970). In terms of external stakeholders, micro- and small firms require contacts with many parties: customers, business partners, banks and financial institutions, suppliers, distributors, wholesalers, and manufacturers. MSMEs automatically connect with environment and society as they are one of the social units. Their business activities and transactions with other entities eventually affect not only their individual performances, but also society and environment.

8.4.3.2 Referral

We have a good relationship with every single gun shop in the area. They refer customers to us, and we refer customers to them, mainly on a speciality basis or if they have a product that we don't sell or we have a product that they don't sell, then **we will forward that on**. (Interview #98)

I live here for 40 years, so I have a lot of networks. I am the member of Chamber, some exercise clubs. I know Olivia and them. I know the lady behind her, I know what she does, and I know the guy who works as skipper. That's how a small town works and the lady in the grey shirt, she's a manager for the ASB bank. I've given you four people just then. I can tell my customers I am not the expert in leasing, you can go to talk to Alan. He is the leasing manager of ANZ bank. (Interview #7)

Almost all participants mentioned referrals and used word of mouth communication. It was found that business owners in Cambridge prefer to recommend their customers to other shops if they cannot supply their requirements. Referrals occurred when businesses lack a product or service. These limitations occur because of inadequate staff, tools, ingredients, or machines. Referrals among different entities in networks are free advertisement activities which help MSMEs to reduce advertising costs. Referrals provide a picture of a particular network showing how many people they know (Brown & Reingen, 1987; Reingen & Kernan, 1986). Many business owners in Cambridge know each other because they join associations, clubs, and social groups as members. These connections increase business owners' opportunities for knowing each other.

8.4.3.3 Participation in trade associations or professional network groups

I joined the Cambridge Chamber of Commerce, which is... over 250 members. I know many people. We'll chat with them and we'll

probably talk about how we're going through all the same challenges. Everyone has the same, how hard it is to find staff, and the same challenges. So it's good to get it off your chest. Sometimes you **learn things from one another**. I recently spend a bit of time with the girls up at [a local restaurant], because they're trying to make their business more sustainable. So they're trying to some more sustainable practices and we've done a lot of that stuff. So they asked if I'd come up and talk to them, and I'm willing to tell them about the sort of things that we do. Definitely, **you can kind of learn little things when you see what people are doing and friendships are good**. That's what the Chamber is really good for, **it's those networking**. It's good for high profile, everyone knows your face and your business. Also, it's really good to hear the challenges that people have and hear about what people do differently. Particularly in different industries, it's really good to hear how people do things. There's a guy that runs a sign business, and ten years ago he made a decision that he didn't want to work Friday anymore. So he said, 'I'm only going to work four days a week.' He only works for four days, and it's a really successful business and it works. Everyone just got used to the idea that he's only there Monday to Thursday and then he has three days off to go surfing. So **it's interesting to hear things like that about how people manage**. Whether it's how they manage something in the business or how they balance the business in their lifestyle. (Interview #21)

[What kind of benefit do you get from being part of the Cambridge Chamber of Commerce membership?]

Yes, I probably **could gain more benefit if I have more time to be involved in** it. I mean, I don't get to many of the events because I was too busy running the business unfortunately. I don't have any staff full time, we run the contractors so I don't get to go to many of the events that they operate. But **I do find that I keep up to date through the Chamber of Commerce**. That is why I'm prepared to pay the membership. (Interview #26)

I am not a member of Cambridge Chamber of Commerce. No, not any more. I did not get much benefits from it. So, I decided to stop. I am a member of the Hotel association. It's **helpful for keeping connections** with other accommodation owners. (Interview #10)

The interviews showed MSMEs in Cambridge have connections with many entities; for instance, relationships with other businesses within the same industry, with other businesses across different industries, with banks and financial institutions, and with other organizations such as Cambridge Chamber of Commerce, Inland Revenue, church, and i-SITE. The connections enable various advantages for

MSMEs. Participating in these associations permits MSMEs to reduce information searching cost, and share and exchange business strategies. Individual MSMEs can hedge against risks such as customer complaints, regulation changes and damages occurring from lack of insurance. MSMEs gain benefits from working with nominees in trade associations or professional networks to avoid conflict with different stakeholders.

8.4.3.4 *Personal interactions among business owners*

I am a member of Cambridge Golf Club. Many people know me, they know I open a restaurant. So when the restaurant have some special discounts, I bring the coupon for them. If they order some foods, they get 10 percent discount. I just give to them when I go to play golf. Many people came. This is not a lot increase in sale, but it is the opportunity. If I don't go the play golf, I realize nobody from the club come here. Sometimes it is like, they see my face, and then they come here. (Interview #42)

Participants noted that they interact frequently with other people, and many activities link to their own interests relating to sport, travel and hobbies, and these personal associations link to business connections. Personal relationships containing a high level of trust create the possibility for them to work together in numerous business activities. A similar finding by Sparrowe et al. (2001) was that the more individuals associate with each other, the higher the performance of the firms will be. Business owners with personal connections with other people have more opportunities to talk and share their experiences and knowledge; for instance, about the growth of their businesses. It provides more opportunities for business owners to create and coordinate activities with others to further enhance overall performance.

8.5 Conclusion

This chapter discusses the empirical findings from semi-structured interviews. It highlights details to further explain results of Ologit and PLS-SEM. The discussion provides detailed insights in relation to the research questions of this study, particularly to the questions of why and how symbiotic relationships are associated with risk, return and value of MSMEs. The chapter enhances understanding about phenomena, situations and interactivities in terms of symbiotic relationships and

their impact. Discussions from a financial perspective contribute to prior literature and financial theories.

Chapter 9: Conclusion

9.1 Introduction

This chapter summarises the thesis. It discusses the introduction to the impact of symbiotic relationships and the relevance of the study as well as outlining the findings on the relationship between the concept of symbiosis and risk, return and the value of micro-, small and medium enterprises (MSMEs). The next section addresses the contribution of this study to literature followed by a discussion of policy implications. These implications are suggested in relation to various entities: MSMEs, business owners, bankers, trade and professional associations, and local government/policy makers. The final segment suggests areas for future research.

9.2 Scope and focus of the study

A number of scholars in both the sociology and business fields discuss symbiotic relationships. Etzioni (1996) commented that good society contains many people who like to share core values with others, so those values can enrich one another. Many business scholars have adopted the idea of symbiosis from sociology. They refer to business networking, arguing that individual businesses should relinquish the notion of standalone and adopt a synergistic model of working where everybody benefits. Etemad, Wright and Dana (2001) suggest that small businesses can reduce the risk and uncertainties caused by the limitation of firm size through cooperating with large-sized firms. It is claimed that working cooperatively can help to retain customers and improve profits, as long as both parties fulfil their obligations.

Collaboration seems like a simple solution that is in everybody's interest but many business owners are unable to visualise its potential and overlook it as a creative option. Correspondingly, the topic provided an opportune focus for a research study which initiated the researcher's preoccupation with and interest in connections between small businesses. Firstly, this study aimed to examine the impact of

connections between small businesses and how cooperation helps small business owners enhance financial gains. Secondly, it aimed to explore the application of the Monte Carlo method in estimating net profit of MSMEs in different industries. Finally, this study examined how interfirm networks and relationships between businesses and banks are associated with MSMEs' performance in terms of changes in profit and firm growth.

To investigate this question, MSMEs in Cambridge, New Zealand were used as a case study. The methodology included running simulation models and undertaking fieldwork where data were collected from both primary and secondary sources. Various analytical techniques were applied: the Monte Carlo simulation approach, Ordered Logistic Regression (Ologit), Partial Least Square Structural Equation Modelling (PLS-SEM) and Thematic Analysis technique. The empirical findings were presented quantitatively and qualitatively with evaluation from a financial perspective.

9.3 Summary of empirical findings

All research questions were answered using both analytical data and interpretive responses with each data type serving different but complementary functions. Findings are summarised here in relation to key questions:

- Do symbiotic relationships exist among MSMEs?
- Which entities offer dynamic impacts to MSMEs?
- How does information flow among MSMEs?
- What is exchanged by actors in a symbiotic community?
- How do exogenous factors affect risk and return of MSMEs? and
- How can a good signalling model be created in order to improve the risk and return position of MSMEs?

Do symbiotic relationships exist among MSMEs?

Based on the literature review and data that emerged from fieldwork, this study proposes a number of factors to explain the existence of symbiotic relationships among MSMEs. Regarding the variables relating to the symbiotic relationship aspect, descriptive statistics show different percentages of intensity and range among MSMEs in Cambridge. Table 9-1 shows the percentage of business owners who interact frequently with others within the same and across different industries

and also the percentage of firms which are connected with others within the same and across different industries.

Table 9-1: Participation response: Network intensity and network range in MSMEs

Variables	Frequency of interaction		Connections	
	<u>across</u> different industries	<u>within</u> the same industry	<u>across</u> different industries	<u>within</u> the same industry
Micro-firms (n=130)	45.4%	33.1%	73.1%	50.0%
Small firms (n=27)	48.1%	18.5%	77.8%	48.1%
Medium firms (n=43)	60.5%	37.2%	88.4%	62.8%

Based on thematic analysis, the existence of symbiotic relationships among MSMEs can also be explained by interpretive responses accessed from semi-structured interviews. The evidence of the subject ‘signals of symbiotic relationships’ (See Chapter 8) emphasized the analysis results. Some business owners chose to donate funds to the community, while word of mouth and referrals occurred often between business owners, particularly when they could not supply particular requirements of customers. Symbiotic relationships can be seen when business owners participate in trade associations and professional groups, as well as when they interact with each other personally.

Which entities offer dynamic impacts to MSMEs?

The results of Social Network Analysis (SNA), within seven dense areas (Appendix J), show that there are different hubs which either connect or were connected to businesses in other industries (See Table 9-2).

Table 9-2: Hubs of connection among MSMEs in seven areas of high density

Areas of high density	Hubs of connection
Businesses operating in:	
1	Recreational goods retailing industry
2	Accommodation industry
3	Cafes, restaurants and takeaway food services industry
4	Medical services industry
5	Building installation services industry
6	Legal and accounting services industry
7	Horse and dog racing activities industry

The interpretive responses accessed from semi-structural interviews demonstrate that the CCC is an entity acting as a hub to connect many businesses. Many business owners stated that they have more opportunities to meet others who operate businesses in both the same and different industries. In addition to the firms themselves, supportive local entities such as CCC, Waipa District Council, and i-SITE offer synergistic working opportunities. Partnership between the local community board and the Council to promote and enhance community wellbeing enables achievement of short-term and long-term plans. Cooperation between local authorities and central entities also enables local enterprises' needs to be met.

How does information flow among MSMEs?

