



# The Effect of Innovation and Dynamics Capabilities on the Relationship between Malaysian SMEs' Business Network and Firm Performance

A thesis submitted for the degree of Doctor of Philosophy

by

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## Declaration

I hereby declare that the thesis is based on my original work, except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Brunel University or other institutions.

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## Abstract

The business network that is linked to flexibility, aggressiveness and strategy has become increasingly important in recent years. Several studies suggest that such networks potentially have a profound impact on firm performance, including Small and Medium-sized Enterprises (SMEs). The role of SMEs in enhancing global and local economic growth is undeniable, particularly in the context of developing countries such as Malaysia. Although numerous researches have been conducted in this field, the majority of them limit their focus to the relationship between firm capabilities (i.e. innovation and dynamic capabilities) and firm performance in specific industries. Research on the synergy impact of business networks, innovation and dynamic capabilities on SME performance remains scarce. This has become a significant gap, which this research seeks to address. This research investigates the roles of dynamic capabilities and innovation capabilities as a moderator and mediator in the relationship between business networks and firm performance, based on the model developed from the concepts of the Resource Base View (RBV) and Dynamic Capability (DC) theories. The model was justified through the Structural Equation Modelling (SEM) technique using AMOS version 23. Taking Malaysia as a research context, the model was tested against a total of 463 SMEs across different industries and categories (i.e. micro, small, and medium SMEs) through face-to-face surveys with 130 owners, 41 CEOs, 79 managers and 213 executives. This study presents five important findings: (1) there exists no direct relationship between business network and firm performance; (2) there exists a direct relationship between innovation, dynamic capabilities and firm performance; (3) the existence of the relationship between business network and firm performance is conditioned by innovation capabilities; (4) dynamic capabilities do not moderate the relationship between business network and firm performance; however (5) dynamic capabilities moderate the relationship between business networks and innovation capabilities. To conclude, the synergy of business networks, innovation capabilities and dynamic capabilities will significantly affect SME performance. This implies that SME performance will not be affected by the business network, as a single variable. The research offers three key contributions. Firstly, it enhances our understanding of the important synergies between business networks, innovation capabilities and dynamic capabilities in elevating SME firm performance. Second, the findings provide a new perspective on how the application of RBV and DC theories can be used as a conceptual lens to analyse the factors affecting SME performance. Lastly, the result signposts practical approaches for SME decision-makers by providing assistance to boost firm performance.

## Acknowledgment

*By the Name of Allah, the Most Gracious and the Most Merciful*

Alhamdulillah; all praise and thanks are infinitely due to Allah, Lord of the world. Thanks be to Allah for his guidance and giving me the capability, courage, strength, patience, inspiration and willingness to complete this PhD Thesis.

I would like to express my deep gratitude and appreciation to my supervisor, Dr Maria Balta. She was an excellent supervisor and very helpful, patient and optimistic when teaching and encouraging me to finish my PhD.

I am also thankful to my second supervisor, Dr Chima Mordi, for his guidance and support during my research, especially after Dr Maria Balta left Brunel University. Special thanks go to my former supervisor, Associate Professor Dr Joyce Ko, for her guidance in the beginning of my PhD Journey.

I would like to extend my sincerest appreciation to the Malaysian Government and Majlis Amanah Rakyat (MARA) for funding my PhD through a scholarship programme. I am also thankful to all of the staff and my colleagues at Brunel Business School for their support.

I am grateful to all of my friends, lectures and businesspeople in Malaysia, who supported the pre-test, pilot and survey questionnaire reported in this thesis. Their contribution was essential to the success of this research.

Finally, I would like to express my biggest gratitude to my husband, Wan Toren, whose courage and love makes all things possible, to my parents (Che Mat and Zainab), my in-laws (Wan Yusoff and Rahmah), my sisters (Che Rosmariza and Murni Noriza), and all of my children (Wan Maheran, Wan Taheran, Wan Nur Umairah, Wan Muhammad Muadz, Wan Muhammad Hamzah and Wan Nur Aisyah Zahra). Thank you for all of your support and patience throughout this whole period of completing my thesis. I would also like to extend my love and appreciation to my sisters-in-law and brothers-in-law for their kindness and moral support. Thanks to Allah for giving me a little prince and princess (Hamzah and Aisyah) as my inspiration and motivation to finish this research. Hopefully, this research will be their motivation for their own future educational journey.

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## List of abbreviations

<b>ABBREVIATIONS</b>	<b>DESCRIPTIONS</b>
SME	Small Medium Enterprises
GDP	Gross Domestic Product
CEO	Chief Executive Officer
DC	Dynamic Capability
RBV	Resources Based View
SPSS	Statistical Package for the Social Sciences
AMOS	Analysis of Moment Structures
ACCCIM	Associated Chinese Chambers of Commerce and Industry of Malaysia
ICT	Information and Communications Technology
R & D	Research and Development
ROI	Return on Investment
ROS	Return on Sale
TTO	Technology Transfer Offices
PRO	Public Research Organisations
AIS	Accounting information system
US	United States
LISREL	Linear structural relation
IP	Intellectual Property
SIC	Strategic Innovation Capability
NSDC	National SME Development Council
IG	Idea Generation

ITE	Internal Technological Environment
TAE	Technology Acquisition and Exploitation
CFA	Confirmatory Factor Analysis
GFI	Goodness of Fit Index
CFI	Comparative Fit Index
AGFI	Adjusted Goodness of Fit Index
RMSEA	Root Mean Square Error of Approximation
TLI	Tucker-Lewis Index
IFI	Incremental Fit Index
SCA	Sustainable Competitive Advantages
WB	World Bank
EU	European Union

# **Chapter 1 : Introduction**

## **1.1 Background of the Study**

The existing literature focuses on the ability of Small and Medium Enterprises (SMEs) to utilise their resources either internally or externally in the Malaysia context or globally (Kodama and Shibata, 2014; Onn and Butt, 2015; Song et al., 2016). Some researchers discussed either internal or external factors rather than the combination of both factors (Glavas and Mish, 2014; Huang et al., 2015; Mouzas and Ford, 2012). Most discourse has been based on the business, management and related areas, such as business networks, dynamic capability (DC), and innovation as the main factors that contribute to a firm's performance (Aaboen et al., 2016; Birkinshaw et al., 2016; Wang et al., 2015). Through a deceptively complex process of relationship building, business contacts or connections may be leveraged by a firm for the business interest - a mechanism that is known as business networking. A study has confirmed that these business networks act as powerful external resources in facilitating the inflow of various pivotal information into the firms concerned, such as legal, regulations and financial-related information, which is critical for enhancing the Malaysian SMEs' performance (Nor et al., 2016). On this basis, the subliminal contribution of such networks to a firm's performance through feeding in information, (particularly critical financial-related information), is undeniable and noteworthy. Furthermore, business networks, through collaboration with the government or universities and public research institutes encourage the dissemination of information regarding the availability of intangible resources, such as financial sources (focusing on information).

The business network is the relationship formed, either directly or indirectly, with other (business or non-business) organisations. The resultant effect is that the company is unable to control the activities of the other actors in the network or have a general idea of what is taking place in the network (Oberg et al., 2016). The business relationship process management of the firm acts as a driver of performance, that improves the company's portfolio (Mitrega and Pfajfar, 2015). Gupta et al., (2015) used a cartel network to describe the importance of the external

environment. In other words, they used the power of association between the actors to maintain higher prices in the market. Developing business relationship related to changing and shaping the network in continuous motion allows the sensing and integrating of the process into the network process orientation. The collaboration between the actors in a business environment (private sector, government, universities and public research organisations) will enhance the innovation capabilities and so, consequently, increase firm performance (Autant-Bernard et al., 2013).

Innovation, related to SMEs, is a vital determinant of survival, growth and sustainability (Pelser, 2014; Pullen et al., 2012). To be more innovative, collaboration between the same level of business sounds perfectly plausible, and is considered a benchmark for firm performance and economic growth (Rezazadeh, 2017). Various scholars have examined several types of innovation; for instance, product or process innovation, organisational innovation (Fernandes and Ferreira, 2013) and technological innovation (Ratten and Ratten, 2007). Innovation occurs when the relationships in business networks are established and depend on the economic effects of both parties (La Rocca and Snehota, 2014). The following are the characteristic of the innovators' firm: 1) to explore the current business networks to acquire resources from their partners; 2) to develop a business relationship with emerging networks; and 3) to study and find the fit technology related to the needs of the firm for current and future purposes (Medlin and Tornroos, 2015).

Firm performance and the competitive edge of the business organisation are dependent upon the resources and capabilities that are available to the enterprise. While, on the one hand, the resource based view suggests that the company can gain a competitive advantage by using its existing capabilities and resources that are inimitable, exceptional and irreplaceable to generate value for consumers that cannot be reproduced by market rivals (Camisón and Villar-López, 2014), this study uses RBV to investigate the relationship between organisational and technological innovation capabilities, which contribute to superior firm performance. The results confirm the positive correlation between them. The adoption of resources by enterprises is essential for achieving innovative performance in the new context (Corsaro and Cantù, 2015).

In a dynamic market scenario, where the resources change occasionally, the ownership of resources is insufficient; adaptation is the only key to long-term success. When the existing resources are coordinated and combined in such a manner that produces new processes, skills, and knowledge for gaining an advantageous position in the competition, it is denoted as a dynamic capability. The theory of dynamic capability underpins the reason behind the competitive survival of the brand in the competition rather than focusing on sustainability in the competition. Furthermore, it supports the capabilities of the firm. It is imperative to discuss the dynamic management capabilities advanced by (Teece, 2009), which is related to the skills, routines, processes, and organisational structures which enable firms to build, employ and arrange the intangible resources to satisfy the customers' needs that is arduous for competitors to imitate.

The firm is able to adapt in anticipating and exploiting the opportunities (technological advances and a volatile market) using a DC lens, which leads to increased firm's performance and sustenance in the relevant market (Day and Schoemaker, 2016). In the context of location, this research agrees with (Fainshmidt et al., 2016) that dynamic capabilities contribute more to SME performance in developing countries compared with developed countries. The positive relationship between dynamic capabilities and competitive advantage depend on the level of dynamism and the external environment (Schilke, 2014). The firm that cannot anticipate or respond to external disruption in the volatile environment faces difficulties in terms of survival; they need strategies, structures and processes that allow agility and responsiveness (Felin and Powell, 2016). Scott-Kennel and Giroud (2015) argue that firm-specific advantage is a unique asset to the firm that moulds its competitive advantage. In the Malaysian context, Onn and Butt (2015) argued that the component factors of dynamic capability are vital for sustaining competitive advantage. Chowdhury et al., (2015) indicate that the power of the firm or related ability will influence the proper arrangement of resources, influence the network actors in the value co-creation of the firm and achieve a better outcome.

In light of the above, the idiosyncratic resources and the uniqueness of the firm's capabilities which is related to the business networks, innovation capabilities and dynamic capabilities present an important concept in the strategic management

context. Furthermore, because the area of SMEs, especially in developing countries like Malaysia, needs further research, the main objective of this study is to identify the antecedents of SMEs' performance that may support academics and practitioners to utilise those resources and capabilities. More specifically, this research critically examines the moderating and mediating role of dynamic capabilities and innovation capability on business networks and the consequences of firm performance for SMEs in Malaysia. In light of the gap in the current literature on these perspectives, the present research result is expected to fill this gap. To reflect the great need for new, promising ideas on the topic, this research was purposely selected for its broad mix of contributions. Also, this research complements previous studies on knowledge sharing (Dyer and Nobeoka, 2000), knowledge integration (Grant, 1996), knowledge transfer (Modi and Mabert, 2007) and organisational capabilities (Wu et al., 2010).

## **1.2 Malaysia Context**

Small and Medium Enterprises (SMEs) contribute to world economic growth, particularly the Malaysian economy. In early 2005, a survey by the National SME Development Council showed that, of the 523,132 business firms surveyed, 99.2 per cent (or 518,996 firms) were SMEs. Therefore, they constituted a huge majority of the businesses established and were significant to the Malaysian economy. Thus, the Government introduced some development programmes to help the growth of SMEs in realising the country's vision to become a higher income nation with a developed status by 2020. However, SMEs in Malaysia still lack a competitive advantage in the global business environment because of their low productivity and poor performance (Tehseen et al., 2015). Furthermore, Malaysian SMEs contribute less to the Gross Domestic Product (GDP) and exports compared to other Asian countries, like Singapore, Japan and Korea (Halim et al., 2013). Taking into account the significant contribution of SMEs to economic growth, there is an on-going debate about identifying the critical success factors that contribute to the performance of SMEs (Bashar Bhuiyan et al., 2016; Chiun Lo et al., 2016; Sivageahnam et al., 2015).

According to Salikin et al., (2014), besides the financial issues facing SMEs in developing their business, the non-financial aspects also play an essential role in increasing firm performance. The non-financial aspects are related to management skills (Rahman et al., 2016). Financial assistance is normally needed in the start-up stage but, for the growth phase, firms need to improve their management and marketing skills (Hashim, 2015).

Furthermore, according to Snell and Lau (1994), management issues are mostly related to small firms compared to larger firms. Small firms fail to develop the knowledge, skills and competencies of their workers (Omar et al., 2009). Insufficient knowledge among workers may sometimes contribute to the complexity of the financial problems as they are unable to manage the financial sources, draw up a business plan or engage in general communication (Berry et al., 2002). Conversely, some scholars argue that, with higher management skills, SME owners are able to manage their firms and convince the financial institutions to acquire business funds (Islam et al., 2011). In addition, knowledgeable workers will help the firm to acquire resources, both external and internal (Salleh and Hussin, 2016).

As mentioned by the CEO of SMECorp. Malaysia (2015), Dato' Hafsa Hashim, *"SMEs need to restructure their financial systems, improve their management skills and emphasize high quality products/services to ensure SME survival"*. Further, she added, *"The utilisation of technology which is still relatively low poses another problem or serves as a constraint for entrepreneurs to move forward"*. This is a very important issue that needs to be further investigated empirically for Malaysian SMEs to continue improving their firm performance.

In line with this, this research focuses on management skills or capability and innovation capability together with business networks (acquiring external resources for innovation) in order to improve the quality of the products, produce novel products and be pioneers in the market. Hence, it is reasonable to adopt hybrid theories (the resource based view and dynamic capability) to address this issue. Furthermore, the outcome of this research demonstrates the importance of resources and capabilities in enhancing firm performance.



### 1.3 Problem Statement

There is a correlation between the concepts of innovation and research. Innovation evolved as the seed of an idea in the minds of a research group which desires the right environment and supportive surroundings in order to be nurtured so grow into a sturdy, healthy invention. It is the duty of the senior management of the corporation to create a healthy environment that helps the growth and nurturing of ideas to come to fruition that is useful for making the lives of humans simpler (Watson, 2007). That is the aim of innovation and creativity from an industrial point of view. It is important for the development of fresh, new ideas today that could revolutionise the way in which generations function in the distant future and so lead to tremendous adjustments to the lives of people.

It is important to understand that innovativeness can only be adopted by a business based on the availability of the resources that the company possesses in the form of assets, both intangible and tangible. Businesses, therefore, must develop their capabilities through developing the skills of their staff and also by nurturing the learning process so that the resources and capabilities are well used to transform the capacities of the business to deal with the present changes in the market competition.

The issue, however, is not based on the adaptation of such novel practices which can bring about positive results from the perspective of the companies that are competing to gain an advantage. The small and medium-sized enterprises in Malaysia with limited resources struggle to adopt innovative policies into their work curriculum so that the firms can prepare themselves for the market competition. As the issues of business networks and firm performance are interrelated, it is observed that miscommunication between the various stakeholders of the firm often results in the poor performance of the company and therefore the firm suffers from poor profitability (Laursen and Salter, 2006). It is, therefore, important that a verdant resolution regarding how to adopt methods of innovation is introduced, so that the resources of the business may be used to integrate its inherent capabilities so that the loopholes between the business network and the performance of the enterprise

can be closed, thereby steering the firm towards an era of success and growth. Further, Malaysian SMEs lack a capability to manage their external and internal resources, which they less competent than other firms and unable to sustained in the market.

Likewise, SMEs lack knowledge about managing or preparing their products or services and require assistance from the government, universities and public research organisations. Training and research programmes and policies will help firms to become more competent and experienced in managing the firm efficiently, with the objective of reducing costs and maximising profits (Rahman et al., 2015; Yigitcanlar and Muna, 2015).

The Malaysian government realises that the SMEs not only contribute to the economy but also generate employment for entrepreneurs and the staff whom they employ in their firm (Sivageahnam et al., 2015). With only three years remaining until 2020, the challenges facing SMEs in Malaysia needs to be identified and addressed, highlighting the critical success factors that spur firm performance. Therefore, this research adopts the determinant of firm performance, focusing on the role of the business network, innovation capabilities and dynamic capabilities.

#### **1.4 Research Aim**

The aim of this research is to examine critically the moderating and mediating role of dynamic capabilities and innovation capability on business networks and the consequences of this for the firm performance of SMEs in Malaysia.

## **1.5 Research Objectives**

The following are the research objectives:

- i. To conduct a comprehensive literature review of the resources and capabilities theories.
- ii. To examine the role of business networks, innovation capability and dynamic capabilities on firm performance.
- iii. To determine the effect of business networks and their elements on innovation capability.
- iv. To explore the function of dynamic capabilities and innovation capabilities as moderators and mediators in the suggested model.
- v. To develop a framework for the antecedents of SME firm performance.

## **1.6 Research Questions**

This research attempts to answer the following three questions:

- i. Are business networks, dynamic capabilities or innovation capabilities also sufficient for promoting firm performance in a volatile environment, or is a combination of these required?
- ii. Do the two types of capabilities (dynamic capabilities and innovation capabilities) act as moderators and mediators in the relationship between business networks and firm performance? If so, why?
- iii. What are the effects of business networks and their elements on innovation capability?

## **1.7 Scope and Significance of the Study**

The concept of innovation has been widely researched because it is possibly the most relevant area when assessing the most verdant method of innovative practices for a specific organisation. There are a plethora of studies (Aziati et al., 2014; Sivageahnam et al., 2015) that explore the scope and various facets of this issue. However, this study focuses on small and medium-sized enterprises in Malaysia that

have become the defining structure of the country's economy. The scope is infinite for these firms, as they are not bound by the limitations of the more mature players in the industry who can transform their processes. Unfortunately, this is not the case because of various internal and external factors that need to be addressed. The existing small and medium sized units, as well as those that are entering the domain of business for the first time, are safe under the wings of the government support of the country. Hence, they have an opportunity to adopt their limited resources, manage their capabilities and develop their skills to use the resources to remain competitive and serve their consumers (Verhees and Meulenber, 2004). The present study will, therefore, expound on the importance of employing innovative techniques reforms in the capabilities of the small and medium-sized enterprises, thereby acting as a mediating tool for establishing a bridge between the network that the businesses, depending upon its final performances in the market competition.

The Malaysian economy is growing at the fastest rate because of the predominance of SMEs which has contributed over 30% of the national GDP and grew by 5.1% in 2013 (The Star Online, 2014), as reported by the National Bank of Malaysia. Malaysia aims to increase the contribution of SMEs by enhancing their export contribution from 19% to 25% and employment from 59% to 61% (Kurnia et al., 2013). This research argues that most of the small and medium-sized enterprises have an inherent flexibility in their approach which helps them to adapt their processes to changes and innovation to suit the needs of the market. As the larger organisations tend to be tied by their resources and capabilities, reconfiguration is an arduous task for them. It results in stagnancy, which affects the organisation and its brand lags behind in the competitive race (Walter et al., 2006). They suggest the importance of developing a network capability to improve firm performance and one of the factors for network development is governmental agencies. Furthermore, previous studies showed conflicting results between business network, innovation capability, dynamic capacity and firm performance (Ho and Lu, 2015; Koryak et al., 2015; Martín-de Castro, 2015). However, the relationship with firm performance remains vague. This research presents a brand new conceptual framework and complete empirical evidence to fill the gap and thus contribute to the literature.

The findings from previous studies that explore the complex relationship between the factors that influence firm performance remain fragmented and unexplained, although some of them focus on financial factors (Guan and Yam, 2015). There is limited study that focuses on non-financial factors, particularly the relationship between business networks and their elements with firm performance, innovation capability and firm performance and dynamic capabilities and performance. Also, no study of which the researcher is aware has examined a combination of these relationships. This study fills this gap because it explores the intrinsic connections.

The heterogeneous character of SMEs makes them far more innovative but, due to a lack of resources, they do not have the capacity to innovate and hence fall behind in the competition. It is true that most of the small and medium-sized companies in Malaysia who are focused on manufacturing and production activities are open to innovative practices as they tend to invest more resources in research and development rather than their service counterparts. The variables of business network and firm performance are, to some extent, interrelated, as the business activities involve many stakeholders, so an efficient network is imperative, which can affect the performance of the business in delivering the outcomes. Dynamic capabilities come into play in the adaptation of innovative methods in technology and culture so that the network can be effectively used to mitigate communication gaps between the various kinds of stakeholders and thus deliver quality results to the consumers (Gulati, 2007). The Malaysian government has been providing full support for the growth of small and medium-sized enterprises. It has become vital that the importance of the mediating and moderating effect of the tools of innovation and dynamic capabilities should be studied, which can help in transforming the business network and thereby affect the firm performance in the market competition. There is a dearth of empirical evidence relating to the combination of RBV and DC (Nieves and Haller, 2014). This research fills the gap in content and methods by focusing on intangible resources, which only refers to knowledge using quantitative methodology (Enkel and Heil, 2014; Eriksson et al., 2014). Arend and Bromiley (2009) and Barreto (2010) argue that one of four key identified problems is the lack of empirical support for the positive relationship between dynamic capabilities and firm performance (Wilden et al., 2016). This research addresses this dearth by using

dynamic capabilities as playing an indirect role in affecting performance (Laaksonen and Peltoniemi, 2016).

As mentioned above, Malaysian SMEs still lack of a solid critical success factor framework for enhancing their competitiveness in the volatile market and boosting firm performance (Chiun Lo et al., 2016). This study addresses this deficiency by analysing how three internal capabilities enable outside collaboration in turbulent markets and also offers some important theoretical implications (Wang et al., 2015). The study also hopes to make some useful contributions by focusing on identifying the main factors that affect the performance of Malaysian SMEs. It will identify the factors that will enable Malaysian SMEs to achieve and maintain a competitive advantage and attain superior performance. This aligns with (Chiun Lo et al., 2016), who focused on the critical success factors of SMEs, that lead firms to invest in beneficial areas.

## **1.8 Structure of the Thesis**

A brief outline of the chapters and their contents is as follows:

Chapter one provides an overview of the research and lays out the background and context of the study, together with a few details about the variables under investigation from a theoretical perspective. It also states the primary purpose of the research and highlights the objectives and the scope of the study. Chapter two examines thoroughly the existing literature in the area of SME performance, so that the secondary sources of information that are available in the form of previous published articles, blogs, journals and books on the research topic can be used as a basis for studying the research topic from a theoretical perspective, and the relationship and loopholes between the same can be highlighted to prove the potency of the research hypotheses.

Chapter three presents the conceptual model and hypotheses development. It explains the conceptual model of the research and the hypotheses using the arguments found in the existing literature. The choice of the related theories is

justified (resource-based view (RBV) and dynamic capabilities). Chapter four highlights the methods and tools that the researcher used to gather the data and information and that will be required to analyse them in the course of the research. As the present research is primary and quantitative in nature, it will involve data accumulation from the chosen research sample, which will be selected from the research population. This chapter will also highlight the philosophy, strategy and approach that has been followed by the researcher in conducting the research and also the timeframe and tools for analysis that have helped in achieving the findings of the research.

Chapter five analysed the data and set out the analytical tools, like the Statistical Package for the Social Sciences (SPSS) and Analysis of Moment Structures (AMOS), graphs, and tables used to analyse the data. Chapter six outlines the research findings, accompanied by discussions. Chapter seven summarises the main findings of the research. It provides useful insights into the implications of the research related to academic and management practice. Finally, this chapter provides the limitations and suggests avenue for future research.

## **1.9 Concluding Remarks**

This chapter spans eight sections. The first section discusses the background of the study, the second section explains SMEs in the Malaysian context, while the third section states the problem statement for the research. The fourth, fifth and sixth sections discuss the research aims, objectives and research questions. The seventh section explains the scope and significance of the study and the eighth section outlines the structure of the thesis. The next chapter reviews the literature on the variables employed in the study, which focuses on business networks, innovation capabilities, dynamic capabilities and firm performance, together with a discussion of the theory behind the resource-based view.

## **Chapter 2 : Literature Review**

### **2.1 Introduction**

This chapter presents an in-depth examination and analysis of various studies of SME and the theories on which the variables are based. The theories of dynamic capability (DC) and the resource-based view (RBV) aroused this research discussed and elaborated theoretically and empirically. It also explores business organisations, innovation, dynamic capability, firm performance and the government's role in such a setup.

### **2.2 Global SMEs: Definition of the principles of SMEs**

The abbreviation "SME" is used by the European Union and international organizations like the United Nations, the World Bank, and the World Trade Organization, and refers to firms that do not fall within the category of large firms. To date, there is no standard definition of what constitutes an SME. The definition of SMEs is essential and useful for the purposes of: (1) benchmarking against other countries or regions within the economy; (2) preparing statistics and monitoring the health of the sector; (3) determining eligibility for certain forms of public support; and (4) providing arbitrary thresholds for imposing taxes or other regulations (OECD, 2004). Regarding the definition of SMEs, economists tend to be divided into classes according to quantitative and qualitative measurable indicators (Berisha and Pula, 2015). Quantitative criteria refer to the number of employees, production volume and capacity, capital turnover, market share and type of industry (Pargaru and Dragan, 2015). Regarding the qualitative criteria, there is a more extensive analysis of SMEs, including the influences on the branch of activity, the positioning in the context of the business, techniques and technology used, and the organizational and management methods and techniques (Pargaru and Dragan, 2015). These two approaches were suggested by the Bolton Report 1971, which was one of the first attempts to provide a definition of SMEs (Carter and Jones-Evans, 2006). However, for policy makers, academics, international institutions and statistical agencies use the quantitative approach to define SMEs. The European Commission defines SMEs based on the



number of employees, annual turnover and annual balance sheet, as shown in table 2.1 (European Commission, 2005). Nevertheless, the criterion of the number of employee is mandatory for enterprises to fall into this category and other two categories is a choice of enterprise.

**Table 2.1:** Definition of SMEs by European Commission

Source: *Defining Small and Medium Enterprises: a critical review*

Enterprise category	Headcount: Annual Work Unit (AWU)	Annual turnover	or	Annual balance sheet total
Medium-sized	< 250	≤ €50 million	or	≤ €50 million
Small	< 50	≤ €10 million	or	≤ €10 million
Micro	< 10	≤ €2 million	or	≤ €2 million

The World Bank uses three criteria of quantitative method, consisting of the number of employees, total assets in U.S. dollars and annual sales in U.S dollars (IEG: 2008). Enterprises or business entities must meet the criterion of number of employees plus either one of the other two criteria (total assets or annual sales). Table 2.2 shows the definition of SMEs according to Worlds Bank standards.

**Table 2.2:** Definition of SMEs by World Bank

Source: *Defining Small and Medium Enterprises: a critical review*

Enterprise indicators (2/3)	Number of employees	Total assets	or	Total annual sales
Medium	> 50; ≤ 300	> \$3,000,000; ≤ \$15,000,000	or	> \$3,000,000; ≤ \$15,000,000
Small	> 10; ≤ 50	> \$100,000; ≤ \$3,000,000	or	> \$100,000; ≤ \$3,000,000
Micro	< 10	≤ \$100,000	or	≤ \$100,000

The categories based on the number employees set by the World Bank (WB) and European Union differ, as the EU sets the number at less than 250 (< 250), while the WB lays down a number of employees between 50 and 300 (>50; ≤ 300) for medium-sized enterprises. However, the largest sources define that SMEs have 0-250 employees (Ayyagari et al., 2003). World Bank on Country Indicators shows that 46 of the 132 countries define SMEs as businesses with fewer than 250 employees (Kushnir et al., 2010). Table 2.3 shows that some countries determine the business type based on the number of employees.

**Table 2.3: Distribution of firms by number of employees in different countries**

*Source: Defining Small and Medium Enterprises: a critical review*

	Micro	Small	Medium	SME	Large
EU countries, Iceland, Norway, and Switzerland	1 - 9	10 - 49	50 - 249	1 - 249	250 +
Australia	0 - 9	10 - 49	50 - 199	0 - 199	200 +
Canada	0 - 9	10 - 49	50 - 499	0 - 499	500 +
Japan	4 - 9	10 - 49	50 - 249	1 - 249	250 +
Korea	5 - 9	10 - 49	50 - 199	5 - 199	200 +
Mexico	0 - 10	11 - 50	51 - 250	1 - 250	251 +
New Zealand	1 - 9	10 - 49	50 - 99	0 - 99	100 +
Turkey	1 - 19	20 - 49	50 - 249	1 - 249	250 +
United States	1 - 9	10 - 99	100 - 499	1 - 499	500 +

The limitation associated with defining SMEs by their number of employees is that part-time, temporary or casual workers are currently widely used by employers (Curran and Blackburn, 2001). A similar difficulty is faced by countries that employ financial criteria as indicators, as the financial reporting by accountants may vary regarding inequalities and inconsistencies, and managers/owners may see cash flows from earnings as relevant indicators to monitor the company's progress, which makes the comparison between countries difficult due to the fluctuating inflation and exchange rates (Berisha and Pula, 2015). However, Gibson and Van Der Vaart, (2008) strongly suggested using the turnover criterion, as it is the most consistent of the three quantitative criteria. Conversely, for developing countries, where the figures

on employment and profits are always blurred by tax considerations, sales may be used as the measure of all things.

Regarding the qualitative approach, the Bolton report defines three essential characteristics of SMEs: (1) the management of the firm belongs to its owner/s; (2) independence and free from outside control; and (3) a small share of the market (Bolton: 1971 as quoted in Stokes and Wilson: 2010). The following table 2.4 presents the qualitative indicators defining SMEs as summarized by the Industrial Development Organization of the United Nations (UNIDO).

**Table 2.4: Definitions of SMEs by UNIDO**

*Source: Booklet of Standardized Small and Medium Enterprises Definition (2007)*

Category	SMEs	Large Companies
<b>Management</b>	<ul style="list-style-type: none"> <li>▪ Proprietor-entrepreneurship</li> <li>▪ Functions linked to personalities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Manager-entrepreneurship</li> <li>▪ Division of labor by subject matters</li> </ul>
<b>Personnel</b>	<ul style="list-style-type: none"> <li>▪ Lack of university graduates</li> <li>▪ All-round Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dominance of university graduates</li> <li>▪ Specialization</li> </ul>
<b>Organization</b>	<ul style="list-style-type: none"> <li>▪ Highly personalized contacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Highly formalized communication</li> </ul>
<b>Sales</b>	<ul style="list-style-type: none"> <li>▪ Competitive position not defined and uncertain</li> </ul>	<ul style="list-style-type: none"> <li>▪ Strong competitive position</li> </ul>
<b>Buyer's Relationships</b>	<ul style="list-style-type: none"> <li>▪ Unstable</li> </ul>	<ul style="list-style-type: none"> <li>▪ Based on long-term contracts</li> </ul>
<b>Production</b>	<ul style="list-style-type: none"> <li>▪ Labor intensive</li> </ul>	<ul style="list-style-type: none"> <li>▪ Capital intensive, economies of scale</li> </ul>
<b>Research Development</b>	<ul style="list-style-type: none"> <li>▪ Following the market, intuitive approach</li> </ul>	<ul style="list-style-type: none"> <li>▪ Institutionalized</li> </ul>
<b>Finance</b>	<ul style="list-style-type: none"> <li>▪ Role of family funds, self financing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Diversified ownership structure , access to anonymous capital market</li> </ul>

However, Bolton's committee revealed the limitation associated with using the qualitative method, as it is difficult to operationalize (Curran and Blackburn, 2001). Despite the number of definitions of SMEs, the tendency to use the quantitative approach is higher compared with the qualitative and employee number criterion as the foremost antecedent in categorizing SMEs. Table 2.5 indicates the definition criteria of various countries.

**Table 2.5: SME definitions by various countries**

Source: *Growing the global economy through SMEs*

VARIOUS COUNTRIES						BRICS					
	EU	USA	Asia (Malaysia)	Egypt	Ghana	Brazil (industrial)	Brazil (commercial)	Russia	India	China	South Africa
<b>Name</b>											
	Small and Medium Enterprise	Small and Medium Business	Small and Medium Enterprise	Micro, Small and Medium Enterprise	Micro, Small and Medium Enterprise	Small and Medium Enterprise	Small and Medium Enterprise	Small and Medium Enterprise	Micro, Small and Medium Enterprise	Small and Medium Enterprise	Micro, Very Small, Small and Medium Enterprise
<b>Number of employees</b>											
Micro	<10	–	<5	1–4	1–5	1–19	1–9	–	0	–	<5
Small	<50	<100	5–50	5–14	6–29	20–99	10–49	15–100	0	<300	20–49
Medium	<250	<500	51–150	15–49	30–39	100–499	50–99	101–250	0	300–2000	50–200
<b>Annual turnover</b>											
Micro	<€2	0	RM250.000	0	\$10k	0	0	–	<Rs50m	–	<R200k
Small	<€10	0	RM250.000–<RM10m	0	\$100k	0	0	400m RUB max	Rs50–60m	<Y30m	R3m–R32m
Medium	<€50	0	RM10m–RM25m	0	\$1m	0	0	1bn RUB max	Rs60–99m	Y30–Y300m	R5m–R64m

According to Jasra et al., (2011), SMEs represent a business rather than a public limited company. Business entities should have no less than 250 workers in the case of the manufacturing and service industries, including trading businesses, and be able to meet any of the subsequent circumstances (Lucky and Olusegun, 2012):

1. A trading/service concern having total assets at cost in which land and buildings worth up to Rs 50 million are not included.
2. A manufacturing unit having total assets at cost of up to Rs 100 million without land and buildings.
3. Any concern of service, trading or manufacturing with net sales less than Rs 300 million as per current the financial statements.

As mentioned, the measurements using the definition of SMEs differ across countries. The following table 2.6 represents the type of measures used to define SMEs by certain countries.

**Table 2.6: Indicators Adopted to Categorise SMEs (By Country)**

*Source: Central Bank of Malaysia, 2006 - SME Annual Report 2005*

<b>Country</b>	<b>Indicators</b>
<b>Malaysia and Germany</b>	Employment and sales
<b>Japan, Korea &amp; Philippines</b>	Employment and assets
<b>Taiwan</b>	Employment, sales and capital
<b>Thailand and Singapore</b>	Employment and fixed assets
<b>Indonesia</b>	Assets and sales
<b>China</b>	Employment, sales and assets

The criteria for justifying SMEs vary across countries, and are based on the number of employees and sales amount (Park and Yoo, 2017). For example, in the United States, small businesses are categorised as those with fewer than 20 employees. Small business hire between 20 and 99 employees, and medium-sized ones between 100 and 499 employees, unlike Japan, where SMEs are retail, wholesale and service industries that hire fewer than 5 employees, or 20 employees in the manufacturing industry.

As mentioned above, the common criteria for defining SMEs consist of the number of employees, employment, industry, country, size and asset value. This is consistent with the findings of (Darren and Conrad, 2009).

### **2.3 Contribution of SMEs**

In accordance with the paradigm shift in the theory and practice of management, economic growth, recently, more than ever, depends basically on entrepreneurship (Aparicio et al., 2015). The importance of SMEs have been recognized by the previous literature with regard to economic development and job creation in developed and emerging economies (Bianchi and Wickramasekera, 2016). Recently, there has been wide recognition that SMEs play a bolder role in the new paradigm of

business context, provide 70-90% of employment around the world and contribute to a large portion of national income and increased GDP (Hong et al., 2012; Rezazadeh, 2017). In the context of developed countries, SMEs are agile companies that drive innovation (Valaei et al., 2017). Furthermore, increasing the number of innovative SMEs and knowledge-intensive industries is a key element of firm performance and economic transformation (Lin and Lin, 2016; Romero and Martínez-Román, 2012).

SMEs, by number, dominate the world stage of business. The present data suggest that more than 95% of enterprises across the worlds are SMEs but approximately only cover 60% of private sector employment (Ayyagari et al., 2011). Japan is consider as having the highest proportion of SMEs among industrialized countries, accounting for approximately 99% of all enterprises (EIU 2010). In India, they contribute 80% of the country’s businesses (Ghatak, 2010) while, in South Africa, an estimated 91% of the formal business entities are SMEs (Abor and Quartey, 2010). However, for 2012, the estimated data on 27 countries in the European Union (the EU-27) also illustrate the importance of SMEs (see table 2.7 in growing the global economy).

**Table 2.7: No. of enterprises, employment and gross value added (GVA) figures for the EU-27 by size classification for 2012**

*Source: Wymenga et al., 2012*

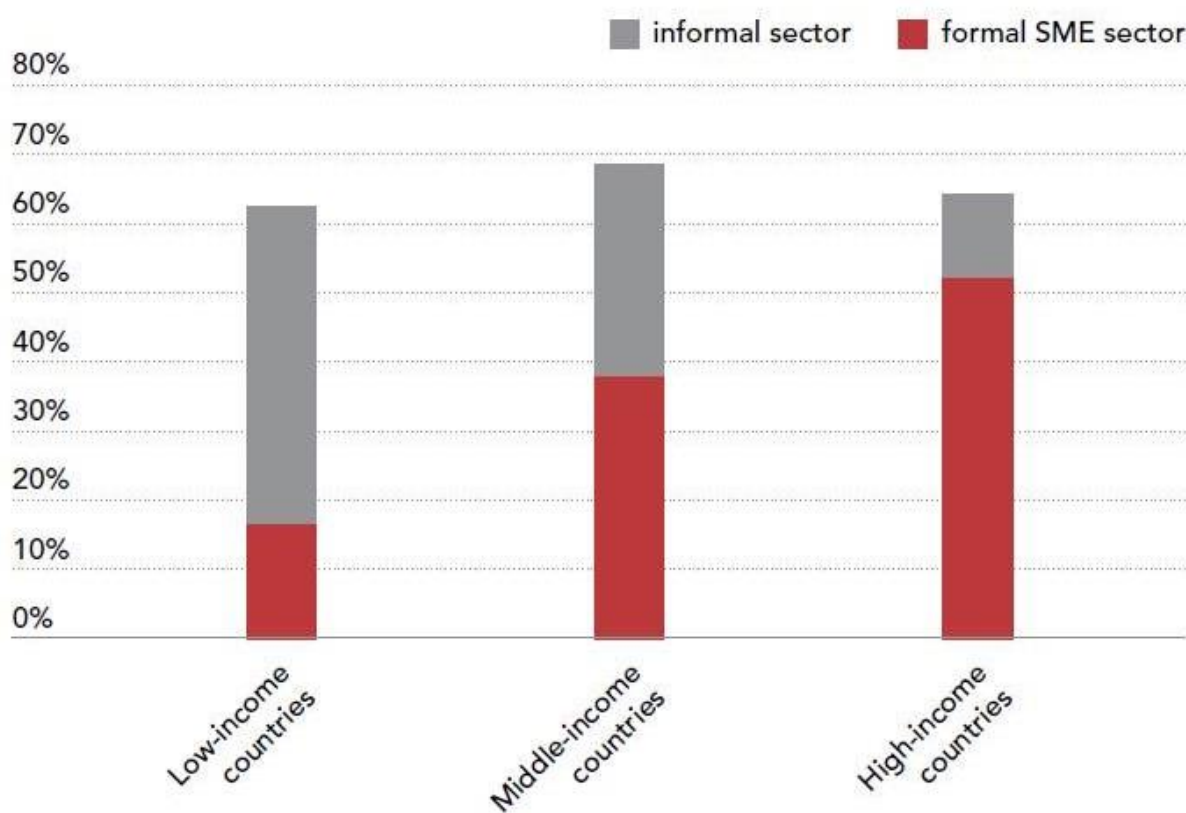
	Micro	Small	Medium	SMEs	Large	Total
Enterprises	19,143,521	1,357,533	226,573	20,727,627	43,654	20,771,281
%	92.2	6.5	1.1	99.8	0.2	100
Employment	38,395,819	26,771,287	22,310,205	87,477,311	42,318,854	129,796,165
%	28.5	20.6	17.1	67.4	32.6	100
GVA (€ millions)	1307360,7	1143935,7	1136243,5	3587540	2591731,5	6179271,4
%	21.2	18.5	18.4	58.1	41.9	100

This shows that 99.8% are enterprises, 67% for employment and 58% contributes to gross value added (GVA). SMEs play a keys role in both high and low income countries in terms of contributing to both GDP and employment (Dalberg, 2011). They also play a role as major contributors to economic innovation, especially via collaboration with the larger corporate sectors. Figure 2.1 illustrates the contribution

of SMEs to GDP, including both the formal and informal sectors, which is disproportionately large in low-income countries. The contribution of SMEs to economic fundamentals varies according to low-income and high-income countries, being the 16% of GDP in low-income countries and 51% of GDP in high-income countries.

**Figure 2.1: SMEs contribution to Country GDP**

Source: South African Institute of Public Accountants (SAIPA), based on World Bank 2003



Furthermore, the contribution of SMEs to job creation is particularly essential for countries that are plagued by high unemployment rates and generally for developing and emerging economies. For instance, in Morocco, SMEs account for 46% of employment, while the SMEs in Bangladesh provide 58% of the total employment. In South Africa, SMEs contribute more to employment, at 61% of the total, whereas, in Ghana, they provide over 80% of total employment (Abor and Quartey, 2010).

However, there are a lots of traditional obstacles facing SMEs; for instance, financial constraints, difficulties in utilizing and exploiting technologies, managerial capabilities constraints, regulatory burden, and low productivity, which is become more acute in a globalised under technology-driven environment (Brief, 2000). SMEs play an essential role in contributing substantially to income, output and employment in the world economy. Nevertheless, with the current financial crisis has created a particularly tough climate for SMEs, through reducing the demand for goods and services and diminishing the lending by banks and other financial institutions. Because of that, it is reasonable to investigate the determinants for increasing SME performance.

#### **2.4 Background of Malaysian SMEs and the Challenges**

SMEs are increasingly becoming eminent in developing countries like Malaysia. According to Reider (2008), small businesses are vital to the world economy. SMEs play a key role in the economy of the country, and the policy makers are therefore specifically concentrating on the issue. According to the Asia Pacific Co-operation (APEC) 2010 report, SMEs account for over 90% of all enterprises. According to a report published in 2011, the SME sector in Malaysia was expanding and, by 2012, it had successfully expanded at a rate of 6.8% despite suffering various types of external environmental challenges. SMEs contribute 99.2% of the total establishment in Malaysia, 32% of GDP and 19% of exports (Bashar Bhuiyan et al., 2016). Since then, it has been recorded that SMEs in Malaysia have experienced steady growth.

On the wholesale and retail front, the SME Corporation of Malaysia comprises various sub-sectors, namely telecommunications, healthcare facilities, private education, insurance, finance, professional working environments and business facilities, wholesale and retail formats, dine-out outlets and stay-inns. These service sectors account for almost 90.1% of the SME's. According to a study by the Department of Statistics, Malaysia, in 2010, the manufacturing industry accounts for a 5.9 % share of the SME market; the service industry accounts for the majority, with a 90.1% share of the SME market, and the agriculture sector has almost 1.0% of the SME sector, followed by the construction, and mining and quarrying sectors, which



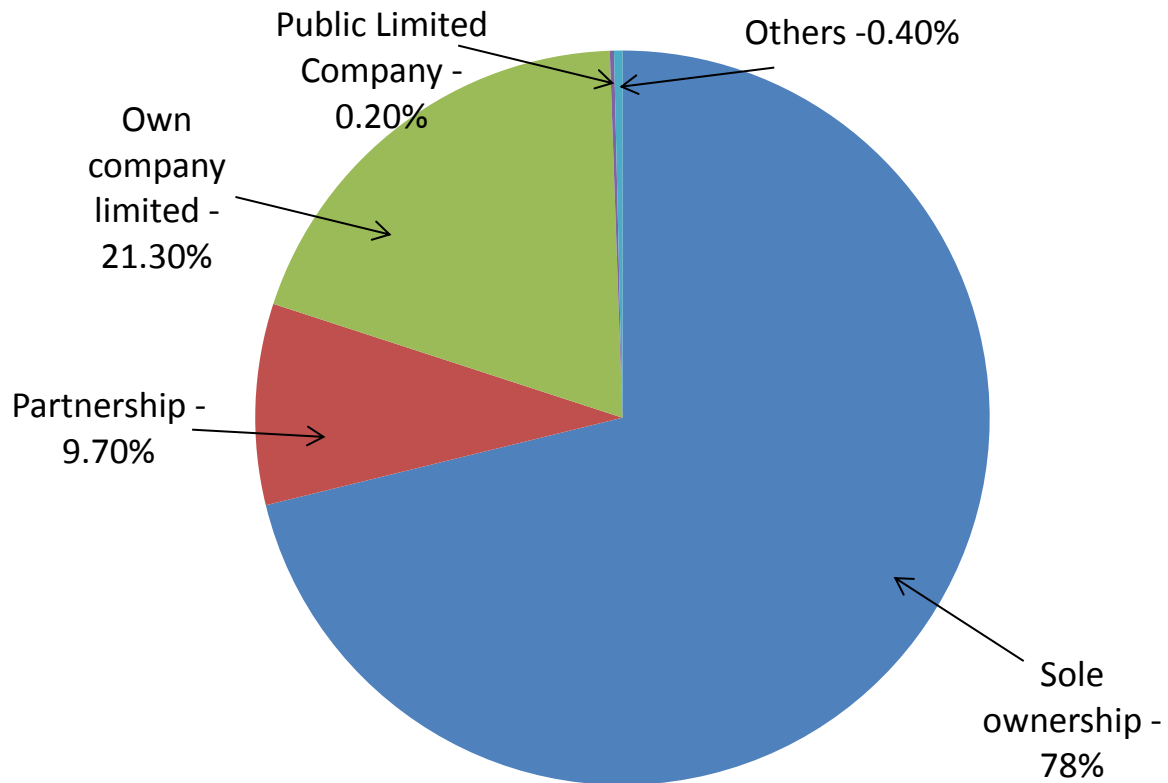
have a 3% and 0.05% share, respectively (Ramayah and Ignatius, 2005). This brings the total number of SME's to 496,458 that fall into the micro establishments of the sectors, 128,787 establishments in the small business environment, and 19,891 in the medium-sized business enterprises in all of the business sectors mentioned above, respectively. The total number of SMEs accounts for about 645,136 in the wholesale and retail sector, with 17,803 large firms under this establishment, accounting for about 662,939 individual establishments (SME Corp. Malaysia, 2014). All these statistics show that, of the total of 580,985 SMEs, 50% of these belonging to the service sector are under the wholesale and retail trade wing.

The geographical division of these SMEs shows that the majority of them are based in Selangor (19.5%) and Kuala Lumpur (13.1%), followed by Johor (10.7%), Perak (9.3%) and Sarawak (6.8%) (Economic, SMEs Census, Department Statistic of Malaysia, 2011). The lowest concentration of SMEs can be found in W.P Labuan and W.P. Putrajaya, with a meagre 0.3% and 0.1% of the enterprise population, respectively. With such figures, it can be concluded that SMEs' business factors contribute significantly to the Malaysian economy (Jayabalan et al., 2009). The contribution of the SMEs' GDP was 32.7% in 2012, compared to the overall GDP of Malaysia. The government aims to increase GDP by almost 41% in the coming 5 years.

However, the percentage share of SMEs has a negative correlation with the age of SMEs. In other words, a significant percentage, namely 45%, of SMEs in the economy is new organisations that began operating less than 5 years ago. Only about 12% of SMEs have been operating for over 20 years, as most of them have either developed into large firms or are no longer in operation. The distributions of large firms is different, as 60% of all firms have been operating for more than 10 years. Approximately 78% of SMEs are sole proprietors and partnerships, 21.3% are private limited companies, and only 0.2% are public listed companies (see figure 2.2). This is different and contrary to the firm, of which 94% are private limited companies or public listed companies.

**Figure 2.2:** Categories of SMEs (by legal status)

Source: *Banci Pertubuhan dan Enterpris 2005, Department of Statistics Malaysia*



Further, Malaysia's SMEs contribute to 56% of the workforce and have an expected value of added products worth RM120 billion by 2020 in the manufacturing sector (Bashar Bhuiyan et al., 2016). In reality, Malaysian SMEs still lag behind other advanced nations, like Germany and Japan, where the current GDP contribution is around 21.7%, employment is 57.4% and exports are 19%, respectively (Ho et al., 2013; NSDC, 2013). In line with this target, on 12 July 2012, Prime Minister Dato' Seri Mohd Najib bin Tun Abdul Razak launched the "SME Masterplan 2012 to 2020: Catalysing Growth and Income". The government was instructed to focus on the essential development of SMEs since the 1970s under the New Economic Policy and further extend the implementation of Industrial Plan 2 and 3 (Mohamad and Sung, 2009). In 2004, the government established the National SME Development Council (NSDC), that further reinforced their commitment to SMEs. The role of the NSDC is to formulate strategies for the development of SMEs across all economic

sectors, encourage partnership with the private sector, coordinate the task-related ministries and agencies and also verify the effectiveness of the overall implementation of the program in Malaysia (Sivageahnam et al., 2015). The NSDC provides advanced access to information, financing, financial restructuring and advisory services, and training and marketing coordination, and also manages a comprehensive database to monitor the progress of SMEs in all sectors.

To evaluate the economic condition of developing countries, researchers have focused on studying the performance of the SMEs there; for instance, Samson and Rosli (2014) argue that SMEs act as a catalyst for change and contribute to the industrial growth and development of the country. It is a catalyst for change that enables industrial development, production, employment and overall growth and economic enhancement of the developing country. Khan and Khalique (2014) highlighted the fact that SMEs boost a country's employment and, in Malaysia, more than half of the population is employed in this sector. Thus, researchers have highlighted that many countries have therefore focused on meeting their development goals by incorporating strategies to promote SMEs. The role of SMEs has remained critical in developing countries, and the sector is therefore considered by Singh and Mahmood (2014) to be the "backbone" of many economies.

Many studies have addressed the issue of the challenge faced by Malaysian SMEs (Isa, 2008; Mohamed et al., 2014; Rahman et al., 2016; Saleh and Ndubisi, 2006; Saleh et al., 2008). The challenge facing Malaysian SMEs are: a lack of finance resources, the changing international market environment (globalization and liberalization), the strong competition from emerging markets and technology advancement (shortening the lifecycle of products), strategic alliances and consolidation, access to domestic and global markets, human resource constraints, a lack of innovation, the high-level bureaucracy in government agencies, a lack of professional and skill workers, and limited access to better technology and information communications technology (ICT) (Mohamed et al., 2014).

This study focused on the following challenges faced by SMEs: government assistance (tax incentives, greater technology support, central body training, a central body that collates and disseminates information on SMEs), a low level of

Research and Development (R&D), management capabilities and a lack of access to better technology and ICT or external resources (networks) (Saleh et al., 2008; Saleh & Ndubisi 2006). In line with this, there is a need for research on importance of SMEs, particularly on the critical determinants of firm performance. Because of that, the researcher focused on the critical determinants of success for Malaysian's SMEs; for instance, the role of business networks, innovation capabilities and dynamic capabilities in enhancing firm performance. In the next sub-topic, the researcher will explain the definition of SMEs in the Malaysian context to see how this differs from the situation in other countries.

## 2.5 Definition of Malaysian SMEs

Malaysian SMEs are classified further into Micro, Small and Medium, and the definition differs between the manufacturing sector and the non-manufacturing sector. Related to this, a new definition of SME was announced by Y.A.B. Dato' Seri Mohd Najib bin Tun Haji Abdul Razak (the Prime Minister), that took effect on 1<sup>st</sup> January 2014 (see table 2.8).

**Table 2.8: New definition of SMEs**

*Source: SME Corporation Malaysia, 2014*

<b>SECTORS</b>	<b>MANUFACTURING</b>	<b>AGRICULTURE, CONSTRUCTION, MINING &amp; QUARRYING AND SERVICES</b>
<b>NUMBER OF FULL-TIME EMPLOYEES</b>		
<b>MICRO</b>	Less than 5 employees	Less than 5 employees
<b>SMALL</b>	From 5 to less than 75 employees	From 5 to less than 30 employees
<b>MEDIUM</b>	From 75 to not exceeding 200 employees	From 30 to not exceeding 75 employees
<b>ANNUAL SALES TURNOVER</b>		
<b>MICRO</b>	Less than RM 300,000	Less than RM 300,000
<b>SMALL</b>	From RM 300,000 to less than RM15 million	From RM 300,000 to less than RM3 million
<b>MEDIUM</b>	From RM15 million to not exceeding RM50 million	From RM 3 million to not exceeding RM 20 million

These strategic changes in SMEs' definition were led by SME Corp, which is more appropriate for the present economic condition. Based on the new definition of SMEs, the Malaysian rules have made it mandatory that, for a manufacturing outlet, under the Micro business model, the number of employees should not exceed five, and that their annual turnover should not be more than RM 300,000. Additionally, manufacturing units of smaller enterprises should have between six and 75 employees. A medium industry of the same format must not have more than 75 employees, and should clock in an annual turnover of about RM15million. In the case of service and other sectors, the sales turnover has to be less than RM 300,000 or the number of employees must be less than 5 in a Micro environment. A small business enterprise should have from 5 employees to about 30 or an annual turnover of about RM3 million or less. For a medium enterprise of the same capacity of production, the employees must not exceed 75, with an annual turnover of no more than RM20 million (Saleh and Ndubisi, 2006). With this new definition of SMEs, there is the possibility of increasing the contribution of SMEs to GDP.

## **2.6 Descriptive analysis**

This research uses the systematic review method to justify the theme of this research, focusing on the keywords of “business networks”, “dynamic capability/capabilit\*” and “innovation capability/capabilit\*”. This research used Scopus, which is the largest citation database of peer-reviewed literature (Randhawa et al., 2016). The researcher searched the selected article (focusing on 3\* and 4\*) from 2014 to 2016. The journals comprise focal articles related to business domains; for instance, entrepreneurship and small business management, strategic management, innovation, general management, industrial marketing, general management, ethics and social responsibility and international business. Recently, most management studies have focused on the implementation of dynamic capabilities and innovation. However, the business network research is dominated by marketing (see table 2.9).

**Table 2.9: Literature Review 2014 to 2016**

<b>Theme</b>	<b>Representative work/Sample Articles</b>
Collaboration	(Chowdhury et al., 2015; Finke et al., 2016; La Rocca and Snehota, 2014; Menguc et al., 2014; Mitrega and Pfajfar, 2015; Pulles et al., 2014; Song et al., 2016; Sun and Cao, 2015; Wang et al., 2015; Yang et al., 2015; Zhao et al., 2015)
Knowledge	(Björkdahl and Holmén, 2016; Eklinder-Frick et al., 2014; Hakanen, 2014; La Rocca and Snehota, 2014; Lai et al., 2015; Li and Lin, 2015; McGrath and O’Toole, 2014; Randhawa et al., 2016; Rasiah et al., 2016; Sandberg, 2014; Scott-Kennel and Giroud, 2015; Sun and Cao, 2015; Todo et al., 2016; Wang et al., 2015; Xavier Molina-Morales et al., 2015; Xu et al., 2014)
Resources	(Aaboen et al., 2016; Abrahamsen et al., 2016; Antonelli et al., 2015; Björkdahl and Holmén, 2016; Corsaro, 2014; Finke et al., 2016; Kodama and Shibata, 2014; Kok and Ligthart, 2014; La Rocca and Snehota, 2014; Manser et al., 2015; McGrath and O’Toole, 2014; Medlin and Tornroos, 2015, 2014; Mitrega and Pfajfar, 2015; Olsen et al., 2014; Ostendorf et al., 2014; Purchase et al., 2016; Restuccia et al., 2016; Schilke, 2014; Slater et al., 2014; Spieth and Lerch, 2014; Wang et al., 2015; Xu et al., 2014; Zeng and Glaister, 2016)
Business network (inter-firm- customer, supplies and competitor, university and public research organization, government role	(Abrahamsen et al., 2016; Andersen and Medlin, 2016; Chowdhury et al., 2015; Ciabuschi et al., 2014; Corsaro, 2014; Eklinder-Frick et al., 2014; Hakanen, 2014; La Rocca and Snehota, 2014; Maniak et al., 2014; Manser et al., 2015; McGrath and O’Toole, 2014; Medlin and Tornroos, 2015, 2014; Menguc et al., 2014; Mitrega and Pfajfar, 2015; Munksgaard and Medlin, 2014; Olsen et al., 2014; Ostendorf et al., 2014; Pulles et al., 2014; Purchase et al., 2016; Rasiah et al., 2016; Sandberg, 2014; Song et al.,

	2016; Todo et al., 2016; Wang et al., 2015; Xavier Molina-Morales et al., 2015; Xu et al., 2014; Yang et al., 2015; Zhang et al., 2015; Zhang et al., 2015; Zhao et al., 2015)
Innovation capabilities (product, process, market, organizational)	(Björkdahl and Holmén, 2016; Camisón and Villar-López, 2014; Camps and Marques, 2014; Eklinder-Frick et al., 2014; Felin and Powell, 2016; Hervas-Oliver et al., 2016; Huo et al., 2014; Kock and Georg Gemünden, 2016; Kok and Ligthart, 2014; Kulangara et al., 2016; La Rocca and Snehota, 2014; Lai et al., 2015; Li and Lin, 2015; Maniak et al., 2014; Manser et al., 2015; Medlin and Tornroos, 2014; Menguc et al., 2014; Randhawa et al., 2016; Rasiah et al., 2016; Restuccia et al., 2016; Rice et al., 2015; Schilke, 2014; Scott-Kennel and Giroud, 2015; Slater et al., 2014; Teece et al., 2016; Todo et al., 2016; Wang et al., 2015; Xavier Molina-Morales et al., 2015; Xu et al., 2014; Yang et al., 2015; Zhang et al., 2015; Zhang et al., 2015; Zhao et al., 2015)
Dynamic Capabilities (sensing, Adopting, Adapting, coordination, Reconfiguration)	(Antonelli et al., 2015; Birkinshaw et al., 2016; Day and Schoemaker, 2016; Dong et al., 2016a; Felin and Powell, 2016; Friedman et al., 2016; Hakanen, 2014; Hervas-Oliver et al., 2016; Kock and Georg Gemünden, 2016; Kodama and Shibata, 2014; Kok and Ligthart, 2014; Koryak et al., 2015; Maniak et al., 2014; Manser et al., 2015; Munksgaard and Medlin, 2014; Pezeshkan et al., 2016; Randhawa et al., 2016; Restuccia et al., 2016; Rice et al., 2015; Schilke, 2014; Slater et al., 2014; Song et al., 2016; Spieth and Lerch, 2014; Wang et al., 2015; Wang et al., 2015; Wilhelm et al., 2015; Xavier Molina-Morales et al., 2015; Zeng and Glaister, 2016)
Performance	(Antonelli et al., 2015; Birkinshaw et al., 2016; Camisón and Villar-López, 2014; Camps and Marques, 2014; Ciabuschi et al., 2014; Friedman et al., 2016; Hervas-Oliver et al., 2016; Huo et al., 2014; Koryak et al., 2015; Lai et al., 2015; Li and

	Lin, 2015; Menguc et al., 2014; Pezeshkan et al., 2016; Rice et al., 2015; Schilke, 2014; Scott-Kennel and Giroud, 2015; Slater et al., 2014; Spieth and Lerch, 2014; Teece et al., 2016; Todo et al., 2016; Wang et al., 2015; Wang et al., 2015; Wilhelm et al., 2015; Xavier Molina-Morales et al., 2015; Yang et al., 2015; Zhang et al., 2015; Zhang et al., 2015)
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## 2.7 Collaboration and Firm Performance

Firms collaborate to gain superior marketplace and financial performance. Market performance can be seen in new product launches, market development and penetration, quality improvement, and consumer satisfaction, while financial performance refers to the firm's income growth, profitability, and return on investment (ROI) compared with competitors in the same industry (Amores-Salvado et al., 2015; Chen et al., 2015; Fidel et al., 2015). The resource-based view (RBV) indicates that effective inter-firm collaboration can benefit the marketplace and financial performance in multiple ways (Faems et al., 2005). Firstly, collaboration increases the partners' access to complementary assets, capabilities, and other sources, that can doubtlessly improve the company's market performance. Secondly, collaboration encourages the exchange of codified and tacit knowledge, thereby improving the firm's innovation process. Thirdly, collaboration helps them to perceive new resources and applications, lower their development expenses, shorten their development cycles, lessen their financial risks, as well as achieve their goals and access the right customers (Athaide et al., 2003; Meyers and Athaide, 1991; Udwadia and Ravi Kumar, 1991), while studies on both supply chain and marketing have empirically documented that collaboration results in higher ranges of value creation and customer pride (Allred et al., 2007; Fang et al., 2008).

The previous empirical research shows that collaboration in the form of alliances with external actors (inter-firm, universities, public research bodies and government) will improve the service quality, enhance the sharing of financial risks, reduce the costs,



increase productivity (Gunasekaran et al. 2008) and be beneficial for performance or make it possible to reap performance gains (Yang et al., 2015). Nieves and Segarra-Ciprés, (2015) employed data from 109 companies in Spain to determine the function of the external and internal sources of management innovation in the hospitality industry. The result of their empirical research shows that both factors influence the innovation management of the company. Companies who perform well on management innovation tend to be good at innovation, productivity and competitiveness. Employees with a high level of knowledge combined with external knowledge will be more productive and create more knowledge, which benefits the company, because tacit knowledge is inimitable.

In relation to the collaboration of SMEs in Malaysia, it has been found that collaboration helps to enrich the firms (Yaacob et al., 2016). Collaboration between two firms helps to share knowledge and resources with equal respect. For example, if one firm has a better supply chain management system, it is possible that, after collaborating with another firm, the company that lacked an effective supply chain system could enrich this area by receiving assistance from the other firm. Similarly, if one firm lacks presentation skills, it would be helpful for them to seek help from others and learn new ways to improve their business. Thus, collaboration helps in enriching the overall system (Kumar Panda, 2014).

The change in day and age of technology with innovation and business environment shifts given to their dynamic nature has forced business firms to strive for better collaboration within their supply chain and to manage their resources well and tactically to stay ahead of the competition (Ahmad and Seet, 2009). These formats of collaboration help to improve the business formats, eventually leading to better firm performance, and thereby facilitating a smooth supply chain for collaborating partners and creating advanced performance and benefits (Saleh and Ndubisi, 2006). Strategic collaboration leads to better results, as both of the collaborating partners strive to fulfil a common growth goal.

The capabilities of a firm are a critical factor for the collaboration strategy, which contributes towards enhancing firm performance (Wang et al., 2015). According to them, innovation capabilities (collaborating with RBV and dynamic capabilities) are

one of the factors that influence external collaboration and subsequently affect firm performance. The benefits of collaboration are multi-fold; firms can reduce their production costs and achieve greater economies of scale by pooling their resources together. Additionally, firms may hedge their risks by building a portfolio of investment through strategic collaboration, thereby gaining access to restricted markets through partnerships and being able to increase and beautify their core abilities through gaining access to complementary resources in partner organisations (Wang et al., 2015). As noted above, collaboration with external and internal actors is beneficial to firms, and enhances the firms' performance.

## **2.8 Resource Base View (RBV) and Limitations**

Over the last few years, many studies have explored the concept of the Resource-Based View of strategic management (Almarri and Gardiner, 2014). The concept of RBV has attracted academic as well as managerial attention. The importance of the RBV of strategic management has been frequently studied in various academic literature (Kazlauskaitė et al., 2015; Kozlenkova et al., 2014; Kraaijenbrink et al., 2010).

RBV is the most popular theory regarding companies' sustainability, regardless of whether this is at the local or international level. The theory has been identified as one of the top three most useful theories in emerging economies for understanding firm strategy in emerging economies (Kazlauskaitė et al., 2015). Resources can be divided in two types: property-based (which are the physical and financial assets) and knowledge base resources (intangible resources likes managerial systems and organisational culture which are not effortlessly un-substitute, imitable and transferable since they are tacit) (Chang et al., 2014).

Regarding the future value of strategic resources, firms should know the appropriate time to implement their strategy to control their unique resources and offer comparatively lower costs than others (Barney, 1986). According to Dierickx and Cool (1989:p. 1507), an imitability of an asset stock is related to certain characteristic, like time compression diseconomies, asset mass efficiencies, the

inter-connectedness of asset stocks, asset erosion, and causal ambiguity. To sustain a competitive advantage, according to Barney (1991), the resources of the company should be valuable, rare, imitable and substitutable. Newbert (2008) also suggests that the competitive advantage is related to valuable and rareness of the resources and that firm performance is related to a competitive advantage.

Furthermore, Terziovski (2010) utilises RBV evaluation to indicate that the innovation strategy of SMEs is similar to that of big firms. Consequently, amassing VRIN resources to improve the competitive advantage has grown to be fundamental academic and managerial strategic thinking, while Helfat and Peteraf (2003), explain the relationship between the heterogeneity of resources and a firm's capability.

Hogarth et al., (1991) develop a four-stage framework: privileged access, transformation, leverage and regeneration, related to different types of firm activity and resources to impact on long-term profitability. As mentioned by Grant (1991:p. 139), "*resources as a basic profitability*"; resources are the source of a firm's capabilities, capabilities are the main source of its competitive advantage". He mainly focuses on the sources of competitive advantage for firm's profitability. Heene and Sanchez (1997) focus on the firm's performance outcome, which is related to the difficulties of operationalizing uniqueness and value independently.

Moreover, Porter (2008) also mentioned this term as "structure follows strategy". The term was discussed and studied in various forms. Thus, it may be mentioned that researchers in the strategic management field understood and evaluated the fact that the competitive advantage of the firm largely depends on its distinctive internal capability and also the constantly changing external environment. Researchers have further pointed out that the resource-based view of the firm has emerged from the relationships between resources and the ability of the firm. The concept of competitive advantage is therefore of tremendous importance in the study of firm performance and the resource-based view, which is essential for the growth of the firm.

Furthermore, Porter (2008) studied the concept of cost leadership and differentiation about competitors and identified two essential sources of competitive advantage.

Porter also studied the low-cost position, which enables the firm to use dynamic pricing and high sales volume to differentiate products that create brand loyalty and help in gaining a positive reputation. Decisions concerning timing as well as commitment level are crucial in gaining a competitive advantage in the market. RBV is an old concept which was introduced as early as 1957. The term was first used about “distinctive competence” and is evaluated using RBV. Table 2.10 represents the view of RBV of multiple scholars, based on earlier existing RBV. In sum, all scholars classify the term of resources with their interpretation based on their research. They discuss the characteristics, functions, features, types, categories, relationships and the same objectives to achieve a competitive advantage and boost firm performance.

**Table 2.10: Brief view of RBV (own illustration)**

Study	Views
Selznick, 1957	Resource immobility - some of the resources are either very costly to copy or inelastic in supply.
Penrose, 1959	She categorizes resources as “tangible things”, which include equipment, materials and semi –finished goods, and “human skills.
Wernerfelt, 1984	Resources as ‘anything which could be thought of as a strength or weakness of a given firm’- lead superior long-term performance for the firm. (exe; capital, processes, equipment, personnel, brand names, in- house knowledge of technology and trade contract).
Barney, 1986	Introduce the concept of a strategic factor market, i.e., a market where the resources necessary to implement a strategy are acquired and suggest that firms should focus on unique skills and capabilities rather than its competitive environment.

<b>Study</b>	<b>Views</b>
Dierickx and Cool, 1989	An imitability of an asset stock related to the certain characteristic likes, time compression dis-economies, asset mass efficiencies, interconnectedness of asset stocks, asset erosion, and causal ambiguity.
Prahalad and Hamel, 1990	Core competencies (resources) are the wellspring of new business development and focus on top management.
Barney, 1991	The empirical indicators of the potential of firm's resources to generate sustained competitive advantage are value, rareness, imitability and substitutability.
Grant, 1991	The key to a resource-based approach to strategy formulation is understanding the relationships between resources, capabilities, competitive advantage, and profitability – in particular, an understanding of the mechanisms through which competitive advantage can be sustain overtime.
Hogarth et al., 1991	Develop four stage framework; privileged access, transformation, leverage and regeneration related with different type firm's activity and resources to impact long term profitability.
Hall, 1993, 1992	Suggests that intangible resources essentially fall into two categories: assets and skills (or capabilities).
Peteraf, 1993	To sustained competitive advantage, the four condition (superior resources (heterogeneity within an industry), ex post limits to competition, imperfect resource mobility and ex ante limits to competition) must be meet.
Heene and Sanchez, 1997	Focus on the difficulties of operationalizing uniqueness and value independently of firm performance outcomes.
Hunt, 2000	Categorizes resources as financial, physical, legal human, relational, organizational and informational.

Study	Views
Helfat and Peteraf, 2003	The analysis incorporates the founding, development, and maturity of capabilities in a manner that helps to explain the sources of heterogeneity in organizational capabilities followed by branching into six additional stages.
Sminia, 2009	RBV and capability- focus on how these characteristics are achieved over time.
Terziovski, 2010	Using RBV model to prove the innovation strategy SMEs is similar with big company.
Danneels and Florida, 2010	Alteration firm's resources by leveraging existing resources, creating new resources, accessing external resources, and releasing resources to enhance dynamic capability theory and focusing on resource cognition.

Small and medium scale businesses are a driving force that fosters the economic growth of the company, and have played a major role in the process of job creation. It is vital for entrepreneurs to take care of the performance of their staff in order to develop the business in a competitive market. In countries like Malaysia, small and medium scale businesses play a huge role in the development and welfare of the country (Kuan Kok, 2015). Hence, it is imperative for SMEs to take care of their overall performance to keep the focus on the overall development of the company as well as the economy of the country. Resource-based theories look at the performance of the firm with a widened perspective towards global sustainability.

The SMEs of Malaysia must understand that it is very important to view their firm's performance and organise audit at regular intervals. This is paramount for the companies as it will help them to work on the innovation part that will have a mediating effect on the firm's relationship with the business network and its performance. The Resource-Based View has been on the market for a long time. The companies nowadays take it very seriously as it provides a perfect platform to work on their innovation part to improve their business operations (Borgatti and Li,

2009). The resource-based view mainly discusses the resource requirements for the fine performance of the business.

Several business resources are of utmost importance to the entrepreneur for the development of the business. It is very important for SMEs to understand the market competition and the environment as well, otherwise at times it will become very tough for the enterprises to set their foot in the market. RBV is also directly related to the concept of competitive advantage. Such resources are key elements in enhancing performance, which directly adds to the relationship of business networks and firm performance. The RBV works very well in helping businesses to beat their competitors and place themselves in a better position. The resources available to the firm are the best way to evaluate the development of the company and the performance of the firm. In the context of SMEs, a patent holder will be the best example to explain the appropriate part of his license holders (Lin and Lu, 2011). It is natural that larger firms will have more resources than smaller ones, but in this, as we are talking about SMEs, it is very important to know that competitive advantage in a very tough market condition can be overcome by the RBV theories applied by the SMEs in Malaysia (Obaji et al., 2016; Onn and Butt, 2015).

However, according to (Kraaijenbrink et al., 2010), there are a few limitations of RBV that need to be addressed. Firstly, RBV have no managerial implication impact. The theory of RBV appears to inform managers to develop and obtain VRIN resources and develop an appropriate organization, but makes no comment regarding how this should be done (Connor, 2002; Miller, 2003). As same as Kaufman (2015), the person who argues, that for RBV, the value of resources is exogenous, and the theory does not provide any direction to managers about how to determine which resources are valuable and which not. They only focus on the characteristics of RBV, which is based on their rarity and imitability. Secondly, RBV usability is too limited and does not achieve SCA. Connor (2002) argues that RBV is only applicable for large firms with significant market power instead of small firm. He argues that smaller firms are unable to achieve SCA based on their static resources and so they fall beyond the bounds of RBV. However, Millers (2003) argues that firms with their VRIN resources are only able to acquire new resources; otherwise, their competitors would acquire them with a similar base. Thirdly, VRIN/O is neither necessary nor

sufficient for SCA. Foss and Knudsen (2003) argue that the VRIN/O criteria do not necessarily describe SCA; for instance, uncertainty and immobility are the main basic conditions for SCA to arise and other conditions are merely additional to this. Finally, the resource definition is unworkable. The inclusion of definition resources have problem as they do not have sufficient acknowledge between resources that are input into the firms that the capabilities enable the firms to select, deploy and organize those inputs. Furthermore, RBV does not address the fundamental differences between how various resources will be contributed to SCA. Even though RBV recognizes the type of resources, such as human capital, physical capital and organizational capital (Barney, 1991), it treats them in the same way and there is no differentiation between them.

However, in a systematic review of RBV, Newbert (2007) found that, despite the broad acceptance of RBV, there is a need for alternative conceptual frameworks to be created and empirically tested. In line with this, this research suggests adding the theory of dynamic capabilities, as explained in the next section.

## **2.9 Combining RBV and Dynamic capabilities**

The dynamic capabilities emerge with RBV because the firm resources alone are insufficient to sustain a firm competitive advantage in the long-term. Furthermore, in the current situation of hyper-competitiveness and high-velocity, it will make it more difficult for firms to sustain their competitive advantage (Barreto, 2010). The current unpredictable environment, with the new market and new technologies emerging, will cause the value of resources to change drastically. In order to overcome these obstacles, the application of dynamic capabilities is reasonable, as the purpose of DCs is to achieve a competitive advantage and increase firm performance in a volatile market (Kraaijenbrink et al., 2010). With the addition of dynamic capabilities, RBV can account for 'ex post' sources of SCA (Makadok, 2001). Hence, through combining dynamic capabilities and RBV, firms are able to increase the productivity from the resources belonging to them and avoided imitation by competitors through isolating mechanisms. Furthermore, since RBV is not have sufficiently acknowledged between the input resources and capabilities that facilitate the firm to select, deploy



and organize those resources, the application of dynamic capabilities can offset this limitation. This is because dynamic capabilities is defined as:

The firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die (Eisenhardt and Martin, 2000:p. 1107).

## **2.10 Dynamic Capability**

Dynamic capability can be elucidated as the organisation's competence to adopt change or configure an innovative framework that will help to maintain the profitability ratio as well as enhance the coordination of the management department (Chang et al., 2015). The external and internal competences are properly addressed with the changing business environment based on the determinates of dynamic capabilities. Therefore, these help to enhance the operations management within the organisation and the overall firm effectiveness is increased. The dynamic capabilities exist to filling the gap or limitations of the resource-based view. The origin of RBV emphasizes an implicit illustration of organisational capabilities as being constantly honed and hard to replicate practices for carrying out well-known processes (Amit and Schoemaker, 1993; Barney, 1991).

Dynamic capabilities are necessary for a firm's performance sustainability, particularly in volatile global environments. Dynamic capabilities have regularly been associated with environmental condition whether in a turbulent or stable environment (Schilke, 2014). Hence, Schilke (2014), in research linking dynamic capabilities, competitive advantage and the efficacy of dynamic capabilities related with varying environmental dynamism, found that dynamic capabilities tend to be more strongly connected with competitive advantage in modestly dynamic rather than in sturdy or highly dynamic environments. Moreover, the dynamic capabilities claim that organisational ability can continuously "create, extend, upgrade, protect, and keep relevant the enterprise's unique asset base" (Teece, 2007:p. 1319). Such capabilities will increase the firm's competitive advantage and the organisation will be able

rapidly and effectively to adapt to the uncertain environment, thereby increasing the profitability of the company (Fraj et al., 2015).

A dynamic capability is “the capacity of an organisation to purpose- fully creates, extend, or modify the resource base” (Helfat et al., 2007:p. 4). Furthermore, the main functions of dynamic capability, according to Teece (2007), are; sensing the threat or opportunity, responding to it through external resources to enhance the existing resourcing by combining and transforming and finally reconfiguring the operational capabilities. However, a dynamic capability is not an ‘*ad hoc* solution’ to a firm’s difficulty but a continuous process of organisations skills and knowledge that are exercised to remain synchronized with the market volatility (Day 2011:p.186). Therefore, firms will achieve a competitive advantage and maintain their performance.

However, there is an argument (Eisenhardt and Martin, 2000; Teece et al., 1997) regarding the relationship between dynamic capability and the environment. Furthermore, this means that the influence of successful dynamic capability is related to the external environment on a different level; however, Ambrosini et al., (2009) discuss dynamic capabilities in three aspects: incremental dynamic capabilities, renewing dynamic capabilities and regenerative dynamic capabilities. Further, Wang et al., (2015) argue the successful firm performance is related to the implementation of dynamic capabilities and success traps. The findings of this research reveal that the success trap has a negative relationship with dynamic capabilities and so contributes less to firm performance. This means that the firms with a successful background of monopoly firm, dynamic capabilities are unnecessary as they do not have any competitors or substitutes. Again, Teece (2009) stresses that the concept of dynamic capabilities refers to the skills, routines, processes, organisational structure and disciplines that allow firms to build, employ and orchestrate the intangible resources to meet and satisfy their customers’ needs. These characteristic of intangible resources cannot be easily duplicated by competitors. In line with Teece, this research will only focus on intangible resources. According to Li and Liu (2014), environmental dynamism is a driver of dynamic capabilities and significantly positively affects competitive advantage. They interpret dynamic capability as “a dynamic capability is the firms' potential to systematically

solve problems, formed by its propensity to sense opportunities and threats, to make timely decisions, and to implement strategic decisions and changes efficiently to ensure the right direction". Makkonen et al., (2014) revealed that a firm's competitive advantage is positively related to dynamic capability and innovation, and enhances their evolutionary fitness. This capability essentially comprises knowing how to combine external and capabilities with internal resources and skills, but must also be related to the company's need for the resources (Casanueva et al., 2014).

Apart from that, although dynamic capability has various definitions or views, offered by different researchers (see table 2.11). Based on previous researchers, since earlier of existing dynamic capabilities, most discuss how firms utilise their resources both externally and internally to enhance their firm performance in a volatile market. This research will be based on the ideology of Teece (2007) (sense, seize and reconfigure) combined with other scholars. In sum, this research will discuss the five elements of dynamic capability: namely, sensing capability, absorptive capability, adoptive capability, coordination capability and reconfigure capability.

**Table 2.11: Views of Dynamic capability (own illustration)**

Study	View
(Teece and Pisano, 1994b)	The subset of the competences and capabilities that allow the firm to create new products and processes and respond to changing market circumstance.
(Teece et al., 1997)	The firm's ability to integrate, builds, and reconfigures internal and external competences to address rapidly changing environments.
(Teece, 1998)	The firm's ability to sense and seize the opportunity.
(Eisenhardt and Martin, 2000)	The firm's processes that use resources - specifically the processes to integrate, reconfigure, gain, and release resources—to match and even create market change; dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die.

Study	View
(Teece, 2000)	The ability to sense and then seize opportunities quickly and proficiently.
(Zollo and Winter, 2002)	A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness.
(Winter, 2003)	Those (capabilities) that operate to extend, modify, or create ordinary capabilities.
(Zahra et al., 2006)	The abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision maker(s).
(Helfat et al., 2009)	The capacity of an organization to purposefully create, extends, or modifies its resource base.
(Teece, 2007b)	Dynamic capabilities can be disaggregated into the capacity (a) to sense and shape opportunities and threats, (b) to seize opportunities, and (c) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets.
(Barreto, 2010)	A dynamic capability is the firm's potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base.
(Pavlou and El Sawy, 2011)	DC as a set of capabilities—sensing the environment, learning, coordinating, and integrating— that help reconfigure existing operational capabilities into new ones that better match the environment.
(Day, 2011)	Extending existing dynamic capabilities with “adaptive capabilities”.
(Danneels, 2011)	Necessary to consider managerial resource cognition in order to understand the actual or potential exercise of dynamic capability.

Study	View
(Hodgkinson and Healey, 2011)	Extend the Teece terminology by adding psychological mechanism (emotional and cognitive) - psychological foundations of dynamic capabilities.
(Argote and Ren, 2012)	Adapt, integrate, and reconfigure resources.
(Li and Liu, 2014)	A dynamic capability is the firms' potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely decisions, and to implement strategic decisions and changes efficiently to ensure the right direction.

### 2.10.1 Identification of the Proposed set of Dynamic Capabilities

Extending the terminology of Teece (2007), this research focuses on intangible assets, which are related to the firm's ability to sense, absorb and adapt the opportunity or threat, coordinate the external and internal resources and reconfigure them, if necessary (a combination of the five elements of dynamic capabilities). Intangible assets refer to knowledge transfer involving internal and external conditions. Furthermore, consistent with Barney (1991), the source of company should be valuable, rare, imitate, non-substitute, knowledge assets, that are usually very difficult to imitate. This research seeks to examine, conceptualise, operationalise, and measure a measurable model with a set of identifiable and specific components of dynamic capabilities. Teece et al., (1997) suggest that dynamic capabilities are related to reconfiguring, learning, integrating, and coordinating. Subsequently, in 2007, such capabilities were enhanced to cover sensing the environment to seize opportunities, and assets reconfiguration. Galunic and Eisenhardt (2001) added that dynamic capabilities are tools for reconfiguring the existing operations. Dynamic capabilities are also discovered to be conducive to long-term firm performance (Wang and Ahmed, 2007). D'Aveni et al., (2010) also emphasise the significance of dynamic modification capability with regard to short-term competitive advantages to cope with a hyper-competitive environment, in which

resources are difficult to acquire. Furthermore, Day (2011) agreed that dynamic capabilities are a contributing factor to firm competitiveness; however, he recommends the new element of developing the existing dynamic capabilities, called 'adoptive capability'.