According to Signalling theory, information flows from entities acting as senders (antecedents) to entities acting as receivers in a supportive environment (Connelly et al., 2011). Interview responses demonstrate this environment includes many attributes: location proximity, non-growth-oriented firms, two-way relationships, trustworthiness, growth-cell town, the existence of trade organizations, dense embedded relationships, and good corporate governance. While word of mouth and referrals are signals indicating how different MSMEs were connected to each other, workshops, training, various sport elite clusters are regarded as signalling an environment which supports the interactions of many business owners. The density of information transference depends on both network range and intensity, and the strength of relationships at either the personal or enterprise level. The impacts of

these symbiotic relationships on business performance differs, according to the strength of ties, weak (Granovetter, 1973), and strong (Krackhardt, 2003).

Results from SNA demonstrate a web of connections among MSMEs in various industries where the information can be flow very well in areas of high density connection. Within these areas, business transactions among MSMEs can support one another well, and in some respects, increase the level of returns or/and reduce costs and expenses. They can also reduce uncertainties caused by information asymmetry. Sharing news, information and even new regulations regarding business and the economy, help individual enterprises to reduce information searching costs.

The information flows when business owners participate in trade associations or any professional organizations. Within CCC, its team members are selected from business owners who run MSMEs in several industries. These members can also act as nominees signalling other members' requirements to the Chamber board, so all stakeholders gain mutual advantages by belonging to this organisation.

What is exchanged by actors in a symbiotic community?

The findings of multivariate analysis accessed by Ologit and PLS-SEM address different aspects of the impacts of symbiosis. Table 9-3 shows the significant factors affecting the change in net profit and firm growth where '+' represents a positive relationship and '-' shows negative relationship.

Table 9-3: Significant factors associating with business performance of MSMEs

Variables	Change in net profit	Variables	Firm growth
CON_BANK	+	CON_SAME	-
CON_DIFF	+	INDUS_ASSO3	+
CON_SAME	+	FREQ_DIFF	+
FREQ_DIFF	-	FREQ_SAME	+
ATTEND	-	INFO	-
FRANCHISE	+		

Connections with banks and with businesses operating within the same and different industries relate positively with a change in net profit. The frequency of interaction associates positively with firm growth. A positive impact on a change in net profit is also found when businesses operate under regulations of franchisers or supplier companies.

To elaborate on the impacts of symbiotic relationships, PLS-SEM was adopted to assess the mediating effects of interfirm relations and relations between firms and banks (See Table 9-4).

Table 9-4: Summary of hypothesis testing by PLS-SEM

Hypothesis	Results
<i>H₁: A change in MSMEs' net profit is positively associated with strong interfirm relationships via strong relationships between businesses and banks.</i>	<i>H₁ is not supported</i>
<i>H₂: A change in MSMEs' net profit is positively associated with strong relationships between businesses and banks via strong interfirm relationships.</i>	<i>H₂ is not supported</i>

The results of PLS-SEM show no direct relationship between interfirm relations and business performance, showing strong relationships between businesses and banks have no mediating power relating business performance. Although strong relationships between businesses and banks are associated with business performance, these relationships did not relate to interfirm relations. An explanation of this could be supported by findings from qualitative analysis that the relationships between MSMEs and banks are happening due to daily banking transactions, not because MSMEs owners want to invest in any big projects. Therefore, this does not support MSMEs in building interfirm relationships with others.

How do exogenous factors affect risk and return of MSMEs?

Interpretive responses explain how and why symbiotic relationships impact business performance in terms of risk, return and value of MSMEs. Positive impacts of symbiotic relationships enable MSMEs to reduce costs and expenses yet create return and add value. The relationships between enterprises and banks offer firms

opportunities to access finance as well as build more business partnerships. They also provide some intangible benefits when business owners intend to make banking transactions. Some finance theories, Signalling, Agency, and Stakeholder were applied and merged with the concept of symbiosis, then used to elaborate on this concept.

How can a good signalling model be created in order to improve the risk and return position of MSMEs?

To demonstrate how a good signalling model can be created, it is necessary to understand the drivers and ascertain which entities offer dynamic forces and which of those acting as a hub of a network are important to investigate. While GEPHI software offers analytical tools to evaluate these, responses from semi-structural interviews provide additional understanding about how information is generated and transferred. When recognizing main actors in networks, it is important to evaluate potential performance of these entities to identify the real impacts of symbiotic relationships on improvement in relation to risk and returns. This study adopts the Monte Carlo simulation approach to evaluate these. All indicators are secondary data, and findings suggest a potential net profit for MSMEs. However, in order to identify the real impact of connections between firms, fieldwork was conducted to gather more accurate information. For example, if, cooperating with others provides potential increased percentages of return and decreased expenses, simulation results will be more precise than from using only secondary data.

9.4 Significant contribution to literature

This study contributes to the literature in two primary areas: small business networks; and risk, return and value of MSMEs.

Empirical findings of this study can contribute to academic definitions of small business networks and improve understanding of symbiosis and how this can help MSMEs to enhance financial gains. The concept of symbiosis did not initially emerge in business studies, but many researchers use this concept to explain how it enables businesses to enhance firm performance in various ways. The scope of business symbiosis studies is broad and depends on the context and main focus of

each study. Previous studies indicate that the impact of symbiotic relationships can be positive or negative: the results of this study support a positive impact. Using a case study with a simulation model and undertaking fieldwork helps to achieve robust results. These different methods increase understanding of each factor and its attributes. Adopting the second generation of multivariate analysis to resolve the limitations of the first-generation technique, applying SNA to calculate network scores, then incorporating them into an econometric model contributes an enhanced picture of business symbiosis to the literature.

Differently from various studies which focus on overall countries in general, this study uses Cambridge, New Zealand as a case study to explore how symbiotic relationships associate with risk, return and value of MSMEs operated in the town. Focusing on MSMEs in one particular area provides the opportunity to understand unique environmental factors, and engage deeply with real samples in a certain time period. It allows researchers to examine how trade associations and particular network groups in the town play important roles in adding value into local networks. This is significant for developing literature in deeper aspects, and uses this scope to link with prior research and what was found in the real situation. Although limited in sampling scope, this study provides generalization in theory building, particularly how finance theories are used to evaluate impacts of symbiotic relationships. This study contributes to a research framework as it incorporates financial modelling into network evaluation. Mixed-method methodology provides robust results which can ameliorate issues of purely quantitative and purely qualitative. It indicates the use of only secondary data is not enough in case study and experimental research, so visiting real fields and incorporating primary data can give fresh results.

The interpretation of the findings in this study uses a financial lens, so a range of financial theories were applied. The study is based on Signalling theory which relates to signal transference, information sharing, and asymmetric information. This theory is widely applied in capital market studies, yet not often found in small business research. This study shows the development of Signalling theory and demonstrates that the theory can be incorporated into some aspects of small

business network studies. Stakeholder theory, Agency theory, Transaction cost theory, Resource dependence theory were also included and used to explain how symbiotic relationships relate to risk, return and value of MSMEs. The use of these finance theories is rarely found in small business studies, so this study could motivate scholars to develop these theories in broader areas. Multiple theories were used, but all findings were evaluated from a financial perspective so this study could be a pilot case and influence future studies and provide the groundwork for further improvement.

9.5 Policy implications

The empirical findings in this study have some implications for MSMEs, banks, trade associations and local government/policy-makers.

First, the findings of this study could encourage MSMEs, bank, government and policy-makers to focus on factors relating to the concept of symbiosis and adopt them to improve returns and to reduce risk and uncertainty in MSMEs. They could consider whether certain factors should be examined before generating any action plans for both MSMEs and a community. For instance, this study found that the change in net profit and firm growth are not associated with location (business sited within or beyond the town centre (See Chapter 7). However, the findings from semi-structured interviews indicate that location proximity is one of the factors affecting interactions among MSMEs' owners. Every related entity should consider how to use 'the beauty of a small town,' where business sites of MSMEs are not far away from each other and where many business owners already have personal interactions with each other, to improve the return and growth of MSMEs. In this case, some policies, for example 'neighbourhood watch' could be further developed so that neighbouring firms should supplement each other in certain areas, thereby creating sustainability in the long term.

Second, the findings from the Network analysis show cooperation between several businesses in Cambridge and stress networking regarding 'who connects with who.' Therefore, MSMEs' owners can consider these findings when considering building potential business partnerships who can meet their requirements. The density of connection among MSMEs in seven main areas can signal opportunities to

individual firms to increase target customers, expand market distribution, and reduce costs and expenses. MSMEs which are already connected with similar entities, as found in this study, can consider accessing the potential value from making connections across different dense areas. Those businesses in the same industry, who have not yet had connections, can consider building similar business partnerships to gain benefits comparable to those in this study. This implication is not only important to MSMEs in Cambridge, but can also apply to MSMEs in other areas, particularly if the main activities and characteristics of MSMEs are complementary.

Third, the findings demonstrate the concept of symbiosis including connections, frequency of interaction, workshops/training attendance and membership in trade/professional associations enable MSMEs to improve profit. The findings provide encouragement to MSME owners to abandon the ideas of working alone and adopt the idea of cooperative working where all entities can benefit. Business owners can use sports clubs, trading associations, social meetings and formal networking organisations to build connections and collaborative relationships.

Fourth, this study found that the relationships between banks and MSMEs are significant. The number of banks which individual MSMEs should connect with for business purposes is also critical. Connecting with only one bank was negatively associated with the change in net profit. Therefore, MSMEs' owners could trade-off between value added and associated risks when building lending relationships with banks to avoid a hold-up problem. While the soft information accessed from this relationship enables both MSMEs and banks to reduce transaction costs, understanding how relationship banking actually works may help both parties to improve the nature of interactions to leverage additional benefits rather than just to reduce costs.

Fifth, interview findings suggest that banks should build connections with trading associations and other parties, even within the banking sector. Additionally, it could be beneficial to establish a regulation framework supporting all banks to cooperate and share certain information regarding their customers. The notion of standing

alone adopted by many banks could be reassessed if increased cooperation can improve banks' survival in the long term.

Future cooperation amongst banks may be significant as there are a number of potential threats to banks in the current business environment. In recent times, FinTech (financial technology) plays important roles in both business and banking services (Gomber, Koch, & Siering, 2017). Although FinTech enhances financial services and transactions, it could create negative effects for banks' performance (Románova & Kudinska, 2016), particularly when banks overlook the idea of working with others. FinTech enables MSMEs' business owners to use various technological financial products and services for any banking transactions. In order to offer convenience to customers, start-ups in the form of non-banks provide gateways for loan customers where they affirm more efficiency than traditional financial institutes (Lee, 2015). Other threats to banks are peer-to-peer lending and crowdfunding. Using digital finance technologies, peer-to-peer lending is done through social networks using the verification of cryptography (Glaser & Bezenberger, 2015) while crowdfunding allows business owners to share innovative ideas about their projects to the crowd for raising financial support for their initiatives (Belleflamme, Lambert, & Schwienbacher, 2014). Other FinTech in the form of digital money, digital payments, digital insurance, and digital financial advice can cause risky situations for traditional financial services providers like banks, in terms of losing customers. Regarding action plans, banks could also consider cooperation with digital finance start-up companies who use innovation to integrate banking transactions and various technology devices. Although both parties have similar aims, they can share their own core competencies to supplement each other's gaps.

Aligning with the revolution in financial sectors, and the commitment of the ruling Labour Party regarding improvement of broadband and telecommunications services (New Zealand Labour Party, 2017a), this study supports the foundation concept of cooperation which banks utilise to protect themselves against risks caused by digitalization.

Sixth, the interview responses demonstrate a trading association, CCC, is a hub which plays an important role in building and nurturing symbiotic relationships among MSMEs, and between MSMEs and banks. The opportunities for members to be in the Chamber Team offer the Chamber an understanding of MSME requirements, conditions and problems. However, some members did not receive much benefit from being members, so they discontinued their participation in the Chamber's activities (see Chapter 8). Therefore, it could be beneficial if proposals for organising activities, workshops and meetings can really help MSMEs to improve overall business performance rather than support only some groups of members, thereby causing conflict of interest. Trade/professional associations can consider significant factors found in this study to contribute to newsletters, business awards, education programs and research initiatives.

Finally, under the current government policy, a Tax Working Group will be set up, and is scheduled to begin 1 April 2021. This policy aims to promote long-term sustainability and productivity of the economy by reconsidering imbalances in the tax structure (New Zealand Labour Party, 2017a). This includes the consideration that small firms having high income should pay higher tax, yet large firms having low income should pay lower tax. In this case, in order to maintain similar level of profits, MSMEs that have high incomes should consider reducing costs and expenses, and the concept of symbiosis can well assist this process. This study offers significant findings about how connections and networks are significant for small business performance. It shows that connections and networks can come in many different forms. The findings align with the policy of the current New Zealand government which promotes regional business partner networks to support small businesses (New Zealand Labour Party, 2017b).

This study presents seven high-density areas where MSMEs in different industries associate with each other, therefore some specific tax policies could be further developed to support those strongly-tied networks. These could increase the probability of business connections, and encourage MSMEs to leverage the additional value from those symbiotic relationships, and then create growth of local economics. The study provides a mechanism and frameworks for policy analysis to

estimate the incremental economic and social value of networks for a community and can inform decision policy-makers when deciding on allocation of funds to particular networks.

9.6 Limitations of the study

This study has some limitations which can be addressed in further research. Firstly, despite this study exploring the impacts of symbiotic relationships on a firm's performance, the study focused on only one particular area, MSMEs in Cambridge. With support from CCC, the participants were the business owners who are members of CCC. Although they are a dense and authentic sample, the impact of symbiotic relationships also needs to be investigated in a larger sample, including business owners who are not members of the Chamber. This will give a more solid result as it offers more opportunity to understand the flow of information, interactivity and interaction between several MSMEs in the whole business network. Symbiotic relationships among MSMEs in New Zealand could differ from those in other countries as they have different contexts and cultures. Secondly, networking is dynamic and changes over time (Castro & Roldan, 2013). Due to the limited period of data collection in the fieldwork, the empirical findings regarding the impacts of symbiosis on firm performance, uncertainty factors, and success factors of MSMEs could be different. Interaction of business owners during events or local fairs could give different empirical findings, resulting in diverse impacts. These can provide different determinants to running the Monte Carlo simulation, and lead to various scenarios in estimating business performance.

With regard to Monte Carlo, selecting the probability distribution is still a debatable topic among scholars. Both subjective selection in terms of the decisions from the experts and objective selection from historical data can be used to specify the probability to run the simulation. In the first part of this study, in order to explore the application of the Monte Carlo simulation in estimating industrial net profit, historical data were used to run the goodness of fit test. However, the empirical data from the field work gave subjective ideas in terms of the range of input factors as well as the appropriate probability distributions for running the simulation. It would

give more precise and realistic results if both subjective and objective ways of specifying probability are considered.

In terms of the adoption of PLS-SEM with a larger sample, causality and reverse causality between dependent latent variables (The change in profit) and independent latent variables (interfirm relations and business-bank relations) have not been explored. This study draws relationships between variables based on the proposition that symbiotic relationships can increase return, yet decrease risk to MSMEs. The path coefficients between constructs give numeric outcomes for how connections between several businesses, and those between businesses and banks, associate with firms' profit. Also, the findings identify whether connections between different entities link with the connections with other entities. However, these findings may not give detailed information underneath these associations which indicate the importance of further analysis.

In terms of the qualitative research method, face-to-face interactions enable researchers to modify some delicate questions and make changes enabling participants to understand. In relation to validity, this study uses a large sample size to investigate antecedents, processes and outcomes of networking among different entities. The consideration of credibility and representativeness of data are fulfilled as a large sample is used. The conversations between researchers and respondents were carefully transcribed, then rechecked with some of the participants. Regarding its reliability, the scope and the analysis of data included are comprehensive and inclusive with the empirical findings from both quantitative and qualitative analyses. However, this study has some limitations regarding the time frame. In network studies, cross sectional data within a shorter period of time may not give a precise picture of symbiotic relationships. Particularly, when exploring interactions among people, longitudinal studies could be more appropriate for observing behaviour, actions and reactions between them. Longitudinal studies also enable researchers to investigate how businesses enhance returns, yet reduce risk and uncertainties in different periods of time. Accepting the similar issue for other studies regarding limitation of sample, the context of symbiosis in this study is only evaluated from

the financial perspective. The study ignores other lenses, for instance psychology, sociology, or philosophy, as the internal drivers of firm performance.

Regarding indigenous MSMEs, a number of Māori and Pacific businesses are operated in Cambridge. However, this study does not separately analyse how symbiotic relationships among them relate to financial performance. According to Gladwin, Kennelly, and Krause, 1995, indigenous business owners tend to follow the triple bottom lines, which focus on financial performance, social equity, and environmental protection to operate businesses. It could be possible that these indigenous MSMEs also use a different traditional approach of management to enhance their financial performance, without only adopting the concept of symbiosis. This study does not consider this financial framework when evaluating how symbiotic relationships affect risk and return in MSMEs. This creates a gap for future study to investigate.

9.7 Suggestions for future study

Although this study has limitations, they do not impact on the reliability and validity of the research findings, but do indicate possible areas for future research. The study investigates connections between several MSMEs in Cambridge to discover whether there are any impacts relating to elements of risk, return and value, so all business owners (as research participants) were required to name other firms with which they had been interacting. However, almost all participants avoided directly mentioning the names of individual enterprises. This may be because of concerns about personal identity or inability to recognize others because of their broad relationships in the whole network. Therefore, the coding and analysis process in SNA was challenging. The interpretation of empirical findings was at a macro-level which means the findings demonstrate connections between several enterprises at the industrial level rather than indicating those at the enterprise level. If names of an enterprise were mentioned, two-mode networks consisting of two sets of units (e. g. individual enterprises and industry types) would provide an appropriate case that reflects symbiotic relationships in Cambridge at the micro-level (Johannisson, Ramirez-Pasillas, & Karlsson, 2002). Even in such an instance, when the participant chose to mention industry names rather than individual enterprise names, does not

affect the aims of analysis. The results of SNA in the form of network scores were used as indicative variables in PLS-SEM to define 'interfirm' relations. This is consistent with literature as interfirm relations consist of connections among firms within the same industry and those across different industries (Dagnino, 2009). This study conducted semi-structured interviews to evaluate connections on a micro-scale among individual firms which impact on financial gains, added value, cost reduction and risk mitigation. Therefore, the name of the industry or enterprise used at the analysis stage is not important.

To examine how symbiotic relationships and affect business performance, incorporating cross-sectional data with longitudinal data might provide robust results. Using cross-sectional data could suffer from causality and reverse causality issues (Reese & Aldrich, 1988), using longitudinal data may allow many potentially confounding variables to be included in analysis (John, 2007). Also, using panel data could be suitable for experimental studies to deal with causal relationships in the analysis and to create significant confidence in theoretical models (Low & MacMillan, 1988). Recognising the limitation of the cross-sectional data used prior in this study, semi-structural interviews were conducted to address this. These interviews allow researchers to further explore the antecedents, processes and outcomes of small firms' collaboration.

Normally, survey responses are cross-sectional in nature; however, Statistics New Zealand has amended this type of database and provides access to New Zealand's Longitudinal Business Database (LBD) which is a helpful resource for understanding the behaviour and performance of New Zealand firms (Fabling & Sanderson, 2016). The LBD covers a variety of business practices and consists of various types of data from Inland Revenue (IR), the Ministry of Health, the Ministry of Education, and the Department of Corrections. LBD includes data from Business Operation Survey (BOS) which collects information from New Zealand businesses across different industries and can be used to understand enterprises' capacities. In order to create robust results and deal with the causality and reverse causality issue that occurs due to the usage of cross-sectional data, data from BOS could be used. In relation to the aims of this research, BOS has various sections and one of those

aims to ask business owners about 'co-operative arrangements.' This section relates to different types of interaction between firms and other entities such as customers, suppliers, associations and other businesses. Survey participants have to give the reasons they make co-operative arrangements with others, such as sharing costs, distributing risk, access to R&D, access to production processes, access to management skills, access to new distribution channels, access to work practices, access to financial resources, and access to new markets and suppliers.

Researchers can access the microdata available in the Data Lab by addressing their intentions before registering with Statistics New Zealand. Researchers have to search for the type of data that is relevant to their research questions, then complete and submit an application form. Initial and final approval, and setting up access and project space takes up to 21 working days (Statistics New Zealand, 2018a). Regarding the contribution of this study, after accessing data, selecting appropriate samples from Microdata Lab which match this study's samples would add robustness. A sample matching process can be undertaken after specifying different criteria which should be focused on (such as firm size, year of operation, or type of industry). Then, using computer software to match two sample sets which have the same criteria can reduce the number of unrelated samples from Microdata Lab. It is important and necessary to examine survey responses in BOS which relate to business performance such as costs, quality, profitability and productivity and determine whether these elements are lower, on a par with or higher than competitors. Next, various analysis techniques, including regression analysis, could be used to evaluate the relationships between business performance and co-operative arrangement factors. The consistency of results when using BOS with the results when using cross-sectional data can confirm the robustness of the experimental research relating to the impacts of cooperative activities.

Some previous studies used microdata accessed from BOS and LBD to investigate business innovative and economic performance. These can be seen in the study of Statistics New Zealand (2009), by Fabling and Sanderson (2014), and Maré and Graham (2013) who used this database to investigate the concept of symbiosis. However, further research is still needed. It is particularly important for

experimental research to incorporate longitudinal data and cross-sectional data to make results valid and robust.