Geels (2014), draw internally-oriented strategy approaches for the strategic reorientation conceptualisation in response to external pressures; for instance, dynamic capabilities, knowledge, resources, sense-making and the cognitive learning process in relation to activities and responses from the environment. Furthermore, the company should respond to and interpret things quickly, related to pressures and signals from the environment (e.g. consumer feedback, supplier information, competitor action, political discussions, public debates, research information) (Geels, 2014). Hence, the dynamic capabilities elements (sensing, absorptive, adoptive, coordination and reconfiguration) are the most appropriate strategies for addressing these matters and boasting firm performance (Geels, 2014; Patterson and Ambrosini, 2015; Sánchez-Sellero et al., 2014).

The company should focus on the utilisation of dynamic capabilities instead of having them and the process in dynamic capability views also related with searching and feedback (Geels, 2014). Dynamic capability highlights two aspects, first, it pertains to changing a unique character of the environment; second, it stresses the main role of strategic management in the relationship with internal and external resources, organisational skill and functional competences with regards to the changing environment with the skills of adapting, integrating and reconfiguring (Boly et al., 2014). The purpose of adopting a dynamic capability is to react to new circumstances with regards to environmental changes (external) and also the resources and capacities (internal) that change for those firms (Aminu and Mahmood, 2016). In correlation with this, the attention that firms pay to these antecedents will influence the maximisation of profit. Firm will penetrate the market all the time and become the first mover compared to their rivals.

Consequently, the firm should consider investing in management capabilities like dynamic capabilities in order to increase the firm performance especially related with innovation, as suggested by Randhawa et al., (2016). Furthermore, a firm with

dynamic capabilities will help to create opportunities due to its potential to navigate and even shape the external environment (network-building) (Day and Schoemaker, 2016). Next, a firm with well-developed dynamic capabilities will encourage just-in-time (JIT) decision-making, share the key activities with their network partners and learn to profit in conditions of volatile markets and technological uncertainty. According to Zeng and Glaister (2016), a firm with dynamic capabilities which focuses on flexibility and experimentation will contribute towards a sustainable competitive advantage. However, Felin and Powell (2016) argue the dynamic capability theory supports the notion of the firm must parallel between market strategies (external) and internal structures. Furthermore, strong dynamic capabilities are a vital element in fostering the organisation's agility or flexibility to address deep uncertainty and operate at a lower cost (Teece et al., 2016). In other words, dynamic capabilities will help the manager to make decisions on when and how to manage under deep uncertainty. According to Teece et al., (2016:p. 18), there are three clusters of dynamic capabilities:

- i. Identification, development, co-development, and assessment of technological opportunities (and threats) in relationship to customer needs (the "sensing" of unknown futures);
- ii. Mobilisation of resources to address needs and opportunities and capture value from doing so ("seizing"); and
- iii. Continued renewal ("transforming" or "shifting").

The higher order of dynamic capabilities influences firm performance more than low-order dynamic capabilities and these dynamic capabilities contribute more to firm performance in developing countries compared to developed countries (Fainshmidt et al., 2016). The characteristic of dynamic capabilities in simultaneous forces between cooperation and competition will lead to the success of firms like the Samsung Group (Song et al., 2016).

Above, in line with that argument, this paper will propose the dynamic capabilities elements, comprising: (i) sensing; (ii) absorptive, (iii) adoptive, (iv) coordination, and (v) reconfiguration capabilities.

### **2.10.2 Sensing Capability**

According to Day (1994), the market sensing capability and customer linking capability are the distinctive capability features of market-driven organisations. This means that the importance of sensing capability and the relationship with customers are factors driving company competitiveness and boosting performance. Teece (1998) explains sensing capability as identifying and selecting the most appropriate source. The company should have the capability effectively to navigate agile turns, as Microsoft did, once Bill Gates recognised the vital aspect of internet usage.

Recent research by Teece (2014) and (Penrose 1959:p. 86) indirectly describes dynamic capability with regards to sensing capability. One of the strategy approaches for strategic reorientation conceptualisation by (Geels, 2014) is sense making in relation to external forces. The norms words by (Li and Liu, 2014) “propensity to sense opportunities and threats.”. These views reflect the importance of the sensing capability of the firm to identify the external opportunity or threats.

The discussion on the aspect of sensing capability is embedded in the existing literature on the capability-based approach in general, and in the discourse on sensing and seizing open innovation, in particular. Traditionally, as Dutrénit (2000) argues, the aspects of innovation have been essentially confined within the organisational walls of the business firms, and so organisations followed the patterns and practices of organisational innovation within the closed walls of the organisation, under the aegis and management of the managers and policy makers. However, according to Epstein and Manzoni (2004), the recent developments and evolutions evident from the “volatility and velocity of the market, technological developments and advancements, availability and mobility of the knowledge workers, development of venture capital markets, technological complexities, accelerated product life cycles and globalization of markets” have been instrumental factors in urging managers and management scholars to rethink the aspects of innovation and take it outside the box of the organisational context and settings.



As such, the development of the new model of innovation by integrating and intermingling the internal and external environments and gathering knowledge and learning from them has been a marked trend in recent times. This opening up of the organisational boundaries and adoption of the inclusive approach towards innovation and learning, based on the concept of outside-in and inside-out, has paved the way for the development of the concept of sensing capability. The need for the active management of knowledge inflows and outflows and the establishment of mechanisms to tap into knowledge from external sources have been the essence of the concept of sensing ability insofar as the capability-based approach is concerned (Galbraith et al., 2002). In sum, the sensing capability critical success of implementation dynamic capabilities as it focuses on justifying the problem compared with problem solving and can be avoided wrongly solving the problem (Dong et al., 2016).

### **2.10.3 Absorptive Capacity**

Absorptive capacity constitutes a resource, a capability, and a good source of sustainable competitive advantage for the company over time (Sánchez-Sellero et al., 2014). Absorptive capacity is also related to an ability to recognize new information, together with the assimilation, exploitation and transformation of knowledge that is developed outside the firm to produce a dynamic organisational capability (Boly et al., 2014). Cohen and Levinthal (1990) defined the absorptive capacity as “the ability to recognize the value of new, external information, assimilate it, and apply it to commercial ends”. Absorptive capacity is the firm’s ability to learn the new things becoming a competitive advantage and the recognition that knowledge is adapted and adopted to expose the firm to external resources and advance innovation and firm performance.

The definition of (Cohen and Levinthal, 1990; Enkel and Heil, 2014) suggests that companies should develop sufficient resources to recognise, assimilate, and maintain external knowledge rather than set up market limitations, in order to boost the potential absorptive capacity as well as arrange for the phase of future knowledge transfer. Jiang et al., (2010) claim that firms should reconfigure their

resources along with acquiring knowledge through repetition with regard to managing and organising their cooperative relationships. Moreover, Schildt et al., (2008) found that the absorptive capability to learn through alliances improves firm performance.

According to Sánchez-Sellero et al., (2014), firms' capabilities, structure and behaviour, that drive absorptive capacity and R&D activities, enhance the generation of an absorptive capacity and new knowledge. Consistent with (Cohen and Levinthal, 1990, 1989), related to the identification, evaluation and exploitation of external knowledge, the importance of absorptive capacities as the "eyes and ears", especially for a company to fortify, complement or refocus their knowledge base, is indeed worth pursuing to enhance the firm's innovation and consequently boost firm performance (Rammer and Schmiele, 2008).

Cheng and Shiu (2015), based on their research on specialist knowledge providers, found that the level of absorptive capability is one of the factors that influence innovation performance. Absorptive capacity is always associated with knowledge, innovation and firm performance (Ghisetti et al., 2013). According to Todorova and Durisin (2007), companies' relationship with customers and other partners, as a social integration mechanism, affects the component of absorptive capacity. Furthermore, the power relationships with them are an important factor in valuing and exploiting new knowledge.

The absorptive capacity is one of the elements of dynamic capabilities which focus on recognizing new opportunities (acquisition) and external information, then assimilate, apply and transform them to commercial ends (Patterson and Ambrosini, 2015). Patterson and Ambrosini (2015) conducted qualitative research on intellectual property rights (IPR) in the European biopharmaceutical industry to assess how absorptive capacity contributes to commercialisation. Their research contributes towards extending the absorptive capacity constructs and focuses on acquisition, assimilation, transformation and exploitation. The absorptive capacity is the ability of a company to search for or acquire external knowledge, analyse and understanding that knowledge, and refine and develop their existing knowledge together with external knowledge to make it more valuable and extend or leverage their existing

competencies or create new ones and transfer the knowledge to its operations. They empirically discovered that assimilation, transformation as well as exploitation were incessantly connected. Nevertheless, additionally, they discovered that assimilation must occur both before and after acquiring and searching for being included to the identify value process. As sum, Patterson and Ambrosini (2015:p. 86) determine the new process of absorptive capacity as covering the components of 'search for and recognize value,' 'assimilate before acquire,' acquire, 'assimilate after acquire,' and 'transform' and 'explore.' To summarise, acquisition refers to firms' ability to identify and acquire knowledge externally; assimilation refer to the firm's routine and process, and is closely related with analysing, processing, interpreting and understanding the knowledge obtained from external sources; while application refers to how the knowledge is utilized for commercial ends (Hakanen, 2014).

The absorptive capabilities are divided into two groups: potential and realised absorptive capacity. The potential absorptive capacity consists of the acquisition (recognise and acquire external knowledge) and assimilation (understand, analyse and interpret the external knowledge). The realised absorptive capacity consists of transformation (combined existing and new knowledge) and exploitation, which means the firms' ability to exploit the external knowledge commercially in order to achieve their goals (Chang et al., 2014).

Chang et al., (2014) conducted research on the positive effect of commitment and flexibility of resources as an antecedent of absorptive capacity (mediator), and their findings support that proposition that these help to achieve superior new product development performance. This shows that the relationship between resources and a certain capability will benefit the firm in order to minimise the firm's cost and maximise the profit. The absorptive capacity is also vital in terms of the firms' ambidexterity and is related to exploration (external learning) and exploitation capabilities (assimilation and application) (Lee and Kang, 2015). The firms will increase their performance while engaging in these capabilities. Finally, absorptive capacity refers to firms' ability to identify, interpret, assimilate, and use the knowledge residing in the external environment (Patel et al., 2012).

#### **2.10.4 Adaptive Capability**

Lu et al., (2010:p. 420) defined 'adaptive capability' as the firm's ability to coordinate, recombine, and allocate resources to meet the changes required by foreign customers and/or suppliers. The term 'foreign' refers to external resources that are required by the firms.

According to Day (2011), the barriers to adaption consist of: organisational rigidities (Path dependency and lock-in, inertia and complacency, structural insularity) and lagging reaction (time consuming). Therefore, companies should attend to the factors hindering this to ensure the success of a company's strategy. In order to improve the adaptability of the firm, the business model of the company should continuously sense and respond to the market demand and provide a flexible backbone with regards to customer needs (Day, 2011).

Helfat (2007) suggested that the essence of the firm should be in sync with the developments and advancements of the external environment, as has been emphasised by management scholars and researchers for a long time now. As a matter of fact, changes and advancements take place in the external and internal environments, to which the organisation should respond by changing, adapting and adjusting their policies and activities. This has emerged to become an indispensable part of the firms' broader strategic context that is vital for the sustenance, prosperity and growth of the organisation. The adaptive capacity of firms may be associated with the fact that the extent to which the firms are successful in aligning their activities with the external and internal conditions, the greater the chances of success and sustained growth and prosperity and the lesser the chance of risks to the organisation in the wake of adverse conditions. According to Hodgkinson and Healey (2014), the challenge of a firm's innovation and organisational adaptability is to grasp and enhance rather than disregard or militate against "hot" cognitive processes that are "less deliberative" in nature. (Day, 2011) suggested the adoption of adaptive capabilities to extend the existing view of the development of dynamic capabilities.

“Dynamic capabilities theory puts the spotlight on how an organisation acquires and deploys its resources to better match the demands of the market environment” (Day, 2011:p.186) but “they are simply not sufficient for the chaotic marketing environments today” (p. 187) and he suggested that adaptive capabilities are a new element in the existing view of the development dynamic capabilities. According to Kirkbride and Ward (2001), “managers of the business firms make sense of their environments via dominant logics, interpretive frames or knowledge structures which consist of taken for granted beliefs, values, norms and scripts which guide their behavior”. This view was further supported by Lusthaus (2009), who sought to explain that “organisational attention is focused only on data deemed relevant by the dominant logic and other data are ignored”, hence reflecting upon the vital need to adapt to the changing environment and the shifts in dynamics. Adaptability, hence, resides in the premise of being able to tap into, assess and understand the aspects and shifts that occur. Business organisations work, define and adapt their policies and strategies to gain the upper hand over their competitors and to record the sustained growth and prosperity of the organisation. To conclude, Richardson (1972: p. 892) observed that a firm must:

*“...adapt itself to the need for co-ordination ... between the development of technology and its exploitation”.*

### **2.10.5 Coordination Capability**

Coordination capabilities refer to the way in which the managers of firms coordinate and integrate their internal activities (Malik and Kotabe, 2009). One of the three classes of process mentioned by (Teece et al., 1997) is coordination or integration. Jacobides and Billinger (2006) suggest that fairness between internal and external customers is a coordination challenge for the firm. The coordination capability is the ability of the organisation to coordinate and manage the various organisational processes and activities which are related to the internal and external environments (Tseng and Lee, 2012).

The coordination capability of firms can be related to the ways in which the internal and external resources are coordinated and harmonised to ensure their best use and

that the challenges that evolve over time and shifts in trends are accounted for, while tapping into the emerging opportunities and tackling the challenges and issues that may occur from time to time (Smirnova et al., 2011). The essence of the coordination capability of the firm, hence, transcends the boundaries of the organisation and goes on to explore the external aspects as well as the dynamics of the market environment, that have a profound influence on the activities, policy making and strategy implementation of the firms (Mohrman et al., 2008).

#### **2.10.6 Reconfiguration Capability**

Reconfiguration delineates the firm's capabilities to take advantage of the opportunities through their ability to determine the external opportunities via scanning and changing the firm's structure of asset and technology change (Malik and Kotabe, 2009; Teece, 2007). The particular company must consistently align and realign its particular tangible and intangible resources in order to maintain and strengthen their operations. According to Pavlou and El Sawy (2011), dynamic capabilities clout performance in new product development (NPD) by reconfiguring operational capabilities, notably in higher levels of volatile environment.

According to Nash (2003), the concept of reconfiguration and its significance may be related to the realisation of the need to upgrade and adapt the strategies, capabilities and competencies of the organisation to maintain the competitive edge in the market. As Connor (2008) stated, "capability reconfiguration mechanisms are distinct from the notion of dynamic capability, which measures the incumbent's capacity to modify existing capabilities". These methods are related to the concept of the modification and adaptation of the strategies and dynamic capabilities of the firms in accordance to the needs and requirements as they develop and evolve over time and in response to the changing, evolving situations. The reconfiguration of the dynamic capabilities relates to the adjustment and further enhancement of the competitive capabilities of the firm in order to suit the conditions as they evolve over time.

In this connection, the opinion of Peters (2007) deserves special importance. He argues that the connection of reconfiguration capability vis-à-vis dynamic capability may be related to the fact that “a dynamic capability is a learned and stable pattern of collective activity through which the organisation systematically generates and modifies its operating routines in pursuit of improved effectiveness”. As such, the reconfiguration refers to the accumulation of past experience in a tacit manner, the articulation of knowledge and through the process of the codification of knowledge.

## **2.11 Business Networks**

A business network is complex in nature, as several companies work together to achieve a set target or goal (Abrahamsen et al., 2016). Further, the business network can also be established as the process whereby a mutual relationship is formed with other people, potential clients and customers through networking for the enlargement of the organisation. The main purpose of the business network is the expansion of the business to generate revenue for the company (Claro, 2004). Business networks tend to incorporate suppliers and customers, along with distributors, and for the growth of business networking. They should have sound, concrete reasons for third parties to be part of the business network, which suggests that it is essential for companies to establish the potential of conducting business, so this kind of factor is imperative for SMEs. Communication between actors as a feature of the business network will provide more value to the firm to create competitive resources and contribute to better outcomes (innovation and firm performance) (Cosaro, 2014).

The concept of network resources, introduced by (Gulati, 1999), relates to the resource assimilation that arises from the involvement of a firm in inter-organisational networks. Subsequently, Gulati et al., (2000:p. 205) refined this definition by establishing three types of network resource: network structure (position, density, centrality, direct and indirect links, structural gaps), network membership and tie modality (number, characteristics, strength). They also incorporate strategic networks. There are five key areas of strategy research; namely, the structure of the industry, the firm's resource inimitability and capabilities, contracting and

coordination costs, the positioning within an industry and network limitations and advantages. Kenny and Fahy (2011) argue that firms can use the complementary resource endowments of their network partners to achieve their strategic goals.

The business network consists of companies that have established relationships, directly and indirectly, with other business and non-business organisations (Snehota and Håkansson, 1995). Consequently, the company is unable fully to control the activities and resources of others entities, or have a complete picture of everything that happens in the network (Håkansson and Ford, 2002). In line with this, especially for new business formation, the need for resource combination and interaction between business parties is paramount, as suggested by (Corsaro and Snehota, 2011; Oberg and Shih, 2014). Furthermore, the resources are elements with the potential for anybody to use and, under the assumption of resources heterogeneity, the value of the resources depends on how the firm can combine those resources, especially in the business networks relationship, to improve firm performance.

The term “know-how” should be applied to the firm to utilise the network resources. As mentioned by Casanueva et al., (2014), the importance of mobilising capability is to manage the whole network alliances and exploit the property of the network belonging to their partners. This shows the importance of the source of the network from their surrounding and the capability of the company to utilise and exploit them in order to achieve a competitive advantage and boost firm performance.

From a business network perspective, the relationship between companies and their other actors in the networks itself helps them to gain a significant amount of information, undertake effective and efficient knowledge transfer, engage in resource mobilisation and explore business opportunities (Thornton et al., 2014). Business networking and alliances will support business operations to decrease production costs, the economy of scale, enhance production efficiency, create continuous innovation and decrease product imitation or diversity from their rivals and so continue their business success (Nimlaor et al., 2014).

The business network of the company includes the requirements for the business, such as marketing, accounting, sales and manufacturing departments (Rollin, 2012).



Small and medium-sized enterprises in Malaysia play a major role in the development of the country's economy. The development of the industry and the growth of the economy have made Malaysia an open economy of the world. However, SMEs are facing some of the challenges related to the business development world due to the development plans of the government. The globalisation of SMEs depends on the development of business networks (Schoeffel and Benitti, 2012). Thus, there should be the proper development of strategies, methodologies and plans for the business network and the enhancement of Malaysian SMEs, since this will help the growth of the economic development of the country.

However, a planned business network should be implemented so that SMEs in Malaysia can develop and grow into large firms, so that they can become the gateway to larger enterprises. The concept of the business network allows a firm to gain more clients and acquire an ownership advantage. SMEs are the pillars of the economic development of the country and will help in raising funds by developing business networks with various other nations so that the economy of the country can be developed (Spence and Gallace, 2011). This will help Malaysian SMEs to gain competitiveness, and maintain their reputation and brand globally. It will also help them to operate dynamically rather than remaining in isolation.

### **2.11.1 The Importance of Business Networks**

The previous literature highlighted the importance of the business network as a source of innovation performance (Abrahamsen et al., 2012; Ahuja, 2000; Baum et al., 2000; Wilkinson and Young, 2002). The most important tool for marketing is the business network, since it helps to develop the organisation's success and assists in building connections with the right people in the firms. It is important for Malaysian SMEs because it will strengthen the business supporting them. The business network will facilitate an increase in the sales of SMEs and help them to develop into large firms (Baumol, 2004) gradually.

The concept of the business network will help to stimulate new ideas and strategies to make approaches for the business. New businesses can be generated with the help of the business networks. Through this, SMEs can connect to a multitude of people who can become future customers of the company. Through business networks, SMEs can reach different business professional forums to gain business advice and other recommendations. This will help to build a stronger network and it will become easier to solve the problems that arise in the organisation.

Another significant role of the business network is to create an excellent platform to market their goods and services (Bernroider, 2002). A strong business network helps to develop the business automatically. If the business networks of SMEs are connected with the various social media, like Facebook and LinkedIn, among others, then marketing will become easier for the organisation and it will give them an opportunity to share their information regarding the business (McGrath and O'Toole, 2014). The business network is important since it helps to grow the business by connecting various people, generating innovative ideas and gathering business experience.

Business networks can be considered as beneficial and valuable, as they help to expand the knowledge base; new clients are formed, and different promotions are also conducted to promote awareness of the established business (Heinrich and Betts, 2003; Oberg et al., 2012). The major benefits include, firstly, generating growth in business; this is the dominant reason for the maximum number of firms to get involved. Secondly, opportunities: ambitious entrepreneurs within the business network can lead to copious opportunities, including joint ventures, client leads, partnerships, and the documentation of possibilities along with business or asset sales. Thus, it is safe to state that an enormous number of opportunities can be created through business networking (Kragh and Andersen, 2009). Finally, connection and advice: it is imperative for businesses to have a relevant and useful source of connections within the network to act as points of reference and mentors in times of need and emergency for the organisation. Further, advice is essential as well for the organisations to reduce the number of errors committed while conducting their business. It is further important to gain advice from people who are experienced and can provide solutions that are beneficial to the organisation.

Overall, the importance of the business network and collaboration with other actors, such as customers, suppliers, competitors (inter-firm), universities, public research bodies and the government, will give firms access to external resources (Hervas-Oliver et al., 2016). In line with the above, this research focused on the role of the business network as a contributory agent of intangible resources for the firm.

### **2.11.2 Inter-firm Collaboration**

The concept of inter-firm collaboration is the active participation of companies involved in cooperating in activities that are innovation related (Xavier Molina-Morales et al., 2015). Inter-firm collaboration promotes the innovation of an organisation due to its growth and the opportunities for development, so that they can gain tremendous advantages in terms of competitiveness and included in the strategy of the company (Dobra, 2013). Inter-firm collaboration assists Malaysian SMEs to engage in inter-organisational innovation. Inter-firm collaboration is beneficial for the innovation of a firm. When the company develops some new strategies to improve their products and services, there is a need for inter-firm collaboration that helps in finding a balance asset for the development of the company. If the SME is involved in several other inter-firm collaborations, they can create more innovative products that can be successfully marketed. Inter-firm collaboration will help to develop the company with new ideas and maintain the growth of the economy of the SMEs, that will be beneficial for the company (Gotzamani, 2004). The innovation of new products and services will help the employees to become motivated and make them productive in developing new products for the development of the firms.

Through the inter-firm relationship, firms can learn or reap certain benefits between them, including new projects, opening up new markets or dealing with new customers and learning about the difficulties of implementing new work policies (Martin-Rios, 2014). According to Porter (1980), this research will focus on firms' dyad relationship with suppliers, buyers (customers) and competitors, which are part of the five competitive forces. This research also focuses on the dyad relationship.

Customer collaboration or participation will be effective through sharing information, coordinating effectiveness, and customer outcomes; for instance, customer satisfaction, loyalty, and value added, consequently, affect business results like sales and market share (Fidel et al., 2015). Furthermore, Wang and Rajagopalan (2014) posited Dyad-Specific Alliance Capabilities, which are related to combined knowledge through the inter-firm relationship.

Innovation is the creation of new knowledge and ideas to contribute to new products and services which are influenced by external collaboration and the knowledge spill-over effect (House and Tseng, 2015), part of which is created inter-firm. The participation of customers in providing responses, information and knowledge is a vital factor in improving product design (Menguc et al., 2014). Von Hippel (1989) suggests that customers share information regarding new product designs, product characteristics, and product prototype evaluation.

Customers receive services from the companies, and these services become part of the revenue earned by the organisation that is empowered to provide the services. The customer can choose from various products and services which are available in the market and thus this becomes one of the main factors on which the sustainability of the business depends (Stark and Vedres, 2012). The focus for SMEs remains to fulfil the demands and needs of customers, and so they create products to meet the demand. This can be referred to as the entity within the firm which is responsible for the establishment of a process, and thus the business receives the output of the process, which is the financial gain. Customers are also an integral part of the business networking, as their satisfaction and acceptance allows the organisation to grow its network. The organisation focuses on and targets reaching larger networks of the customers, as this not only increases the financial revenue but it lets the organisation earn a good reputation in the market, which is another important factor for the growth of the business (Ulaga and Eggert, 2006).

The customer relationship is one of the critical success factors. However, Chiun Lo et al. (2016) reveal that there is no significant effect on customer orientation and firm performance (financial and non-financial). Their research shows that only technology orientation has a relationship with firm performance (financial and non-financial),

although the top management support relates only to financial performance rather than non-financial performance.

Similarly, supplier involvement in new product development, with their expertise, knowledge and information regarding particular products (specification, life expectancy and availability), will help firms to reduce any future potential uncertainty that could affect the product development or even delay the launch of a new product (Menguc et al., 2014). Suppliers or vendors are an integral part of supply chain management because they supply the raw materials or products to the organisation or individual. This kind of process tends to remain constant, and the most common manufacturing item is the inventorial item (Andersson et al., 2007).

Most private sector companies believe that SME suppliers are less competitive than their larger counterparts. It is essential for the SMEs' business, particularly in Malaysia, to establish better relationships with their suppliers in the long term because such ties will lead to the supply of a similar quality of goods (Chiun Lo et al., 2016). A change in supplier tends to create a difference in the quality of the supplied goods, which could negatively impact on the establishment of business. About 87% of receivers state that small businesses tend to share personal bonding in the growth of a relationship with their suppliers to create a better supplier relationship (Windahl and Lakemond, 2006). Furthermore, choosing the correct supplier is the most important contribution to innovation performance, as following the criteria specification of a product that is needed instead of making the wrong selection will impact on the innovation process of the firm (Pulles et al., 2014).

It is imperative that SMEs strive to attain the same goals and remain profitable because they cannot afford to be unprofitable for a long time. Competitors are rivals who try to establish themselves in the same forum and target the same goals. This is the aspect which tends to be stressful for the business as it is continuously striving to establish different strategies which would act as a competitive advantage for the organisation. The presence of competitors further allows the companies to monitor the quality of the products and focus on producing various kinds of unique product (Kowalkowski et al., 2013; Ritter and Gemünden, 2004). It is essential for companies

to be in a competitive environment as a monopoly tends to kill the potential of an organisation and a similar kind of production is conducted over time.

Moreover, inter-firm collaboration will increase technology transfer. The context of this research is focused on knowledge as an intangible resource; technological knowledge transfer has become one of the most vital strategic resources in numerous sectors. Firms with excellent technological knowledge and advanced technologies will improve their competitive advantage and lead the market. Acquiring technological knowledge consists of two main strategies; concentrate on the internal strategy (R&D) or external resources (from external partners) (Leischnig et al., 2014). However, a combination will greatly influence the firm's output.

### **2.11.3 Universities and Public Research Organisations**

The research organisation is an organisation which helps to develop the firm's performance and economic growth. Such research will support and strengthen the capacity of SMEs in the Malaysian context to develop new strategies for developing new products and services (Istikoma et al., 2015). This programme will enable them to outsource their research and increase the efforts of the research to extend their networks. The research organisations will help SMEs to develop their research capability (Rollin, 2012). This will enable SMEs to encourage the national level to give them financial support. Further, it will help firms to prepare some proposals and cooperate with the programmes. The research organisations will enable them to innovate new products and services for the development of the organisation and its economic growth (Susman, 2007).

Likewise, the relationship between firms and universities will enhance the firm's performance, as they can provide more resources to the firm (Fitzgerald and Cunningham, 2015). Furthermore, universities have a technical competitive advantage in society as a whole. This role is highlighted in several studies (Geuna and Muscio, 2009; Perkmann et al., 2013; Ramos-Vielba and Fernández-Esquinas, 2012; Rothaermel et al., 2007; Schoen et al., 2014). Those phenomena are related to the scenario, like less qualified research, increasing complexity (related to the new

technology), and the open innovation approach (Cesaroni and Piccaluga, 2015), although Merton (1973), argues that the research outcomes of the university should not be part of the university's agenda. In contrast, (Bercovitz and Feldmann, 2006; Cesaroni and Piccaluga, 2015; Etzkowitz and Leydesdorff, 2000; Lazzeroni and Piccaluga, 2003) suggested that the university agenda should collaborate with universities, but the knowledge must be managed accordingly. As they mentioned, using specific procedures will enhance the process of identifying academic invention, protection and transfer to industry. Thus, the intense activity of patents, licensing and the creation of spin-offs is regarded as a desirable outcome interest of the university under the "responsible partnering" approaches (EUA et al., 2009; Verheugen and Potocnik, 2009). Through cooperative research, the firm needs to take advantage of collaboration or cooperation with universities and public research organisations.

Cooperative research comprises cooperative research programmes, where support is created through collaboration between researchers, industry and also the community. The cooperative research programmes have been able to develop new technologies, products and services, which have helped in solving issues which are related to economic, environmental and social challenges. SMEs require solutions to the problems which they frequently encounter in conducting their business (Johanson and Vahlne, 2003). There are several cooperative programmes that provide a platform for SMEs which would help them to resolve issues related to their businesses. This cooperation can be considered a process of knowledge transfer.

According to organisational theory, knowledge transfer is conveying information from one part of the organisation to another. Knowledge transfer is undertaken to organise, create, capture and distribute knowledge so that its availability can be tracked more easily. Knowledge transfer is one of the crucial factors, as it is vital in the establishment of the organisation for a competitive market. This increased gain in knowledge and thus demand for knowledge transfer is vital. Knowledge cannot be measured; the original knowledge holder is not at a loss once the knowledge is shared (Heinrich and Betts, 2003). Knowledge transfer is obtained through personal interaction, cooperative education, curriculum development and personal exchange (Forestier, 2010; Halim et al., 2015). Collaboration between firms, universities and research organisations will enhance the existing knowledge base resources.

According to Rasiah et al., (2016), in Taiwan, the support from universities and R&D labs are essential in supporting the technological upgrading of the semiconductor industry. Further, Graf and Henning (2009) analysed four eastern German regional innovation networks and found that the universities and public research institutes are the pivotal actors in regional networks. Similarly, Xu et al., (2014), based on their research on 270 Chinese firms, suggest that universities, public research organisations, and the government can improve new product development. Furthermore, innovation capabilities mediate those relationships. The knowledge transfer from universities and public research organisations can be integrated with other external resources to improve the competitive advantage and lead to superior performance. Likewise, Aziz and Samad (2016) support the view that the relationship with a university or public research organisation will contribute to superior performance.

#### **2.11.4 Government Role**

The government acts as an environment and ecosystem that supports the rapid growth of SMEs by encouraging entrepreneurship, innovation and investment. Most significantly, the government will act as a facilitator and catalyst. SMEs are recognised as important economic agents who will be given the opportunity to gain access to resources. The government will also enact and implement laws and regulations that support the activities of SMEs. Where there are gaps that constrain the growth of SMEs, the government will intervene by providing training programmes and also help, through providing financial and business support services, to achieve the specific development of the targeted Masterplan.

The government assistance is evident in the second Industrial Master Plan (IMP2), 1996 to 2005, which was extended by the Third Industrial Master Plan (IMP3), 2006 to 2020. The government still devoted efforts to achieve Bumiputera's equity ownership in the corporate sector of at least 30%. Furthermore, the government have implemented many programmes to strengthen the performance of SMEs (Nor et al., 2016). The Malaysian government has introduced a master plan for SMEs (2012-2020) to improve their performance. The SME Masterplan (2012-2020) is a



long-term plan, which was first formed for the development of SMEs in Malaysia. The Master Plan is very comprehensive, covering the overall strategy and policy framework for the future, based on the analysis of empirical evidence on the current situation of SMEs. For the first time in Malaysia, quantitative impact studies on existing government programmes have been implemented to evaluate the effectiveness of the programme, thereby paving the way for a results-based approach in the future.

According to Zhao et al., (2015), the government is the main leading actor because, without its support, no collaboration can take place. For example, the universities and research institutes relate to the government as same as the private sectors with the creation of collaboration frames based on the regulations for technological improvement and exploitation. Furthermore, the governmental bodies will directly and more efficiently control the innovation activity with their regulative power. The government support for small firms is intended to facilitate access to vital inputs from private sources (Bessant, 1999); however, Romijn and Albaladejo (2002) suggest that the aim of public R&D is to help new start-ups and enhance pre-competitive research in recently established ventures.

The government should pay more attention to SMEs for the following reasons (Doh and Kim, 2014). Firstly, to achieve superior business assistance services for SME innovations. Secondly, earlier studies (OECD, 2004; ILO, 2001) indicated that SMEs commonly have minimal technical and managerial ability due to access to finance (bureaucratic, complicated setting-up procedures); operation and business growth; infrastructure; and a lack of efficient institutional structures. Thirdly, numerous government support strategies exist to assist SME innovation to be linked or interact with shared activities with other actors, since the development of networks in innovation is vital in this knowledge-based economy. Fourthly, SMEs are an exceptional risk group because of weaknesses, a shortage of finances of their own, reliance on few customers, and a lack of security and credit history. Finally, governments strengthen SME innovation and legal frameworks to safeguard intellectual property, and discourage monopolies and unfair trade practices.

Accordingly, governments reduce the administrative cost and burden of SMEs to promote innovation. Technological networks (collaboration and partnership) among the actors within the markets are crucial sources of innovation. As a result, governments have attempted to promote alliances and construct networks amongst SMEs across sectors and borders. Specifically, governments enhance SMEs' access to information by means of presenting financial incentives and assistance to help the innovation of SMEs. However, innovative SMEs have to be market driven because an over-dependence on public support and finance will not help their sustainability. In different words, too much public financial assistance, without market co-investment, can prevent SMEs' innovation by means of growing possible marketplace distortion.

Concerning IP rights, SMEs lack an excellent working understanding of the system and consequently under-exploit the current forms of IP protection. Therefore, the reinforcement of legal frameworks by governments is important for the innovation of SMEs. The intervention of government support is based on the availability of market failures (Doh and Kim, 2014).

Moreover, some of the business markets require regulation especially for product origin and safety purposes. The government can promote and provide support to the company in the form of bargaining on international trade agreements or correct and make a regulation to expand the company's growth and business expansion in the global market (Nimlaor et al., 2014). Business professionals have managed business incubators; government assistance incubators tend to be comparatively ineffective in providing access to external capital or even business-related consulting and networking assistance (Tang et al., 2014).

However, Tang et al., (2014), indicate that government-supported incubators are effective in providing infrastructure, a perception of credibility, and resources, such as laboratory facilities and staff training. The collaboration will encourage networking, resource sharing, resources pooling, consulting, public image, clustering, geographic proximity, costing, and funding. Moreover, raising transaction costs because of the idiosyncratic as well as cumulative nature of firm-specific R&D capabilities increases

the complications that innovating ventures encounter in obtaining the capital that is essential to establish and commercialise their technologies.


West et al., (2014) argued that there is increasing interest in non-pecuniary motivations like universities, non-profit organisations and government agencies. Peng and York (2001) further highlight the priority of institutional factors in emerging economies as governments play a dominant role in these emerging economies. In line with this, Shou et al., (2014) also indicate the importance of Guangxi (an informal institutional factor) and legal support (a formal institutional factor) in enhancing the performance advantage. Moreover, Walter et al., (2006), suggest the significance of developing network capability to improve firm performance and one of the factors in network development are governmental agencies. Moreover, the government policy will help the firm in terms of support and protection (legal support), and induce firm activity, especially related to innovative activity (Lall, 1992).

The legal support comprises the laws which are also known as business law, and it is the body which establishes rights, relations and the conduct of the factors which regulate organisations. It is important that businesses should be engaged in commerce, sales, merchandising and trade (Stark and Vedres, 2012). The business laws within the legal system help to understand that the company is a separate legal entity from its owners and employees, so this further helps in establishing rights which can assist in the protection of rights.

A further form of government intervention for SMEs is tax relief. They are reliefs' state aids or "advantages" under the EU law for SMEs. The initiative of tax relief is conducted to increase the number of SMEs within Europe. The SMEs were able to establish and gain a substantial amount of revenue through the businesses they undertake. The company cannot be valued at more than £18,000 to qualify as an SME and be eligible for tax relief (Ritter and Gemünden, 2004). In summary, table 2.12 shows the government roles in Malaysian SMEs.

**Table 2.12: Problem in Business Operation and desired forms of government Assistance**

Source :SME Annual Report, 2005;Mohamed et al., 2014

Rank	Problem		Rank	Desired Forms of Government Assistance
1	Competition from bigger players		1	Tax incentives
2	Not able to obtain loans		2	Greater access to finance
3	Not able to source skilled labour		3	Greater technological support
4	Competition from new entrants		4	Central body that collates and disseminates info on SMEs
5	Lack of government support		5	Central training body

In conclusion, despite the advantages and disadvantages of collaboration between universities and public research organisations with industry, however, most of them positively impact both parties and contribute to better performance, like the government role. As a result, this research will empirically evaluate the role of inter-firm relationships, university and public research institute relationships and the role of the government in business network to foster firm performance. In term of an indirect relationship between the business network and firm performance, this research considers innovation capability and dynamic capabilities as mediators and moderators.

## 2.12 Innovation

Innovation is fundamentally about determining and employing opportunities to create new services, work practices and products and subsequently influences firm performance consistently (Andries and Czarnitzki, 2014). There are two types of innovation activities: inbound and outbound. The inbound activities refer to the firm's capability to obtain and explore knowledge from its external partners (suppliers,

customers, competitors, consultants, research institutes, universities, or governments), while outbound activities mainly cover contractual agreements, co-operation, partnerships, alliances, and licensing (Cheng and Shiu, 2015).

Wawmayura et al., (2015) argue that, in developing countries, technology plays a vital role in the competitive advantage, whether regional or global. Also, the technology is always parallel to the R&D and innovation in the company. Furthermore, innovation is one of the business strategies for sustaining and growing SMEs, particularly in the current market scenario (Nor et al., 2016). Further, SMEs plays an essential role in process innovation to enhance their production processes' capability or their supply chain operations (Wright et al., 2005). Different types of innovation contribute to several parts of the product's life cycle, and the main focus in fostering and sustaining Malaysian SMEs is new or modified products, processes and services in the global area (Nor et al., 2016).

Some researchers suggest that SMEs' ability to develop unique products and flexibility in adopting new technology are the key antecedents for SMEs gaining a competitive advantage (Williams and Hare, 2001). Because of that, SMEs should focus on innovation to increase and sustain firm performance in the marketplace. However, because of the small size of SMEs and the many barriers (lack of funds, lack of labour skills, poor managerial skills, lack of market access and a lack of knowledge), the firm also needs to focus on the continuity of innovation activities (Nor et al., 2016).

### **2.12.1 Innovation Capability**

This research focuses on firm innovation related to innovation capacity or capability. Innovation capacity refers to a continuous improvement of capability and resources that enables firms to explore and exploit opportunities to develop new products or services to fulfil the market requirements (Szeto and Elson, 2000). Capability refers to the capacity to deploy the firm's resources or employees' ability to perform the task required. Specifically, capability can be defined as the business process for integrating and rebuilding the internal and external resources to influence

competitive excellence and increase firm performance (Kodama and Shibata, 2014). Capabilities have been established as a revolutionised ability between innovation objective and resources (Forsman, 2011). However, innovation capabilities refer to a set of organisational routines and processes with firm ability to acquire, assimilate, exploit and transform knowledge to produce a dynamic organisation (Xu et al., 2014). According to Wang and Ahmed (2004), innovation capabilities refer to the firm's ability to develop a new product, services or market through innovative behaviour and processes with an innovative strategic orientation.

Schumpeter (1934) has already revealed that a positive relationship exists between innovation in driving growth and creative destruction. Specifically, Schumpeter (1934, p.g 166) referred to innovation by entrepreneurs as including either marrying different types of knowledge or adapting existing stocks of knowledge to generate new processes, products and organisational structures that help to lower costs and delivery times and increase flexibility and quality. He also stresses that firms should use adaptation capability to explore the possibilities and exploit them.