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Appendices

Appendix A: Systematic review

Table A1: A summary of the relevant studies included in this review

Number	Title of study	Authors	Publication year
1	Generating Business Referrals for SMEs: The Contingent Value of CEOs' Social Capital	Chollet, B., Géraudel, M., & Mothe, C.	2014
2	SME–supplier alliance activity in manufacturing: contingent benefits and perceptions	Arend, R. J.	2006
3	How Exactly Do Network Relationships Pay Off? The Effects of Network Size and Relationship Quality on Access to Start-Up Resources	Semrau, T., & Werner, A.	2014
4	How Entrepreneurs' Knowledge and Network Ties Relate to the Number of Employees in New SMEs	Sullivan, D., & Marvel, M.	2011
5	Technologies That Support Marketing and Market Development in SMEs—Evidence from Social Networks	Eggers, F., Hatak, I., Kraus, S., & Niemand, T.	2017
6	The Two Sides of the Story: Network Investments and New Venture Creation	Semrau, T., & Werner, A.	2012
7	Network Structure, Knowledge Governance, and Firm Performance: Evidence from Innovation Networks and SMEs in the UK	Clifton, N., Keast, R., Pickernell, D., & Senior, M.	2010

8	In Good Company: When Small and Medium-Sized Enterprises Acquire Multiplex Knowledge from Key Commercial Partners	Bojica, A. M., Estrada, I., & del Mar Fuentes - Fuentes, M.	2018
9	Supply Chain Performance Based on the Lean–Agile Operations and Supplier–Firm Partnership: An Empirical Study on the Garment Industry in Indonesia	Sukwadi, R., Wee, H. M., & Yang, C. C.	2013
10	Co-opetition and Technological Innovation in Small and Medium-Sized Enterprises: A Multilevel Conceptual Model	Gnyawali, D. R., & Park, B. J.	2009
11	Credit Risk Assessment and Relationship Lending: An Empirical Analysis of German Small and Medium-Sized Enterprises	Behr, P., & Güttler, A.	2007
12	The Interdependence between Trade Credit and Bank Lending: Commitment in Intermediary Firm Relationships	Matias Gama, A. P., & Van Auken, H.	2015
13	External accountants' business advice and SME performance	Carey, P. J.	2015
14	Bridge and redundant ties in networks: the impact on innovation in food SMEs	Shiri, G., Sauvée, L., & Abdirahman, Z. Z.	2015
15	The moderating effect of social capital in relation to entrepreneurial orientation and firm performance	Jalali, A., Thurasamy, R., & Jaafar, M.	2017
16	Risk-taking Propensity, Managerial Network Ties and Firm Performance in an Emerging Economy	Danso, A., Adomako, S., Damoah, J. O., & Uddin, M.	2016

17	Networking and its impacts on smes' performance at ho chi minh city, Vietnam	Van Binh, T.	2016
18	Moderating role of external networks and mediating effect of innovation performance on the relationship between technology orientation and firm performance	Lee, D. H., Dedahanov, A. T., & Rhee, J.	2015
19	Network types and performance in SMEs: the mediating effects of technology commercialization	Park, T., & Rhee, J.	2013
20	Connecting the dots: A multiple case study of the network relationships of small and medium-sized enterprises (SMEs) in the non-traditional agricultural export (NTAE) sector of Ghana	Abban, R., Omta, S. W. F., Aheto, J. B., & Scholten, V. E.	2013
21	The nature of SME co-operation and innovation: A multi-scalar and multi-dimensional analysis	Tomlinson, P. R., & Fai, F. M.	2013
22	Does a micro-macro link exist between managerial value of reciprocity, social capital and firm performance? The case of SMEs in China	Wu, W. P., & Leung, A.	2005
23	Cooperative strategy, knowledge intensity and export performance of small and medium sized enterprises	Haahti, A., Madupu, V., Yavas, U., & Babakus, E.	2005
24	Which came first, the chicken or the egg? Banks and firms on local banking markets	Jackowicz, K., & Kozłowski, Ł.	2016
25	Relationship banking and firm profitability	Uchida, S., & Ahmed, S. U.	2011

26	Antecedents of SME alliance performance: a multilevel review	Prabhudesai, R., & Prasad, C. V.	2017
27	Social capital, embeddedness, and market interactions: An analysis of firm performance in UK regions	Cooke, P.	2007
28	Relational Ties in Emerging Markets: What Is Their Contribution to SME Growth?	Totskaya, N.	2015
29	Inter-firm relations in SME clusters and the link to marketing performance	Lamprinopoulou, C., & Tregear, A.	2011
30	The nature of SME co-operation and innovation: A multi-scalar and multi-dimensional analysis	Tomlinson, P. R., & Fai, F. M.	2013
31	Strong ties, Substantive Embeddedness and Innovation: Exploring Differences in the Innovative Performance of Small and Medium-sized Firms in UK Manufacturing	Tomlinson, P. R.	2011
32	Investigating the impact of CEO's social network on SMEs performance and access to external resources in the Moroccan textile industry	Adama, T. Y. M., & Nadif, M.	2018
33	SME growth: The relationship with business advice and external collaboration	Robson, P. J., & Bennett, R. J.	2000
34	Social networks across the SME organizational lifecycle	Peltier, J. W., & Naidu, G. M.	2012

35	The effect of business advisers on the performance of SMEs	Berry, A. J., Sweeting, R., & Goto, J.	2006
36	Networking: Gender differences and the association with firm performance	Watson, J.	2012
37	Relationship marketing and the management of corporate image in the bank-SME relationship	Vegholm, F.	2011
38	The influence of network effects on SME performance	Naudé, P., Zaefarian, G., Tavani, Z. N., Neghabi, S., & Zaefarian, R.	2014
39	Local formal interpersonal networks & SMEs internationalisation: Empirical evidence from the UK	Idris, B., & Saridakis, G.	2018
40	Modelling the relationship between networking and firm performance	Watson, J.	2007
41	Impact of network capability on small business performance	Zacca, R., Dayan, M., & Ahrens, T.	2015
42	Rapid internationalisation among entrepreneurial firms in Australia, Canada, Ireland and New Zealand: An extension to the network approach	Loane, S., & Bell, J.	2006
43	The nature of the small firm: understanding the motivations of growth and non-growth oriented owners	Holmes, S., & Zimmer, I.	1994

44	The contribution of networking to small firm marketing	O'Donnell, A.	2014
45	Personal networks and knowledge transfer in inter-organizational networks	Rejeb-Khachlouf, N., Mezghani, L., & Quélin, B.	2011
46	A mediation model between dimensions of social capital	Castro, I., & Roldán, J. L.	2013
47	Growth dynamics: the bidirectional relationship between interfirm collaboration and business sales in entrant and incumbent alliances	Singh, K., & Mitchell, W.	2005
48	Strategic performance through inter-firm networks Strategic alignment and moderating role of environmental dynamism	Yousaf, Z., & Majid, A.	2016
49	Business networks and the competitiveness of small manufacturing firms in Sweden's northern periphery	Dubois, A.	2015
50	Collaborative relationships and SME Supply chain performance	Eyaa, S., Ntayi, J. M., & Namagembe, S.	2010
51	Industry association networks, innovations, and firm performance in Chinese small and medium-sized enterprises	Qiao, P. H., Ju, X. F., & Fung, H. G.	2014
52	The Development of Entrepreneurial Social Competence And Business network to improve competitive advantage and business performance of small medium sized enterprises: A case study of Batik industry in Indonesia	Ismail, T.	2012

53	What drives the export performance of small and medium-sized subcontracting firms? A study of Korean manufacturers	Kim, J. J., & Hemmert, M.	2016
54	The influence of international networks on internationalization speed and performance: A study of Czech SMEs	Musteen, M., Francis, J., & Datta, D. K.	2010
55	Proactive cooperation with strangers: Enhancing complexity of the ICT firms' alliance portfolio and their innovativeness	Golonka, M.	2015
56	Exploring the Relationship between Business Factors and performance in Malaysian Halal biotechnology SMEs context	Bakar, S. A., Sulaiman, M., & Osman, I.	2014
57	Influence of government R&D support and inter-firm collaborations on innovation in Korean biology SMEs,	Kang, K. N., & Park, H.	2012
58	A Literature Analysis on the Relationship between External integration, environmental uncertainty and firm performance in Malaysian SMEs	Chin, T. A., Hamid, A. B. A., Rasli, A., & Tat, H. H.	2014

Table A2: Systematic review coding results

Category	Meaning	Codes for alternatives (number of studies)
1	Context	A-Developed countries (31) B-Developing countries or emerging economies* (19) C-Non-applicable (4)
2	Geographic region	A-United State of America (4) B-Asia (16) C-Oceania (3) D-Europe (23) E-Africa (3) F-Non applicable (3) G-Others (1) *C&D (1)
3	Study objectives	A-Empirical studies (54) B-Non- Empirical studies (4)
4	Theories used	A-Transection cost theory (1) B-Social network theory (10) C-Resource dependent theory (0) D-Stakeholder theory (0) E-Signalling theory (0) F-Resource based view theory (6) G-Non-applicable (26) H-Other theories (6) I-Agency theory (0) *B&F (2) *B&H (2) *A&H (1)
5	Data	A-Primary data A1- Questionnaire/ Survey (40) A2- Interview (5) A3- Others (0) B-Secondary data (6) *A1&A2 (3)
6	Data period	A-Cross-sectional (40)

		B-Longitudinal (11)
		C-Non-applicable (3)
7	Main subject	A-It relates to finance. (10) B-It relates to sustainability. (0) C-It relates to entrepreneurship. (4) D-It relates to management. (17) E-It relates to innovation. (9) F-Others (4) *All (3) *A&B (1) *A&D (4) *C&D (1) *D&E (1)
8	Method	A-Quantitative A1- Regression (26) A2- Partial Least Square Structural Equation Modelling (2) A3- Others (7) A4- Structural Equation Modelling (7) B-Qualitative (5) C-Mixed (2) *A1&A2 (1) *A1&A3 (2) *A3&A4 (1) *A4&B (1)
9	Focus	A-Entrepreneur relations (21) B-Enterprise relations (23) C-Relations between business and banks (5) *A&B (5)
10	Path	A-Mediators (13) B-No mediator (39)
11	Impacts	A-Financial impacts (10) B-Non-financial impacts B1- technology/innovation (6) B2- Employment (1) B3- Export/ internationalization (3) B4- Marketing (4)

		B5- Growth (0)
		B6- Information/ knowledge/ resources (2)
		B7- Entrepreneurial (2)
		B8- Others (2)
		B9- strategy/ management (2)
		* All (6)
		* B4&B7 (1)
		* B4&B9 (1)
		* B5&B6 (1)
		* B5&B7 (1)
		* B6&B8 (1)
		* B7&B8 (1)
		*A&B4 (4)
		*A&B3 (1)
		*A&B5 (1)
		*A&B7&B9 (1)
		*A&B8 (1)
		*A&B9 (1)
		*B1&B4&B9 (1)
12	Network criteria	A-Network scores (0)
		B-Non-network score i.e. frequency, intensity, range, detailed (42)
		C-Non-applicable (11)
		*A&B (1)

* Noted as emerging economies are China, India, South Korea, Thailand, Indonesia, Malaysia, Vietnam, Philippines, Brazil, Republic of Chile, Argentina, Mexico, Columbia, Peru, Czech, Poland, Hungary, Russia, Republic of Turkey, Egypt, Nigeria, Libya, Israel, Jordan.

Appendix B: Number of MSMEs in Cambridge

Table B1: Number of MSMEs in Cambridge

Area	Cambridge North					Cambridge West					Cambridge Central				
	Total	0	1 to 5	6 to 9	10 to 19	Total	0	1 to 5	6 to 9	10 to 19	Total	0	1 to 5	6 to 9	10 to 19
Employment Size Group															
ANZSIC06															
Total Industry	213	159	39	9	..	267	192	57	12	6	591	285	165	66	48
A Agriculture, Forestry and Fishing	9	6	3	..	0	18	15	3	0	0	21	21	0	..	0
B Mining	..	..	..	..	..	0	..	..	0	0	..	..	..	..	..
C Manufacturing	12	9	..	..	0	12	6	3	..	0	42	12	12	6	3
D Electricity, Gas, Water and Waste Services	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..
E Construction	36	21	9	3	0	36	21	12	..	0	36	18	6	9	..
F Wholesale Trade	6	6	..	..	0	15	9	3	0	..	36	15	9	6	6
G Retail Trade	12	9	..	0	0	18	12	6	0	..	93	18	48	15	6
H Accommodation and Food Services	3	3	0	..	0	12	..	6	6	..	30	3	12	3	12
I Transport, Postal and Warehousing	..	..	0	..	..	..	..	0	0	..	9	6	..	..	0

J Information Media and Telecommunications	..	..	0	..	..	..	..	..	..	..	3	0	..	0	..
K Financial and Insurance Services	9	9	..	..	..	12	12	..	..	..	27	15	6	3	..
L Rental, Hiring and Real Estate Services	33	36	..	..	..	57	57	3	..	..	129	114	12	..	0
M Professional, Scientific and Technical Services	42	33	12	0	..	27	18	3	..	0	48	21	12	6	6
N Administrative and Support Services	12	6	6	0	0	12	12	0	0	0	18	9	6	..	..
O Public Administration and Safety	..	0	0	..	..	..	0	..	0	0	6	..	0	..	..
P Education and Training	..	0	..	..	..	6	6	0	0	..	12	3	..	..	..
Q Health Care and Social Assistance	9	6	..	..	..	12	3	6	..	..	27	9	9	9	..
R Arts and Recreation Services	12	9	..	0	0	12	12	3	0	0	15	9	6	0	..
S Other Services	6	6	..	..	..	9	6	..	0	0	42	12	24	6	..

Appendix C: Questionnaire⁶

Survey of business symbiosis in MSMEs

Number.....Date of interview.....

Name of respondent.....

Position of respondent.....

Address of enterprise.....

Contact.....

Section 1: Closed-end questions

A. Personal data:

1. Gender of business owner
 - Male
 - Female
2. Nationality of business owner
 - New Zealander
 - Other (please specify).....
3. Age of business owner
 - <= 40 years old
 - 41-60 years old
 - > 60 years old
4. Highest education level
 - High school
 - Post graduate certificate
 - Bachelor degree
 - Master degree
 - Post graduate degree

⁶ Face-to-face interviews were conducted.

B. Enterprise data

5. What kind of business do you operate now?
- Sole trader
 - Partnership
 - Company
6. Types of business
- Manufacturing (please specify).....
 - Trading (please specify).....
 - Services (please specify).....
7. Age of enterprise (the operation period)
- < 1 year
 - 1-5 years
 - 6-10 years
 - 11-20 years
 - >20 years
8. How many employees (full-time and part time) do you have?
- ≤5
 - 6-9
 - 10-19
9. Location of enterprise
- In the town centre (please specify).....
 - Out of the town (please specify).....
10. Is your business operated as a franchisee or works under the regulation of headquarters?
- Yes
 - No

C. Business performance

11. What is your firm performance (net profit) in last 12 months? (Please tick in the boxes)

<input type="checkbox"/>	Make much loss
<input type="checkbox"/>	Make some loss
<input type="checkbox"/>	Make no profit

	Gain some profit
	Gain significant profit

12. Is there any change in the number of employee in last 12 months? (Please tick in the boxes)

	Decrease
	The same
	Increase

D. Business networking and symbiotic relationships

13. Do your business corporately connected/operated with other businesses in the same industry to enhance business performance?

- Yes
- No.

14. Do your business corporately connected/operated with other businesses in different industries to enhance business performance?

- Yes
- No

15. How often do you associate with other business owners per month? (Please tick in the boxes)

		Frequency of interaction				
With the <u>same</u> type of business		Frequently (> 4 times)		Occasionally (1-4 times)		Never
With the <u>different</u> type of business		Frequently (> 4 times)		Occasionally (1-4 times)		Never

16. Please specify top three names of business you have regular business contact with, and specify activities relating to those contact.

	Name of business	Activities
1.		

2.		
3.		

17. What are the benefits/ positive impacts you get from having connection with other businesses (in the question number 16)? (Please tick in the boxes)

Benefits	Yes
Finances (sale/revenue/profit)	
Marketing	
Manufacturing and production	
Technology and innovation	
Knowledge and information	
Human resource management (training/ skill development)	
Business strategies (goals/plans)	
Business management (consulting/ solving business problem)	
Franchising and subcontracting	
Export and import	
Others (specify)	

18. How do you think about word of mouth in the business networks?

Impacts of the word of mouth	Yes	No
I get more customers from referrals of other business owners		

who run business in the <u>same</u> industry.		
I get more customers from referrals of other business owners who run business in <u>different</u> industries.		
I always refer my customers to other shops operated in the <u>same</u> industry.		
I always refer my customers to other shops operated in <u>different</u> industries.		
I get more customers from referrals of my previous customers.		
I get more customers from i-SITE/ visitor information centre		
I get more customer from being a member of trading/professional associations		

19. Are you members of any industry associations?

Yes

How many associations you currently take part as a member?

1 association

2-3 associations

> 3 associations

No, I am not a member of any associations.

20. How do you think about information transference in the business networks?

Impacts of information transference	Yes	No
The information/ news received from <u>other business owners</u> is beneficial to my business.		
The information/ news received from <u>friends and family members</u> is beneficial to my business.		
The information/ news received from <u>government/local authorities</u> is beneficial to my business.		
The information/ news received from <u>trading/ professional associations</u> is beneficial to my business.		
The information/ news received from <u>banks/ financial intermediary</u> is beneficial to my business.		
I always transfer information/news relating to economy and business to <u>other business owners</u> .		
I always transfer information/news relating to economy and		

business to <u>friends and family members</u> .		
I always transfer information/news relating to economy and business to <u>government/local authorities</u> .		
I always transfer information/news relating to economy and business to <u>banks/ financial intermediary</u> .		

E. Relationships with banks/ financial intermediary

21. Do you have interactions with banks?

Interactions with banks	Yes	No
Do you currently use a bank loan for running your business?		
Do you normally use online/internet banking for running business?		
Do you normally use EFTPOS for business transaction?		
Do you have financial plans with banks?		
Do you purchase insurance from banks to hedge against risks?		

22. How many banks/financial intermediaries have you have built close relationship during business operation?

23. How long of these relationships?

- < 1 year
- 1-5 years
- 6-10 years
- 11-20 years
- >20 years

F. Internal and external factors impacting business performance

24. What do you think about your social behaviours?

Social abilities	Yes	No
You think you have ability to identify others' emotions and intentions.		

You think you have the skill to create the impression on others while connecting with them.		
You think you have the ability to motivate or change others' opinions or attitudes.		
You think you have ability to adapt to current situation.		

25. Do you currently attend these activities?

Activities	Yes	No
Workshops		
Trainings		
Trade fairs		
Seminars		

26. What are the impacts of attending the activities (in the question number 25) on your business?

Impacts of events and fairs	Yes	No
Impacts on income		
Impacts on sales		
Impacts on costs and expenses		
Impacts on the number of customer		
Impacts on market distribution		

27. What the impacts of Waikato Express way on your business?

Impacts of Waikato Express way	Yes	No
Impact on income		
Impact on sales		
Impact on costs and expenses		
Impact on the number of customer		
Impact on market distribution		

28. What the impacts of road construction in the town on your business?

Impacts of Waikato express way	Yes	No
Impact on income		
Impact on sales		
Impact on costs and expenses		

Impact on the number of customers		
Impact on market distribution		

Section 2: Semi-structured interviews with open-ended questions

29. What ways you can increase your income and profit? How having business connection help to increase more income?

.....

30. What ways you can reduce your cost and expenses? How having business connection help to decrease costs and expenses?

.....

31. What is the important elements for having/ building the business relationship?

.....

32. Are you members of any associations? What benefits do you get from being a member?

.....

33. Do you have good connections with any banks for running business?
 What benefits you expect to gain from bank?

.....

END

Thank you for your participation

Note:

Appendix D: Letter of Ethical Approval

WAIKATO MANAGEMENT SCHOOL
TE RAUPAPA

Waikato Management School
The University of Waikato
Private Bag 3105
Hamilton 3240
New Zealand

Amanda Sircombe
WMS Research Office
Phone +64 7 838 4376
Email amandas@waikato.ac.nz
www.management.ac.nz



Ploypailin Kijkasiwat
25 Carlson Crescent
Silverdale
Hamilton

10 May 2016

Dear Ploypailin

*Ethical Application WMS 16/63
Impact of Symbiotic Relationship on Risk, Return and Value of MSMEs*

The above research project has been granted Ethical Approval for Research by the Waikato Management School Ethics Committee.

Please note: should you make changes to the project outlined in the approved ethics application, you may need to reapply for ethics approval.

Best wishes for your research.

Regards,

Amanda Sircombe

Amanda Sircombe
Research Manager

Appendix E: Cover letter/ Information sheet

Topic: Impact of Symbiotic Relationships on Risk, Return and Value of MSMEs

Overview

This study investigates the impacts of symbiotic relationship on various entities in Cambridge in terms of return, risk and value of Micro, Small and Medium Enterprises (MSMEs). The exogenous factors including elite cluster, local events and special occasions will be examined to see whether those factors are dynamic drivers of enhancing enterprises' value of MSMEs. Additionally, this study will examine how information flows through the network. Then the signal modelling may be created in order to inform MSMEs how to assimilate businesses. This study will extend to the concept of symbiosis and focus on financial perspectives by adopting Stakeholder theory, Agency theory, Signalling theory, and Asset pricing theory. The sample group of this study will be business owners in Cambridge, especially members of Cambridge Chamber of Commerce, who will be chosen as participants.

I am a PhD student in the financial department of Waikato Management School. My study will focus on relationships among various parties in Cambridge including business owners, local people who live in Cambridge, visitors from other regions, as well as public organizations, Cambridge Chamber of Commerce and local authorities. I believe information and responses from participants will be valuable for analysing the results which will be beneficial not only for MSMEs, but also for others, and the country.

What will I have to do and how long will it take?

I would like to invite you to take part in one of the following:

Semi-structured Interview. The interview will take up to 30 minutes and be conducted by me. I will contact you by telephone or email to arrange the location for the interview process and your preference time. Your identities will be protected confidentially. The interview will be recorded, but you can opt out at any time.

What will happen to the information collected?