Several scholars have interpreted innovation capabilities based on their framework; for instance, three innovation capabilities (Koc and Ceylan, 2007) - idea generation (IG), internal technological environment (ITE), technology acquisition and exploitation (TAE); four innovation capabilities (Adler and Shenbar, 1990) - technological assets, organisational assets, external assets and project management; five innovation capabilities (Wang et al., 2008) - R&D capabilities, marketing capabilities, innovation decisions capabilities, manufacturing capabilities and capital capabilities; six innovation capabilities (Romijn and Albaladejo, 2002) - professional background of founder/manager(s), intensity of networking, skills of workforce, internal efforts to improve technology, proximity advantages related to networking and receipt of institutional support; and seven innovation capabilities (Guan et al. 2006, p.g 974) - learning capability, resource exploiting capability, R&D capability, organisational capability, manufacturing capability, marketing capability, and strategic capability. However, this research will focus on product and process innovation (technological capabilities), market innovation capability and organisational innovation capability.

Building innovation capability is essential for mere economic survival and to foster national and regional growth and welfare for the next generation (Zhao et al., 2015). Camisón and Villar-López (2014), in their research on organisational and technological innovation, found that capabilities contribute to superior firm performance and show a positive relationship. The characteristic of innovators' firms, for instance: 1) explore the current business networks to gain resources with their partners; 2) develop and exploit business relationships in emerging networks and 3) explore and find the fit technology related to the needs of the firm for current and future purposes (Medlin and Tornroos, 2015). Rasiah et al. (2016) used the training and knowledge embodied in machinery processes and products for the measurement of innovation capabilities in their research. Innovation capability is not only limited to domestic performance but also to exports, which increase the profitability of the firm. The focus of the paper on innovation capabilities is related to the capabilities of the firm to acquire and generate incremental knowledge and new stocks of knowledge from external and internal resources.

A high order of innovation capabilities can be achieved through the combination of technology and organisation and so improve firm performance (Ripoll-sempere, 2016). With a view to achieving a sustainable competitive advantage, there is a need to invest in a combination of technological innovation (product and process) and management innovation (market and organisational) instead of the single type of innovation (Ripoll-Sempere, 2016; Hervás-Oliver et al., 2016). According to Rasiah et al. (2016), innovation capabilities are a critical antecedent of export extension in Taiwan's semiconductor industry. Furthermore, Ngo and O'Cass (2009, p.g 48) provide a comprehensive understanding of innovation capabilities related to the integrative process which focuses on the application of the collective knowledge, skills and resources of the firm to execute innovation activities related to technical innovation (product/services and process) and non-technological innovation (managerial/organisational, market, marketing). The positive relationship between superior innovation capability and firm success been been proved by empirical research and leads to improved innovation performance (M. Zhang et al., 2015). A detailed explanation of these types of innovation capabilities will be presented in the next section.

## **2.12.2 Type of Innovation**

There are different types of innovation; innovation is strictly about the commercialisation of ideas as well as inventions. As affirmed above, there are four types or application considered in the discussion on innovation that help a firm to grow and thrive in the business. These are product, process, market and organisational innovation.

### **2.12.2.1 Product Innovation**

Product innovation needs the understanding of both customers and technologies or both market or technologies capabilities (Ellonen et al., 2009). Product innovation depends on the internal capability to manage the design function (Fernández-Mesa et al., 2013). Product innovation is strictly about public imagine or the relationship between the consumer products and innovation application. In the context of innovation, it has been mentioned that consumer products are primarily evident product innovation. Dariush (2007), mentioned product innovation as an example and cited the example of the vacuum cleaner. This is a consumer product, although Dyson introduced “dual cyclone” technology into the vacuum cleaner which made it unique and different from the conventional vacuum cleaners that are available in the market. It is this innovative technology that makes it unique and function differently from the rest. It is the overall functioning ability of the product that has been innovative and new. As far as the product innovation concept is concerned, it could be stated that it is the attribute that helps to enhance the overall product quality and performance and a new product is formed to attract consumers and encourage them to purchase. Thus, it is the “new product development” that enables the company to introduce new and advanced products. Product innovation is not restricted to the SME or commercial sector but can also apply in the industrial sector. They could easily emphasise developing a new product to improve firm performance (Woodside, 2005).

Schumpeter (1942) found that the interrelationships between product innovation firms that maintain or even restore a competitive advantage are a critical area of



theory development and academic debate. According to Tsai et al., (2011), based on their research using 105 high-technology firms, there is a positive relationship between external technology acquisition, product innovativeness and sequences for increasing firm growth. Therefore, there is no doubt that external relations can increase a company's profits. Further, product innovation depends on what the firm offers to the customer, which is a new product that may take different forms like extensions, upgrades or major changes to the existing product, either radical or incremental in nature (Zhang et al., 2015). However, product innovation capabilities in China are determined by customer focus and imitation (Breznitz and Murphree 2011; Economist 2014).

Meanwhile, Menguc et al., (2014) studied product innovation capability, focusing on supplier and customer involvement. Their results, related to Canadian high-tech companies, extend the understanding of the role of customer and supplier participation and affect new product performance through different types of product innovation (radical and incremental). Additionally, the knowledge process is recognised as a co-evolutionary relationship between product innovation and capability development, and there is a strong relationship between them, both conceptually and empirically (Kashan and Mohannak, 2015). Capability development can be related to a dynamic capability, which this research focuses on.

#### **2.12.2.2 Process Innovation**

Process innovation is the activity that encourages the implementation of new or significantly enhanced products, which is empowered by techniques, equipment or software (Xie et al., 2015). It is a process that enables a strategic product development system and, ultimately, helps in introducing a unique product to the market that impacts on society. Process innovation is that aspect of product innovation that leads to a dramatic impact on society (Robertson et al., 2012). Innovations that impact significantly on society are known as process innovation. It is also known as a new and significantly enhanced method for producing as well as delivering output that adds value to the organisation. The term of 'process' has emphasises an interconnected activity that is specifically designed to change inputs

into a specific output for the customer. Process is connected to an operational activity with the help of which the organisation enhances its function. According to Sargent (2014), the term process connotes the concept about the ways in which value is offered to the end customer; for example, raw material, logistics, after-sales service and raw materials. According to Bicen and Johnson (2015), based on their research regarding lean innovation capability, the two factors that impact on process innovation in selecting resources are the adoption of the different business models and operating in different markets. The selection of appropriate resources disbursed will minimise the cost and maximise the profits.

Many innovations have a greater impact on society, which are either products or services. These are classified as process innovations. A good example of process innovation is the assembly line developed by Henry Ford for the mass production of his T-model cars. On the assembly line, the chassis of the cars were lodged, and the cars moved along a conveyor belt while the workmen fixed the body or did some work on the cars during the manufacturing process. The assembly line made it possible to manufacture hundreds of units of cars in a single day. For example, the photocopier made the administrative work in offices far simpler (Atuahene-Gima, 2005). Although it was not a consumer good as such, we only need to see its impact on running an office the day when the photocopier breaks down. A process consists of a set of tasks, flow of information and skills and the application of labour to get these tasks done by the workers. A process is nothing but a way of transforming inputs into an output. The input is usually the labour, capital and raw material while the outputs are the finished goods and services. The role of innovation lies in the process design (Lundvall, 2010).

### **2.12.2.3 Market Innovation**

Market innovation is strictly about introducing new marketing methods that are processed by significantly changing the product design or packaging and it falls under the category of management innovation (Camisón and Villar-López, 2014). It is connected to the ways in which a product is developed and positioned or promoted, and the price identified. Market innovation in SMEs in Malaysia aims to

address the consumers' needs more effectively; it is also focused on opening up new markets for product positioning and emphasises increased product sales through the adoption of new items. Besides this, market innovation includes the implementation of those processes that were not introduced into the firm earlier. In short, it is part of a new marketing concept or strategy adopted to enhance business growth and profitability. According to researchers, new or market innovation is about adopting new strategies or models by the firm to increase the firm's performances (Zawislak et al., 2012).

#### **2.12.2.4 Organizational Innovation**

After studying the various literatures and reviewing the journals, it may be mentioned that organisational innovation is a diverse concept that has been explained in different ways by different researchers over time. According to some scholars, organisational innovation is strictly about implementing a new organisational method while carrying out the business' work (Camisón and Villar-López, 2014). The definition of organisational innovation is discussed in previous literature and debated but it is not easy to reach an agreement as it is still scarce and scattered (Armbruster et al., 2008). All of the definitions of organisational innovation can be seen in table 2.13. They include both the workplace organisation and external relations. It is apparent from these studies that the changes in the workplace organisation or external relations that are based on the organisational methods include changes in management strategy, mergers or acquisitions, simple capital replacement, extensions and so on, that lead to product innovation (Sargent, 2014).

According to Battisti and Stoneman (2010), based on their research in the UK on the relationship between different types of innovation, organisational innovation plays a vital role in shaping innovative activity. According to Hervas-Oliverq et al., (2012), based on their research on Spanish firms, introducing a process innovation is influenced by the development of organisational innovation.

**Table 2.13: Organizational innovation definition***Source: (Camisón and Villar-López, 2014)*

Study	Definition
(Daft, 1978)	Concerns organizational structure and administrative processes Adoption
(Kimberly and Evanisko, 1981)	Adoption of electronic data processing for a variety of internal information storage, retrieval and analytical purposes, indirectly related to the basic work activity of the hospital and more immediately related to its management
(Damanpour and Evan, 1984)	Innovations introduced into the organizational structure, into administrative processes and/or human resources
(Damanpour et al., 1989)	Innovations in the administrative component that affect the social system of an organization
(Hwang, 2004)	Design of an appropriate organizational structure and processes, and a human resource system
(OECD, 2005)	Implementation of a new organizational method in the business practices, workplace organization or external relations
(Hamel, 2006)	A marked departure from traditional management principles, processes and practices or a departure from customary organizational forms that significantly alters the way the work of management is performed
(Armbruster et al., 2006, 2008)	Changes in the structure and processes of an organization due to implementation of new managerial and working concepts and practices, such as teamwork in production, supply chain management, or quality management systems
(Birkinshaw et al., 2008)	Invention and implementation of a management practice, process, structure or technique that is new and is intended to further organizational goals
(Mol and Birkinshaw, 2009)	Introduction of management practices that are new to the firm and intended to enhance firm performance
(Battisti and Stonemana, 2010)	Innovation involving new management practices, new organization, new marketing concepts and new corporate strategie

(Damanpour and Aravind, 2011)	New approaches in knowledge for performing management functions and new processes that produce changes in the organization's strategy, structure, administrative procedures, and systems
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Regarding organisational capability and its relatedness to firm innovation, (Grant, 1997) suggested 'the greater the span of knowledge being integrated and the more sophisticated the integration mechanisms, the more difficult is it for any potential rival to accomplish replication'. This principle shows that the importance of knowledge spill-over and the complicated integration mechanism tend to prevent rivals from imitating products or services. The firm's capability to minimise the imitability by rivals will increase the profit.

### **2.13 Drivers of Innovation**

Innovation means helping every firm to grow seamlessly in the market. Innovation is a continuous process that is controlled by the drivers mentioned below. Different factors encourage an organisation to innovate. These drivers help to create a sense of urgency to create innovative products and services to help in achieving new goals and generate new ideas. Some of the predominant drivers are the emerging technologies, competitor actions, new ideas from consumers and constant changes in the external environment (Frey et al., 2013; Rammer and Schmiele, 2008).

From the competition perspective, innovation plays a key role in controlling the firm's performance in the business sector. In order to sustain amidst the steep competition in the market, companies have time and again adapted to the innovative technique. Competition is the key driver that encourages companies to develop a new product and improve in business. The firm needs to counteract competitors, as they will cause firm growth (Zhang et al., 2016). With the help of innovative processes, companies can easily introduce new types of products or services and attract consumers to buy their products. Hence, to get an edge in the domain, innovation plays a significant role (Abramson and Littman, 2002). Technological advancement is another driver that has encouraged the innovation of products or services and

could easily be developed with the help of technological knowledge. In this technology-driven world, creating new products with the help of technology helps to get an edge in the market (Hung and Chou, 2013). Globalisation today has led to steep competition in the market. The external environment, which is related to consumer ideas, is also considered part of the influence of innovation, as firms need to fulfil their customers' requirements (Ngo and O'Cass, 2013).

Some other drivers of innovation include the increasing competition, changing market demand, increasingly complexity resources and interaction, and increasing environmental concerns. The change in the market demand is a crucial factor that enables the firm to perform better and get an edge in the sector (D'Alvano and Hidalgo, 2012). Overall, innovation is not only based on external factors but should also include internal factors like management capabilities (dynamic capabilities) (Randhawa et al., 2016).

## **2.14 Benefits of Innovation**

Innovation is often linked to the driving force that helps in incorporating positive changes into the organisation. Some of the major benefits of innovation in the performance of SMEs in Malaysia are, firstly, that it helps to enhance the firm's efficiency, accelerates productivity, product quality, and competitiveness, and accelerates the overall performance and profitability. Secondly, innovation helps in developing customer value by incorporating ways of meeting consumer needs and unexpressed needs or addressing existing market needs in a specific way. Innovativeness is associated with the firm's resource management technique; for example, innovative employees help to increase the productivity of the company by creating new and impressive products and getting an edge in the market (Davenport, 2005).

From the perspective of the organisation, innovations help in overall growth and profitability. Innovative managers encourage employees through their creative insight, while innovative employees perform better and develop unique products that help them get an edge in the market. Malaysian SMEs play a crucial role in

sustaining economic growth and developing the country's status by 2020. The innovation of the firm will influence firm performance and also contribute to economic growth of the country. According to Bashar Bhuiyan et al., (2016), their research on the effect of innovation drivers and strategies on food processing firm performance suggests that firms should improve their new products, sources and market in order to improve firm performance and sustain growth in coming future.

In today's global dynamic environment, innovation plays an important role in sustaining a firm's competitive advantage and long term growth (Spieth and Lerch, 2014). In terms of collaboration, innovation capability will benefit the ability to link external resources with internal capabilities and able to help attract qualified partners which influence firm performance (Wang et al., 2015).

## **2.15 Firm Performance**

The performance of the firm is defined as the assessment of productivity from the overall operations and activities of the business, as stated by (McLeod, 2006). Furthermore, firm performance also refers to the measurement of the firm's position in the marketplace and the firm's ability to meet the performance objectives and stakeholder requirements (Chiun Lo et al., 2016). The concept of the evaluation of the performance of the business is essential in determining how well the business has been able to utilize its assets for the purpose of generating a better return in terms of revenue and profitability. Therefore, in this respect, the use of financial information proves to be very effective in reflecting the overall performance of the business. The financial information is mainly collected from the financial statements of the business, which are published by business firms in their annual reports. Similarly, SMEs and their stakeholders also make use of such information for assessing the financial stability, associated risks and potential profits of the business. As mentioned in other research, judging of the performance of the business means measuring the results obtained by the business through considering the set of policies and other strategic decisions for the business (Bamiatzi et al., 2014; Boso et al., 2016; Lin and Lin, 2016; Mandal and Rao Korasiga, 2016; Tarutė and Gatautis, 2014).

Several research studies have shown how effectively the factor of firm performance determination can be done by using different types of tools for financial management. One of the most widely-used tools is ratio analysis (Santos and Brito, 2012). The determination of the financial facts is accounted as a reflector of the overall performance or the efficiencies of the business. It has often been mentioned by several researchers that the financial achievements of the business mirror the internal affectivities of the business.

The performance of the business is mainly judged for the purpose of assessing the efficiency and expertise with which the business is able to carry out the operations and the activities. The financial information mainly reflects the financial soundness and health (Gee, 2006). Therefore, in the case of SMEs also, it is vital to perform well in order to meet the objective of the growth and sustainability of the business. For the different stakeholders in the business, the determination of firm performance is vital in order to take the respective decisions.

In sum, a firm's performance can refer to two main areas: operational performance and financial performance (Saunila, 2016). Financial performance focuses on results (profitability) and operational performance focuses on the antecedents of the results (productivity or quality). This research only focuses on financial performance (sales growth, profit growth, profitability, return on sale (ROS), and return on investment (ROI)).

### **2.15.1 Sales Growth**

The concept of sales growth is accounted the primary measure used by the different types of stakeholders of a business. Those things reflect the efficiency of the business to utilise its overall assets and other potential factors to earn a better and enhanced return from the business, in shape of sales growth. As opined by (Nobes and Parker, 2008), sales are defined as the ultimate factor for which the business operations are being conducted by all business houses of the operations and activities. The factor of sales growth is, thus, considered to be one of the vital measures used for reflecting on the performance of the business overall (Chiun Lo et



al., 2016). The growth in sales not only reflects the potential for higher profits or cash flows within the business but, at the same time, is also used as a measure to assess the leadership of the business among the target group of consumers (Karim and Rutledge, 2004).

Thus, the sales growth of a business is also considered as a measure for determining the hold of the firm in the market. The sales growth is determined with the help of the mathematical formula used for the measurement of growth in sales of the business, and the difference between the sales of current year and the base year divided with the sales of the base year (Walter et al., 2006). The sales growth is considered another main measure by organisational managers to determine the efficiency of the marketing team as the other associated departments of the business (Paula et al., 2002). On the other hand, the other stakeholders also determine the growth in sales attained by the business over the stipulated time period, for the purpose of their respective interests. The growth in sales is also accounted as the reflector of the better performance of the business.

### **2.15.2 Profit Growth**

The growth in the profit is considered another performance indicator for judging the financial efficiency and proficiency of the firm in the sector. Businesses in the small and medium sector or in any other sector that can earn a growing profit or rate of return from the business are regarded as growing businesses (Tuan, 2015). This is also judged by the number of stakeholders to assess the financial health and future prospects of the business in the case of investment. The profit is the resultant amount of surplus earned by the business after meeting all of the expenditure from the amount earned as total sales (Boso et al., 2013). This is the residual amount of surplus earned by the business for its shareholders or ultimate owners (Paula et al., 2002). The profit earned is shared or retained in the business depending on the policy of the business. Thus, the growth in the profit is further considered one of the main factors for performance measurement and the share of individual profit that the shareholders can earn from the business. The growth in the profit is one of the important measures used for the determination of the financial growth and

soundness of the business. The growth in the profit is calculated by dividing the difference between the profit of current years compared with that of the previous year or the base year (Davidsson et al., 2009). Further, the difference in this figure is divided by the profit of the base year in order to determine the rate of growth in the profit earned by the business within the stipulated time period (Davidsson et al., 2009). The determination of the growth in profitability is considered as one of the main measures used by the organisational managers to determine the financial growth while, on the basis of the same, the managers are further able to plan expansion and other strategies of the business. Researchers like (Repo, 2009) believe that growth in profitability ensures the inclusion of growth factors in the business, leading to the further development of the firm in the sector.

The term 'profit' refers to excess income over the expenses of a business organisation that it achieves through the concurrence of business activities within a stipulated frame of time. The profit is the figure which is arrived at when the business has earned a certain amount of revenue through the sale of its designated products and services to its consumers by the end of a stipulated period and the expenses. When the difference is in excess of the revenue, it results in profit and the excess expenditure results in a loss in the business venture. The growth of the business enterprise is directly dependent on the growth of profits as then the company would be in a position to increase its operational capacity and also refurbish its technology and functional capacity to meet the rising demands of its consumers (Kim et al., 2013). The profit growth reflects the economic health of an enterprise and also reveals the openness towards embracing the culture of change and innovation within the enterprise to foster the sustainability and future growth of the enterprise.

### **2.15.3 Profitability**

The profitability is another main yardstick that is used to measure the business performance and this is also one of the main ratios that states the overall profitability factor of the business and the soundness of the same (Zhao et al., 2010). As mentioned by (Schaltegger et al., 2008), profitability determines the segmental analysis of the different types of profit in the business and, from the segmental

analysis of the profit, it is further possible to determine the efficiency. Because of that, the business has been able to control the costs or expenditure and retain a larger share of profit for the business as well as for its shareholders. The overall profitability is further segregated into three types of profit, which are mainly the gross profit, operating profit and net profit; thus, the overall profitability is determined by calculating the gross profit margin, operating margin and net profit margin (Halıcı and Erhan, 2013; Karabag and Berggren, 2014).

As opined by Schaltegger et al., (2008), these are the three main profit factors which are determined in order to throw light on the overall profitability of the business or the financial performance. The gross profit margin is determined by dividing the gross profit by the total revenue figure (Ben-Menahem et al., 2013). The other profit is the operating profit margin, which is calculated by dividing the figure for the operating margin by the total sales (Santarelli and Tran, 2013). This profit margin mainly reflects the ability of the business over the cost controlling factors or the soundness with which the business has been able to reduce its costs to maintain a higher rate of profit (Choe, 2004). The net profit margin is the ultimate profitability factor (Karabag and Berggren, 2014).

The ultimate profitability of the firm can be determined, as this is the final rate of return that the business has been able to restore to the business for the shareholders and other operations of the business. From the view of the shareholders and market investors, this rate of net return is used as the measure to judge the financial efficiency and growth factors of the business, on the basis of which they are able to take their investment decisions. The organisational shareholders view this as the performance indicators as, from the growth of the net profitability factors, they are able to ascertain the efficiency with which the business has been able to utilise its invested amount or the fund (Tuan, 2015).

#### **2.15.4 Return on Sales**

The return from the sales is the main measure that is calculated by the number of stakeholders to reflect how effectively the business has been able to utilise its

different resources and assets to generate a higher rate of sales, as opined by (Shim and Siegel, 2009). The sales return is determined from the return earned by the business from the use of the equity fund, the assets of the business and the other investments (Lahiri and Kedia, 2009). The sales value earned is thus analysed on the basis of segmental return. Therefore, from the determination of return on sales, the organisational managers and also the other stakeholders would be able to reflect on the efficiency of the business in generating higher and better returns (Jiang et al., 2016). According to Schwartz and Catanach (2007), the determination of the return on sales by SMEs is vital, inasmuch as the businesses would be able to ascertain the effectiveness of using the available firm's assets and other resources. For SMEs, regulating the firm's performance on a daily level is considered one of the essential factors in assessing the areas for improvement, which are instrumental for further growth (Champlain, 2003).

#### **2.15.5 Return on Investment**

The return on investment is another major factor used as a performance indicator of the firm to determine the proficiency of the business in effectively utilising the factors or funds invested in the business (Atkinson, 2007; Jiang et al., 2014). Atkinson (2007) argues that the return on sales is the rate of profit earned by the business from the utilisation of the overall investment made into the business. This measure is used by the shareholders and other investors and also by the organisational managers to evaluate the performance of the firm in generating a high rate of return. This is one of the main ratios calculated while judging the profitability and the efficiency of the business by managing the resources and the assets in the most effective manner (Satiman et al., 2015).

The efficiency of investments can be evaluated by measuring the return on investment (Jiang et al., 2014). The return on or the benefit of the investment is calculated by the organisation through deducting the cost of the investment from the gains of the investment and dividing it by the cost of the investment (Street and Santhanakrishnan, 2011). The proceeds that are arrived at by the sale of the investment of the interest constitute the return on investment. This measurement tool

is popular because of its simplicity and its wide horizon of applicability. In other words, when the return on investment is talked about it is basically the profitability of the investment that is the centre of the interest; for instance, two different products in the market can be compared on the basis of the gross profit that has been generated by both of them through their marketing costs. The same products can be compared by an analyst using different methods for calculating the return on investment; hence, the flexibility in its usage exposes it to high risks of manipulation by various users to suit their individual tastes and needs (Teeratansirikool et al., 2013). Therefore, understanding the different inputs is important before the utilisation of the metric of return on investment.

## **2.16 Concluding Remarks**

This chapter has attempted to discuss the various types of dynamic capabilities, innovation capabilities related to business relationship and their effectiveness on SMEs, particularly Malaysia. The aim of the literature review was to shed light on the importance of business networking for the performance of SMEs. It is therefore evident from the previous research that SMEs play a pivotal role in the country's economic condition. The principal contribution of the paper lies in evaluating the ways in which the business network, innovation and resource-based view assists in enhancing the overall firm's performance or impacts on the growth and profitability of SMEs. It has therefore been studied that innovation is another key driver that encourages the overall performance of the firm and enables it to earn maximum return on the investment. As far as the SME's performance in Malaysia is concerned, the firm must remain proactive and constantly create innovative products or incorporate innovative ways constantly to stay in touch with consumers and also ensure business through developing unique items and offering seamless services to the target audience. Based on the literature review, this study found a need to develop a conceptual model for defining the antecedents of SMEs' performance. The next chapter will further explain the theoretical and hypothesis development.

## **Chapter 3 : Conceptual Model and Hypotheses Development**

### **3.1 Introduction**

The previous chapter reviewed and analysed the literature on the subject under investigation. This chapter focuses on justifying the use of two theories: the resource-based view (RBV) and dynamic capabilities (DCs). Furthermore, it will also examine each hypothesis.

### **3.2 Identification/justification of the proposed combination of the RBV theory and DCs**

The rationale for selecting a theory as the best theory is not based on its contextual independence, but on its ability to reveal new facts which are transferrable to better practices (Wacker, 1998). Omar et al., (2017) suggested that there are two categories of theories, which are native theory (originated) and imported theory (borrowed from a different discipline). In this thesis, the RBV originated from the economic field and was then adapted to strategic management (Wernerfelt, 1984). Although dynamic capability was originally from the field of strategic management, however, it is now an extension of the resource-based view.

Resources and capabilities have long been recognised as valuable to a firm's competitiveness (Jeng and Pak, 2014). In line with this, this research employs a combination of the RBV and DCs to show this analogy (to achieve firm competitive advantage and related superior performance).

The resource-based view (RBV) is a popular theory that conceptualises the effect of heterogeneous intangible firm resources to ascertain and sustain firm performance (Aminu and Mahmood, 2015; Barney, 1991, 1986; Bridoux, 2004). RBV postulates that all companies within the same industry share the same resources and have the same possibility of achieving a sustained competitive advantage (Barney, 1991). This means that all firms can implement their strategies using the available resources to improve their performance, as they possess everything in common. As

a result, the source of performance is for firms within the industry to regulate the heterogeneous intangible valuable, rareness, inimitable and non-substitutable resources to use in employing strategies differently from their rivals that are also challenging to duplicate by current or potential contenders (Barney, 1991). However, this approach is obsolete in the explanation of how and why some firms do better than others in the fact-changing environment (Eisenhardt and Martin, 2000; Pinho, 2011; Sardana et al., 2016).

Furthermore, the RBV has also been criticised for being static and not taking into cognizance the dynamics of the changing environment (Drnevich and Kriauciunas, 2011; Wilden et al., 2016); that is, a volatile environment. The organisational resources do not directly influence the firm's performance but, in combination with dynamic capabilities, they can achieve superior performance in the long-term (Essex et al., 2015; Wu, 2006). Consequently, to complete and complement the loop-hole of RBV, dynamic capabilities play a role in adapting and exploiting opportunities, and determining the source of the firm's superior performance in an unforeseen market condition (Teece and Pisano, 1994; Teece et al., 1997; Zhou and Li, 2010).

Additionally, dynamic capabilities expanded the resource base approach to deal with this situation (Nieves and Haller, 2014; Pinho, 2011). Dynamic capabilities stress that successful firms are those that indicate reaction on time, fast and flexible innovation together with management capabilities to coordinate and redeploy the internal and external competencies efficiently. The RBV focuses on the identification and choice of resources, but dynamic capabilities focus on resource deployment to face the volatile environment and adapt to the changes in technology and customers (Sang, 2016). Hence, the combination of these theories brings a more robust and comprehensive approach to the firm level analysis (Sardana et al., 2016).

The DC theory indicates that the ownership of resources is a necessary but inadequate condition for value creation. However, a combination of the firm's capability to develop and deploy the resources, instead of resources in isolation, will help to create a competitive advantage and remarkable performance (Lisboa et al., 2015).

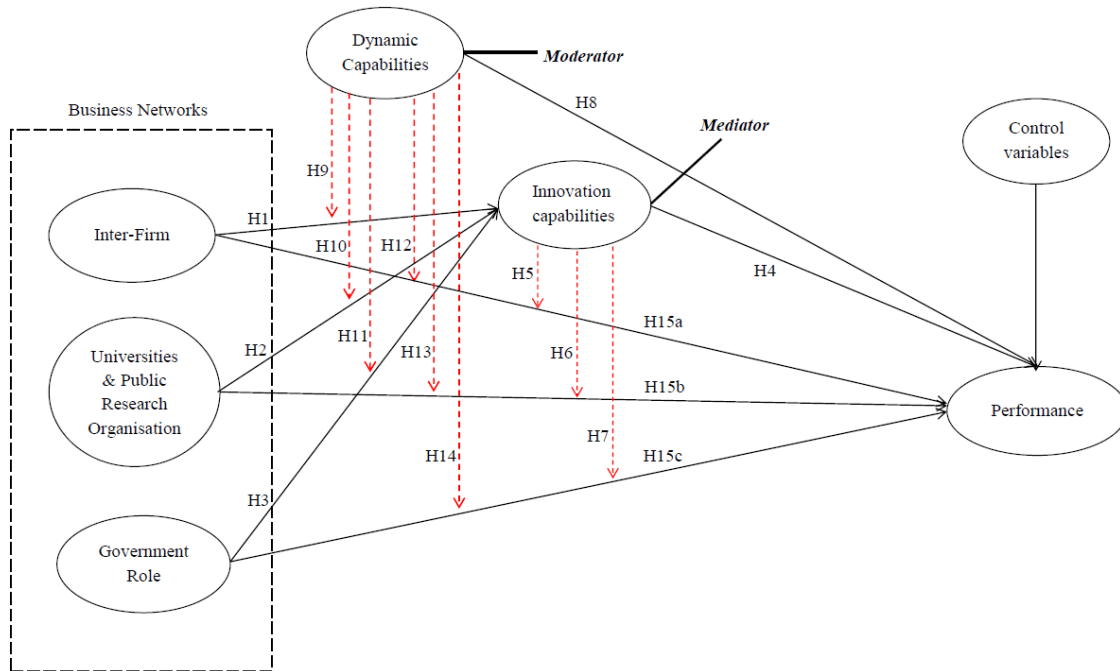
Unlike the RBV, that is designed on the platform of heterogeneous and inimitable resources, DCV stresses that the essence of proficiency and capabilities is rooted in the organisational and managerial process devised by the resource position of a firm and shaped through their route (Aminu and Mahmood, 2015). Consequently, in such a turbulent business setting in emerging markets, firms deploy not only the valuable resources but also the need for the dynamic capability to reconfigure such resources in a way that will avoid ease of replication or imitation by current or future competitors (Aminu and Mahmood, 2015).

Furthermore, to survive in the volatile market, firms should be able to succeed in selecting the internal and external resources and developing new capabilities (Chang et al., 2015; Singh et al., 2013). Chien and Tsai (2012) argue for the need for dynamic capabilities by the firm to reconfigure their resources to gain a competitive advantage over their rivals.

However, despite all of the arguments outlined above, these theories have been recognised as complementing each other in ascertaining the firm's sustained competitive advantage and superior firm performance (Chang et al., 2015; Teece and Pisano, 1994; Teece et al., 1997). Other scholars argue that the RBV can influence the sustainable competitive advantage because it is inseparable, unique, synergistic and hard to duplicate (Nordqvist, 2005), while Wilden et al., (2016) suggested using DCV and the RBV as a combination appropriately to achieve superior performance.

Furthermore, by combining these theories, the dynamic capability view is related to conferring a competitive advantage by adding the unique values of the resources of the firm to the strategic change, especially in the rapidly changing technological industries (Fainshmidt et al., 2016). Consequently, this research develops the model (figure 3.1) based on a combination of these theories.



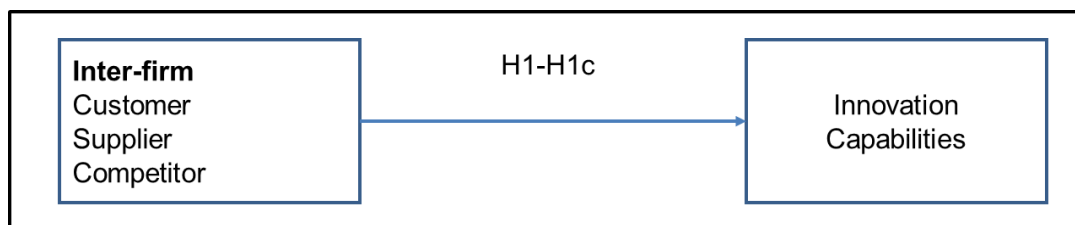


**Figure 3.1: Conceptual Model**

### 3.3 Conceptual Model

Based on figure 3.1, the conceptual model shows the relationship business network, dynamic capabilities and innovation capabilities in impacting on firm performance. It also presents the path of hypotheses H1 to H15. The details of their relationship are explained in section 3.3.1 to 3.3.9.

#### 3.3.1 Inter-firm and Innovation capabilities (sub from model)



**Figure 3.2: Relationship between inter-firm and innovation capabilities**

Figure 3.2 shows the relationship between inter-firm (elements of the business network) and innovation capabilities. The network is structured as a set of pathways for achieving and creating resources or accessing customers, as well as a lens through which managers view and make sense of business opportunities. This conceptualisation of the network has been said to call for a more reactive strategy by companies in order systematically to examine and learn about the business of network partners which is associated with each other (Håkansson and Ford, 2002). This is not to say that the firm needs to wait for others to do (or direct) their business. However, managers need to communicate with their various business partners about their current understanding of the very ambiguous actual aims and objectives of the firm's goals and interests of others and not only the actual aims and objectives they set for their firm (Snehota and Håkansson, 1995), which means that precisely how the actors perceive each other's roles and interests in the network may have implications for their next actions and the development of the network (Halinen and Törnroos, 2005).

Earlier studies focused on the way in which the activities in a formal network scheme shape and show that the business of the participating firms is not surprising, so firms usually think of a network as a channel for gaining access to the resources of others or customers (Munksgaard and Medlin, 2014; Snehota and Håkansson, 1995). As a result, studying the issue from the perspective of resource-based theory (RBT) is quite new, since the RBT concentrates mainly on the positive contexts of resource sharing and also building inter-firm collaborations. Earlier models started with an analysis of the partners' personal resources and competencies, which are connected to their particular experiences, learning, awareness and personal attitudes.

Particularly, Della Corte's (2009) model concentrates on affiliated issues as the main reason for network failure. Consistent with Della Corte and Aria (2014) on network failure, or unsuccessful network development, it is pertinent to analyse the personal attitudes and backgrounds of the partners. For Barney (1991; 1986), resources and competencies have to be valuable, rare, difficult or costly to imitate and used in organisational terms to generate a sustainable competitive advantage. If the resources found are not more valuable, they can be labelled as an infirmity.

Accordingly, the personal approach of the partners faces problems of non-valuable resources for their cooperation and a lack of organisational factors to use those resources appropriately, which overestimates the risk of failure in their relationship. These aspects usually depend on specific variables. These include the personal attitudes and moral approaches of the leaders of the partnership, their background in terms of history and reliability, the parties' experience with inter-firm collaboration, their awareness of the need for collaboration through the network and the other parties' resources and competencies (Della Corte and Aria, 2014). Tehseen et al., (2015) highlight the importance of entrepreneurial competencies for business success through external integration. However, based on their research, Della Corte and Aria (2014) believe that there is a need for cooperation in both areas.

Furthermore, the leaders' characteristics of the firms and related to the resource-based view, they argue that personal attitudes and previous experience can affect the network's failure and performance. However, Martin-Rios (2014) argues that participating in inter-firm knowledge networks appears to enhance legitimacy and prestige between firms, developing trust and reciprocity within collaborative relationships, and is an effective tool for obtaining human resource management knowledge. It shows that the company should focus both on the past and on external collaboration to gain new information and experiences. Aarstad et al., (2015) also argued that the company's ability to innovate depends on sourcing new, external factors, diversity and non-redundant information. Besides that, they also stated that the factors for increasing firm performance depend on quality, flexibility and also cost priority, which is related to external collaboration.

Consistently, collaborating with external companies provides companies with more flexible access to valuable knowledge or resources. It can contribute to new product development and innovative firms accentuate the value of cooperation with external actors to procure complementary knowledge or resources and reduce the risks of development when products are increasing in complexity and novelty, but firms have limited internal resources (Hsieh, 2013). This is because the different natures and contexts of other inter-firm relationships may be associated with the various types of new service projects in various service sectors when firms cooperate with different actors to develop new services

There are many reasons why companies put collaboration into practice. Several authors (Barratt, 2004; Camarinha-Matos et al., 2009; MacCarthy and Jayarathne, 2012) have identified the different advantages of working with other organisations, such as economies of scale, better and faster responses to changes, and the cost-sharing that is associated with certain activities (product development, transportation, warehousing). Besides that, companies may also choose to collaborate with different partners to reduce the risks and uncertainty. Information sharing among the network members provides common knowledge that leads to better planning decisions and, consequently, less risk associated with back orders, lost sales (Cannella et al., 2011; Lehoux et al., 2014) and support (Hsieh, 2013).

Not surprisingly, firms think of a network as a way of gaining access to the resources of others or customers (Snehota and Håkansson, 1995). However, Munksgaard and Medlin (2014) highlight the very different mixture of interests that firms bring to their engagement in a formal network scheme. Furthermore, through inter-firm, the company can also improve its competency. Hall et al., (2011) suggest that a competency assessment process is linked to two types of competencies: hard and soft. Hard competencies refer to the ability of an organisation to perform activities or tasks aimed at achieving a specified number of outcomes, while soft competencies refer to a general aptitude to perform behaviour such as the ability to exchange knowledge. These competencies should both be considered when selecting the right partner.

The complex net of inter-organisational communication paths links the firm with its technological environment, manufacturing and marketplace (Rothwell, 1991), thereby providing opportunities for and restrictions on behaviour via inter-related relationships (Brass et al., 2004). On the other hand, Kao (1993) suggested that “guanxi” has a direct effect on the market expansion and sales growth of Chinese firms by influencing the resource sharing in social, economic, and political contexts in inter-firm transactions. Luo (1997) also found that “guanxi” is positively linked to the performance of foreign-funded enterprises. However, the major disadvantages of “guanxi” are perceived to be the additional cost and time that this approach involves (Fock and Woo, 1998). A great “guanxi” network is an essential, but not ample, condition for business success in China (Tsang, 1998). Nevertheless, the attention

devoted to networking and various environments reflects various real-world scenarios where inter-firm cooperation is the most important and leading key to the successful performance of both the individual enterprises and the whole network (Ghisetti et al., 2013). As mentioned earlier, firms normally pursue inter-firm cooperation to tap into sources of know-how positioned outside the boundaries of the firm. This helps to achieve fast access to new technologies or new markets, benefit from economies of scale in joint R&D and production, share the potential risks for activities that lie beyond the scope or capabilities of a single firm and improve firm performance (Fischer and Varga, 2002; Zeng et al., 2010).

Nevertheless, collaboration between companies is complicated, and many barriers may be difficult to surmount. Lehoux et al., (2014) argued that the theoretical results show significant benefits which mean that the structure of the collaboration and some coordination mechanisms must be designed carefully to achieve better performance for the company. Nevertheless, the partners were not necessarily ready to modify their way of doing or to share sensitive information to attain these benefits. Additionally, they observed that partners had difficulty in evaluating the fixed costs associated with the implementation of collaboration as well the savings that may be generated from a better coordination of operations.

Some benefits could be harder to examine and to share, such as faster delivery or increased geographical coverage. Also, collaborations are rarely fixed in time. The environment changes continuously as well as the parameters considered when building collaborations and establishing coordination mechanisms. Therefore, this dynamic involves adjusting the relationship when needed.

It is argued that inter-firm collaboration should be established only if the business entities will work together, are willing to invest time and effort and if the benefits expected are greater than those that could be obtained individually (Audy et al., 2012). If collaboration is identified as the best way to increase long-term competitiveness, a company should then follow certain steps to create, manage and maintain the relationship correctly. This involves building the collaboration by choosing an appropriate partner and establishing a legal framework of the relationship. The partnership also involves implementing different coordinating

mechanisms to synchronise the network activities and improve the collaboration performance. Furthermore, since the collaboration could generate sizeable benefits, it becomes necessary to measure the collaboration performance and implement incentives to share these advantages fairly, so the company should find another partner if the collaboration proves to be less profitable than anticipated.

Along similar lines, Yan and Dooley (2014) found that the inter-firm and project-level antecedents of collaboration between buyer–supplier qualities might affect the new product development project outcomes, especially in terms of design quality and project efficiency. To grow more competitive, the inter-firm relationship becomes a driver of competitive advantage in a business environment (Mitrega and Pfajfar, 2015). Furthermore, the innovation-generating business network is normally related to other actors. For instance, universities, institutions and company-based research organisations influence emerging businesses and technological fields. These evolve into inter-firm networks with the aim of establishing a dominant technological design (Möller and Rajala, 2007; Möller and Svahn, 2006).