Your responses will be analysed and used to write a PhD thesis, as well as academic publications for conferences and journal articles. You will not be identified, because no personal information will be gathered unless you give explicit consent. Only my supervisors and I will have access to the information you provide, so the conversation will be treated with the strictest confidence. After the publications have been written, all interview conversation and notes will be destroyed and tapes erased.

Declaration to participants

If you take part in this study, you have the right to:

- Refuse to answer any particular questions, and to withdraw from the study at any time.
- Ask any further questions about the study that occurs to you during your participation.
- Be given access to a summary of the findings from the study when it is concluded.

If you have any questions about this research project contact:

Ploypailin Kijkasiwat

PhD candidate, Department of Finance

Waikato Management School, the University of Waikato

Appendix F: Participant consent form for interview

Project Title: Impact of Symbiotic Relationship on Risk, Return and Value of MSMEs

Dear Sir or Madam,

This short note is to confirm that you are willing to take part for interview process in a PhD study about impacts of symbiotic relationship on risk, return, and value of MSMEs in Cambridge. Neither you nor your business will be able to be identified when the study results are compiled. Information gathered will be aggregated. No specific details will be shared with any other business. More information on the project can be found in the Information Sheet. The interview should take about 30 minus to complete. Please be aware that you can opt out of the interview at any time, or indeed refuse to ask questions or to take parts.

Declaration:

I have read the Information Sheet for Participants for this study and have had the details of the study explained to me. My questions about the study have been answered to my satisfaction, and I understand that I may ask further questions at any time. I also understand that I am free to withdraw from the interview at any time, or to decline to answer any particular questions in the study. I agree to provide information to the researcher under the conditions of confidentiality set out on the Information Sheet.

Signed: _____

Name: _____

Date: _____

The information gathered will not be made available to any persons other than me and my two supervisors, and will be kept secured and deleted after completion of my thesis.

Thank you for taking part in this interview which will help us understand these issues.

Yours sincerely,

Ploypailin Kijkasiwat

PhD candidate, Department of Finance

Waikato Management School, the University of Waikato

Email: pk80@students.waikato.ac.nz

Mobile phone: + 64 21 0823 0578

Appendix G: Schedule for conducting the interview

Area: Cambridge, New Zealand

Participants: Members of Cambridge Chamber of Commerce

Interview number (#)	Types of business ⁷	Interview date	Interview number (#)	Types of business ⁸	Interview date
1	Recreational Goods Retailing	9-2-2017	51	Personal Care Services	6-3-2017
2	Cafes, Restaurants and Takeaway Food Services	9-2-2017	52	Computer Systems Design and Related Services	6-3-2017
3	Furniture, Floor Coverings, Houseware and Textile Goods Retailing	10-2-2017	53	Creative and Performing Arts Activities	6-3-2017
4	Cafes, Restaurants and Takeaway Food Services	13-2-2017	54	Building Installation Services	7-3-2017
5	Clothing, Footwear and Personal Accessories Retailing	16-2-2017	55	Textile Fibre, Yarn and Woven Fabric Manufacturing	7-3-2017
6	Recreational Goods Retailing	16-2-2017	56	Sport and Physical Recreation Activities	7-3-2017
7	Management and Other Consulting Services	16-2-2017	57	Funeral, Crematorium and Cemetery Services	7-3-2017

⁷ Classification is based on ANZSIC06 (level3) New Zealand Standard Industrial Output Categories (NZSIOC)

⁸ Classification is based on ANZSIC06 (level3) New Zealand Standard Industrial Output Categories (NZSIOC)

8	Cafes, Restaurants and Takeaway Food Services	17-2-2017	58	Motor Vehicle and Transport Equipment Rental and Hiring	8-3-2017
9	Recreational Goods Retailing	17-2-2017	59	Accommodation	9-3-2017
10	Accommodation	17-2-2017	60	Legal and Accounting Services	9-3-2017
11	Cafes, Restaurants and Takeaway Food Services	20-2-2017	61	Specialised Food Retailing	9-3-2017
12	Recreational Goods Retailing	20-2-2017	62	Bakery Product Manufacturing	9-3-2017
13	Recreational Goods Retailing	20-2-2017	63	Accommodation	10-3-2017
14	Other Health Care Services	20-2-2017	64	Legal and Accounting Services	13-3-2017
15	Cafes, Restaurants and Takeaway Food Services	20-2-2017	65	Real Estate Services	13-3-2017
16	Cafes, Restaurants and Takeaway Food Services	20-2-2017	66	Supermarket and Grocery Stores	14-3-2017
17	Accommodation	21-2-2017	67	Scenic and Sightseeing Transport	14-3-2017
18	Cafes, Restaurants and Takeaway Food Services	21-2-2017	68	Recreational Goods Retailing	14-3-2017
19	Other Social Assistance Services	21-2-2017	69	Specialised Food Retailing	14-3-2017
20	Accommodation	22-2-2017	70	Medical Services	15-3-2017
21	Cafes, Restaurants and Takeaway Food Services	22-2-2017	71	Recreational Goods Retailing	15-3-2017

22	Furniture, Floor Coverings, Houseware and Textile Goods Retailing	22-2-2017	72	Computer Systems Design and Related Services	15-3-2017
23	Cafes, Restaurants and Takeaway Food Services	22-2-2017	73	Transport Support Services	16-3-2017
24	Glass manufacture	23-2-2017	74	Legal and Accounting Services	16-3-2017
25	Clothing, Footwear and Personal Accessories Retailing	23-2-2017	75	Computer Systems Design and Related Services	16-3-2017
26	Accommodation	23-2-2017	76	Furniture, Floor Coverings, Houseware and Textile Goods Retailing	17-3-2017
27	Personal Care Services	24-2-2017	77	Recreational Goods Retailing	17-3-2017
28	Other Social Assistance Services	24-2-2017	78	Hardware, Building and Garden Supplies Retailing	20-3-2017
29	Recreational Goods Retailing	24-2-2017	79	Other Social Assistance Services	20-3-2017
30	Other Social Assistance Services	24-2-2017	80	Other Social Assistance Services	21-3-2017
31	Management and Other Consulting Services	24-2-2017	81	Waste Collection Services	21-3-2017
32	Cafes, Restaurants and Takeaway Food Services	25-2-2017	82	Legal and Accounting Services	21-3-2017
33	Cafes, Restaurants and Takeaway Food Services	27-2-2017	83	Legal and Accounting Services	22-3-2017
34	Computer Systems Design and Related Services	27-2-2017	84	Veterinary Services	22-3-2017

35	Cafes, Restaurants and Takeaway Food Services	27-2-2017	85	Specialised Food Retailing	22-3-2017
36	Other Social Assistance Services	27-2-2017	86	Horse and Dog Racing Activities	23-3-2017
37	Supermarket and Grocery Stores	27-2-2017	87	Legal and Accounting Services	23-3-2017
38	Cafes, Restaurants and Takeaway Food Services	27-2-2017	88	Legal and Accounting Services	27-3-2017
39	Other Personal Services	28-2-2017	89	Medical Services	28-3-2017
40	Horse and Dog Racing Activities	28-2-2017	90	Market Research and Statistical Services	28-3-2017
41	Legal and Accounting Services	28-2-2017	91	Construction Services	28-3-2017
42	Cafes, Restaurants and Takeaway Food Services	1-3-2017	92	Medical Services	29-3-2017
43	Clothing, Footwear and Personal Accessories Retailing	2-3-2017	93	Legal and Accounting Services	29-3-2017
44	Other Social Assistance Services	2-3-2017	94	Sport and Physical Recreation Activities	30-3-2017
45	Hardware, Building and Garden Supplies Retailing	2-3-2017	95	Real Estate Services	30-3-2017
46	Machinery and Equipment Repair and Maintenance	2-3-2017	96	Automotive Repair and Maintenance	3-4-2017
47	Specialised Food Retailing	2-3-2017	97	Management and Other Consulting Services	7-4-2017
48	Building Installation Services	3-3-2017	98	Recreational Goods Retailing	26-4-2017

49	Architectural, Engineering and Technical Services	3-3-2017	99	Motor vehicle retailing	26-4-2017
50	Building Installation Services	6-3-2017	100	Banker	27-4-2017

Appendix H: Participant Survey Responses

Table H1: Participant responses regarding the change in net profit of firms

Dependent variable	Make loss	Make no profit	Gain some profit	Gain significant profit
The change in net profit	14%	21%	48%	17%
Explanatory variables				
Characteristics of business owners				
Age of business owner				
< 40 (n= 61)	18.0%	19.7%	45.9%	16.4%
41-60 (n=94)	12.8%	19.1%	47.9%	20.2%
> 60 (n=45)	11.1%	26.7%	51.1%	11.1%
Gender of business owner				
Male (n= 89)	18%	19.8%	44.1%	18%
Female (n=111)	9%	22.5%	52.8%	15.7%
Nationality of business owners				
Local (n=170)	13.5%	20%	48.2%	18.2%
Non-local (n=30)	16.7%	26.7%	46.7%	10%
Firm attributes				
Firm age				
< 1 year (n= 9)	44.4%	44.4%	11.1%	0%
1-5 years (n= 30)	10%	30%	40%	20%
6-10 years (n=62)	21%	16.1%	51.6%	11.3%

11-20 years (n=56)	8.9%	19.6%	51.8%	19.6%
> 20 years (n=13)	7%	18.6%	51.2%	23.3%
Firm size				
< 5 employees (n=130)	17.7%	25.4%	46.9%	10%
6-9 employees (n=27)	14.8%	11.1%	51.9%	22.2%
10-19 employees (n=43)	2.3%	14%	48.8%	34.9%
Sector				
Service (n=105)	16.2%	18.1%	46.7%	19%
Non-service (n=95)	11.6%	24.2%	49.5%	14.7%
Location				
In the city (n=116)	16.4%	19%	45.7%	19%
Out of the city (n=84)	10.7%	23.8%	51.2%	14.3%
Symbiotic relationship variables				
The number of industrial associations which firms belong to as members				
1 association (n=72)	11.1%	29.2%	45.8%	13.9%
2-3 associations (n=33)	12.1%	15.2%	51.5%	21.2%
More than 3 associations (n=33)	9.1%	12.1%	54.5%	24.2%
No association (n=62)	21%	19.4%	45.2%	14.5%
Connections with banks				
No (n=53)	26.4%	26.4%	37.7%	9.4%
Yes (n=147)	9.5%	19.0%	51.7%	19.7%
Connections with businesses operated within the same industry				