Frequently, the real innovative partners in inter-firm collaboration are customers, suppliers, manufacturers, and competitors. Nevertheless, this kind of literature solely concentrates on the dyad alliance together with the client, supplier and competitor. Various researches demonstrate that collaboration along with its customers and suppliers may enhance innovation for SMEs compared to their competitors and rivals (Cooke et al., 2000; Diez, 2002; Doloreux, 2004; Kaufmann and Tödting, 2001; Pulles et al., 2014). Likewise, (Kaminski et al., 2008) revealed that collaboration with suppliers and customers for SMEs might encourage new product development. Fischer and Varga (2002) utilised a current postal survey, providing data on innovation and inter-firm relationships, and found that networking activities have been based primarily on vertical relationships (customer, supplier and producer, service provider networks) rather than on horizontal linkages (producer networks, industry-university linkages). The existing, relative reliable innovation-linkages are about inter-firm relationships, the vertical relationships among customers, suppliers and product or service providers.

Some researchers have focused on the particular relationships amid cooperation with customers or clients as well as the innovation of companies. Fritsch and Lukas (2001) mentioned these that innovative endeavours, intended for accomplishing product innovation, were associated with client collaboration. Tether (2002) at the same time stated that cooperation with clients could be advantageous when the intention was to develop more novel or complicated innovations. Fischer and Varga (2002) mentioned that customer networks represented the most frequent form of inter-firm cooperation. Additionally, Füller and Matzler (2007) revealed that virtual customer integration, whereby customers were virtually incorporated into a company's innovation process, might provide valuable input for new product development. Thus, the advantages offered by clients and customers as sources of information propose that they can be used more regularly simply by the firms when the innovations under development possess a higher degree of uniqueness (Amara and Landry, 2005).

Customers have always been considered to be the sources of new ideas (Cooper, 1976; Von Hippel, 1977). Cooperation with customers is frequently associated with the determination to identify the requirements, needs and choices of customers, thus providing the right way to access innovation opportunities. Clients who participate in the innovation process also reduce the risk linked to the subsequent introduction of the innovation to the market (Von, 1988) and have differentiated consequences according to the phase of the new product development process in which they are involved (Gruner and Homburg, 2000). Involving customers in the innovation process has been specifically demonstrated to be crucial in services (Alam, 2002; Ennew, 1996; Kelley, 1992; Martin and Horne, 1995; Oliveira and Von Hippel, 2011; Von Hippel and Riggs, 1996). The ideas that they generate tend to be more innovative than those that are internally generated (Kristensson et al., 2002). Mention and Asikainen (2012) argue that co-operating with market players is resource-intensive and therefore significantly influences innovation intensity. Customers may express their needs and preferences and generate ideas which are more innovative than internal ones, which usually make their implementation more challenging. Additionally, the process of extracting tacit knowledge from the customers themselves requires quite a lot of effort. Firstly, it requires developing the right incentive mechanisms to enrol clients in the idea generation process. Secondly, it

necessitates using adequate analytical instruments (Kristensson et al., 2002). Finally, the conversion process involving tacit knowledge into explicit knowledge is a difficult task (Nonaka and Lewin, 1994).

SMEs have insufficient financial resources, technology, skills and knowledge (Hashim, 2007). Hence, their business success and stability appear to be strongly determined by more co-operative interactions and the capabilities of their suppliers (Luke and Bill, 2004; Mudambi et al., 2004). The close relationships with suppliers complement the deficiency of SMEs' resources and help SMEs to gain access to innovation ways, processes, technologies and materials (Koh et al., 2007; Pressey et al., 2009). Small companies utilise supplier interactions to enhance their innovation in the production and designs processes, minimise the supply shortage risk and fulfil unpredicted high customer requirements by developing external and internal capabilities and expertise (Ellegaard, 2006; Fawcett et al., 2008).

Hence, some researchers concentrate on cooperating with suppliers in the innovation of firms and also indicate that cooperation with suppliers allows firms to minimise the risks and lead times associated with product development while boosting flexibility, product quality as well as market adaptability (Chung and Kim, 2003). Particularly, suppliers are valuable sources of information to develop or enhance products (Nieto and Santamaría, 2007). The business development and innovative endeavours of a firm are frequently rooted in a network effect (Gadde et al., 2003; Hakansson and Snehota, 1989; Hakansson, 2014; Powell et al., 1996). Where the development of strong supplier relationships is essentially intended for drawing upon complementary resources (Gadde and Håkansson, 1994; Gadde et al., 2010). The quality of the supplier relationships may also affect the effectiveness of activity coordination (Yan and Dooley, 2014). Nevertheless, cooperation with suppliers is frequently linked to efficiency and input quality improvement (Revilla and Villena, 2012). Supplier participation in the innovation process leads to a faster development process (Gold, 1987; He et al., 2014), minimises the development cost and time-to-market as well as affects product quality and cost (Clark and Fujimoto, 1989; Clark, 1989; Lorenzoni, 2010). Suppliers are also a source of specialised knowledge and skills, which might adequately complement the capabilities of the firms (Un et al., 2010). Firms can rely on the particular specialised knowledge of their



suppliers to build better products (Takeishi, 2002) in addition to gaining new competencies. The research on supplier involvement provides evidence that supplier involvement is positively connected with design innovation, a faster development process as well as increased financial performance (Menguc et al., 2014). Other studies find that supplier integration contributes to enhanced performance outcomes using improved quality, technological enhancements, and minimised costs and cycle times (McDermott and Handfield, 2000). Also, suppliers contribute to the appearance of incremental new products because they recognise their particular materials well, and are frequently consulted for that reason by their particular client firms (Crawford and Di Benedetto, 2011).

Nevertheless, with regards to radical innovation, collaboration with suppliers over product design and other new product efforts may offer some new knowledge. However, this knowledge is usually narrower than other types of knowledge because suppliers operate within the same industry. Likewise, other research indicates that for new products, supplier participation in design and other early new product activities might not impact or might even reduce new product performance because of coordination necessities (Clark, 1989). Suppliers may potentially discourage manufacturers from developing substantially new products to protect their particular investment in existing resources and skills (Lau et al., 2010). The majority of research finds that the involvement of suppliers in the design process has a positive impact. Notwithstanding the fact that supplier knowledge is narrower than other types of knowledge, this knowledge is more easily accessed than other types of collaboration and is frequently more beneficial because suppliers possess specialised expertise that may be unavailable to the firm. According to Menguc et al., (2014), supplier involvement in design seemed to be beneficial to new product performance under both high incremental and radical innovation capability. Similarly, He et al. (2014) revealed that supplier integration had positive direct effects on new product performance.

Competitors typically strive for a market share without engaging in collaborative endeavours, which means that they are seeking to develop their market share alone. Today, nevertheless, the relationships between competitors are far more complicated, and markets increasingly illustrate network structures as firms realise

that a variety of competition and cooperation is the ideal way forward (Ganguli, 2007). Rather than battling with each other amidst intense competition, competitors today frequently divide themselves into clusters and partnerships (Bougrain and Haudeville, 2002; Ganguli, 2007; Levy et al., 2003). This particular hybrid behaviour, which consists of both elements of cooperation and competition, is known as cooptation (Brandenburger and Nalebuff, 1995), and has become increasingly popular in recent years (Gnyawali et al., 2006; Medlin and Ellegaard, 2015; Ricciardi et al., 2016).

Cooptation is another cooperation mode. Cooptation (Nalebuff et al., 1996) refers to the relationship between firms that, at the same time, involves both competition and cooperation. The rationales for cooperating with competitors are threefold: the willingness to share the risks and costs of innovation activities, the quest for a synergistic impact through the combination of resources (Das and Teng, 2000; Huang et al., 2009) and the compliance with the new regulatory restrictions or even industry standards (Nakamura, 2003). Even though competitors could be vital sources of innovation and organisational learning (Afuah, 2000), they also focus on the same markets and possess knowledge and resources that are, or at least appear to be, similar. This kind of cooperation to perform well subsequently implies the development of complicated relationships and mechanisms to secure the respective knowledge base while encouraging knowledge exchange between competitors. Protecting the respective knowledge base is undoubtedly even more challenging in knowledge-intensive business services, as they are highly dependent on skilled individuals, who usually represent a highly mobile workforce.

According to Ferreira et al., (2015), their research on Inter-Firm Cross Border Cooptation between Portuguese and Spanish firms shows that there is positive relationship between cooptation with competitors for the Portuguese firms regarding various types of innovation that enhances firms performance. However, Spanish firms negatively approved cooperation on innovation. Regarding the financial results, there is an impact for both countries. Because of the cooperative and competitive nature of cooptation, one of the significant advantages is that firms gain access to additional know-how, skills, and resources while, they can and should protect their property simultaneously (Bouncken and Kraus, 2013). Cooptation enables risk

sharing and the creation of reliable contacts (Jiang et al., 2016). The disadvantage of cooperation is the high risk of opportunism (Levy et al., 2003; Zerbini and Castaldo, 2007) in the case where competition partners share or absorb knowledge in the future about their purposes.

Ritala and Hurmelinna-Laukkanen (2009) differentiate three main motives for cooperation. Firstly, companies that participate in cooperation desire to increase their current market size or build a new market. They share their resources to improve their current products and services or create new ones. Secondly, companies aim to enhance their resource utilisation, minimise their risk, and share costs. Thirdly, protecting their market shares and enhancing their competitiveness might be a motive for cooperation. Through aligning individual interests and bundling forces, cooperating firms can protect and possibly even improve their competitive position in the market and so beat the competition coming from strong third parties (Gnyawali et al., 2006; Gomes-Casseres, 1994).

Carayannis and Alexander (1999) emphasise the importance of cooperation for knowledge-intensive, dynamic, and complex fields. For instance, technology industries are allowed access to knowledge and resources, particularly if the players are SMEs (Gnyawali and Park, 2009). These kinds of industries change rapidly, and the uncertainty regarding their future is high (Ganguli, 2007). Cooperation provides the opportunity to keep up with these changes more easily, share valuable extra knowledge, and cushion the blow against the risks associated with an uncertain future.

However, Nieto and Santamaría (2007) indicate that cooperation is an inappropriate strategy for creating highly new innovation. Gnyawali and Park (2011) examine most successful firms and suggest that cooperation increases innovation because of the additional cooperation among other businesses and group-to-group competition. In these situations, consumers benefit from multi-feature goods at reasonable prices arising from economies of scale, additional resources, integrative technologies, minimised imitation, and intensified competition at the group level. Perks and Easton (2000) presume that less tension occurs when cooperators compete against third parties.

Coopetition eventually results in more technological diversity, as formerly rival firms share their knowledge, technologies, and additional resources (Quintana-Garcia and Benavides-Velasco, 2004). Bouncken and Fredrich (2012) indicate the positive effects of coopetition on innovation and competitive performance. Oliver (2004) presumes that coopetition should occur during the early, more exploratory phases of innovation processes that require novel solutions. Nieto and Santamaría (2007) claim that coopetition is only rational while performing basic research and establishing standard setting. In some cases, coopetition is the least profitable strategy for innovation when the particular innovation is of a highly unique nature and highly influential for the maintenance of a competitive advantage, while opportunism may cause severe damage to the coopetitors (Bouncken and Kraus, 2013).

However, Lööf and Heshmati (2002) argued that domestic coopetition negatively affects innovation input while it boosts innovation output. Likewise, information sourcing from competitors positively influences innovation output in their sample of manufacturing firms. Griffith et al., (2006) propose that information sourcing from competitors has a lower impact (in magnitude and significance) than sourcing from customers and suppliers regarding product and process innovations respectively. According to Masso and Vahter (2008), information sourcing from competitors positively impacts process innovation but has no significant effect on product innovation. (Raffo et al., 2008) found that sourcing information from competitors significantly enhances R&D investment in France and that the influence of information from competitors was a major source of enthusiasm to innovate products in four countries.

Likewise, competitors have also been revealed to have an adverse effect on both the incidence of product innovation and the number of new products in manufacturing firms (Un et al., 2010). Regarding services, previous studies have suggested that cooperating with competitors may support imitation, which consequently leads to a new concept for the firm instead of new to the market innovation, rather than targeting breakthrough innovations (Mention, 2011). Competitors normally hold a similar pool of resources and, in knowledge-intensive industries, tend to be dependent on a limited set of highly skilled and talented individuals. Such firms are characterised by

their particularly high turnover rates, which propose high levels of mobility among the labour force between them. In manufacturing industries, it might appear reasonable to argue that different knowledge bases are necessary to achieve a high degree of innovation novelty (Un et al., 2010). In contrast, the (relative) closeness between the respective knowledge bases, rather than their differences, may be beneficial for innovation in services, as it could deliver quicker returns while necessitating more restricted investment endeavours compared to other cooperation arrangements.

In relation to competitors, the intention to cooperation with them is based on a desire to carry out basic research and establish standards (Tether, 2002). Hence, firms have a tendency to cooperate with their competitors whenever they share common problems that are beyond the competitor's strength; for instance, pre-competitive research programmes and co-production arrangements (Tether, 2002). In general, cooperation with competitors for SMEs may encourage their innovation performance and also firm performance.

Also, empirical evidence suggests that the inter-firm relation is an important locus of innovation and company performance. (Mol and Birkinshaw, 2009) argue that better access to external knowledge sources positively impacts management innovation. (Tether and Tajar, 2008) also claimed that the organisational model of the process, with the two well-established innovation ways of process and product innovation, show that the organization-cooperation model is not only the most prevalent innovation mode but also the most highly associated with non-technological innovation.

Moreover, Lefebvre et al., (2015) indicate that cooperation with customers matters in terms of product innovations although cooperation with competitors is far more important for organisational innovation. In sum, sufficient evidence supports the inter-firm relation as an important locus of innovation that leads to a firm's performance. Therefore, the question is: does inter-firm cooperation (with partners including customers/client, suppliers, and competitors) have a positive impact on the innovation and performance of SMEs? This leads to the following hypothesis:

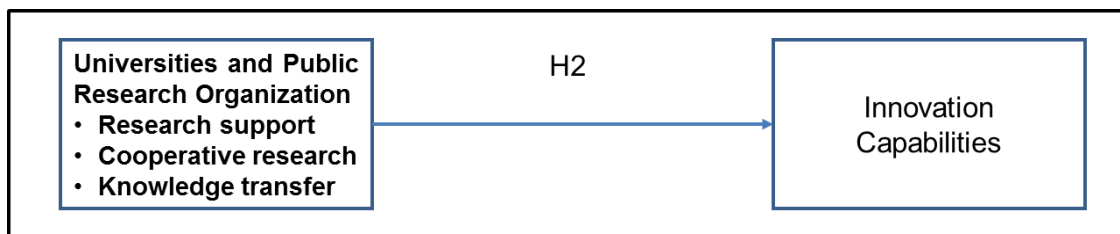
**H1:** Inter-firm collaboration for SMEs is positively associated with their innovation capabilities.

**H1a:** Collaboration with customers for SMEs is positively related to their innovation capabilities.

**H1b:** Collaboration with suppliers for SMEs is positively related to their innovation capabilities.

**H1c:** Coopetition with competitors for SMEs is positively related to their innovation capabilities.

### 3.3.2 Universities and public research organisation and innovation capabilities



**Figure 3.3: The relationship between universities, public research organisations and innovation capabilities**

Figure 3.3 shows the relationship between universities and public research organisations and innovation capabilities. Universities and public research laboratories are treated as institutions that can play a part in generating a wealth of knowledge and most benefit the related firm (Metcalf, 2010). Furthermore, university and public research organisations contribute to the knowledge based on innovation through technology transfer offices, setting up business parks, the formation of spin-off companies, and other programmes related to “valorisation”, which is a benefit to the private sector (Jongbloed, 2015; Jongbloed and Zomer, 2012). The role of Universities and Public Research organisations (PROs) as the drivers of innovation resulted in the European Commission (EC) expressing a desire to strengthen the interaction between universities and the business world (EC 2011). This interaction will strengthen the competitive economy in Europe. In particular, technological innovation is considered a key ingredient for economic and social development. Therefore, universities can help in strengthening economic activities around the world. Furthermore, the adoption of open innovation by firms is most beneficial, which is defined as ‘the use of purposive inflows and outflows of

knowledge to accelerate internal innovation and to expand the markets for the external use of innovation, respectively' (Chesbrough, 2006: p. 1).

The aim of each organisation is to reduce costs and to maximise profit. To achieve this, the role of universities and research organisations is vital in generating, sharing and transferring knowledge to society. Collaboration with them can support the organisation to realise the aim of the company. Firms continuously improve their knowledge and use new technologies due to the peculiarities of their competitive environments (Bigliardi et al., 2015).

Accordingly, scholars and policy makers have accentuated the importance of collaboration between public research organisations and SMEs to promote the process of innovation for the development of both the organisation and the region (Johnston et al., 2008; Kodama, 2008). This collaboration plays a vital role in building the knowledge-base and developing a sustainable competitive advantage for small firms (Masiello et al., 2015). Firms are encouraged to find external resources to fund new resources or strengthen the existing ones. This collaboration can prove mutually beneficial and is most relevant to SMEs as they lack the internal resources necessary to compete, especially on innovation capability (Masiello et al., 2015).

Moreover, the collaboration between firms and public research organisations (universities and government/federal research organisations) has attracted considerable attention because of the efficient management of intellectual property at the firm level and positive contribution to the economy (Jeong and Lee, 2015). Furthermore, they also provide rich resources for technology innovation. Technology licensing by public research organisations will benefit firms. This is a more profitable and faster way to grow the business, by licensing the patents, copyrights, designs, trademarks, and other intellectual property to others.

This collaboration is also beneficial to universities. Both the staff and students have access to a source of complementary expertise and equipment. Other benefits include accessing new, interesting and relevant research, building a relationship and creating new jobs for students – a source of earnings (Jongbloed, 2015; Prigge,

2005; Venniker and Jongbloed, 2001). Furthermore, it also enhances the universities' teaching objectives and research and knowledge transfer, as well as potentially generating additional earnings. Even though it is not an easy way method for collaboration, the benefits to both parties make it worth pursuing.

Today's view of innovation is that it is a much more interactive process and uncertain as innovators create a broad range of collaborators and knowledge resources (Landau and Rosenberg, 1986; Utterback and Abernathy, 1975). Networks and the flow of technology between universities, public research organizations, enterprises and people play a vital role in an innovation system (innovation ecology), leading to a knowledge-based economy (Jongbloed, 2015). However, collaboration between universities and public research organisations with businesses only occurs when it is in their mutual interest. In doing so, the firm requires an absorptive capacity to realise knowledge transfer from universities and public research organisations (Jongbloed, 2015).

The interaction between universities and public research organisations with firms is referred to as 'technology transfer' (identifying, exploiting, protecting, and defending intellectual property) who concern on the management of intellectual property (IP) produced by universities (Jongbloed, 2015; OECD, 2004). Furthermore, universities also provide technology transfer offices (TTOs) for assessing inventions, licensing IP, developing and funding spin-offs and other start-ups, and patenting and approaching firms regarding contract-based arrangements.

The mechanisms and manifestations of knowledge transfer between universities and private actors include networks, consultancy, continuous professional development, contract research, licensing, research collaborations, and spin-outs, as well as regular teaching activities (Holi et al., 2008). A firm which is seeking external resources can benefit from collaboration with universities and public research organisations, as they have incubator units, science parks, TTOs, on-site commercial research institutes and small business development centres (Jongbloed, 2015).



An intense interaction between universities and private companies can lead to the blurring of the sectoral boundaries established regarding responsibility, supervision, behaviour, and results, not least by pointing to the increasingly apparent connection between the views on technological innovation and society (Jongbloed, 2015). Moreover, the collaboration between them, will increase their scientific productivity and even not prove detrimental to the academic freedom of university researchers (Zomer et al., 2010; Zucker and Darby, 1998). Although Jongbloed (2015) argues that this collaboration is a more challenging process, especially for universities, to balance serving customers and putting their academic research into practice, the benefits to both parties strengthen the relationship.

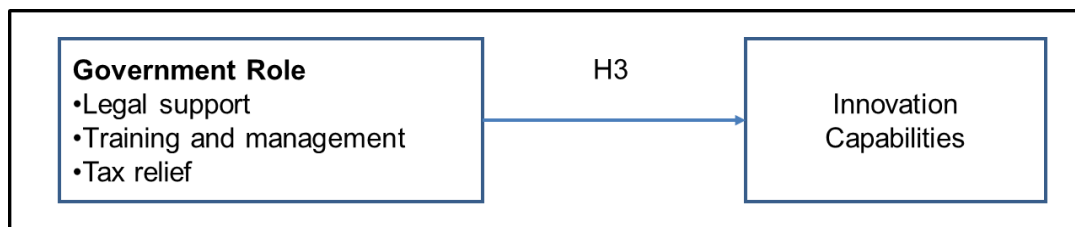
In terms of patenting, the collaboration between universities and public research organisations (Laplume et al., 2015) proves that the process is easier and faster with regards to invention and patent filing speed. Jeong and Lee (2015) argue that the differentiation between the universities and public research organisations with regard to inter-firm technology transfer is related to the licensing transactions regarding their timing patterns.

As aforementioned, PROs plays a key role in the system of innovation, as recognised in the literature on knowledge production (Lee and Miozzo, 2015). There is an increase in university-industry collaboration, which can consist of a variety of activities, from the direct commercialization of academic research as a university spin-off company and the licensing of university patents held and technical consultancy by the university to solving certain technical problems independently. Through joint research with a company or creating a research consortium aimed at solving problems associated with the wider industry, the entire group of businesses/members may benefit from the research results (Lee and Miozzo, 2015). However, some theoretical and empirical studies stress the failure of collaboration between PROs and firm due to the PROs epitomising 'the dark side of the moon', as SMEs do not form a homogenous group. SMEs are unable to justify their internal needs or find solutions to fulfilling them through external collaboration. Reluctance to invest (money or time) in PROs, a low absorption capacity for external knowledge, considering innovation unimportant, and SMEs only react to specific market opportunities or competitive challenges are barriers of successful in collaboration

(Buratti and Penco, 2001; Masiello et al., 2015; Patton, 2013). Also, trust becomes a more important factor for the success of the relationship which is consistent with other studies of SMEs (Bernardos Barbolla and Casar Corredera, 2009). Overall, the evidence points to the positive impact of collaboration between public research organisations and firms over innovation capabilities, which leads to the hypothesis:

**H2:** University and Public Research Organization collaboration for SMEs is positively associated with their innovation capabilities.

### 3.3.3 Government role and innovation capabilities



**Figure 3.4: The relationship between government role and innovation capabilities**

Figure 3.4 shows the relationship between government role and innovation capabilities. Small and medium-sized enterprises (SMEs) are essential not only in developed countries but also in developing countries since they form a key source of materials, ideas, processes and services that huge companies do not (Kraja et al., 2014). SMEs are significant contributors to the creation of new jobs and the growth of the economy. Therefore, the government plays an important role in protecting the firm, creating facilities for business and leading them to operate in the right way because contemporary global economy deals are SME-related or impacted by the economic crisis.

The government acts as a policy maker who initiates and controls the regulation or policy and either gives pressure or pleasure to the firm, thereby affecting firm performance (Chan et al., 2016). The importance of government intervention rests mainly in the potential contribution to SMEs' economic performance, while new technologies minimise the importance of the scale of economies in various activities (Doh and Kim, 2014). Furthermore, Nimlaor et al., (2014) show that one of the

factors that influences business performance for SMEs is government policy. However, the common issues that SMEs experience are, for instance, “lack of finances, difficulties in manipulating technology, constrained managerial capabilities, minimal efficiency, as well as regulatory difficulties”, that has become more severe in this new knowledge-based economy (OECD, 2000: p. 1). As a result, each government has policy initiatives that enhance access to financing and information infrastructures for SMEs, and also provide SMEs with regulatory, legal and also financial frameworks that ideally suited to entrepreneurship, start-up, and even growth.

The key success factor in the performance of SMEs is government policy and their support for SME programmes (Kraja et al., 2014; Nimlaor et al., 2014). Most SMEs deal with financial issues as vital resources, especially in the start-up stages. Offering these resources such as in relation to business plans and marketing strategies helps SMEs to realise their objectives and goals. According to Jasra and Khan (2011), the most critical success factor for SMEs is also financial, especially to run the operations profitably, and the success of SMEs contributes to the development of the country. Likewise, (Doh and Kim, 2014) also suggest the importance of governmental financial aid for SMEs’ regional innovations, which improves the performance of the company. Furthermore, the government, as a policy maker, plays a significant role in improving the performance of SMEs regarding business, job creation, export growth, as well as productivity (Doh and Kim, 2014). According to Kraja et al., (2014), government support of SMEs through policies shows a positive correlation between performance and policies. This means that encouraging the policies of the local as well as the central government generates incentives and enthusiasm for small- and medium-sized enterprises.

Several studies have discussed the importance of technology adoption or implementation and research by the government to help SMEs to improve their performance through technology. Doh and Kim (2014) note a positive relationship between technological assistance by the Korean government and networking with universities regarding patent acquisitions and new design registrations of regional SMEs. Companies are encouraged to implement government standards such as ISO 9000 series (quality management- QMS), ISO 14000 series (Environment

Management-EMS), and ISO/IEC 27000 series (IT Security Management- ISMS). Others are ISO 31000 (Risk Management) and ISO 500001 (Energy Management), which are essential for the recognition and marketing of the company itself. Singh et al., (2014) highlight the greatest number of ISO14001 certification recorded, and the adoption of that standard is more likely by SMEs in the area of manufacturing with a high turnover compared with a lower turnover. This kind of standard can enhance the reputation of the company. Further, this certification can also be a useful tool for credibility, by demonstrating that the product or service meets the expectations of the customers. Because of government policy, for some industries, certification is a legal or contractual requirement.

As mentioned, the implementation of new technologies by the company plays a major role in the company's innovation and performance. However, technologies and industries can be more complex and require effective knowledge transfer through a communication channel, time and social system (Nordin et al., 2014). Moreover, the transformation of the success of technology has been developed by universities and research institutes, and higher learning plays a major role in the process of innovation and improves firm performance. The main objective of technology transfer to SMEs is to create a partnership and collaboration between academia and the private sector to improve the performance of the company. The newness of the technology, process or idea will add unique characteristics to the approach in communications, which is related to three stages: knowledge, persuasion and decision in decision-making for innovation adoption. According to Nordin et al., (2014), the new technologies in the Malaysian Paddy Fertilizer Industry in innovation diffusion show the importance of farmers' knowledge and information, the management of knowledge transfer, and the extent of the readiness and realisation of innovation to improve performance. The government plays a major role in the transformation of knowledge through their agencies, like the Department of Agriculture (DOA), the Malaysia Agriculture Research and Development Institute (MARDI) and the National Information Technology Agenda (NITA).

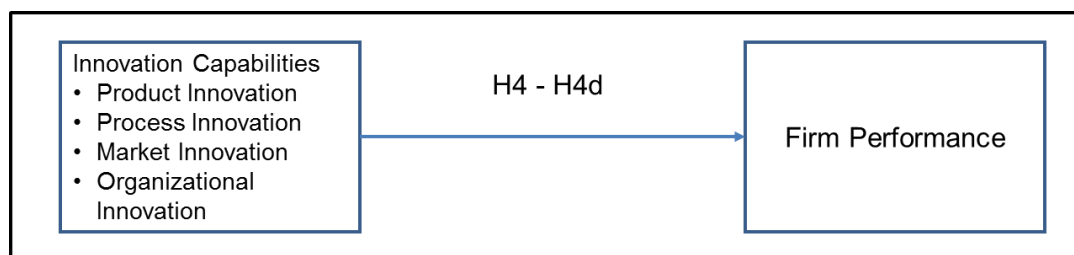
Likewise, Chen et al., (2014) also reveal that government, support through their information, technical assistance, financial and physical support, provides the inspiration and motivation to solve the problem and improve performance. Support

by government agencies leads to the provision of many resources for the company, like physical resources (finance and technological), general resources, for instance, administrative support and access to university resources (Tang et al., 2014). However, Tang et al., (2014) argued that a business incubator should be managed by business professionals, that government support is more related to a counselling service and external personal finance as well as networking to incubate the tenants' companies.

Sometimes, the policies and regulations by the government can lead to unfair competition, corruption, bureaucracy and over-control by the state, which will have an adverse impact on the company's productivity and competitiveness due to the increased operating cost burden (Patanakul and Pinto, 2014). According to Shutyak and Van Caillie (2015), the role that the government played in fostering and developing the SME sector in Ukraine was ambivalent. The study revealed that Ukrainian SMEs are robust enough to survive without direct government support. The government had to pay more attention to specific rules and regulations, programmes and supporting organisations along with the development of the SME sector and growth of the economy and political power. Thus, the role of the government has both positive and negative effects on companies. Overall, government support is aimed at helping the company itself to improve its innovation capabilities. This leads to the following hypothesis:

**H3:** The government role for SMEs is positively associated with their innovation capability.

### 3.3.4 Innovation capabilities and firm performance (sub from model)



**Figure 3.5: The relationship between innovation capabilities and firm performance**

Figure 3.5 shows the relationship between innovation capabilities and firm performance. Innovation capability refers to the ability of the company to generate, exploit, deploy, combine and create new ideas successfully (Hartono and Sheng, 2015). Scholars consider innovation as one of the most significant capabilities of the organisation as it enables firms to change, adjust and even provoke them and improve their performance (Diaz-Fernandez et al., 2015). Innovation capabilities should have a positive effect on firm performance as it contributes to its ability to search for and create new resources and efficiently produce superior products and resources compared to its competitors (Jeng and Pak, 2014).

Several scholars stress that the integration between marketing and operations is positively impacted by several aspects of the firm; for instance, new product development, quality management, production planning, just-in-time and advanced manufacturing implementation, and on-time delivery, as well as an enhanced variety of product mix and high customization, which is related to innovation capabilities and improved firm performance cost of goods and services (Blois, 1991; Clark and Fujimoto, 1991; Morris and Morris, 1992; Paiva, 2010; Sardana et al., 2016; Sawhney and Piper, 2002; Shin et al., 2015; St. John and Hall, 1991; Tatikonda and Montoya-Weiss, 2001).

Developing marketing capabilities will enhance the marketing performance and boost firm performance. It is argued that marketing capabilities are a significant driver of firm performance (Lin et al., 2015). Furthermore, in medium-sized enterprises, the support of marketing capabilities is essential to increase the profitability within a highly competitive industry; otherwise, innovation cannot lead to actual profits (Jeng and Pak, 2014).

One of the factors that leads to the superior performance of an organization depends on how the firm develops their capability regarding the key business process (Perunović et al., 2016). The prevailing literature discriminates between different types of innovation (product, process, market and organizational), and scholars have delve into different methods for undertaking these (Kim et al., 2012; Perunović et al., 2016). The important finding from the previous decade of empirical innovation research is not limited to a small number of high technology manufacturing sectors,

as firm level innovation, defined as the implementation of new product, process, marketing or organizational methods (OECD, 2005), is widespread throughout many countries (Fagerberg et al., 2005; Smith, 2000; Tether and Tajar, 2008). Furthermore, in order to achieve a high level of competitiveness both locally and globally, innovation capability is one of the most vital dynamics (Saunila, 2016). Product innovation is one of the main influences on firm performance (Boso et al., 2016).

Product innovation is a multi-dimensional phenomenon that significantly influences SME performance (Roach et al., 2016; Rosenbusch et al., 2011). There are three types of innovation antecedents related to firm performance, which consist of innovation process input, innovation output and innovation orientation (Rosenbusch et al., 2011). The input phase is considered an employment growth and output phase that is related to sales growth (Choi et al., 2016). Research suggests that the output phase of firm growth (sales growth) has a positive relationship with innovation (Coad and Rao, 2008; Coad, 2009; Goedhuys and Sleuwaegen, 2010). In line with this, the focus of this research is on the output phase.

The increase in innovation capability by a firm with the ability to integrate their key capacity and sources by measuring and reinforcing innovation and focusing on innovation outputs leads to firms achieving higher business performance (de Souza Bermejo et al., 2015). Walker et al., (2015) discuss the importance of how technology innovation in influencing firm performance. Technological innovation capability refers to the product and process capabilities (Walker et al., 2015). Specifically, product innovation usually identifies new services or products to meet external needs, while process innovation refers to the introduction or implementation of new elements in a firm's production to create new goods and render services (Damanpour, 2010; Martínez-Román et al., 2011; Schilke, 2014).

Firm performance sometimes depends on how the firm manages their resources either internally or externally (Shevchenko et al., 2016) within their capability and size. Accordingly, regardless of the company's size, a lack of innovation capability and sustainability makes achievement difficult. Companies with innovation capabilities, that can manage their resources more successfully, leads to superior

financial firm performance (Akhavan and Mahdi Hosseini, 2016). Firms with strong innovation capabilities result in higher innovation outputs because they can expand, modify and innovate their products or services compared with their competitors, which leads to higher performance (Frey et al., 2013; Jeng and Pak, 2014).

Innovation as a key to firm performance is widely recognised, however not all businesses have the capability to innovate as there are some risks and uncertainties that can lead to a high failure rate (Van der Panne et al., 2003). Rousseau et al., (2000) and Sandin (1999) highlight that only one out of five projects ever initiated is viable. The results of this research showed the failure of innovation towards firm performance. The most important factor could be the company's inability to determine the degree of uniqueness of the product and superiority compared to the alternatives, the innovator's knowledge of the firm and the future market development of the product (Van der Panne et al., 2003).

There is no doubt about the linkage between innovation and firm performance. However, inconsistencies exist due to stakeholder involvement, hyper competition across industries and the types of innovation (e.g., product, process, marketing and organisational) (Rousseau et al., 2016). There are a few difficulties in the relationship between innovation and firm performance. For instance, a time gap before innovative activities is transformed into the company's performance, which innovative ideas (product, process marketing, organisational) are involved in the process up to the final stage of commercialization (Choi et al., 2016). For each stage, there might be a decrease in innovation because more processes lead to higher mortality rates. Therefore, innovation and sales growth are positively related. The top performers can increase sales during innovation, but average performers are less likely to succeed at each stage compared with high performers (Coad and Rao, 2008). It is argued that firms indicate a critical contemporaneous stock performance and subsequent firm survival (Guo and Zhou, 2016) which is related to increasing the firm performance.

Overall, innovation has been shown to be an important antecedent of performance, as it enables firms to achieve a competitive edge and respond to briskly changing



markets (Helfat and Peteraf, 2003; Hult et al., 2004; Jeng and Pak, 2014; Teece, 2007; Zhang and Liu, 2010). Thus, the following is proposed:

**H4:** Innovation Capabilities positively influence firm performance.

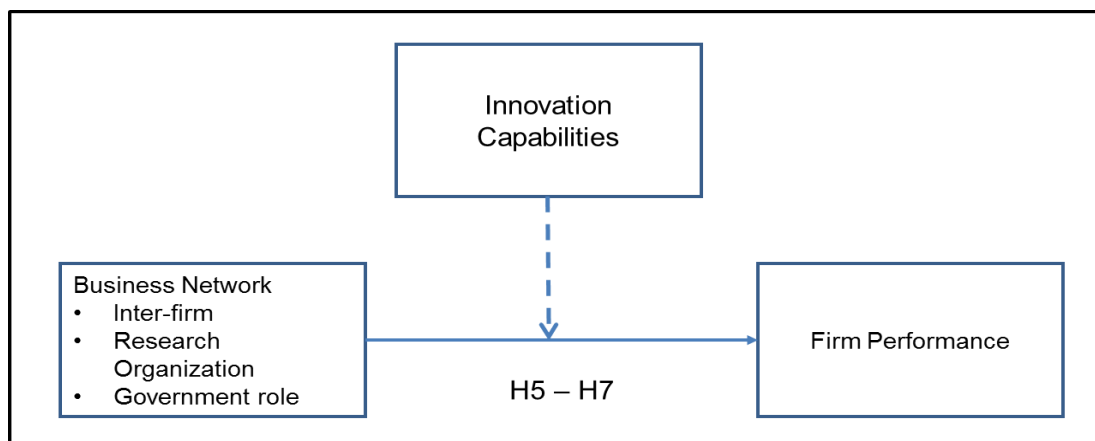
**H4a:** Product Innovation positively influences firm performance.

**H4b:** Process Innovation positively influences firm performance.

**H4c:** Market Innovation positively influences firm performance.

**H4d:** Organizational Innovation positively influences firm performance.

### 3.3.5 Innovation capabilities as a mediator between business network and firm performance (sub from model)



**Figure 3.6 : The relationship between innovation capabilities, business network and firm performance**

Figure 3.6 shows the relationship between innovation capabilities, business network and firm performance. Some scholar discuss how innovation influences external factors (rules and regulations set by the government) and firm performance (Chan et al., 2016). Others have explored innovation capability as a mediator between external factors and firm performance (Iskandar and Manaff, 2015). Innovation is considered an important factor in converting resources (such as knowledge) as external factors into innovation performance and firm performance (Urgal et al., 2013).

Some empirical works stress that collaboration with an external partner will benefit the firm itself regarding not only innovation but also firm performance (Aschhoff and

Schmidt, 2008; Gronum et al., 2012; Mazzola et al., 2015). For example, Inauen and Schenker (2011) stress that openness towards universities in R&D operations has a positive relationship between the proportions of innovative product sales over total sales.

Innovation capability can be influenced by external or internal factors. The business network is considered an external factor that drives innovation capability. Consequently, some scholars relate crowdsourcing (in this context, customer, supplier, competitor, PRO and government) for the product of the firm can influence innovation capability (generating new product ideas) and increase firm performance (Xu et al., 2015). For example, the crowdsourcing of DELL, regarding their program called Idea Storm (Ideastorm), where users can participate in suggesting new products and product improvement, led to more than 10,000 ideas being submitted (Xu et al., 2015). This crowdsourcing was related to open innovation (Chesbrough, 2003), exposing the innovation activities of the firm. From the crowdsourcing models (as unique resources), customers or others related actors are motivated to present their idea freely (Marjanovic et al., 2012). Furthermore, crowdsourcing also has a positive relationship with innovation capability through the tacit and explicit knowledge gained from external actors (ex-customers and competitors) to improve the process or create new products (Hine et al., 2010; Ku, 2014; Levy, 2009; Poetz and Schreier, 2012; Turban et al., 2009). During collaboration with the external environment, the employee can generate a creative idea to fill the internal gap in resources (Marjanovic et al., 2012; Poetz and Schreier, 2012; Sigala and Chalkiti, 2012; Zhao and Zhu, 2014). In this sense, building the external network (business networks) becomes a critical priority resource of the firm since it helps them to respond to the briskly changing environment and provides them with an response of inherent flexibility and revitalization that greatly increases firm performance (Xu et al., 2015).

Likewise, the term 'open innovation' is also related to the relationship between the firm and the external resources (inter-firm relationship), which is closely linked to innovation capability and firm performance (Mazzola et al., 2015). Open innovation refers to the company shifted from close innovation to a more open way of

innovating, and is closely related to the external and internal relationship (Chesbrough, 2003).

The external actors include customers, suppliers, service providers, competitors, policy makers and others who are essential for the existence of knowledge flow, innovation capabilities and firm performance (Molina-Morales et al., 2015). Knowledge acquisition from customers and supplies will foster a new combination of resources, favouring growth, increase the speed of and simplify innovation, and interact with the suppliers (Molina-Morales et al., 2015; Yli-Renko et al., 2001). For example, car manufacturers will improve their product development coordination by interacting with their suppliers (Dyer and Nobeoka, 2000). However, some scholars suggest that the ability of the firm to deploy the existing resources is greater than the quantity of the resources itself (gain from external) to influence firm performance (Jeng and Pak, 2014; Morgan et al., 2009).

Furthermore, some scholars argue that innovation capability has a relationship with external factors (social networking sites) and firm performance (Jung et al., 2013; Sheng and Hartono, 2015). The relationship with external drivers (actors) of innovation will influence the innovation capability, as the firm will gain more resources. However, the resource spill-over by the firm will lead to unmanageable resources, decrease their quality and affect firm performance (Jones et al., 2004; Park and Lee, 2008).

However, some researchers argue that internal factors are more driven by innovation capabilities compared to external ones (de Souza Bermejo et al., 2015). It is argued that incoming organisational practices have both positive and adverse effects on financial performance (Belderbos et al., 2010).

Likewise, some scholars refer to an 'inside-out' (internal resources and capabilities) and an 'outside-in' (Customer, Supplier competitor, PRO and government) orientation, to show the collaboration with external and internal resources and firm capabilities to improve innovation and firm performance (Saeed et al., 2015). It is argued that an inside-out orientation has a greater influence on firm performance

than an outside-in one. Also, firms should make efforts to use and exploit their internal resources and capability compared to external resources.

Overall, collaborative practice with external sources is essential to overcome the boundaries of internal resources, reach a successful strategy and improve firm performance (Sigala and Chalkiti, 2012; Xu et al., 2015). Accordingly, this study argues that:

**H5:** There is the mediating effect of innovation capabilities on the relationship between inter-firm and firm performance.