No (n=95)	17.4%	30.4%	41.3%	10.9%
Yes (n=105)	13%	18.2%	50%	18.8%
Connections with businesses operated across different industries				
No (n=46)	21.1%	22.1%	45.3%	11.6%
Yes (n=154)	7.6%	20%	50.5%	21.9%
Frequency of interaction with businesses operating within the same industry				
Never (n=95)	21.1%	22.1%	45.3%	11.6%
Occasionally (n=41)	7.3%	19.5%	53.7%	19.5%
Frequently (n=64)	7.8%	20.3%	48.4%	23.4%
Frequency of interaction with businesses operating across different industries				
Never (n=47)	17%	29.8%	42.6%	10.6%
Occasionally (n=55)	16.4%	27.3%	45.5%	10.9%
Frequently (n= 98)	11.2%	13.3%	52%	23.5%
Attendance at workshops/ training				
Yes (n=57)	17.5%	22.8%	45.6%	14.1%
No (n=143)	12.6%	20.3%	48.9%	18.2%
Franchise				
Yes (n= 32)	3.1%	15.6%	20%	31.3%
No (n=168)	16.1%	22%	47.6%	14.3%
Word of mouth				
Yes (n=190)	13.7%	22.1%	47.4%	16.8%
No (n=10)	20%	0%	60%	20%

Information transference				
Yes (n=86)	10.5%	18.6%	48.8%	22.1%
No (n=114)	16.7%	22.8%	47.4%	23.1%
Exogenous factors				
The existence of bypass				
Yes (n= 95)	15.8%	20%	45.3%	18.9%
No (n=105)	12.4%	21.9%	50.5%	15.2%
The existence of events				
Yes (n=98)	16.3%	20.4%	43.9%	19.4%
No (n=102)	15.7%	21.6%	52%	14.7%

Table H2: Participant responses regarding growth of firms

Dependent variable	Percentages		
	Decrease	No change	Increase
Firm growth	28%	43%	28.5%
<i>Independent variables</i>			
Characteristics of business owners			
Age of business owner			
< 40 (n= 61)	32.8%	41%	26.2%
41-60 (n=94)	19.1%	46.8%	34%
> 60 (n=45)	40%	40%	20%
Gender of business owners			
Male (n= 89)	28.1%	50.6%	21.3%
Female (n=111)	27.9%	37.8%	34.2%
Nationality of business owners			
Local (n=170)	25.3%	45.9%	28.8%
Non-local (n=30)	43.3%	30%	26.7%
<i>Firm attributes</i>			
Firm age			
< 1 year (n= 9)	22.2%	44.4%	33.3%
1-5 years (n= 30)	33.3%	33.3%	33.3%
6-10 years (n=62)	35.5%	38.7%	25.8%
11-20 years (n=56)	19.6%	53.6%	26.8%
> 20 years (n=13)	25.6%	44.2%	30.2%
Firm size			
< 5 employees (n=130)	28.5%	45.4%	26.2%
6-9 employees (n=27)	22.2%	44.4%	33.3%
10-19 employees (n=43)	30.2%	37.2%	32.6%

Sector			
Service (n=105)	20%	49.5%	30.5%
Non-service (n=95)	36.8%	36.8%	26.3%
Location			
In the city (n=116)	31%	41.4%	27.6%
Out of the city (n=84)	23.8%	46.4%	29.8%
<i>Symbiotic relationship variables</i>			
The number of industrial association which firms belonged to as members			
1 association (n=72)	27.8%	51.4%	20.8%
2-3 associations (n=33)	30.3%	33.3%	36.4%
More than 3 associations (n=33)	18.2%	33.3%	48.5%
No association (n=62)	32.3%	45.2%	22.6%
Connections with banks			
No (n=53)	35.8%	35.8%	28.3%
Yes (n=147)	25.2%	46.3%	28.6%
Connections with businesses operating within the same industry			
No (n=95)	26.3%	37.9%	35.8%
Yes (n=105)	29.5%	48.6%	21.9%
Connections with businesses operating across different industries			
No (n=46)	34.8%	43.5%	21.7%
Yes (n=154)	26%	43.5%	30.5%
Frequency of interaction with businesses operating within the same industry			
Never (n=95)	26.3%	37.9%	35.8%
Occasionally (n=41)	17.1%	51.2%	31.7%
Frequently (n=64)	37.5%	46.9%	15.6%
Frequency of interaction with businesses operating across different industries			
Never (n=47)	34%	44.7%	21.3%

Occasionally (n=55)	16.4%	45.5%	38.2%
Frequently (n= 98)	31.6%	41.8%	26.5%
Attendance at workshops/ training			
Yes (n=57)	26.3%	42.1%	31.6%
No (n=143)	28.7%	44.1%	27.3%
Franchise			
Yes (n= 32)	18.8%	59.4%	21.9%
No (n=168)	29.8%	40.5%	29.8%
Word of mouth			
Yes (n=190)	27.9%	44.2%	27.9%
No (n=10)	30%	30%	40%
Information transference			
Yes (n=86)	30.2%	44.2%	25.6%
No (n=114)	26.3%	43%	30.7%
<i>Exogenous factors</i>			
The existence of the bypass			
Yes (n= 95)	23.2%	45.3%	31.6%
No (n=105)	32.4%	41.9%	25.7%
The existence of events			
Yes (n=98)	26.5%	43.9%	29.6%
No (n=102)	29.4%	43.1%	27.5%

Appendix I: Spearman correlation coefficients

Table I1. Spearman correlation coefficients

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1.OWNER_AGE	1.000																		
2.GENDER	0.081	1.000																	
3.SEC	-0.020	0.026	1.000																
4.CON_BANK	0.270*	0.105	0.010	1.000															
5.CON_DIFF	0.060	0.059	-0.022	0.130*	1.000														
6.CON_SAME	0.140*	0.106	-0.148*	0.132*	0.170*	1.000													
7.SOCIAL_ABI	0.077	0.042	-0.246*	0.100	0.179*	0.165*	1.000												
8.ATTEND	-0.140*	-0.030	-0.429*	-0.123*	0.135*	0.090	0.332*	1.000											
9.FRANCHISE	-0.040	0.160*	-0.037	0.170*	0.100	0.110	0.095	0.238*	1.000										
10.WOM	-0.110	-0.118*	0.037	0.070	-0.100	0.010	-0.003	-0.008	-0.088	1.000									

11.INFO	-0.070	0.116	-0.329*	0.178*	0.163*	0.118*	0.261*	0.302*	0.310*	-0.125*	1.000								
12.BYPASS	-0.180*	-0.046	0.469*	-0.100	-0.146*	-0.138*	-0.317*	-0.246*	-0.197*	0.126*	-0.240*	1.000							
13.EVENT	-0.190*	-0.133*	0.340*	-0.100	-0.177*	0.000	-0.432*	-0.375*	-0.210*	0.133*	-0.326*	0.690*	1.000						
14.FIRM_AGE	0.480*	0.049	0.033	0.203*	0.000	0.090	-0.045	-0.039	0.080	-0.074	-0.090	-0.106	-0.139*	1.000					
15.INDUS	-0.060	0.125*	0.172*	0.010	0.000	-0.203*	-0.109	-0.065	0.095	0.055	0.020	-0.108	-0.206*	0.053	1.000				
16.INDUS_AS SO	0.003	0.102	0.012	0.040	-0.138*	0.000	-0.122*	0.015	-0.078	0.007	-0.145*	0.048	0.088	-0.060	0.049	1.000			
17.FIRM_SIZE	-0.060	0.064	-0.027	0.225*	0.198*	0.128*	0.144*	0.112	0.204*	-0.045	0.163*	-0.130*	-0.140*	0.120*	0.098	0.031	1.000		
18.FREQ_DIFF	0.055	-0.009	-0.131*	0.122*	0.737*	0.216*	0.329*	0.212*	0.077	-0.064	0.155*	-0.267*	-0.333*	0.151*	0.085	-0.116	0.263*	1.000	
19.FREQ_SAME	0.180*	0.087	-0.232*	0.110	0.158*	0.917*	0.209*	0.142*	0.098	-0.036	0.140*	-0.192*	-0.099	0.123*	-0.256*	-0.070	0.108	0.271*	1.000

Note: *, **, *** indicate 10%, 5% and 1%, respectively

Appendix J: Social Network Analysis

Social Network Analysis (SNA) is "a set of methods for analysis of social structures, methods which are specifically geared towards as investigation of relational aspects of these structures. The use of these methods, therefore, depends on the availability of relational rather than attribute data" (Scott, 2005, p. 38). Fredericks and Durland (2005) provide further explanation of SNA, stating that SNA is the study of relationships within the context of social situations. SNA contains a set of measures and analysis tools that are used to describe and understand relational data. Relational data indicates whether a relationship between two components or actors exists and the values of the relationship. SNA provides a methodological tool to understand the interdependence of actors in networks (Wasserman & Galaskiewicz, 1994).

In order to arrive at a clear definition of symbiotic relationships among MSMEs, this study adopts SNA to examine the relationships among individual firms operating in Cambridge, New Zealand. Regarding studies that analyse business networks, some key concepts are mentioned in relation to actors and relational ties. Actors can be individuals, people in a group, businesses, and social units (Wasserman & Faust, 1994). The terms 'vertices' or 'nodes' are sometimes used to explain the way social entities are linked together by some form of relationship (Prell, 2012). The actors in this study are individual MSMEs located in Cambridge which have some connection or interaction with each other for business purposes. Actors are linked to one another by relational ties with various meanings and will be specified differently among a particular set of actors (Prell, 2012; Wasserman & Faust, 1994). There are many types of relational ties: 'Dyad' is a tie between two actors; 'Triad' is a relationship among three actors; 'Subgroup' is the relationship among a subset of any collection of actors; and 'Group' is defined as the connection among many actors in a network, and its relationships can be measured (Wasserman & Faust, 1994).

There are certain determinants needed for analysing business networks: density and centrality. According to Rowley (1997), density is an attribute of the whole network which measures the relative number of ties in the network linking all the actors together. Density can be measured by comparing the number of relationships in the

existing network and the total number of possible ties that each actor has with other actors. Centrality explains how individual actors in the network relate to others. These are the network attributes used to find which entities are important to others. Many scholars discuss various kinds of centrality in the literature on social networks. These types of centrality include degree, closeness and betweenness. Degree centrality refers to the number of direct relationships from one actor to other actors, showing how well connected they are (Rowley, 1997). Freeman (1979) defined closeness centrality as the ability to contact or connect to other actors in the network. Communication concerns the time expected that information and news passes from actors through the network (Bavelas, 1950; Borgatti, Everett, & Freeman, 2002). Betweenness centrality measures the frequency of interaction where one actor comes across another pair of actors. It is used to measure the ability to control information sharing across networks (Linton C. Freeman, 1979).

This study uses computer software called GEPHI to calculate these network scores which were input in Partial Least Square Structural Equation Modelling (PLS-SEM) as the indicator variables. GEPHI is one of the tools normally used to generate a density diagram which helps researchers to understand networks (Bastian & Heymann, 2009). It can deal with large networks with many nodes. In this study, the interview responses show there are 79 business types which are connected to each other.