To be more specific and clear regarding the hypothesis to be tested in the following sections, more detailed sub-hypothesis were developed, as follows:

**H5a:** Innovation capabilities mediate the effect of collaboration with customers on firm performance.

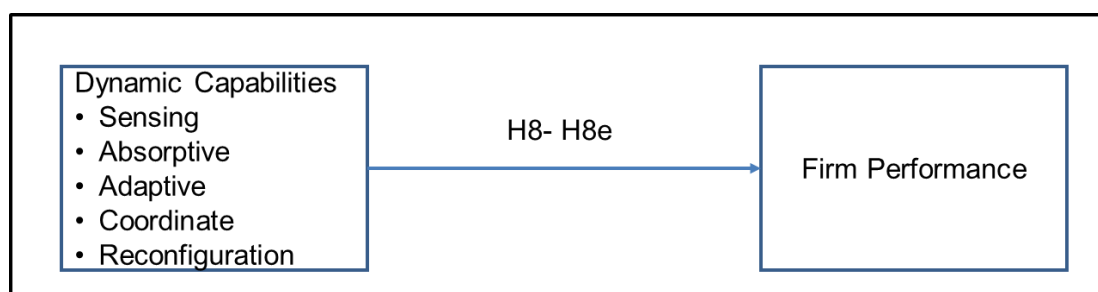
**H5b:** Innovation capabilities mediate the effect of collaboration with suppliers on firm performance.

**H5c:** Innovation capabilities mediate the effect of coopetition with competitor firms on firm performance.

**H6:** Innovation capabilities mediate the effect of collaboration with research organisations on firm performance.

**H7:** Innovation capabilities mediate the effect of government role on firm performance.

### 3.3.6 Dynamic capabilities and firm performance (sub from model)



**Figure 3.7 : The relationship between dynamic capabilities and firm performance**

Figure 3.7 shows the relationship between dynamic capabilities and firm performance. The dynamic capability is the firm's managerial and organisational processes to yield, release, integrate and reconfigure the resources and therefore is change-oriented in response to the threats and opportunities of change in the marketplace (Kindström et al., 2013). This study will analyse its empirical research using the element of dynamic capabilities (Teece, 2007): sensing, absorptive (Hotho et al., 2012; Zahra and George, 2002) and adaptive (Zhou and Li, 2010). The others are coordination (Buckley, 2011; Eriksson et al., 2014) and reconfiguration (Teece, 2007). The sensing capability refers to the ability to spot, interpret and pursue opportunities in the surrounding environment (Nieves and Haller, 2014). The adaptive capability is the firm's ability to reconfigure the resources and coordinate processes promptly and efficiently to meet the volatile environment (Gibson and Birkinshaw, 2004). This capability influences firm performance (Unal and Donthu, 2014; Zhou and Li, 2010).

Reconfiguration capability is one of the dimensions of dynamic capability proposed by Teece (2007) that influence firm performance. Takahashi et al., (2016) highlight the relationship with the external political (government) role. They argue that this capability influences the firm to understand the needs of external resources and show superior performance. Other elements of dynamic capabilities, such as coordination capabilities, also influence firm performance (Holm et al., 2016). Their research on supply chain innovation demonstrates that relationship. By developing ambidexterity as a dynamic capability, Sang (2016) shows that this capability improves competencies as it helps firms to address uncertain and unexpected environments and boost firm performance.

The dynamic capability also helps to characterise how firms obtain, extend their strengths, synchronise their business processes and models with the business environment, and shape them to keep them relevant to the marketplace needs and technological opportunities (Teece, 2014). A firm's coordination capability is another essential factor that influences its competitiveness, as firms communicate with internal units and external groups, like customers, suppliers, and competitors (Huang, 2011). Therefore, a better coordination process can be achieved if the companies respond to the fast-changing environment (Teece et al., 1997), while

reconfiguring refers to the firms' ability to extend the resource base into new markets and services (Kindström et al., 2013).

There have been several studies on dynamic capabilities. Zollo and Winter (2002) stress that dynamic capabilities desire greater effectiveness, while Eisenhardt and Martin (2000) stated that dynamic capability only represent ideal strategies and exhibit equifinal, which is not a sufficient condition for competitive advantage. Besides that, the debate extends to the related impact of environmental dynamism (volatility, unpredictable and uncertainty), that is the environmental influence between dynamic capabilities and firm performance (Eisenhardt and Martin, 2000; Winter, 2003; Zollo and Winter, 2002). For instance, Zahra et al., (2006) suggested that the dynamism of the external environment moderated the potential value of dynamic capabilities (DCs). Also, Teece (2007) highlighted the new elements of DCs as sense and seize opportunities and the reconfiguring of both the internal and external assets of the firm. In other words, DCs generate new knowledge, processes and products, which allows the new creation of competitive advantage and contributes to firm performance. Furthermore, in his current research, he stresses that dynamic capabilities combined with a good strategy is essential for sustaining superior performance, especially in fast-paced environments (Teece, 2014) even though, in offshoring, dynamic capabilities are still relevant to improving firm performance, especially related to the supply chain (Lo and Hung, 2015). In other words, the ability of the company to integrate and reconfigure the resources has a positive effect on firm performance.

Eisenhardt and Martin (2000) view dynamics capabilities as “best practices” that can be duplicated by others and their impact on firm performance depends on whether the configuration of the resources is ‘precise’. Additionally, DCs demand a commitment by firms to maintain and implement their managerial resources (Helfat and Peteraf, 2015), that could render the association between cost and dynamic capabilities, at times, larger than or equal to the potential benefits (Pezeshkan et al., 2016). The above argument shows that the relationship between dynamic capabilities and competitive advantage, which leads to superior performance, may be challenged.

In line with the above, having reviewed of 133 articles published in 12 leading management journals articles, (Wilden et al., 2016) show that there are multiple views and approaches on how dynamic capability relates to firm performance.

Some scholars discuss dynamic capabilities as uniquely important in volatile environments (Teece, 2014, 2007; Teece et al., 1997), which is related to the firm's ability to build, integrate and reconfigure their internal and external forces in the brisk environment. Other scholars stress dynamic capabilities as "first order" capabilities that work to broaden, adjust, upgrade or alter the resources of the firm. They enables changes to be made in the processes, products, services and ad hoc problem solving (Drnevich and Kriauciunas, 2011; Helfat et al., 2007; Winter, 2003). However, according to Li et al., (2016), dynamic capabilities are beneficial to firm performance, even in relatively stable environments. They classified dynamic capabilities into six categories: (1) innovation/technology/R&D; (2) market research/strategic decision-making; (3) alliance/cooperation/external relations; (4) intangible assets/reputation; (5) knowledge management; and (6) strategic human capital management.

Wang and Ahmed (2007) identify three dimensions of DCs: (1) adaptive capability; (2) absorptive capability; and (3) innovative capability, which enhances firm performance. According to them, DCs impact on firm performance via firm capability development and strategies in a volatile environment. Aminu and Mahmood (2015) construed that dynamic capabilities, as a mediator between social capital and firm performance in turbulent business setting, achieve a significant result. This research deduces that configuring the available resources of dynamic capabilities in a challenging milieu will duplicate value-adding strategies.

Other dimensions of dynamic capability (i.e. innovation and corporate venturing) by Dai and Liu (2015) also support the argument that dynamic capability can promote performance outcomes. Dynamic capability is considered the internal capability of the firm. Some authors argue that the absorptive capability (an element of DC) is the most important part and influences firm performance (Hughes and Wareham, 2010; Lichtenthaler, 2015; Müller-Seitz, 2012). Higher levels of absorptive capability enable firms to harness their external resources (executives, customers or suppliers'

references) and then apply them to identify new business opportunities (Lin and Chang, 2015).

It is argued that DCs directly impact on firm performance because they are difficult to imitate (Drnevich and Kriauciunas, 2011; Griffith and Harvey, 2013; Lee et al., 2002; Teece et al., 1997). On the other hand, others highlight the indirect relationship with performance, because the value of DC in terms of competitive advantage is situated in the resource configuration they develop, and the future resource configurations deviate with time and circumstances (Aminu and Mahmood, 2015; Jiang et al., 2015; Wang and Ahmed, 2007; Zahra et al., 2006). Hence, the value of DCs are identified by the acuteness, quickness and precision with which a new resources base is built (Helfat and Peteraf, 2015; Pavlou and El Sawy, 2011; Protogerou et al., 2011; Wilden and Gudergan, 2015). Scholars concur that the contribution of dynamic capabilities to firm performance is enhanced by environmental dynamism (Drnevich and Kriauciunas, 2011; Schilke, 2014; Sirmon et al., 2007; Zahra et al., 2006).

In line with Jeng and Pak (2014), this research also discusses the significance of dynamic capabilities among macro, small- and medium-sized enterprises and the impact on firm performance. DC suggests that the development of an organisational routine will allow the firm to cope with the emerging environmental threats and opportunities and improve firm performance (Mitrega and Pfajfar, 2015). According to Sardana et al., (2016), the result shows that the dynamic capabilities of the manufacturing operations of firms lead to superior firm performance. However, Schenkel and Teigland (2017) stated that dynamic capabilities are the main mechanism for creating a competitive advantage that is sustainable and forms the basis of the firm's performance.

However, some studies found an insignificant impact of dynamic capabilities on firm performance (Schilke, 2014; Wilden and Gudergan, 2015; Wilden et al., 2013). Likewise, Essex et al., (2015) examined the capability of the supply chain manager (the dynamic capabilities perspective) and found that there is no direct correlation with firm performance. In other words, managers cannot utilise their only skills to respond to the changes but in combination with others antecedents (motivation or incentives). Similarly, some researchers have argued that dynamic capabilities may



not necessarily create a suitable configuration of resources (Ambrosini et al., 2009; Eisenhardt and Martin, 2000) and are related to costs (Lavie, 2006; Pablo et al., 2007) which affects firm performance.

Other studies have highlighted the valuable characteristics of dynamic capabilities (Peteraf et al., 2013) as an organisational response to the environment. They are 'idiosyncratic in their details' (Eisenhardt and Martin, 2000: p. 1105) which is difficult to imitate, so value is added to the firm (Peteraf et al., 2013) and contributes to superior performance (Fainshmidt et al., 2016). Similarly, there is evidence to show the positive impact of the successful development of valuable resources that are difficult to imitate in the upstream oil industry (Stadler et al., 2013).

Other disciplines, such as accounting, also suggest that dynamic capabilities have a positive association with accounting information systems (AISs), accounting process performance and the entire firm performance (Prasad and Green, 2015). However, the implementation of DCs into the company achieved varying results; some are better than others. It depends on the success or competence trap (internal resources), whereas success will be reinforced by exploiting the existing resources and competencies and constricts the exploration of new abilities, thereby affecting the development of DCs (Wang et al., 2015). They argue that the success traps have a significant, strong negative impact on DCs that leads to a weak positive effect on firm performance.

Overall, the associations of the dimension of dynamic capabilities (sensing, absorptive, adaptive, coordination and reconfiguration) have a positive relationship with firm performance (Sang, 2016). DCs lead to firm performance and the hypotheses below:

**H8:** Dynamic capabilities positively influence firm performance.

**H8a:** Sensing capability positively influences firm performance.

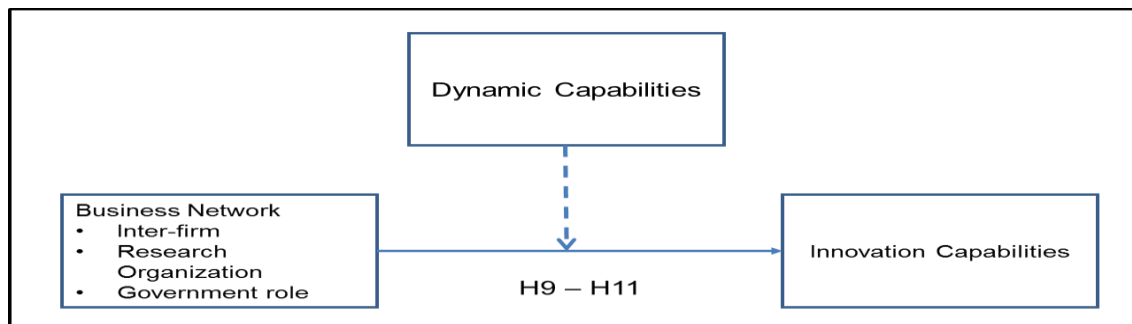
**H8b:** Absorptive capability positively influences firm performance.

**H8c:** Adaptive capability positively influences firm performance.

**H8d:** Coordination capability positively influences firm performance.

**H8e:** Reconfiguration capability positively influences firm performance.

### 3.3.7 Dynamic capabilities as a moderator between business network and innovation capability (sub from model)



**Figure 3.8 : The relationship between dynamic capabilities, business networks and innovation capabilities**

Figure 3.8 illustrates the relationship between dynamic capabilities, business networks and innovation capabilities. To develop an appropriate environment for DCs to become innovative, firms should develop, attract and retain their talent (Hayton, 2005), although there is no assurance that all of the employees in the firm will be or become innovative. The exposure of the external resources of the company in the context of business networks consists of inter-firm collaboration, PRO and the government role that will need a dynamic capability to sense, absorb, adapt, coordinate and reconfigure those resources to suit the needs of the internal resources.

Furthermore, both dynamic and innovation capabilities enable firms to deploy their existing resources, create new ones and contribute to the long-term performance (Jeng and Pak, 2014; Teece, 2007). Scholars already recognise that the element of dynamic capabilities has a positive relationship with innovation capability and business network as an external factor (Shafia et al., 2016; Wang and Ahmed, 2007). The firm's response to external capabilities depends on their capabilities. Some scholars argue the firm's ability to manage external pressure or resources depends on the size of the company (Shevchenko et al., 2016). Accordingly, small businesses are more manageable compared to larger firms to reach true sustainability. However, regardless of their size, it is difficult for firms to be truly

sustainable and survive in a volatile market if they lack an innovation capability (Shevchenko et al., 2016).

The key innovation capability is related to absorptive capacity (elements of DCs) as the firm's ability to seek out, identify and integrate information from external into the internal process for innovation (O'Brien, 2016). In a similar sense, the firm needs to know their internal limitations in order to seek the external resources to adapt to it (Chesbrough, 2003; Huizingh, 2011; Lichtenthaler, 2011). The ability of the firm to manage external and internal resources with their dynamic capabilities will promote the performance outcomes (Dai and Liu, 2015).

Furthermore, the absorptive capability not only focuses on the acquisition and assimilation of external resources but also improves the internal capability to advance the firm performance (Rothaermel and Alexandre, 2009). Therefore, an absorptive capability influences the firm to recognise and understand the potentially valuable new combination of both internal and external resources (Lin and Chang, 2015).

Lin and Wang (2015) suggest that the sensing capability, related to marketing, also influences the firm's commercialization and performance. For many years, the key feature of the innovative process has been knowledge management (Codini, 2015). Studies on dynamic capabilities identify knowledge acquisition, integration and dissemination as the major features of the firm to operate for the long term. The linkage between firm capabilities (DCs) and external sources form the surrounding business networks that lead to the better innovation of the firm and increase performance (Codini, 2015). The business relationship per se does not automatically secure product development. However, the need for other capabilities, like dynamic ones, to enhance the competitive advantage and boost firm performance (Liu, 2015). It is argued that the coordination capability is evolving over time to manage the resources within network orchestration (Codini, 2015). The research on Business Relationship Process Management (BRPM), (Mitrega and Pfajfar, 2015) suggests the importance of BRPM when the company operates in the dynamic environment; in other words, the firm's ability to reconfigure the relationship portfolio and attract new promising partners, thereby ending the unprofitable relationship and improving the

performance of the supplier relationship portfolio. The element of dynamic capability in BRPM concludes that BRPM allows the firm to handle the instabilities embedded in an inter-firm relationship. It also allows the firms to transform over time by reshaping the resources, which is a configuration enabling its competitive advantage. Furthermore, the ability to scan and select an appropriate partner to avoid wrong selections may deteriorate over time, become a burden for the company and impact on the firm's innovation and performance (Capaldo, 2007; Dittrich and Duysters, 2007; Ford et al., 2003).

Likewise, some scholars examine the relationship between governance and how dynamic capabilities influence innovation and firm performance (Cheng et al., 2014). However, others suggest that the performance of the business should be based not only on dynamic capability but in combination with others factors likes external forces (inter-firm, PRO and government) and innovation capability (Andriana Roseli et al., 2016; Easterby-Smith et al., 2009; Eisenhardt and Martin, 2000; Helfat and Peteraf, 2003; Protogerou et al., 2011; Winter, 2003; Zahra et al., 2006; Zott, 2003). Hence this research posits that:

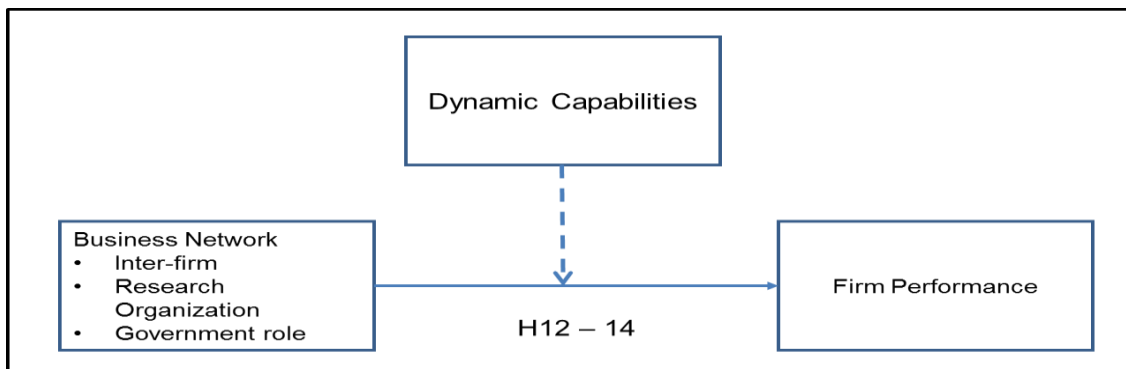
There is a positive moderating effect of DC on the relationship between the business network and innovation capability.

**H9:** Dynamic capabilities moderate the effect of inter-firm collaboration and innovation capabilities.

**H10:** Dynamic capabilities moderate the effect of collaboration with research organisation and innovation capabilities.

**H11:** Dynamic capabilities moderate the effect of the government role and innovation capabilities.

### 3.3.8 Dynamic capabilities as a moderator between business network and firm performance (sub from model)



**Figure 3.9: The relationship between dynamic capabilities, business networks and firm performance**

Figure 3.9 presents the relationship between dynamic capabilities, business networks and firm performance. The combination of external and internal resources which is related to the dynamic capability is an important element that influences firm performance. Song et al., (2016) argue that the relationship between dynamic capabilities and external resources in their context focusing on vendor, supplier and client will increase firm performance. They stress that the cooperation with external resources will enhance the process of new product development and competitive products.

Other scholars have examined dynamic capabilities and knowledge sharing between the actors to improve their existing resources and meet the firm's needs (Rice et al., 2015). The related actors are customers, suppliers, competitors, universities, public research organisations and government agencies (Kok and Ligthart, 2014; Townsend et al., 2010; Uhlaner et al., 2013). Day and Schoemaker (2016) also stress the adaptation and utilisation of dynamic capabilities (sensing, seizing and reconfiguration) related to creative collaboration with the external element will lead to superior firm performance.

However, dynamic capabilities (DCs) do not necessarily achieve successful outcomes; they could affect performance through altering as well as generating

resource bundles (Wang et al., 2015). Wang et al., (2015) suggest that the success trap of the firm has a negative relationship with dynamic capabilities and leads to weak firm performance. Furthermore, some suggest that a firm with a dynamic capability is not guaranteed a successful outcome (Zahra et al., 2006) but this is related to modifying and creating a bundles of resources which influence firm performance (Eisenhardt and Martin, 2000; Zott, 2003). Even Zahra et al., (2006) forewarned that the misuse of dynamic capabilities will damage firm performance.

Stadler et al., (2013) examined the direct effect of dynamic capabilities on successful resources acquisition and found that resource development was significantly related to the indirect effect on some resources' acquisition, resource development and firm performance (Wang et al., 2015), while Schilke (2014) suggests that the positive relationship between dynamic capabilities related to external resources and firm performance is contingent upon market dynamism. In a high or low level of environmental dynamism, dynamic capabilities enhance the effectiveness of the operating routines (Wilhelm et al., 2015). Moreover, Rice et al., (2015) find that the successful implementation of dynamic capabilities influences firm performance, even when mediated by market transformation strategies. However, notwithstanding the combination of business network and DCs, an increase in firm performance leads to the hypotheses below:

**H12:** Dynamic capabilities moderate the effect of inter-firm collaboration and firm performance.

**H13:** Dynamic capabilities moderate the effect of collaboration with university and public research organisation and firm performance.

**H14:** Dynamic capabilities moderate the effect of the government role and firm performance.

### 3.3.9 Business Network and firm performance



**Figure 3.10 : The relationship between business networks and firm performance**

Figure 3.10 shows the relationship between business networks and firm performance. The business networks consist of the direct or indirect relationships a firm has established with other business or non-business organisations which a company is unable to control the conduction of resources (Oberg et al., 2016). Business networking is used today to gain a competitive advantage as the relationship includes vertical integration with a customer or horizontal integration with a competitor (Shamsuzzoha et al., 2016). The objective of collaboration is to share the risk, pool complementary skills, access new markets and technologies, have products on the market faster and further to contribute to customer satisfaction in myriad ways (responsiveness to customer needs, innovation, cost management and speed of quality of products and services) (Fielding et al., 2014).

Over time, companies rely on their external stakeholders (Boesso and Kumar, 2009). Stakeholders consist of all individuals or entities that contribute to the company's "wealth-creating activities" (Evans and Sawyer, 2010). They are business owners, customers, suppliers, employees, the government as well as a range other organisations (Ditlev-Simonsen and Wenstøp, 2013). The capability of the firm to manage their stakeholders and the strong relationship will create more value for the customer. In line with this, Hutchinson et al., (2013) validated a conscientious corporate brand model by Rindell et al., (2011), and argue that ethical conscientiousness is not only important for brand value but also an integral part of the business supplier relationship. Nevertheless, by using external information like a customer, (Holm et al., 2016) with their methodology adoption of Customer

Accounting, there is a positive relationship between business networks (external relationship) and firm performance.

Furthermore, the capabilities of the company to build a relationship with other firms positively influences firm performance, whether local or global (Bianchi et al., 2017). Business networks are valuable resources as the firm can exchange relationships with other firms and strengthen the competitive position of the enterprise (Brockhaus et al., 2013). Some scholars suggest that the business network relationship may be most important for export growth, especially for emerging countries like Latin America (Bianchi and Wickramasekera, 2016). The pool of stakeholder activities in business networks will contribute more resources and increase the business sustainability (Svensson et al., 2016). According to research in Latin America (Úbeda et al., 2015), the business networks of the firms improve their export diversification, and enable them to acquire new technology, create new jobs, and increase their productivity and innovation, thereby strengthening their competitiveness and firm performance.

Moreover, involving universities and the government in the business networks will also benefit knowledge and technology transfer as firm resources (Aaboen et al., 2016). The need for a combination of resources with others parties is an important aspect of new business formation (Oberg and Shih, 2014). This is because the company can never hold all of the necessary resources internally, but they need to interact with other parties in the network (Håkansson et al., 2009). In line with the assumption of resource heterogeneity (Alchian and Demsetz, 1972; Penrose, 1959), the value of the resources depends on how the firms combine their existing resources with other resources to create new products or services (Aaboen et al., 2016). According to them, the four resource entities are product, business relationship, business units and production facilities. As mentioned by Corsaro and Cantù (2015), resource adaptations are necessary to achieve innovative outcomes in new contexts and increase firm performance.

Håkansson et al., (2009) classified three aspects related to strategic choice in a business network: 1) choices within existing relationships, opportunities and limitations on business networks; 2) choice about the position within the business



networks, related to firms simultaneously influencing and being influenced by networks; 3) 'how to network' - if a company controls and at the same time is controlled by other actors. However, such a situation depends on how the actors make sense of the business network and use the opportunities (Abrahamsen et al., 2016). The relationship between firms and other actors, like customers, suppliers, competitors, universities, and the government are essential as these interaction and mobilisation choices will affect the company's network position. They also affect firm performance regarding the availability of resources or sales opportunities (Abrahamsen et al., 2016; Hakansson et al., 2009; Mattsson and Johanson, 1992; Turnbull et al., 1996).

According to Abrahamsen et al., (2016), the process of network picturing is used by managers to understand the business relationship and take advantage of the opportunities within their surroundings. This understanding will lead the managers to strategize the existing and new resources and realise the demand of the stakeholders, thereby increasing firm performance. A longitudinal study by Codini (2015) supports the idea that interactions between the actors within business networks influence the technology evolution and impact on the innovation of the firms. The firm should expand its internal and external knowledge to build the capabilities necessary to develop a new product.

However, Åkerman (2015) stresses 'local business network knowledge', which is related to local actors and their resources, capabilities and behaviour. It is also related to the relationship with customers, supplier and competitors. The opportunities stemming from the conduct of competitors, suppliers and customers in the local business networks leads to the provision of compatible products or services and an increase in the volume of sales and firm performance. Additionally, some scholars have examined the relationship between business networks and alignment and misalignment. Corsaro and Snehota (2011) found that, when the parties are aware of the misalignment without external constraint on their actions, their aligned practices produce a positive effect on the business relationship.

However, the longitudinal study by Ahuja (2000) supports the predictions of direct or indirect ties but, in the inter-firm collaboration network, the increase in the structural

hole had an adverse impact on innovation. Furthermore, Tsai (2001) found that the connectivity between business units in the networks is positively correlated with innovation and the performance of business units. The results about PLS by Berghman et al., (2012) suggest that the internal learning mechanism and the exchange of external information do not always work symbiotically.

The research on Brazilian small firms' networks by Wegner et al., (2015) shows the benefits of a business relationship like access to services, such as scale, status and legitimacy, risk sharing, learning and the development of innovation. However, there is a challenge to understanding such a relationship, due to its variety in the format of inter-organizational relationship (Grandori and Soda, 1995; Todeva, 2006). Dwyer et al., (1987) proposed the five stages of the life-cycle model in business networks. They are: Awareness (recognition of a possible partnership), Exploration (analysing the benefits of the relationship), Expansion (increased interdependency), Commitment (reaching a high-level commitment) and Dissolution (one partner becomes dissatisfied/the ongoing costs outweigh the benefits). However, recent scholars proposed a constant process of change in inter-organizational networks, like the partner selection, structuring and negotiation stage, implementation stage, and performance evaluation of the firm's business relationship and benefits to firm performance (Jiang et al., 2008). Wegner et al., (2015) proposed a different model of the life cycle, which consists of the dating (evaluation stages), introduction (first joint action began), development (mature via negotiations), maturity (full operation and expansion may take place), innovation, and decline stages, which leads to dissolution.

Business networks (e.g., customers, suppliers and competitors) promote learning and provide the resources for addressing uncertainties, to solve problems in a volatile environment and offer the benefits of both specialisation and variety generation (Liu, 2015). Furthermore, those relationships allow firms to synthesise knowledge and provide access to knowledge spill-over for a technical breakthrough which shapes the combinative and cumulative effects. Firms frequently acquire external knowledge via the business network to enhance the competitive advantage (Brown and Duguid, 2002). As an example, Kogut (2000) conducted research on the supplier system of the Toyota product system and found that the suppliers clearly

enhance the new product development. Furthermore, Singer and Helferich (2008) confirm the result of Lynch and O'Toole (2006), that sharing knowledge with external alliances was associated with a faster rate of new product speed to market and shorter product innovation and development time.

However, the business networks will be a failure when the failure in the task happens due to the partners (an inability to do work correctly, efficiently or in the right order) (Zhu and Zolkiewski, 2015). According to them, sometimes, there is a miscommunication between the partners, resulting in dissatisfaction with the relationship (e.g., a customer fails to learn from previous experience or make the adjustment). Deficiencies in the functional quality of services (how products or information are transferred to the partners) causes a problem and diminishes the business relationship. Specifically, Zhu and Zolkiewski (2015) argued that service failure may be caused by service provider-related errors, like service providers' mistakes in invoicing, delivery of the wrong orders or problems in producing the required products and late delivery. Nevertheless, the firm should identify the problem that occurred in a business relationship to (or "intend to") sustain them and benefit each other. Overall, the relationship between the enterprise and others entities will lead to enhanced firm performance.

Hence the research posits that:

**H15:** Business network positively influences firm performance.

**H15a:** Inter-firm collaboration positively influences firm performance.

**H15b:** Research organization positively influences firm performance.

**H15c:** Government role positively influences firm performance.

### **3.4 Concluding Remarks**

This chapter has explained the research need and the importance of doing this research. Consequently, it has presented and discussed how the developed conceptual model for evaluating the determinants of firm performance is justified. The needs of hybrid theories consist of RBV and DCs was also justified. Based on the theoretical background section, a conceptual model was developed with fifteen

hypotheses. After that, all of the hypotheses were critically discussed and supported by the previous literature. The next chapter will be outline the methodology employed to validate these hypotheses.

## **Chapter 4 : Research Methodology**

### **4.1 Introduction**

The previous chapter examined different theories and models relevant to the research topic. The theories, models and concepts related to business networks and dynamic capability highlights the impact of innovation and business networks on firm performance. This helps to identify the mediating and moderating effect of innovation and dynamic capabilities on the relationship between the business networks and firm performance of SMEs in Malaysia.

This chapter focuses on the research methodology. It will examine different research designs and methodologies in order to select the appropriate methods for carrying out the research efficiently. It will help to make a comprehensive initiative to conduct the tentative tasks for obtaining certain findings. Therefore, this chapter provides concepts and ideas about various research methods, such as research philosophies, research approaches, research designs and research strategies. This chapter also highlights the justification for choosing the specific research methods for this research.

This chapter explored various research philosophies and justified the adoption of the positivism research philosophy. Furthermore, it depicted various research designs in a diagram that describes a plan for achieving the key objectives and aim of the research. Consequently, this study adopted a quantitative approach and provided a justification for choosing this particular approach. Likewise, the chapter highlighted the various sampling techniques, sample size, data collection method, and data analysis method and provided an outline structure of several ethical considerations.

### **4.2 Research Philosophy**

A research philosophy is a flexible term linked to improving knowledge, understanding and the temperament of that understanding. A research paradigm is a fundamental set of values (Bernard, 2011). For Serrant-Green (2010), the key

features of a research philosophy are ontology, epistemology and axiology. Ontology emphasises the temperament of reality and the way in which people see the world around them. Epistemology deals with the nature of that knowledge; this is acceptable to the researcher. Axiology provides the way to conduct the research in the search for knowledge.

According to Riege (2003), the research philosophy differs depending on the aims and objectives of the research. It enables the researcher to select an appropriate research strategy by increasing the assumption of the way the world is seen. Researchers mainly use two types of assumption: epistemological and ontological (Toloie-Eshlaghy et al., 2011). The epistemological assumption emphasises relevant knowledge about the research topic, while the ontological assumption is concerned with the nature of the veracity of that knowledge (Morgan, 2007). The epistemological assumption is considered to be more helpful for conducting research efficiently as it provides proper guidance to the researcher. It also helps the researcher to choose a suitable research strategy and method for collecting suitable data according to the needs of the research topic.

Further, Ellis and Levy (2009) mentioned that researchers mainly use three types of epistemological assumption; positivism, interpretivism and critical assumption. Positivists try to discover the reality of the phenomena of interest. They assume that reality is objective and so can be described by measuring the tools of the researcher (Collis and Hussey, 2013). On the other hand, interpretivists rely on the assumption that social reliability is in the human's thought and so is inclined, complicated, subjective and multiple in nature (Collis and Hussey, 2013). Bergh and Ketchen (2009) stated that critical researchers are inclined to approximate and restore the social truth under investigation critically.

#### **4.2.1 Positivism**

Positivist researchers mainly follow a structural method, assimilating rational inferences with an accurate experiential examination of people's behaviour, to disclose and corroborate unfussy relationships that are usually suitable with an

identified likelihood which can, therefore, be used for the forecast (Burns and Burns, 2009). The aim of positivism is to discover the truth and develop it to make it capable of controlling and predicting. Therefore, positivist researchers depend on the persistence of previously set alliances within incidents. They majorly attempt the reality of different theories related to the research topic and analyse them in order to increase the predictive tolerance of the incident (Hair, 2015).

According to Serrant-Green (2010), positivists think that a social phenomenon is measurable and that is why it is linked with the quantitative method and based on the study of quantitative data. They believe that reality can be proved, constant, experimented on and explained from an intent perspective. Carter and Chu-May Yeo (2014) applied the positivist approach to measure social and emotional competencies in the UK and Malaysia using a survey, while McDonald et al., (2015), in their review of the research methods published in the top five entrepreneurship journals between 1985 and 2013, show that the positivist approach dominates the entrepreneurship research.

This study examines the determinants of SMEs performance and focuses on business networks, innovation and dynamic capability. Therefore, this research develops a conceptual model with 15 main hypotheses, based on the previous literature. Consequently, this research adopts a positivist approach, which is a combination of the Resource Based Theory and dynamic capability theory to develop the conceptual model. The proposed conceptual model to determine SME performance was tested to increase our understanding of the value of resources and capability in businesses activity.

#### **4.2.2 Interpretivism**

As opined by Bernard (2011), interpretive researchers assume that people create and associate their own intersubjective and prejudiced implications when they converse with the world. He argues that only by a biased interpretation of the involvement in truth can that truth be unstated. According to Cameron (2009), the key concept of interpretive philosophy is the research of incidents in their original

environment, while admitting that scientists cannot avoid affecting those incidents in their research. They acknowledge that, although there can be diverse explanations of reality, these are preserved in a portion of the scientific facts they are following. It is no less famous than positivism.

Interpretive researchers try to identify phenomena through accessing the denotation that the participants assign to them. The communal reality is overstated by the activities of analysing it. The model is engaged in the belief that an approach is needed that respects the differences between people and objects of the science and thus requires social scientists to grasp the biased importance of social science (Serrant-Green, 2010). The aim of this research is to understand the phenomenon through accessing the meaning that the participants assign to it. Thus, interpretivism uses the qualitative method to analyse the social incident. Therefore, the interpretive research philosophy is not suited to this research, as it emphasises uncovering the hurdles of the social phenomenon with a spirit to gain an interpretive understanding, compared with positivism that focuses on measuring a social phenomenon that validates the theoretical model logically.

#### **4.2.3 Critical Realism**

It is important to state that no particular research method is better than any other one (Truscott et al., 2010). The positivist research philosophy is a scientific approach that uses structured techniques those are measurable and obtained from scientific society, and focused on recognising acts in the natural world. Corbetta (2003) stated that the interpretive research approach is disposed to collecting qualitative data and uses methods like shapeless interviews and participant observation that provide this type of data. Conversely, the positivism research philosophy is the leading approach for carrying out research efficiently.

Burns and Burns (2009) pointed out that the critical researcher is focused on critically examining and renovating the social reality. The critical researcher is similar to the positivist approach. However, this type of research philosophy does not emphasise the direct relationship between the concepts as they develop and are



observed (Walliman, 2015). Critical realism is traceable work by Roy Bhaskar in the late twentieth century, which was a direct response to positivist direct realism and postmodernism (Saunders et al., 2016). Accordingly, critical realism focuses on explaining 'what you see and what you get' (Saunders et al., 2016: p. 138) and underlying the reality of the structures that build observable events through experience. It is concerned with visible social systems and revealing the deviations that can adhere to their agreement.

The critical discerner believes that social reality is created and improved by people, although an individual can intentionally act to change their economic and social conditions. They recognise that their ability to perform is maintained by various social, political and cultural factors. Thus, this approach is not suited to this study; consequently, positivism is appropriate for this research.

#### **4.2.4 Postmodernism**

Postmodernism emphasises the role of language and the power of relations, seeking to question the established way of thinking and giving a voice to marginalised, alternative views (Saunders et al., 2016). According to Seale (1999), there are three core principles of postmodernism; the decentred self (no human universals to determine identity - self-creation of society); rejecting claims to authority (scientific objectivity and must be subjected to critical analysis, traditions and values - constantly attacked) and the commitment to instability in our practices of understanding (subjective and voices within the culture – the equal right to be heard). The objectives of postmodernism radically provoke the traditional way of thinking and knowing. This philosophy is not suited to this research as their conventional methods are related to in-depth investigations, silences and the absence of phenomena (Saunders et al., 2016; Symon et al., 2016)

#### **4.2.5 Pragmatism**

The emphasis of pragmatism is on concepts that are only relevant where they support actions. The process of the pragmatist involves the practitioner being skilled

in the art of relationship building, which includes listening, cooperating and acting with others (Harney et al., 2016). Pragmatism emerged in the late-nineteenth and early 20th centuries in the USA, and the most influential scholars who shaped the development of classical pragmatism are Charles Sanders Peirce (1839–1914), William James (1842–1910) and John Dewey (1859–1952). For pragmatism, research begins with a problem and aims to contribute practical solutions that enhance future practice. In other words, this philosophy emphasises practical solutions and results. This research will not use this philosophy, as the research is related to a range of methods, like mixed, multiple, quantitative, qualitative and action research. To conclude, table 4.1 shows a comparison between the various types of philosophies.

**Table 4.1 : Comparison between the different types of research philosophies**

*Sources: Saunders, Lewis & Thornhill (2016)*

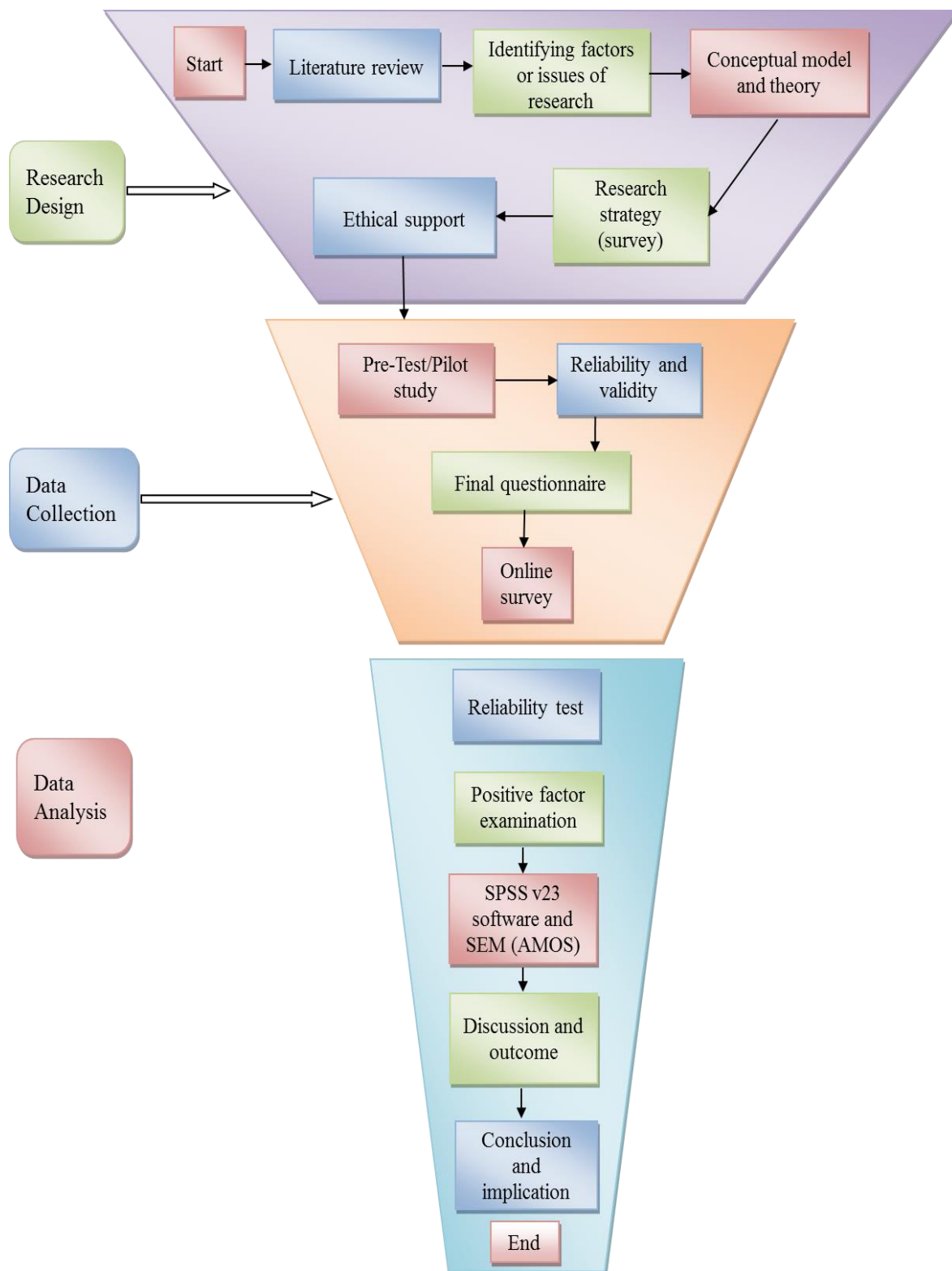
<b>Type of philosophies</b>	<b>Ontology (nature of reality of being)</b>	<b>Epistemology (What constitutes acceptable knowledge)</b>	<b>Axiology (Role of value)</b>	<b>Typical methods</b>
Positivism	Real, external and independent	Observable and measurable facts Causal explanation and prediction as contribution	Value – free research Research is detached, neutral and independent of what is research	Deductive, highly structured, large samples, measurement, typically quantitative method of analysis, but a range of data can be analysed
Interpretivism	Complex, multiple meanings, interpretation, realities	Focus on narrative, stories, perception and interpretation New understanding and worldviews as contribution	Value- bound research Researcher interpretations key to contribution	Inductive, small samples, in-depth investigation, qualitative methods but a range of data can be interpreted

Type of philosophies	Ontology (nature of reality of being)	Epistemology (What constitutes acceptable knowledge)	Axiology (Role of value)	Typical methods
Critical realism	Stratified/layered (the empirical, the actual and the real)	Historical causal explanation as contribution	Value – laden research Researchers try to minimize bias and errors & objective as possible	Reproductive, in-depth historically situated analysis of pre-existing structures and emerging agency
Postmodernism	Nominal complex, rich Flux of processes, experiences and practices	Exposure of power relations and challenge of dominant views as contribution	Value- constituted research Researcher radically reflexive	In-depth investigations of anomalies, silences and absences Range of data types, typically qualitative method analysis
Pragmatism	Complex, rich, external Reality is the practical consequences of ideas	Problem solving and informed future practice as contribution	Value- driven research Research initiated and sustained by researcher's doubts and beliefs	Range of methods; mixed, multiple, qualitative, quantitative, action research Emphasis on practical solution and outcomes

### 4.3 Research design

The research design helps the researchers to grasp the objectives of the study. It is an initiative that helps to obtain an answer to the questions of the research (Saunders et al., 2016). It includes the process of data collection and data analysis to achieve the outcome of the study. The researcher also added ethical considerations to reduce the incidence of risks related to the research (Freshwater, 2007). The researcher examined the relevant literature to understand the problems of the topic that lead to the conducting of this research. The researcher has also created a theoretical model that explains the 15 main research hypotheses.

According to the nature of the topic and the need for the research, the researcher chose the quantitative method using a single data collection technique like questionnaires and commensurate quantitative analytical procedures. This research uses a 'snapshot' time horizon or cross-sectional study because of the time constraint. This kind of study often employs the survey and interview as the research strategy, which provides a justification for selecting the survey strategy. This research only takes fifteen to twenty minutes for the respondents to answer the survey questionnaires. During the second stage of the data collection, the researcher carried out a pilot study and assessed the reliability, validity and strength of the framed questionnaire prepared for the research. Considering the research topic, the researcher created the questionnaire for collecting the primary research data. To conduct the survey, the researcher chose 1,500 respondents. However, it was impossible to complete the survey with all of the respondents adequately. Only 463 questionnaires were successfully completed. The criteria for the respondents include four age groups (20-30 years, 31-40 years, 41-50 years and 51 and above), six categories of education level (SPM, STPM, Diploma, Degree, Master and PhD), and four company positions (owner, CEO, manager and Executive), while the criteria for the firms include three types of company (sole proprietor, partnership and Public Limited Co), three levels of annual turnover (below RM300,000, RM300,001-RM15,000,000, and RM15,000,001-RM50,000,000), five groups of years since they were established (below 5 years, 6-10 years, 11-15 years, 16-20 years and above 21 years) and seven types of industry (manufacturing, services and construction, forestry, (agriculture, fishery & livestock), education and others). After that, the analysed data were interpreted using SPSS software and SEM. By using this research design, the objectives of the research were achieved. The processes involved in this research are depicted in figure 4.1.



**Figure 4.1: Research design**

## **4.4 Research Approach**

There are two types of research approach; the quantitative and qualitative research approaches.

### **4.4.1 Quantitative Approach**

Quantitative research focuses on quantification in gathering and examining data to test the theory (Saunders et al., 2016). This approach fits the deductive method where the theories guide the research. The deductive research approach enables the researcher to increase the knowledge about the specific research topic based on various theories, which then leads to the creation of the research hypotheses (Bryman and Bell, 2015; McCarthy, 2012). For the research strategy, this quantitative research was principally associated with the survey (questionnaires) and experimental research. In the next stage, the researcher aimed to collect the data and then interpret them in order to identify the accomplishment or failure of the hypotheses of the research. After that, the theories were revised, and the hypotheses were rejected if the outcome was negative (Cameron, 2009). According to Hair (2015) and Saunders et al., (2016), the quantitative approach is linked with positivism, that involves analysing the theories that help the researcher to decide the case. Quantitative research includes research strategies like surveys and interviews. The researcher conducts the survey by using questionnaires, interviews or surveillance.

### **4.4.2 Qualitative Approach**

According to Huxham and Vangen (2003), the qualitative approach focuses on the statements in the collected data. It is considered a process of discovering and appreciating the meaning that people or groups assign to human or social problems. Bryman (2006) stated that the qualitative approach is linked with the inductive approach. In the inductive research approach, the theories are the outcome of the study. In an inductive approach, the researchers make an outline of the

generalisable conclusion, depending on the findings and observations of the research, to develop new theories related to the research topic.

The qualitative approach is related to interpretive philosophy and here the researcher learns the topic in its background and applies a promising design where the different types are recognised throughout the procedure. For a qualitative study, various research strategies can be selected, such as narrative research, grounded theory, ethnography and case study.

Table 4.2 presents the differences between qualitative and quantitative research in relation to four factors; the characteristics, role of theory, research philosophy and research strategy. To carry out this research, the researcher chose the quantitative research approach, as this helped to test the hypotheses and establish whether they succeeded or failed. It is carried out through the deductive approach. The researcher did not use the qualitative approach, as the research had to develop new theories about the topic based on the collected data. Moreover, the researcher used the philosophy of positivism to assess the theoretical models related to the research topic. After analysing all of the theories, the researcher created the questionnaire for the primary data collection. The researcher applied tentative data and a survey by using quantitative research.

**Table 4.2: Differentiation between the qualitative and quantitative research approaches**

*Source: Harrison and Reilly (2011)*

<b>Factors</b>	<b>Qualitative</b>	<b>Quantitative</b>
<b>Characteristics</b>	After understanding the relationship among the variables by emphasizing on different type of data collection methods a new theory is created.	It analyse the relationship between two major variables and are assessed statistically and numerically.
<b>Role of theory</b>	It deals with inductive research approach that helps to make new theories based on the findings of the research.	It is based on deductive research approach that tests the relevant theories and after that, the hypotheses are tested that whether they are accepted or rejected based on the positive and negative outcome.
<b>Research philosophy</b>	It follows interpretivism where the topic is studies by the researcher in it circumstance, a rising design is used, and the categories are recognised at the time of ongoing process.	It follows the positivism philosophy that involves testing the authentication of the exiting theories and models related to the research topic and help to understand the research topic clearly.
<b>Research strategy</b>	Grounded theory, ethnography, case study, narrative research	Survey and interview

#### **4.5 Research Context**

Choosing an appropriate location for collecting the primary data is one of the most important aspects of research. To conduct the research, Malaysia is selected as a research location, with a focus on the Peninsula Malaysia (Kelantan, Terengganu, Pahang, Selangor, Wilayah Persekutuan, Negeri Sembilan, Melaka, Perak, Pulau Pinang, Kedah and Perlis), as shown in table 4.3. The researcher selected the decision maker (owner, CEO, manager, executive) of several SMEs in Malaysia to participate in the survey and interview.



**Table 4.3 : Number of SMEs established by state**

*Source: Economic / SMEs Census, 2011 by department of Statistics, Malaysia*

<b>State</b>	<b>Total SMEs</b>
Johor	68,874
Kedah	37,092
Kelantan	37,823
Negeri Sembilan	21,675
Pahang	24,542
Perak	60,028
Perlis	5,053
Pulau Pinang	40,824
Selangor	125,904
Terengganu	22,514
W.P Kuala Lumpur	84,261
W.P Putrajaya	418
Total	558470

#### **4.6 Research Strategies**

Researchers adopt a suitable initiative according to the nature of the research process, that helps them to produce a better answer to the research questions that stem from the objectives (Freshwater, 2007). A research strategy defines the arrangement by the researcher to answer the questionnaires, and this is linked with the chosen philosophy and the methods selected for collecting and analysing the data (Saunders et al., 2016). In this research, the researcher used the philosophy associated with different methods used for the data collection process. An appropriate research strategy helped the researcher to analyse the collected data adequately. As opined by Roger (2009), there are different research strategies the researcher can use. These are action research, narrative enquiry, ethnography and surveys. As mentioned in the previous section, this study adopts the quantitative approach, using the survey method as its strategy. The following sections will review the survey method and the justification for using this research strategy in this study.

## 4.7 Survey

The survey is one of the most popular and widely used research strategies for collecting data (Ellis and Levy, 2009). The survey strategy is usually related to a deductive research approach, and is the most popular and traditional strategy employed in business and management research (Saunders et al., 2016). The survey strategy allows the researcher to collect quantitative data and then analyse them using descriptive and inferential statistics. It helps the researcher to collect relevant data that are connected with the topic. It enables the researcher to analyse the collected data in a numerical system to produce the research result. Surveys are mainly carried out based on the deductive approach that is concerned with the existing theories and tests the hypotheses of the study.

The philosophy of positivism is also related to surveys. The survey includes various types of data collection methods, such as completing questionnaires through the internet or post and conducting interviews by phone. According to Bryman (2006), the two main types of survey are descriptive and analytical surveys. Also, surveys are a very suitable method. They are cost-effective, easy and fast to collect and can involve a huge number of participants (Collis and Hussey, 2013). McDonald et al., (2015) found, in the total of 3,749 articles in the consensus sample covering the 29 year-period surveyed, 3,169 primary methods. The research also shows that the survey method was more dominant (at 54.28%) compared to the other methods (case studies, interviews, document analysis, observation, focus groups, and other quantitative and diary studies).

This study used a face-to-face survey. The benefit of this approach is that the researcher can repeat the questionnaires, pointing out or elaborating on issues and helping to overcome the language barrier (Zehrer and Raich, 2016). Probability sampling is used in surveys to develop findings that are statistically representative of the whole population at a lower cost compared to surveying the entire population. The researcher collected the data based on the selected research context, as stated in table 4.3. As this research is based on stratified sampling, the respondents can be directed geographical location and based on their availability. In other words, the

researcher went directly to the available respondents in the categories of SMEs and focused on the decision maker (Owner, CEO, manager and executive – see table 5.2). They only need to spend 15-20 minutes completing the questionnaires and, based on observation, they were happy to complete the survey. Sometimes, the researcher faces a problem after the survey has been completed, as the respondent would ask a few questions related to overall SMEs and the current Malaysian economy, which might take more than one hour to answer. Another problem facing the researcher was that the respondent requested some time in which to complete the questionnaire. Hence, the researcher had to leave the questionnaire and return a few hours later to collect it. However, overall, the researcher did not encounter huge difficulties during the data collection process.

The researcher implemented the survey process using a design structure that includes five stages. These stages are: designing the survey, adapting the questionnaire, pre-test, pilot test, and collection and analysis of the data. The researcher used the survey for this research because it is cost effective and can be applied to a huge number of respondents. Agarwal and Selen (2009) mentioned the three essential steps while conducting a survey. They are sampling, data collection and instrument. These steps will be explained further in the following section. Before the actual surveys were conducted, this research initially implemented a pre-test and a pilot test, as explained in the next section.

#### **4.7.1 Pre-Test**

It is important to carry out a pre-test before administering the questionnaires to conduct the main survey as this can help to identify any flaws in the questionnaire that need to be removed. Thus, it helps to get a better result for the research, as stated by Hakim (2012).

Brannen (2009) stated that the process of pre-testing is intended to assess the effectiveness of the questions. It helps the researcher to reject redundant and irrelevant questions. Consequently, the researcher can include questions that reflect the needs of the research topic and improve the effectiveness and quality of the

questionnaire in order to obtain clearer and more relevant information on the research topic. Furthermore, the length of the questions must be observed, as this can decrease the willingness of the respondent to answer them. According to Knox (2004), pre-testing the questionnaire helps the researcher to identify whether the questions are repetitive, to avoid irritating the respondent. Moreover, a pre-test is also helpful for determining whether the respondents understand the questions or encounter any difficulties while answering them. Therefore, the researcher can vary the questions according to need. Riege (2003) thought that a pre-test helps to analyse the potency and weakness of the questionnaire that comprises the format, length and order of the questions. There are two different methods for carrying out a pre-test of the questionnaires; participating or undeclared. Under the undeclared method, the questionnaires are distributed among a certain number of respondents, who are unaware of the process of pretesting.

Researchers tend to use the undeclared method, as this helps to measure the consistency of the survey and the standard of the questionnaires. Hakim (2012) mentioned that, before conducting an undeclared pre-test, a participatory pre-test could be helpful for obtaining better responses and appropriately improving the structure of the questionnaire, although conducting these two types of pre-test needs a sufficient amount of resources and time.

Under the participatory method, the respondents are aware of the pre-test to assess the efficiency of the questionnaire in collecting data. The researcher will evaluate the comprehension of the questions asked based on comments from the interviewees. Areas of evaluation include the format, order, structure or pattern of the questions. The comments of the respondents on these queries help to improve the questions. The respondents selected by the researcher for the pre-test comprised two scholars, two practitioners, and two doctoral students in the related area of study.

#### **4.7.2 Pilot Testing**

A pilot test is considered small-scale introductory research that is carried out to assess the viability, cost, time, unfavourable events, and numerical unpredictability,

in an effort to identify a suitable sample size and develop the research design before the presentation of a scale, as stated by Ellis and Levy (2009). In other words, the pilot testing aims to check any errors or weaknesses in the questionnaire before it is launched in the field.

Roger (2009) opines that a pilot test is usually conducted before carrying out a large-scale quantitative study to avoid wasting effort, resources and time. The participants are excluded from the final survey to avoid it being mundane to them because they have participated in the pilot study. It is often applied to examine the design of the full-scale research to adjust it properly. Therefore, it is a valuable insight, as it helps to identify if anything is missing in the pilot survey that can be included later in the large-scale survey to develop the probability of gaining a clearer outcome. It helps to test the validity and reliability of the questionnaire. Knox (2004) stated that pilot testing provides the assurance for conducting the full-scale study. During this process, the researcher had to employ experts or specialists to assess the responsiveness and appropriateness of the questionnaire as it relates to SMEs. The reliability of the questionnaire can be measured through identifying the consistency and regularity of the responses to the questions. Table 4.4 shows the Survey Pilot Process regarding how the pilot test was carried out.

**Table 4.4: Survey Pilot Process (Adopted by Dillman, 2000)**

<b>Survey pilot process</b>	
Stage 1	The questionnaire has been tested by executives with an academic affiliation to ensure question completeness, efficiency, relevancy and format appropriateness.
Stage 2	Observation and “think loud” protocols test if the respondents can complete the survey. Interviews have been conducted as well.
Stage 3	The small pilot study included all of the procedures proposed in the main study.
Stage 4	During the last revision process, researchers checked for typos and errors prior to the questionnaire distribution.

Therefore, the researcher involved some academics to ensure the validity of the questionnaire. To measure the validity, the researcher gathered the opinions of the respondents regarding the attractiveness, transparency and straightforwardness features of the questions. After that, the researcher carried out the pilot test with thirty respondents. This helped the researcher to identify the validity of the questionnaire, after which the researcher tested the reliability of the questionnaire by conducting a pilot study. During the reliability test, the researcher implied the internal uniformity for analysing the constructs and the encumbered objects. As stated by Huxham and Vangen (2003), testing the reliability consistency of the questions is important. For measuring the internal uniformity, the Cronbach's  $\alpha$  is considered the best and most commonly used process. It applies the rule of thumb process for internal computing consistency. There are a certain number of figures used for measuring the internal consistency in Cronbach's  $\alpha$ . They are  $\leq 0.90$  for excellent reliability, 0.70-0.90 for high reliability, 0.50-0.70 for moderate reliability and  $\leq 0.50$  for low reliability. Here, the researcher applied the Cronbach's  $\alpha$  to test the reliability of the questionnaire in the pilot test that resulted in 0.75, meaning that the questionnaire has high reliability.

#### **4.8 Sampling and Strategies**

The number of respondents selected for the research is called sampling (McDonald et al., 2015). The sampling technique enables the researcher to reduce the amount of data by considering data from subgroups compared to all possible cases or elements (Saunders et al., 2016). The selected population experiment and findings are analysed. A comprehensive set of components that has few similar features is the population, and they are chosen from the sample (Brannen, 2009). The process used for selecting a set of people or elements for conducting research is called sampling (Cameron, 2009). To conduct this particular study, the chosen sample is the senior management of the company: Owner (130), CEO (41), managers (79) and executives (213) of SMEs in Malaysia (refer to table 5.2). By using these decision makers, researchers can build an understanding from their insights into the topic based on the questionnaires. Occasionally, the sampling technique can be counted as an important consideration when researchers have tight deadlines and need to

save time. The sampling technique can be divided into two categories; probability or representative sampling and non-probability sampling (Saunders et al., 2016). Probability samples relates to surveys and experiment research strategies with the aim of fulfilling the research objectives. Consequently, the samples or surveys must represent the target population. Furthermore, probability is accepted as the most appropriate method for making an inference and has a rich history and robust and proven theoretical foundation (Brick, 2014). However, non-probability samples are related to selecting from unknown target populations (a source of information for official statistics), high bias and an inability to answer the research question or address the research objectives (Buelens et al., 2015; Saunders et al., 2016). The researcher cannot survey the whole population because of the limited time frame, cost constraint, restricted access and cases known as the census. Johnson et al., (2007) define different kinds of sampling techniques for choosing the sample. They are simple random sampling, non-probability sampling, cluster sampling, stratified sampling, and systematic sampling. According to Lodico et al., (2010), the non-probability sampling technique includes quota sampling, snowball sampling and convenience sampling. There are five main sampling techniques that can be used to select a probability sample, such as simple random, systematic random, stratified random, cluster and multi-stage (Saunders et al., 2016).

This research adopts the probability and convenience sampling techniques to select the respondents for this research and applies a stratified random method (Tashakkori and Creswell, 2007; Teddlie and Yu, 2007). The sample comprises three sections: micro, small and medium-sized firms. The sample also includes all sectors; manufacturing, services, agriculture and construction. The researcher used probability sampling to choose the decision maker of the SMEs in Malaysia, as the likelihood of individuals being chosen is not equal in this sampling technique, as stated by Freshwater (2007). According to Kothari (2008), convenience sampling technique is cost-effective, and it helps to collect the data easily. Therefore, convenience was a motivating factor for the researcher to choose this technique for this study.

The sampling frame therefore must use probability sampling (Saunders et al., 2016). Such a sampling frame was obtained from multiple directories (refer to table 4.3): the

Small and Medium-sized Industry (SMI) directory, Majlis Amanah Rakyat (MARA), Pusat Usahawan Mara (PUSMA) Selangor, SME Corporation of Malaysia and the Department of Statistics Malaysia.

#### **4.9 Sample Size**

After selecting the sampling technique, the next step and the most important issue was to determine the sample size. The total number of respondents chosen from a large population is known as the sample size (Roger, 2009). If the researcher chooses a large sample size to address the research question, then it helps the researcher to gather large data over the research topic in order better to represent the population (Collis and Hussey, 2013). Furthermore, Truscott et al., (2010) stress that many respondents help to increase the quality of the research outcome as it helps the researcher to collect different viewpoints that assist during the process of data analysis. However, this also contributes towards gaining a deeper knowledge of the research topic and answering the questions of the study. This enables the researcher to analyse the data from various aspects. To analyse the proposed conceptual model, the researcher used the Structural Equation Modelling (SEM) approach. This SEM required big data. The SEM can be categorised into a few groups; 100 being poor, 200 being fair, 300 being good, 500 being very good and 1,000 or greater being excellent (Comrey and Lee, 1992; Tabachnick and Fidell, 2007). This research falls within the very good group as the data were collected from 463 respondents.

#### **4.10 Questionnaire as the Data Collection Method**

The questionnaire is the most convenient way of collecting the primary data for any research (Magilvy and Thomas, 2009). Within the survey strategy, the questionnaires are one of the most widely used data collection methods (Saunders et al., 2016). The questionnaires are prepared for the purpose of the survey; they contain a certain number of multiple-choice type questions about the research topic. By using the questionnaire, the opinions of the respondents are collected to help the researcher to obtain significant data and information that are relevant to the research



topic. The questionnaires can be easily distributed among the respondents. Therefore, the researcher chose this technique for collecting the data as it is time-consuming and difficult to interview each respondent. Toloie-Eshlaghy et al., (2011) opined that providing a questionnaire to the respondents gives them a choice regarding how to answer the questions. It is also helpful for collecting more accurate data as the respondents do not have to respond to the questions in a hurry. As these questions are multiple-choice types, the respondents do not have to spend very long answering them. Thus, it helps the researcher to reach to the respondents in short period. To carry out a survey, it is important to prepare a suitable questionnaire that can gather all the relevant information on the research topic. The questions must be fashioned in such a way as to gain the maximum response from the respondents. It is crucial to focus on the structure and design of the questionnaire as the rate of response and its authenticity and validity depend on this. The questionnaires were emailed to the respondents using the Bristol Online Survey. On top of this, the researcher also distributed the questionnaires by hand.

#### **4.10.1 Back Translation**

This research used a back translation technique, as proposed by Brislin (1993). Back translation is usually suitable for cross-cultural studies (Brislin, 1970). This research used a decentring process, whereby the original version of the questionnaire (English version) was changed regularly to ensure that there were identical items in the foreign and back-translated versions. Decentring refers to a translation process in which the source and the target language versions are equally important during the translation procedure (Brislin, 1970; p. 186).

Also, the questionnaires were designed in both English and Malay. This research applied the following translation procedure. First, the researcher translated the English version into the Malay version (one-way translation). Second, the translated Malay questionnaires were given to professional bi-lingual translators (back translation) to be converted back into an English version. Finally, both translated versions of the questionnaire (the one-way translation and the back translation) were given to two professional translators from the University of Utara Malaysia (UUM)

and the International Islamic University (UIA) in order to preserve the meaning and the quality of the outcome.

As suggested by Adams and Iwu (2015), the translation process of the instruments should involve expert stakeholders in a related subject to ensure the quality of connotative meaning. The research questions were translated into Malay based on the back-translation method. The 463 respondents answered the translated questionnaire. The reliability (internal consistency and test-retest) and validity (content validity, construct validity and face validity), as psychometrics properties, were examined.

Behr (2017) stress that back translation can reveal and hide problems and also cause false reports. However, Teo et al., (2015) used back-translation (English-Malay; Malay-English) for their research on the smoking of tobacco in Malaysia, and the result showed that the evidence possessed great reliability and validity, and so was an adequate and useful instrument for evaluating Malaysian smokers. Also, Zehrer and Raich (2016) used the back translation method (translating from English to German and Russian) for their research on an explanatory model for testing how crowding and coping behaviour impact on customer satisfaction. Moreover, Nazurah et al., (2016) also used the back translation method to examine the reliability and internal consistency of the Malay version of the PSI-PF (Parenting stress index-short form). They suggested that the reliability of the PSI-SF in Malay was strong, with a Cronbach's  $\alpha=0.944$  and high internal consistency with a value of 0.90 (parental distress), 0.82 (parent-child dysfunction) and 0.87 (difficult child), respectively. The WHO agreed that using back translation is a quality approach for achieving an unambiguous and commensurate transfer of interpretation transfer of meaning across languages in global health studies (Ozolins, 2009). As mentioned above, back translation has been used in multiple types of research and not only for business management studies, with a predominantly positive influence.

#### 4.10.2 Instrument Measurement

This study adapted ninety-four measurements with five frames and nineteen indicators. The questions are graded using a Likert scale (Bryman and Bell, 2007), which is useful for gathering data according to the opinion of the respondents. This study applied a five-point rating scale that offers various rating structures as follows:

- 1 stands for strongly disagree
- 2 stands for disagree
- 3 stands for neutral
- 4 stands for agree
- 5 stands for strongly agree

The researcher has included both positive and negative types of questions to gain a clear knowledge of the research topic by taking into account the opinions of the respondents. The two different types of questions motivate the respondents to think more when answering them and can select the proper scale that is suitable for a particular question. Table 4.5 shows all of the instrument measurements adopted, with references.

**Table 4.5: Instrument measurement**

Construct	Items codes	Items Measurements	References
Business Network	BIF1	Our company builds partnership with suppliers and has communication quite often.	Gemünden et al., 1996; Huang et al., 2012
	BIF2	Our company often interacts with suppliers to stimulate new product ideas.	
	BIF3	Our company often interacts with suppliers to develop new products.	
	BIF4	Our company often interacts and cooperates with suppliers to test new products.	
	BIF5	Our company builds partnership with customers and has communication quite often.	
	BIF6	Our company often interacts with customers to stimulate new product ideas.	

Construct	Items codes	Items Measurements	References
	BIF7	Our company often interacts with customers to develop new products.	
	BIF8	Our company often interacts and cooperates with customers to test new products.	
	BIF9	Our company builds partnership with competitors and has communication quite often.	
	BIF10	Our company often interacts with competitors to stimulate new product ideas.	
	BIF11	Our company often interacts with competitors to develop new products.	
	BIF12	Our company often interacts and cooperates with competitors to test new products.	
Business Network	BUR1	Extents of your firm have cooperated with research organisation.	Orozco and Ruiz, 2010
	BUR2	We do have Technology transfer from public research organisations.	
	BUR3	We can increase the limited capability of the firm for knowledge absorption (via training, internship, consultancy and informal information).	
	BUR4	We can obtain information about engineers or scientists in R&D fields.	
	BUR5	We can obtain information on R&D tendencies.	
	BUR6	We can earn Benefits related to productive activities.	
	BUR7	We can obtain technological support from researchers for problem solving.	
	BUR8	We can have an earlier contact with future professionals.	
	BUR9	We can use labs and other resources available in public research organisations.	
	BUR10	We can test our products or processes.	
	BUR11	We receive support quality control process.	
	BUR12	We can develop new pattern and licenses.	
	BUR13	We can do contract important researchers for normal innovation activities of the firm (complementary activities).	
	BUR14	We can do contract research that the firm cannot develop (substitutive activities).	

Construct	Items codes	Items Measurements	References
Business Network	BGR1	Government provides technical assistance to my company.	Mondejar and Zhao, 2013; Shou et al., 2014
	BGR2	Government helps training the manpower for my company.	
	BGR3	Cultivating cooperative relationships with applicable government agencies by actively participating in various government-sponsored activities.	
	BGR4	Encouraging our functional areas to maintain cooperative relationships with related functional agencies of government through informal and formal interactions.	
	BGR5	Taking initiatives in developing cooperative relationships with government agencies through dialogue, meetings, and idea exchanges on concerned issues.	
	BGR6	Spending lots of time and effort cultivating cooperative relationships with applicable government agencies.	
	BGR7	The legal system efficiently protects our interests (such as patent, trademarks).	
	BGR8	The legal system prevents us from being cheated.	
	BGR9	The legal system ensures customers' payment.	
	BGR10	The legal system ensures that we can get our money back.	
Innovation Capability	PDI1	Our company often raises quality of the products.	Huang et al., 2012
	PDI2	Our company often raises competitiveness of the products.	
	PDI3	Our company often raises competitiveness of the products.	
	PDI4	Our company often boosts market share of the products.	
	PDI5	Our company often boosts the corporate image and brand awareness.	
	PDI6	Our company often boosts profitability of the products.	
	PRI1	Our company often introduces new technologies to improve production or process procedure.	Huang et al., 2012
	PRI2	Our company often procures new tools or equipment to boost production or work	

Construct	Items codes	Items Measurements	References
		efficiency.	
	PRI3	Our company often comes up with different ways to improve product production or process procedure.	
	PRI4	The profits of our company mostly come from new products and service.	
	PRI5	The product design of our company is faster than that of our competitors.	
Innovation Capability	IMI1	Management actively seeks innovative marketing ideas.	Naidoo, 2010
	IMI2	Improvements in product design are readily accepted.	
	IMI3	Improvements in product placement are readily accepted.	
	IMI4	Improvements in product promotional activities are readily accepted.	
	IMI5	Improvements in product pricing are readily accepted.	
Innovation Capability	IOI1	Organization's emphasis on developing new products or services.	García-Morales et al., 2012
	IOI2	Rate of introduction of new products or services into the market.	
	IOI3	Organization's spending on new product or service development activities.	
	IOI4	Number of new products or services added by the organization and already on the market.	
	IOI5	Number of new products or services that the organization has introduced for the first time on the market.	
	IOI6	Investment in developing proprietary technologies.	
	IOI7	Emphasis on creating proprietary technologies.	
	IOI8	Organization's emphasis on technological innovation.	
	IOI9	Organization's emphasis on pioneering technological developments in its industry.	
Dynamic Capabilities	DSC1	We frequently scan the environment to identify new business opportunities.	Nieves and Haller, 2014
	DSC2	We periodically review the likely effect of changes in our business environment on customers.	

Construct	Items codes	Items Measurements	References
	DSC3	We often review our service development efforts to ensure they are in line with what customers want.	
	DSC4	We spend a great deal of time implementing ideas for new services and improving our existing services.	
Dynamic Capabilities	ABC1	We frequently scan the environment and regularly approach external institutions to collect and acquire industry information.	Burcharth et al., 2014; Wang et al., 2015
	ABC2	When recognizing a business opportunity, we can quickly rely on existing knowledge.	
	ABC3	We are proficient in transforming tech. knowledge from external sources into new products.	
	ABC4	We regularly match new technologies from outside with ideas for new products.	
	ABC5	We have the necessary skills to implement newly acquired knowledge.	
	ABC6	We have the competences to transform the newly acquired knowledge.	
	ABC7	We have the competences to use the newly acquired knowledge.	
Dynamic Capabilities	ADC1	We know the strategic moves of our competitors well.	Biedenbach and Müller, 2012; Chen and Wu, 2011; Ma et al., 2009; Wei and Lau, 2010
	ADC2	We know the product needs of our customers well.	
	ADC3	Our current product is based on established solutions.	
	ADC4	Our company is able to respond appropriately to market changes.	
	ADC5	Our company is able to sustain our advantages during constant industry changes.	
	ADC6	Our firm's ability to remove unexpected obstacles that emerged in the competitive environment has been greater than that of our direct competitors.	
	ADC7	Employees are encouraged and supported to innovate.	
	ADC8	New ideas and changes are welcomed by the organization.	

Construct	Items codes	Items Measurements	References
Dynamic Capabilities	COC1	To coordinate partner-related activities, we have established internal processes (e.g., for marketing, project coordination) within our company.	Meiseberg and Ehrmann, 2013; Nieves and Haller, 2014; Walter et al., 2006
	COC2	To aid cooperation with partners, we have established cross-company processes, meaning processes reaching across company boundaries.	
	COC3	Within our company, we meet regularly to adapt our working procedures to our partners'.	
	COC4	Within our company, we have adjusted our incentive systems (bonuses, target agreements) to serve the aims of a partnership.	
	COC5	We analyze what we would like and desire to achieve with which partner.	
	COC6	We inform ourselves of our partners' goals, potentials and strategies.	
	COC7	We discuss regularly with our partners how we can support each other in our success.	
	COC8	We ensure appropriate allocation of resources (e.g., information, time, reports).	
	COC9	We ensure that employees' expertise is compatible with the work processes they are assigned.	
	RCC1	Rapid organizational response to market changes.	Jiao et al., 2013; Lin and Wu, 2014
	RCC2	Rapid organizational response to competitor's action.	
	RCC3	Efficient and effective communication with cooperative organization.	
	RCC4	Sufficient support by our company for employee innovative activities.	
	RCC5	Encouragement of an innovative culture.	
	RCC6	Sufficient stimulations and rewards to employees with innovative capabilities.	
Firms' performance	FPM1	The average return on investment (ROI) of our company is better than the previous year.	Huang et al., 2012
	FPM2	The average profit rate of our company is better than the previous year.	
	FPM3	The average return of sale (ROS) of our company is better than the previous year.	



Construct	Items codes	Items Measurements	References
	FPM4	The average market share growth rate of our company is better than the previous year.	
	FPM5	The average sales growth rate of our company is better than the previous year.	

#### 4.11 Data Analysis

Data analysis is the method of orderly applying a logical and statistical technique to explain, represent, concentrate, summarise and assess data. It is a process of examining, cleaning, and replacing data with the target of uncovering constructive information, propositions, conclusions and opinionated decision-making, as described by Hakim (2012). According to Bryman and Bell (2015), data analysis has many aspects and approaches encircling different techniques under an assortment of names, in diverse domains. The analysis fragments and detaches integral elements for individual testing. It is the method of collecting raw data and then transferring it into helpful information for decision-making by the punters. The data are collected and evaluated by answering the questions, examining the hypotheses or challenging the theories. As mentioned by Bergh and Ketchen (2009), data analysis is the process of assessing data, methods for interpreting the outcomes of the process, procedures for planning and collecting data for making the testing easier, more accurate or perfect, and all of the equipment and results of numeric that are used to analyse the data.

Serrant-Green (2010) divided the data analysis into three parts. They are EDA (exploratory data analysis), descriptive statistics and CDA (confirmatory data analysis). EDA involves uncovering fundamental characteristics in the data while CDA focuses on verifying or forging the existing hypotheses. Morgan (2007) lists several techniques for analysing quantitative data. First, the raw data should be observed. Afterwards, vital calculations must be re-performed, confirming the total with the sum of the subtotals, analysing the correlation between the numerals, and

normalising the numbers in order to facilitate comparison. Finally, the problems are divided into simpler parts through analysing the factors that escort to the outcome.

To conduct this research, the researcher used SPSS software version 23 to code the data and then selected from the preserved data. Here, the researcher did not identify any lost significance, and therefore it continued to the next step. The reminiscent data, initiated through the sample of invented data and reliability tests, resulted in the dependability of the assessments. The researcher also applied SEM to authenticate the hypothetical models.

#### **4.11.1 Reliability and Validity**

Validity refers to the extent to which a concept is accurately measured and what was predicted to analyse in a quantitative study (Heale and Twycross, 2015). There are three categories of validity: content validity, construct validity and criterion validity (Heale and Twycross, 2015). Content validity refers to the extent to which the instrument covers the whole domain related to the variables or construct to be measured (the questionnaires adequately cover the questions under examination) (Saunders et al., 2016). A subset of content validity is face validity. On the other hand, construct validity considers whether research can draw conclusions about test scores related to the idea studied. Truscott et al., (2010) stated that construct validity contains two subparts; discriminant validity and convergent validity. Lastly, criterion validity or predictive validity refers to the ability of the questionnaires to make an accurate prediction or if any other instrument measured the same variables. This type of validity is measured via a three-way approach: convergent validity, divergent validity (the instrument is poorly correlated to instruments that measure different variables) and predictive validity (the instrument should have high correlations with future criteria).

On the other hand, validity is considered the dependability of the research (Burns and Burns, 2009). To prove the construct validity, it is important to combine the discriminant and convergent validity together. According to Brannen (2009), convergent validity is explained by the extent to which the practical variables of a

particular construct form an important aspect of the inconsistency. It is considered a limitation that indicates the degree to which the two gauges of constructs, which hesitantly must be interrelated, are indeed connected. Three measurements are used to measure convergent validity. These are factor loading, average variance extracted (AVE) and composite reliability, whereas discriminant validity is measured by assessing the principles of the average variance extracted from any of two constructs with the square of the connected estimation. Discriminant validity is the degree to which theoretically similar ideas are diverse.

According to Lodico et al., (2010), convergent validity can be identified if two similar frames converse with one another while, on the other hand, discriminant validity applies two different constructs, which are distinguished. To access the convergent validity, the coefficients can be connected. An unbeaten measurement of convergent validity shows that a measurement of a concept is correlated with another measurement, deliberately to assess theoretically similar ideas. On the contrary, a successful measurement of discriminant validity indicates that an experiment of a concept is not majorly related with another one planned to calculate theoretically different ideas, whereas reliability refers to the extent to which a measurement scale delivers a result that is consistent and stable (Al-Naser et al., 2016). In other words, reliability relates to measurement consistency. Therefore, reliability is known as the repeatability of the outcome. Reliability also refers to the coherence of a measure of the concept (Bryman and Bell, 2015). For example, in any research that has been done previously or is currently being investigated, the outcome will be same, to attain data reliability. There are three attributes of reliability: homogeneity (internal consistency- Cronbach's  $\alpha$ , item-to-total correlation, the Kuder-Richardson coefficient and split-half reliability), stability and equivalence (Heale and Twycross, 2015).

Meanwhile the cronbach's  $\alpha$  is applied to measure the internal reliability of the machinery. Internal reliability involves dealing with issues related to whether the batons, which create the scale, are dependable or not. As a rule of thumb, the different figures represent various levels of reliability; for example,  $\leq 0.90$  stands for excellent reliability, 0.70-0.90 for high reliability, 0.50-0.70 for moderate reliability and  $\leq 0.50$  for low reliability (Johnson et al., 2007). For this research, the researcher took

the discriminant and convergent validity to provide assurance about the accuracy of symbolising the concept of interest by measuring the construct. The measurement for this research is 0.70 and above, which is an accepted social science cut-off point (Nunnally, 1978; Xia et al., 2014).

#### **4.11.2 SPSS**

The term SPSS refers to the 'Statistical Package for the Social Science'. However, in recent times, the term 'SPSS' stands for 'Statistical Product and Service Solution'. SPSS Statistics is a software package mainly used for numerical or statistical analysis. The current updated version 23 of SPSS Statistics is IBM SPSS, which is majorly applied in authoring surveys and operations. It is the leading and most widely-used software in the marketing field. Moreover, it is also used for data administration, data illustration and numerical analysis (Blumberg et al., 2014). Therefore, researchers apply this software in managing data, discovering data files, choosing data, tracing variables, calculating new variables and combining the data set. After using SPSS, the final data analysis is performed. It comprises graphs, charts, descriptive statistics, normal curves, histograms, frequencies and cross tabulation. After that, it examines the theory by the parametric and non-parametric process, then applies regression and correlation containing two variable regressions: multiple regression and logistic regression. Lastly, it distinguishes the assessment through SEM (Structure Equation Modelling), factor analysis and AMOS (Analysis of Moment Structures) (Knox, 2004).

There are many features of SPSS Statistics those are accessible via the pull-down menu. These features can also be regulated by the administrative 4GL command language. This programming has the benefit of condensing recurrent actions, facsimile and organising complex data management and evaluation. Also, other versatile applications can be programmed within the syntax (Bryman and Bell, 2015; Bryman, 2006). According to Knox (2004), these programs are not accessible by menu management. The command syntax created by the pull-down menu can be observed in the result. Therefore, it is important to convert the default setting to make the syntax visible to its users. Clicking on the paste button, users can paste

these into a syntax file that is available on each menu. Through using the inclusive manufacture job service, the programs can be run interactively. Serrant-Green (2010) pointed out that a subroutine micro language can be used to write a command statement. The information exists in the data dictionary and vigorously build command syntax program can be admitted by Python programmability.

#### **4.11.3 Structural Equation Model**

Crouch and Pearce (2013) stated that SEM is an instrument that is used to evaluate theories with hesitant and non-hesitant data with the researchers. Scholars today highly regard its use and attractiveness. SEM is mainly structured and designed for analysing the theoretical models and abstracts. Onwuegbuzie et al., (2009) argued that SEM has some commonly used methods that include latent growth modelling, path analysis, and confirmatory factor analysis. SEM is made of two different models; they are the structural regression model and the measurement model. With the help of a definite number of pragmatic variables, the measurement model explains the latent variables while, on the other hand, the structural regression model involves connecting the latent variables simultaneously.