Table J1: Statistical results of network measurement (The top ten values)⁹

Order	In-degree		Out-degree		Eigenvector centrality		Eccentricity		Closeness centrality		Betweenness centrality	
	Name	Statistics	Name	Statistics	Name	Statistics	Name	Statistics	Name	Statistics	Name	Statistics
1	Accommodation	10	Recreational Goods Retailing	19	Accommodation	1.0	Legal and Accounting Services	6.0	Amusement and Other Recreation Activities	1.0	Recreational Goods Retailing	204.0
2	Building Installation Services	7	Cafes, Restaurants and Takeaway Food Services	9	Cafes, Restaurants and Takeaway Food Services	0.605854	Personal Care Services	5.0	Computer Systems Design and Related Services	1.0	Accommodation	144.8333
3	Architectural, Engineering and Technical Services	7	Specialised Food Retailing	8	Other Personal Services	0.547119	Funeral, Crematorium and Cemetery Services	5.0	Creative and Performing Arts Activities	1.0	Cafes, Restaurants and Takeaway Food Services	129.6667
4	Cafes, Restaurants and Takeaway Food Services	6	Medical Services	7	Other Transport Support Services	0.512519	Horse and Dog Racing Activities	5.0	Automotive Repair and Maintenance	1.0	Medical Services	108.3333

⁹ In degree (demonstrating the number of target groups which have been connected), out degree (demonstrating the number of sources which connect to others. The higher the number of out degree, the higher the connection with others), eccentricity (informing the distance from a given starting node to the farthest node from it in the networks), closeness centrality (indicating the average distance from a given starting node to all other nodes in the networks), betweenness centrality (measuring how often a node appears on the shortest paths between nodes in the networks), and eigenvector (measuring the importance of node in a network based on a node's connections).

5	Other Transport Support Services	6	Pharmaceutical and Other Store-Based Retailing	7	Architectural, Engineering and Technical Services	0.412809	Real Estate Services	5.0	Machinery and Equipment Repair and Maintenance	1.0	Building Installation Services	61.00000
6	Recreational Goods Retailing	5	Legal and Accounting Services	7	Internet Service Providers and Web Search Portals	0.37822	Clothing, Footwear and Personal Accessories Retailing	5.0	Building Installation Services	0.857143	Real Estate Services	48.00000
7	Medical Services	5	Other Social Assistance Services	7	Scenic and Sightseeing Transport	0.37549	Other Health Care Services	5.0	Cafes, Restaurants and Takeaway Food Services	0.785714	Sport and Physical Recreation Activities	48.00000
8	Pharmaceutical and Medicinal Product Manufacturing	4	Clothing, Footwear and Personal Accessories Retailing	7	Building Installation Services	0.328004	Recreational Goods Retailing	5.0	Hardware, Building and Garden Supplies Retailing	0.666667	Other Social Assistance Services	47.00000
9	Pharmaceutical and Other Store-Based Retailing	3	Accommodation	6	Grocery, Liquor and Tobacco Product Wholesaling	0.267472	Medical Services	4.0	Market Research and Statistical Services	0.666667	Architectural, Engineering and Technical Services	45.00000
10	Personal Care Services	3	Building Installation Services	6	Supermarket and Grocery Stores	0.265408	Pharmaceutical and Other Store-Based Retailing	4.0	Accommodation	0.647059	Pharmaceutical and Other Store-Based Retailing	44.5

Table J1 shows that the Accommodation industry has the highest in-degree score. This means that accommodation is connected with many businesses operating in other industries. This is also indicated by the highest eigenvector centrality score. The highest out-degree score is found in the Recreational goods retailing industry. The highest value shows various types of industries that businesses operating in the Recreational goods retailing industry need to connect with. Additionally, according to the highest betweenness centrality score, recreational good retailers are the most important entities of the whole network as they act as the best signallers who transfer information to other entities in Cambridge. The highest eccentricity score is found in businesses operating in the Legal and Accounting Services Industry. This demonstrates that businesses operating in this industry will be more easily influenced by the activities of other businesses from other industries. The highest score of closeness centrality is found in businesses operating in the Amusement and Other recreation activities industry. It indicates the capability of connection with many businesses operating in other different industries. Figure J1 presents the overall picture of business symbiosis in Cambridge.

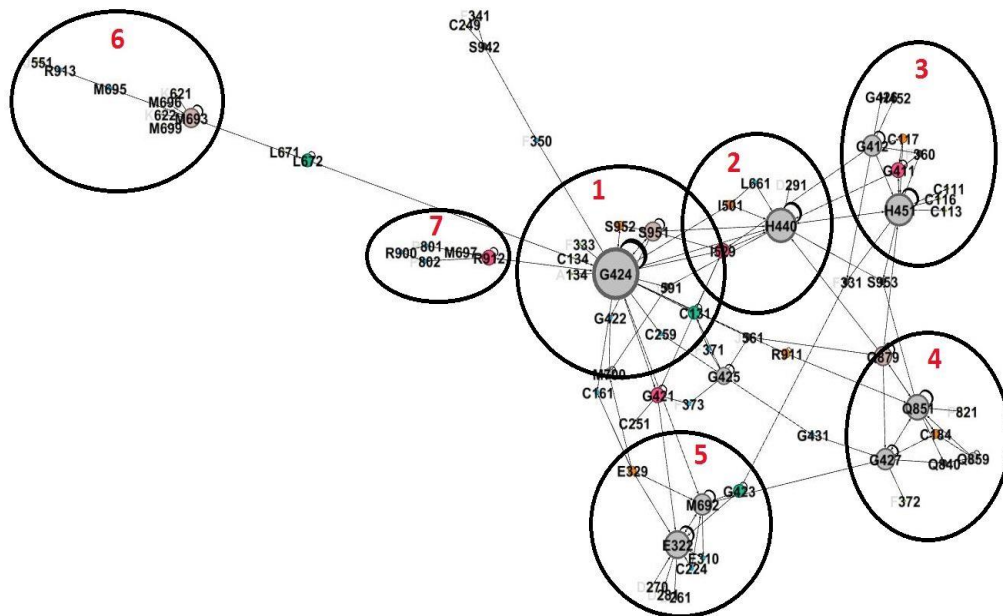


Figure J1: Seven areas of high density of connection among MSMEs operated in different industries

Figure J1 demonstrates that there are seven main areas which have a high density of connections. The web of business connections also presents the prominent nodes which act as the hub transferring signals and information to others. Firstly, a number of retail businesses connect and have business relationships with other different industries. From the web of contacts, businesses operating in the Recreational Goods Retailing Industry are associated with many businesses operating in the Accommodation Industry, the Knitted Product Manufacturing Industry, the Textile Fibre, and the Yarn and Woven Fabric Manufacturing Industry. Recreational goods retailers are also connected with businesses operated in the Real Estate Services, the Funeral, Crematorium and Cemetery Services, the Personal Care Service Industry, and the Sport and Physical Recreation Activities Industry.

The second area of high density of connections is found among businesses operating in the Accommodation Industry, the Café, Restaurant and Takeaway Food Services Industry, and the Recreational Goods Retailing Industry. The Accommodation Industry also connects with businesses operating in the Transport Support Services Industry, the Motor Vehicle and Transport Equipment Rental and Hiring Industry, and the Waste Collection Services Industry. Third, GEPHI shows a high density of connection among businesses operating in the Café, Restaurant and Takeaway Food Services Industry, the Dairy Product Manufacturing Industry, the Supermarket and Grocery Stores Industry, the Grain Mill and Cereal Product Manufacturing Industry, and the Bakery Product Manufacturing Industry. The fourth area of high density of connections is found among firms operating in the Medical Services Industry, the Pharmaceutical and Medicinal Product Manufacturing Industry, the Pharmaceutical and Other Store-Based Retailing Industry, Hospitals, and the Sport and Physical Recreation Activities Industry.

The fifth high density connected area involves the connections among firms operating in the Building Installation Services Industry, the Architectural, Engineering and Technical Services Industry, the Hardware, Building and Garden Supplies Retailing Industry, the Gas Supply Industry, the Heavy and Civil Engineering Construction Industry, and the Furniture, Floor Coverings, Houseware and Textile Goods Retailing Industry. Next, a high density connected area is found

among businesses operating in the Legal and Accounting Services Industry, the Management and Other Consulting Services Industry and the Market Research and Statistical Services Industry. The last area with a high density of connection is seen among businesses operating in the Horse and Dog Racing Activities Industry, the Veterinary Services Industry, and the School Education Industry.

Appendix K: Results from Smart-PLS

Table K1. Outer weights of indicators

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Eigenvector centrality -> Interfirm relation-within industry	0.575	0.381	0.411	1.398	0.163
Business purpose transaction-> Business- bank relations	-0.247	-0.219	0.194	1.277	0.202
Interactivities across industries-> Interfirm relation-across industries	-0.783	-0.307	0.676	1.160	0.247
Interactivities within industry-> Interfirm relation-within industry	-0.489	-0.239	0.462	1.059	0.290
In-degree score across industries-> Interfirm relation-across industries	0.432	0.261	0.391	1.105	0.270
One bank connection-> Business-bank relations	0.942	0.905	0.223	4.215	0.000
Out-degree score across industries-> Interfirm relation-across industries	0.485	0.299	0.413	1.175	0.240
Out-degree score within industry-> Interfirm relation-within industry	0.455	0.334	0.381	1.194	0.233
The change in net profit-> Business performance	1.000	1.000	0.000		

Table K2: Outer loadings

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	<i>T</i> Statistics (|O/STDEV|)	<i>P</i> Values
Eigenvector centrality -> Interfirm relation-within industry	0.707	0.467	0.468	1.511	0.131
Business purpose transaction-> Business- bank relations	-0.352	-0.314	0.216	1.626	0.104
Interactivities across industries-> Interfirm relation-across industries	-0.741	-0.284	0.647	1.145	0.253
Interactivities within industry-> Interfirm relation-within industry	-0.613	-0.325	0.518	1.182	0.238
In-degree score across industries-> Interfirm relation-across industries	0.361	0.243	0.343	1.052	0.091
One bank connection-> Business-bank relations	0.969	0.929	0.228	4.248	0.000
Out-degree score across industries-> Interfirm relation-across industries	0.545	0.333	0.451	1.207	0.228
Out-degree score within industry-> Interfirm relation-within industry	0.645	0.448	0.462	1.396	0.163
The change in net profit-> Business performance	1.000	1.000	0.000		

Table K3: Indirect effects of constructs

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	<i>T</i> Statistics (|O/STDEV|)	<i>P</i> Values
Business-bank relations -> Business performance					
Interfirm relation-across industries -> Business performance	-0.060	-0.031	0.061	0.977	0.329
Interfirm relation-across industries -> Business- bank relations					
Interfirm relation-within industry -> Business performance	-0.043	-0.031	0.044	0.989	0.323
Interfirm relation-within industry -> Business-bank relations					

Table K4: Total effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	<i>T</i> Statistics (|O/STDEV|)	<i>P</i> Values
Business-bank relations -> Business performance	-0.252	-0.248	0.093	2.707	0.007
Interfirm relation-across industries -> Business performance	-0.123	-0.066	0.141	0.873	0.383
Interfirm relation-across industries -> Business- bank relations	0.237	0.125	0.231	1.026	0.305
Interfirm relation-within industry -> Business performance	0.046	0.044	0.091	0.502	0.616
Interfirm relation-within industry -> Business-bank relations	0.172	0.124	0.159	1.083	0.280