Bryman and Bell (2015) found that SEM is predominately used in the social sciences because of its ability to separate the observational errors from the measurement of the latent variable; for example, the height of a human being is measurable, but the intelligence of a human being is not measurable. Therefore, there are some theories on human intelligence that can be used to measure human intelligence. These theories can be examined by applying SEM to the information and data collected by the researcher. In this case, the observed variable is the examined item, and human intelligence is the latent variable. According to Johnson et al., (2007), it is a statistical method that gets a practical approach to the research of a designed theory bearing a phenomenon. SEM analyses the core models in the synchronised analysis of the entire variable system to set the extent to which it depends on the data. This research employed Analysis of Moment Structures (AMOS) version 23 to apply Structural Equation Modelling (SEM) to the results collected for the survey. The researcher chose SEM with AMOS to confirm the hypotheses and manage the

designed conceptual model. This research adopts SEM because it is suitable for justifying and analysing the theories involved with a group of variables that comprise both dependent and independent variables.

The set of two models – CFA (Confirmatory Factor Analysis) and structural models – create the formation equation model. The CFA confirms the correlation between a faction of the measurement components and their related features depend on the hypothesis. On the other hand, the structural model validates the relationship between the factors and the assumption (Roger, 2009; Wang et al., 2014).

Goodness-of-fit is used to measure the theoretical relationship between the variables. Accepting the relationship depends on the sufficiency of the goodness-of-fit. If adequate, it highlights the appropriateness of the theoretical relationship and, if inappropriate, the relationship gets leftover. There are various experimental models, of which a minimum of four models should be used for the CFA and structural model. They include the Goodness of Fit Index (GFI), Chi-square ( $\chi^2$ ), degree of freedom, Comparative Fit Index (CFI), Adjusted Goodness of Fit Index (AGFI), Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI) and Incremental Fit Index (IFI). In addition, the hypotheses are also analysed through the critical value ( $p$ -value), the critical ratio ( $t$ -value) and the consistent estimate (Harrison and Reilly, 2011).

#### **4.12 Ethical consideration**

According to Crouch and Pearce (2013), most researchers use ethical considerations to identify wrong and right. It is a standard for conducting research that comprises some principles and disciplines. A research study may face some issues that harm its quality and outcome so, to avoid these problems, researchers must consider some ethics that can avoid these issues arising regarding the research. Researchers need to follow some discipline to preserve the standard of the research. As stated by Brannen (2009), research ethics refer to the codes and manners of carrying out a research work swiftly to achieve a better outcome. Therefore, it is crucial to undertake some ethical considerations with the help of the

ethical committee to ensure that the respondents who participate in the primary data collection process will not have to face any issues related to the research (George, 2016).

Some scholars under the Data Protection Act 1988 undertaken general ethical considerations to assure the participants, such as the confidentiality of their personal details, and that the collected data will be used only for the purpose for which it was collected. The participants in the research are not manipulated or forced into taking part. The researcher protected the identity and private information of the respondents. Also, the details of the research topic, why it is conducted in that particular country and the purpose of the study are also presented. All of this information gives the participants a clearer picture of the research.

The researcher also assured the respondents that they have the right to express their views to the fullest and can withdraw from the research if at any time they feel uncomfortable about answering any of the questions. The researcher obtained the necessary permission to carry out this study. After completing this process, the researcher obtained permission to conduct the research. The researcher added further ethical considerations in addition to the ethical form to validate the security of the participants. The researcher assured the participants that they would be informed if any harm occurred that might affect them. Further, they are assured that their data would not be manipulated because this could reduce the quality of the research outcome.

#### **4.13 Concluding Remarks**

The researcher has provided a broad description of the different types of methodologies for conducting the research in a structured way. The researcher has described the various kinds of research philosophies, research approaches, research designs, research strategies and ethical considerations.

After discussing all of the research philosophies, the researcher chose the positivist philosophy because it is the most relevant philosophical approach for this particular

research. This study adopts the positivist philosophy because the research is concerned with testing abstract models intended to calculate the mediating and moderating impact of innovation and dynamics capabilities on the relationship between the business network and organisational performance of small- and medium-sized enterprises in Malaysia.

Subsequently, the researcher described different research approaches and distinguished their different features before finally selecting the quantitative approach, according to the research topic. The researchers selected the quantitative approach as it deals with the deductive approach and tests the hypotheses to check whether they are accepted or rejected. The research strategy is linked with quantitative research, which covers surveys and interviews (Ellis and Levy, 2009). The researcher selected the survey and interview for this study, as they are cost-effective and the most convenient research strategy for this research. The researcher also outlined the sampling techniques, sample size, data collection and analysis method.

The researcher mentioned some ethical considerations and data analysis techniques. The researcher used SEM with AMOS to confirm the hypotheses of the research. In the next chapter, the researcher will provide the results of the research.



## **Chapter 5 : Results and findings**

### **5.1 Introduction**

This chapter will elaborate on the results of the survey that was described in chapter 4. This study uses AMOS version 23 to carry out SEM on the results collected from the survey. The study used the SEM technique to validate the hypotheses and the performance of the proposed conceptual model in chapter 4.

### **5.2 Preliminary Data Analysis**

The process of data review was performed to ensure the precision and accuracy of the results obtained. The questionnaires were sent to 463 respondents from Malaysian SMEs. The researcher also carried out a data cleaning process before the actual data analysis to ensure that the data are accurate; no missing and isolated data (outlier) will affect the normality of the data. In order to achieve normal distributed data, that represent the population of the study, cases within complete and isolated data were removed. Removing isolated data will increase the multivariate normality (Kline, 2005).

### **5.3 Descriptive Analysis**

The data were evaluated using a descriptive review to ensure that there are no extreme values presented. Revisions are usually made to categorical data. These are age, gender, education, type of company, position in the company, annual turnover, number of employees, years for which the company has been established and type of industry (see table 5.1 and 5.2) by using frequency to determine the problems that exist, such as unreasonable values or continuous data (interval). The mean value is very important for understanding the reasonableness of the data that have been added while detecting any extreme scores.

**Table 5.1: Entrepreneurs' Profile (n = 463)**

Profile	Grouping	No. (n)	Percentage
Age	20 – 30 years	189	40.8
	31 – 40 years	149	32.2
	41 – 50 years	95	20.5
	51 and Above	30	6.5
Gender	Male	245	52.9
	Female	218	47.1
Education	SPM	131	28.3
	STPM	58	12.5
	Diploma	78	16.8
	Degree	136	29.4
	Master	40	8.6
	PhD	7	1.5
	Others	13	2.8

Table 5.1 above presents the profiles of the 463 respondents who participated in the survey. Notably, 40.8% of the respondents were aged 20-30 years old, 32.2% were aged 31-40 years old, 20.5% were aged 41-50 years old and 6.5% were more than 51 years old. 52.9% of the respondents were male and 47.1% were female.

Educational attainment was represented by 29.4% of the respondents who had obtained a degree, 28.3% a SPM, 16.8% a diploma, 12.5% a STPM, and 10.1% a postgraduate degree. It is important to note that 68.9% of the respondents had obtained a higher education qualification. Hence, the majority of respondents were aged 20 to 30 years old (189), male (245) and held a degree (136).

**Table 5.2: Entrepreneurs' Business Profile (n = 463)**

Profile	Grouping	No. (n)	Percentage
Type of Company	Sole Proprietor	84	18.1
	Partnerships	114	24.6
	Public Limited Co	265	57.2
Position in the Company	Owner	130	28.1
	CEO	41	8.9
	Manager	79	17.1
	Executive	213	46
Annual Turnover	Below RM300,000	145	31.3
	RM300,001 – RM15,000,000	182	39.3
	RM15,000,001 – RM50,000,000	136	29.4
Number of Employees	Below 5	147	31.7
	6 – 75	200	43.2
	76 – 200	116	25.1
Years of Establishment	Below 5 years	62	13.4
	6 – 10 years	166	35.9
	11 – 15 years	103	22.2
	16 – 20 years	56	12.1
	Above 21 years	76	16.4
Type of Industry	Manufacturing	120	25.9
	Services	149	32.2
	Construction	73	15.8
	Forestry	3	0.6
	Agriculture, Fishery & Livestock	56	12.1
	Education	25	5.4
	Others	37	8.0

Table 5.2 shows the business profile of the 463 respondents surveyed for this research. 35.9% of the businesses were set up 6-10 years ago, 22.2% were set up 11-15 years ago, 16.4% were set up more than 21 years ago, 13.4% were set up less than 5 years ago and 12.1% were set up 16-20 years ago.

Forty-three percent of the respondents had 6-75 employees, 31.7% had below 5 and 25.1% had 76-200 employees.

In terms of business ownership, the terms 'private company' and 'partnership' were used interchangeably, as some of the respondents regarded having business partners as a partnership business, although the business identity is actually a private company. Fifty-seven percent were public limited companies, whereas 24.6% and 21% of the businesses were partnerships and sole proprietorships, respectively. Forty six percent of the respondents were 46% were executives, 28.1% were owners, 17.1% were managers and 8.9% were CEOs.

Regarding their company's annual turnover, 39.3% of the respondents stated that this was RM300,001-RM15,000,000, 31.3% that it was below RM300,000 and 29.4% that it was RM15,000,000-RM50,000,000.

The classification of these business types and main activities was not mutually exclusive, since most of the entrepreneurs were involved in more than one type of business activity. Thirty two point two percent of the respondents were engaged in services activity, followed by 25.9% who were involved in manufacturing. The remaining 41.9% of the other businesses consist of construction (15.8%), agriculture, fishery and livestock (12.1%), education (5.1) and forestry (0.6%).

#### **5.4 Normality Test**

The normality of the variables is assessed by either statistical or graphical methods. Two components of normality are skewness and kurtosis. The ideal normal graph has zero skewness. Both skewness and kurtosis are transformed to a Z-score (the standard score for any population) by dividing the statistical value of skewness and kurtosis with the standard error (SE), respectively. The Z-score values should be within the range of  $\pm 1.96$ ,  $p < 0.05$  at the 95% confidence level or a significant level of 0.05. However, these values are rounded up to  $\pm 2$  (Hair et al., 2010).

**Table 5.3: Skewness and kurtosis values for all variables (n = 463)**

	N	Mean	Std.		Skewness	Kurtosis
			Deviation	Variance		
meanBN	463	3.6803	0.66822	0.447	-0.469	0.585
meanBIF	463	3.9114	0.56646	0.321	-1.026	3.230
meanBUR	463	3.8053	0.76865	0.591	-0.693	0.758
meanBGR	463	3.7996	0.89776	0.806	-0.551	1.823
meanDSC	463	4.0177	0.58891	0.347	-0.471	1.331
meanINN	463	3.9997	0.63025	0.397	-0.649	1.449
meanPERF	463	1.1378	0.28577	0.082	1.976	2.588
Valid N	463					

Based on table 5.3, the skewness and kurtosis values for all of the variables involved are in the range +2 to -2. Therefore, the data comply with the normality test.

## 5.5 Outliers

An outlier is a case with such an extreme or atypical value for one variable (a univariate outlier) or such a strange combination of scores for two or more variables (multivariate outlier) that it distorts the statistics. Univariate outliers are cases with very large standardised scores, z-scores, on one or more variable, which are disconnected from the other z scores. Cases with standardised scores of more than 3.29 ( $p = 6.001$ , two-tailed test) are potential outliers (Tabachnick and Fidell, 2013). In SPSS, outliers can be determined based on the outputs from the boxplot. Appendix 1 to 7 shows the construct or variables in this study that detects the presence of outliers. ID numbers representing the respondents were removed to maintain anonymity and to avoid affecting future findings or further analysis (Pallant, 2005). For the surface approach and teaching efficacy variables, no outliers were detected. As shown in appendix 1 to 7, it was found that 46 cases must be removed.

For multivariate outliers, the Mahalanobis distance was used to detect the isolated data among the data of all of the variables present. Mahalanobis distance is the distance of a case from the centroid of other cases, and the centroid is a point where the min of all of the variables intersects with each other (Tabachnick and Fidell, 2013). From the data review process, it was found that 18 cases had to be removed

and the remaining 399 cases (46 cases from outliers and 18 cases from multivariate outliers) are valid for further analysis. The sample size is suitable for the Structural Equation Modelling (SEM) method because SEM requires a large sample size. According to Kline (2005), a sample size of more than 200 cases is considered a large sample. Appendix 8 shows the outliers present on all of the variables after analysis is carried out by determining the Mahalanobis distance.

## **5.6 Reliability Assessment**

Reliability is an essential pre-requisite for validity and is defined as the extent of the reliability of the measurement model in measuring the intended latent construct (Awang, 2015). Reliability is concerned with the outcome of the research and determines how far the measurement or data are consistent (Collis and Hussey, 2013; Hernon and Schwartz, 2009). In other words, the internal consistency measurement is related to the observed indicator variables. Reliability is traditionally estimated by the Cronbach's Alpha ( $\alpha$ ) coefficient (Cronbach, 1951). The criteria for the assessment for reliability for a measurement model are as follows:

Composite reliability refers to the reliability and internal consistency of the latent construct (Thurber and Bonyng, 2011). As a rule of thumb, a figure of  $\leq 0.90$  refers to excellent reliability; 0.70-0.90 refers to high reliability; 0.50-0.70 refers to moderate reliability; and  $\leq 0.50$  refers to low reliability (Hinton et al., 2004).

Average Variance Extracted (AVE) is the average amount of variance in the indicator variables that a construct manages to explain. For every construct, an AVE  $\geq 0.5$  is required.

There are three important factors involved in measuring the reliability of a construct. These are stability, internal reliability and inter-observer consistency (Bryman and Bell, 2015). Stability refers to whether or not the measurement of a sample of respondents remains stable over time. Internal reliability relates to the issue of whether or not an indicator that makes up the scale or index is consistent, while inter-observer consistency refers to the involvement of subjective judgement in such

activities, which may produce a lack of consistency in the decisions, likes categorising or structuring the different answers given by the respondents to open-ended questions. Recently, most researchers use a Cronbach's alpha as a test of internal reliability (Bryman and Bell, 2015). This study will adopt internal reliability, which means using the Cronbach's alpha as a scale for reliability, with a minimum of 0.7 ( $\geq 0.7$ ) as a lower bound of acceptability (Tavakol and Dennick, 2011). Table 5.4 present the Cronbach's alpha figures for all six constructs of the study. The result shows that all of the constructs fall under the category 'Excellent Reliability', as all of the figures are more than 0.7 (rules of thumb 0.70 - 0.90 – excellent reliability) (see table 5.4).

**Table 5.4: Cronbach Alpha for each component in the construct**

<b>Construct</b>	<b>Items</b>	<b>Cronbach's Alpha</b>	<b>Type</b>
Inter-firm	8	0.902	Excellent Reliability
Research Organization	7	0.935	Excellent Reliability
Government Role	9	0.942	Excellent Reliability
Dynamic capabilities	23	0.967	Excellent Reliability
Innovation Capabilities	13	0.954	Excellent Reliability
Firm Performance	5	0.862	Excellent Reliability

## 5.7 KMO and Bartlett's Test of Sphericity

KMO & Bartlett's Test of Sphericity refers to a measure of sampling adequacy in order to check the case with the variable ratio for the analysis being conducted. KMO refers to the variables testing in a given sample being adequate to correlate, and Bartlett's Test of Sphericity is a statistical test that is used to examine the hypothesis that the variables are uncorrelated in the population (relationship confirmation between variables) (Hair et al., 2010). A range of KMO from 0 to 1 and a value close to 1 are optimum, so the value of 0.6 is the minimum suggested, and the value of Bartlett's Test should have ( $p < 0.05$ ) (Hair et al., 2010). The KMO and Bartlett's Test play a vital role in confirmatory analysis. Hinton et al., (2004) suggest using the KMO and Bartlett's Test parameter in order to proceed with the confirmatory factor analysis. The KMO value for the research equals 0.959, which is higher than the suggested value of 0.70. The Bartlett's Test of Sphericity was significant ( $p = 0.00$ ), which is lower than the suggested value ( $p < 0.05$ ). This result shows that the sampling was adequate for conducting factor analysis in the next stage.

**Table 5.5: KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.959
	Approx. Chi-Square	31298.893
Bartlett's Test of Sphericity	df.	2415
	Sig.	0.000

## 5.8 Structural Equation Modelling (SEM)

Structural equation modelling (SEM) was used to analyse the relationship between the business network and Malaysian SMEs' performance, as mediated by innovation capability and moderated by dynamic capability. There are two types of structural equation model, known as the confirmatory factor analysis (measurement model) and the structural model (Hair et al., 2010). Confirmatory factor analysis validates the relationship between a set of measurement items and their respective antecedents, based on the theory. However, the structural model validates the relationship



between the factors as hypothesised. Furthermore, this study involves a two-step approach to modelling. First, the researcher will test the measurement model. If the development model is fit and acceptable, then further tests will be carried out on the structural or full model (Kline, 2015).

### 5.8.1 Measurement Model (Confirmatory Factor Analysis)

The measurements model uses Confirmatory Factor Analysis (CFA) as a statistical method to determine the relationship between the constructs or latent variables and their indicators (Byrne, 2010). In this study, CFA will serve to determine the fitness indexes for the measurement model. In SEM, there are several Fitness Indexes that reflect how fit the model is to the data. However, there is no agreement among researchers regarding which fitness indexes to use (Awang, 2012). Hair et al., (2010) recommend the use of at least one fitness index from each category of model fit. There are three model fit categories; namely, absolute fit, incremental fit and parsimonious fit (see table 5.6).

**Table 5.6: The literature support for the respective fitness index**

Name of category	Name of index	Index full name	Level of acceptance	Literature
Absolute fit	Chi-Square	Discrepancy Chi Square	$p \geq 0.05$	(Wheaton et al., 1977)
	RMSEA	Root Mean Square of Error Approximation	$\leq 0.08$	(Browne and Cudeck, 1993; Schumacker and Lomax, 2004)
	GFI	Goodness of Fit Index	$\geq 0.80$	(Hair et al., 2010)
Incremental fit	AGFI	Adjusted Goodness of Fit	$\geq 0.80$	(Hair et al., 2010; Yang and Yoo, 2004)
	CFI	Comparative Fit Index	$\geq 0.90$	(Bentler and Bonett, 1980; Bentler, 1990)
	TLI	Tucker-Lewis Index	$\geq 0.90$	(Hu and Bentler, 1999; Schumacker and Lomax, 2004)

	NFI	Normed Fit Index	≥ 0.90	(Bentler and Bonett, 1980; Bollen, 1989)
Parsimonious fit	Chisq/df	Chi Square/Degrees of Freedom	< 5.0	(Ahmad et al., 2016; Marsh and Hocevar, 1985; Schumacker and Lomax, 2004; Shadfar and Malekmohammadi, 2013)

### 5.8.1.1 Measurement model/Confirmatory Factor analysis for the latent construct (before modification)

The CFA measurement model does not fit with the studied data (see appendix 9 to 11), while table 5.7 shows that the entire required fitness index did not meet the requirements. The RMSEA value is higher than 0.08, GFI and CFI are lower than 0.90 and Chisq/df is more than 5.0. Therefore, this measurement model needs to be modified in order to meet the requirements of the fitness indexes.

**Table 5.7: Fitness Index recommended by Hair et al., (1995, 2010) and result obtained from measurement model for the entire construct**

Name of Category	Name of Index	Level of acceptance	Measurement model		
			BN	DSC	INNO & PERF
1. Absolute Fit	Chisq	> 0.05	1979.384	1919.780	838.965
	<b>*RMSEA</b>	<b>&lt; 0.08</b>	0.123	0.126	0.107
	<b>*GFI</b>	<b>&gt; 0.90</b>	0.745	0.709	0.823
2. Incremental Fit	AGFI	> 0.90	0.692	0.651	0.774
	<b>*CFI</b>	<b>&gt; 0.90</b>	0.820	0.819	0.892
	TLI	> 0.90	0.801	0.801	0.876
	NFI	> 0.90	0.800	0.800	0.874
3. Parsimonious Fit	<b>*Chisq/df</b>	<b>&lt; 5.0</b>	7.949	8.347	6.261

\* The indexes are recommended since frequently reported in literatures.

Source: Awang (2012).

Note: BN = Business Network, DSC = Dynamic Capabilities, INNO = Innovation and PERF = Firm Performance

The item(s) with low factor loading that will cause poor fitness indexes for the construct should be deleted from the measurement model. After their deletion, the model is re-specified and the fitness indexes will improve. The measurement model for measuring the entire construct after the modification process can be seen in appendix 12 to 14, while table 5.8 shows that the fitness indexes are improved and meet the requirements.

### 5.8.1.2 Measurement model/Confirmatory Factor analysis for the latent construct (after modification)

**Table 5.8:** Fitness Index for measurement model after modification for the all construct

Name of Category	Name of Index	Level of acceptance	Measurement model (After Modification)		
			BN	DSC	INNO & PERF
1. Absolute Fit	Chisq	> 0.05	455.718	542.239	261.742
	<b>*RMSEA</b>	<b>&lt; 0.08</b>	0.078	0.074	0.068
	<b>*GFI</b>	<b>&gt; 0.90</b>	0.901	0.900	0.930
2. Incremental Fit	AGFI	> 0.90	0.857	0.863	0.899
	<b>*CFI</b>	<b>&gt; 0.90</b>	0.956	0.951	0.967
	TLI	> 0.90	0.944	0.940	0.958
	NFI	> 0.90	0.942	0.933	0.952
3. Parsimonious Fit	<b>*Chisq/df</b>	<b>&lt; 5.0</b>	3.830	3.498	3.154

### 5.8.2 Assessing validity and reliability for the measurement model

Once the CFA procedure for every measurement model is completed, we need to compute certain measures which indicate the validity and reliability of the construct. The assessment of the unidimensionality, validity and reliability of the measurement model is required prior to modelling the structural model.

*Unidimensionality:* This requirement was achieved through the item-deletion process for the low factor loading item. The new model is run and the item deletion process is repeated until the fitness indexes achieve the required level.

*Validity:* This requirement was achieved through the following processes:

i) Convergent validity:  $AVE \geq 0.50$ , Refer to the following table (see table 5.9). Average Variance Extracted ,  $AVE = \sum K^2 / n$  where  $K$  = the factor loading of every item and  $n$  = the number of items in a model.

ii) Construct validity: All of the fitness indexes for the model meet the required level.

iii) Discriminant validity: There is no redundant item for the entire construct involved, and also the correlations between all of the constructs are lower than 0.85 (see table 5.10).

*Reliability:* This requirement was achieved through the following processes:

i) Internal reliability: Cronbach alpha  $\geq 0.70$  (see table 5.9)

ii) Composite reliability (C.R):  $C.R \geq 0.6$  (see table 5.9)

where  $K$  = the factor loading of every item and  $n$  = the number of items in a model.

**Table 5.9: The Confirmatory Factor Analysis (CFA) Summary for all constructs**

Construct	Component	Item	Factor Loading	Cronbach Alpha (> 0.7)	CR (≥ 0.6)	AVE (≥ 0.5)
	Inter Firm	BIF1	0.72	0.902	0.864	0.614
		BIF2	0.78			
		BIF3	0.83			
		BIF4	0.80			
		BIF5				
		BIF6				
		BIF7				
		BIF8				

Construct	Component	Item	Factor Loading	Cronbach Alpha (> 0.7)	CR (≥ 0.6)	AVE (≥ 0.5)									
BUSINESS NETWORK	Research Organization	BUR1		0.935	0.929	0.686									
		BUR2	0.76												
		BUR3	0.77												
		BUR4	0.82												
		BUR5	0.88												
		BUR6	0.88												
		BUR7	0.85												
	Government Role	BGR1	0.78	0.942	0.951	0.808									
		BGR2	0.80												
		BGR3													
		BGR4	0.87												
		BGR5	0.87												
		BGR6	0.86												
		BGR7	0.88												
		BGR8	0.87												
BGR9	0.79														
DYNAMIC CAPABILITIES	Sensing	DSC1		0.967	0.966	0.586									
		DSC2													
		DSC3	0.77												
	Absorptive	DSC4	0.76	0.967	0.966	0.586									
		DSC5	0.75												
		DSC6	0.77												
		DSC7	0.79												
		DSC8	0.78												
	Adaptive	DSC9	0.78	0.967	0.966	0.586									
		DSC10													
		DSC11	0.75												
		DSC12	0.74												
		DSC13	0.76												
	Coordination	DSC14	0.77	0.967	0.966	0.586									
		DSC15	0.80												
		DSC16	0.79												
		DSC17	0.77												
		DSC18	0.77												
	Reconfigure	DSC19	0.77	0.967	0.966	0.586									
		DSC20	0.76												
		DSC21	0.76												
		DSC22	0.73												
		DSC23	0.74												
INNOVATION	Product	INNO1		0.954	0.949	0.990									
		INNO2													
	Process	INNO3	0.78				0.954	0.949	0.990						
		INNO4	0.73												
		INNO5	0.74												
		INNO6	0.76												
	Marketing	INNO7	0.76							0.954	0.949	0.990			
		INNO8	0.78												
	Organizational	INNO9	0.81										0.954	0.949	0.990
		INNO10	0.87												

Construct	Component	Item	Factor Loading	Cronbach Alpha (> 0.7)	CR (≥ 0.6)	AVE (≥ 0.5)
		INNO11	0.84			
		INNO12	0.79			
		INNO13	0.84			
FIRM PERFORMANCE		PER1	0.86	0.876	0.870	0.629
		PER2	0.90			
		PER3	0.70			
		PER4				
		PER5	0.69			

**Note :** 1) Coloured box represent item deleted due to the low factor loading.

2) AVE for Business Network =  $(0.614 + 0.686 + 0.808) / 3 = 0.703$ , therefore square root for AVE = 0.838

3) Correlation between business network and dynamic capabilities are 0.97

**Table 5.10 : Correlation between construct for measurement model**

Construct	Inter-Firm	Research Organization	Government Role
Inter-Firm	<b>0.78*</b>	0.57**	0.68**
Research Organization		<b>0.83*</b>	0.79**
Government Role			<b>0.90*</b>

\*Square root AVE

\*\*correlation between construct (<0.85)

The diagonal values in bold are the square root of AVE for that construct, while the other values are the correlations between the respective constructs. Discriminant validity is achieved when a diagonal value in bold is higher than the values in its row and column (Awang, 2012).

### 5.8.3 Structural Model

An analysis of the results showed that the measurement model achieved good fitness indexes after the modification process. Therefore, the analysis will continue with testing the full model (structural model). This part will report on the analysis of

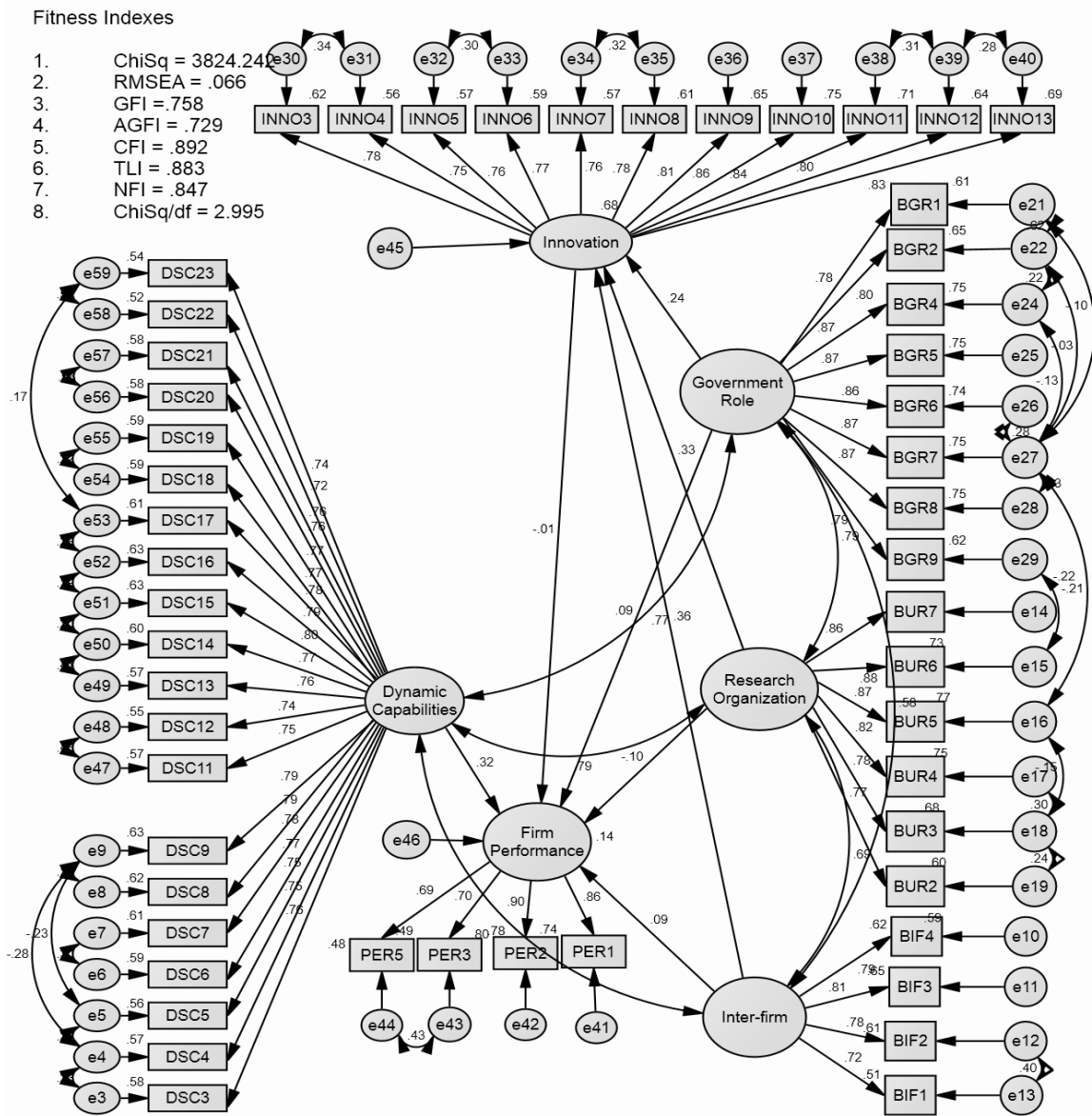
the model development. Structural models have been developed and will examine the relationship between business networks, dynamic capabilities, firm innovation and firm performance, as illustrated in figure 5.1. This figure shows that the entire construct meets the minimum criteria for goodness of fit.

**Table 5.11: Goodness of fit for structural model**

Model Fit Indices	Recommended Criteria	Default Model
Chi-Square	$p > 0.05$	3824.24
RMSEA	$\leq 0.08$	0.066
GFI	$\geq 0.80$	0.758
AGFI	$\geq 0.80$	0.729
CFI	$\geq 0.90$	0.892
TLI	$\geq 0.90$	0.883
NFI	$\geq 0.90$	0.847
Chisq/df	$< 5.0$	2.992

As shown in table 5.11, most of the figures illustrate a good fit except for CFI, TLI and NFI. Chisq/df achieved an acceptable fit of 2.992 as below recommended criteria of ( $< 5.0$ ). The result for the Chi-Square, RMSEA, GFI, AGFI were 3824.24, 0.066, 0.758, and 0.729, respectively, all of which meet the minimum requirement. However, the results for CFI, TLI, and NFI were 0.892, 0.883, and 0.847, which did not achieve the recommended value of  $\geq 0.90$ .

**Figure 5.1: The Standard Regression Weights for relationship between business network, dynamic capabilities, firm innovation and performance**



### 5.8.3.1 Hypotheses Testing

The hypotheses for this research are tested by evaluating the path significance of each relationship. The critical ratio, standardised estimate and *p*-value are used to evaluate all fifteen hypotheses in this research. The critical ratio (*t*-value) is achieved by dividing the regression weight estimate by the standard error (S.E) and it is significant when a *t*-value is more than 1.96 and there is a *p*-value of (0.05).



Table 5.12 and 5.54 represents the results of the path estimates for the fifteen hypotheses for this research. The result revealed that ten of the fifteen hypotheses' casual paths are significant, as the *t*-values are more than 1.96 and the *p*-value is  $\leq 0.05$  (four of the eight main hypotheses are significant – not including the mediator and moderator).

In the analysis of the main hypotheses (this does not include the mediator and moderator), the relationship between inter-firm and innovation is significant, with a path estimate of 0.062, a *t*-value of 6.968 and a significant *p*-value of  $\leq 0.05$ ; hence, hypotheses 1 is supported. Research organization and innovation are also significantly related to innovation, as the path estimate is 0.054, the *t*-value is 4.889 and the significance of the *p*-value of  $\leq 0.05$ ; hence, hypotheses 2 is supported. Similarly, government role and innovation are significant, with a path estimate of 0.041, a *t*-value of 4.122 and a significant *p*-value of  $\leq 0.05$ ; hence, hypotheses 3 is supported. Hypothesis 8 is also supported, as the relationship between dynamic capabilities and firm performance is significant with a path estimate of 0.258, a *t*-value of 2.725 and a significant *p*-value of  $\leq 0.05$ .

However, the relationship between inter-firm and firm performance is not significant, with a path estimate 0.194, a *t*-value 0.851 and a significant *p*-value of 0.395; hence, hypothesis 15a is not supported, while research organization and firm performance are also not significantly related, as the path estimate is -0.153, the *t*-value -0.962 and there is a significant *p*-value of 0.335; hence, hypothesis 15b is not supported. Similarly, with government role and firm performance also there is no relationship as they are not significantly related, with a path estimate of 0.118, a *t*-value of 0.915 and a significant *p*-value of 0.361; hence, hypothesis 15b is not supported. Lastly, the relationship between innovation and firm performance is also not significantly related, as the path estimate is -0.015, the *t*-value is -0.088 and the significant *p*-value is 0.930; hence, hypothesis H4 is not supported. The result for the relationship between innovation as a mediator and dynamic capabilities as a moderator will be discussed in detail in section 5.8.4 and 5.8.5.

Figure 5.1 represents the path coefficients of all fifteen relationships in the proposed conceptual framework. The results revealed a positive and significant relationship

between inter-firm and innovation with path coefficients of 0.36; hence, hypothesis 1 is supported. Likewise, research organization has a significant and positive impact on innovation, with a path coefficient of 0.33; therefore, hypothesis 2 is supported. Government role also has a significant and positive relationship with innovation, with a path coefficient of 0.24; hence, hypothesis 3 is supported. Similarly with dynamic capability also, a significant and positive relationship with firm performance is found, as the path coefficient is 0.32; hence, hypothesis 8 is supported.

However business relationship and firm performance (inter-firm, research organization and government role) are not significant and have a negative relationship, as their path coefficient is 0.78 for inter-firm, -0.10 for research organization and 0.72 for government role, so hypotheses 15a-c are not supported. Lastly, the relationship between innovation and firm performance is not significant and has a negative relationship, with a path coefficient of -0.01. Overall, only four of the path coefficient's 8 hypotheses (not including innovation as a mediator and dynamic capabilities as a moderator) are significant and have a positive relationship. The relationship between dynamic capabilities and firm performance is significant.

**Table 5.12: The hypothesis testing for the causal effect of exogenous variable on endogenous variable for relationship between business network, dynamic capabilities, firm innovation and performance**

Constructs			Estimate	S.E.	C.R.	<i>p</i>	Result
Inter-firm	→	Innovation	0.432	0.062	6.934	***	significant
Research Organization	→	Innovation	0.264	0.054	4.883	***	significant
Government Role	→	Innovation	0.169	0.041	4.164	***	significant
Dynamic Capabilities	→	Firm Performance	0.703	0.258	2.729	***	significant
Inter-firm	→	Firm Performance	0.194	0.228	0.850	0.395	Not Significant

Constructs		Estimate	S.E.	C.R.	<i>p</i>	Result
Research Organization	→ Firm Performance	-0.153	0.159	-0.964	0.335	Not Significant
Government Role	→ Firm Performance	0.118	0.129	0.913	0.361	Not Significant
Innovation	→ Firm Performance	-0.015	0.171	-0.087	0.930	Not Significant

The standard regression weight represents the amount of change in the dependent variable due to a change of one standard deviation in the predictor variable. For example, the estimated value of innovation for firm performance is 0.082. This means that, when innovation rises by 1 standard deviation, firm performance rises by 0.082 standard deviations. It should be noted that the value range of standard regression weights for all of the variables in this model is between -0.222 and 0.082.

**Table 5.13: The Standardized Regression Weights for every path and its R<sup>2</sup> value**

Construct			Estimate	R <sup>2</sup>
Business Network	→	Firm performance	-0.222	0.108
Innovation	→	Firm performance	0.082	0.100
Dynamic Capabilities	→	Firm performance	-0.222	0.132

In order to determine the causal effect between the exogenous and endogenous variables, the squared multiple correlation ( $R^2$ ) must be considered. For example, the  $R^2$  for business network to firm performance is 0.108 (see table 5.13). It is estimated that the predictors of firm performance explain 10.8% of its variance. In other words, the contribution of business network in estimating firm performance is 10.8%. Therefore, the contribution of innovation in estimating firm performance is 10%, and that of dynamic capabilities is 13.2%.

#### 5.8.4 Mediating Effect (Innovation capabilities as a mediator)

In a simple mediational model, the independent variables were considered to cause the mediator and, in turn, the mediator will cause the dependent variables. For this reason, a mediation effect is also termed an indirect effect, surrogate effect, intermediate effect, or intervening effect (MacKinnon et al., 2002).

The direct effect of the independent variable on the dependent variable must be significant (compulsory for mediator testing). When the mediator enters the model, the direct effect will be reduced since some of the effect has shifted through the mediator. If it is reduced but still significant, the mediation effect is called “Partial Mediation”. However, if the direct effect is reduced and no longer significant, the mediation is called “Complete Mediation” (Awang, 2012).

This part discusses the role of innovation as a mediator between the business network and the business performance. In addition, an analysis is performed to see whether there is full, partial or no mediation. Figure 5.2, 5.4 and 5.6 show the direct effect of business network on firm performance.

##### 5.8.4.1 Inter-firm and Performance

Table 5.14 shows that there is positive relationship between inter-firm and firm performance. However, after the innovations, the model, as shown in table 5.15 and figure 5.3, shows that inter-firms are significantly related to innovation and innovation is significantly related to firm performance. Hence, partial mediation occurred.

**Table 5.14: The hypothesis testing for the causal effect of Inter-firm on firm performance**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Inter-Firm → Firm Performance	0.668	0.120	5.583	0.001	Significant

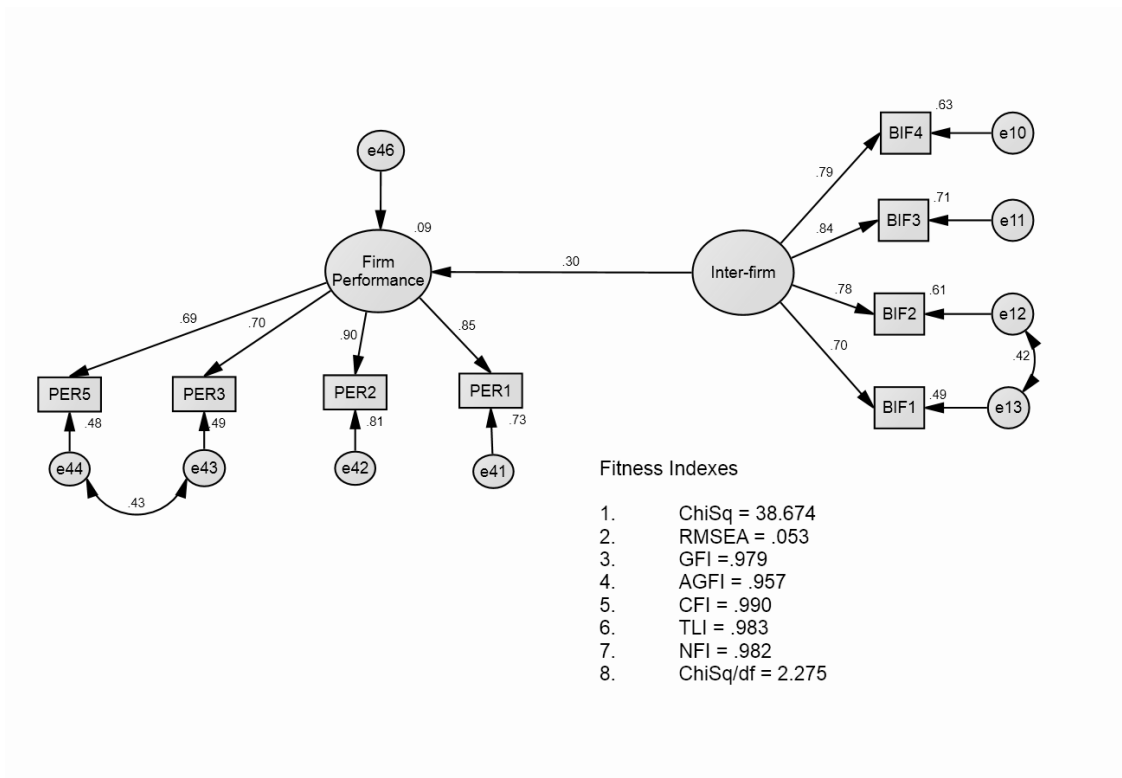


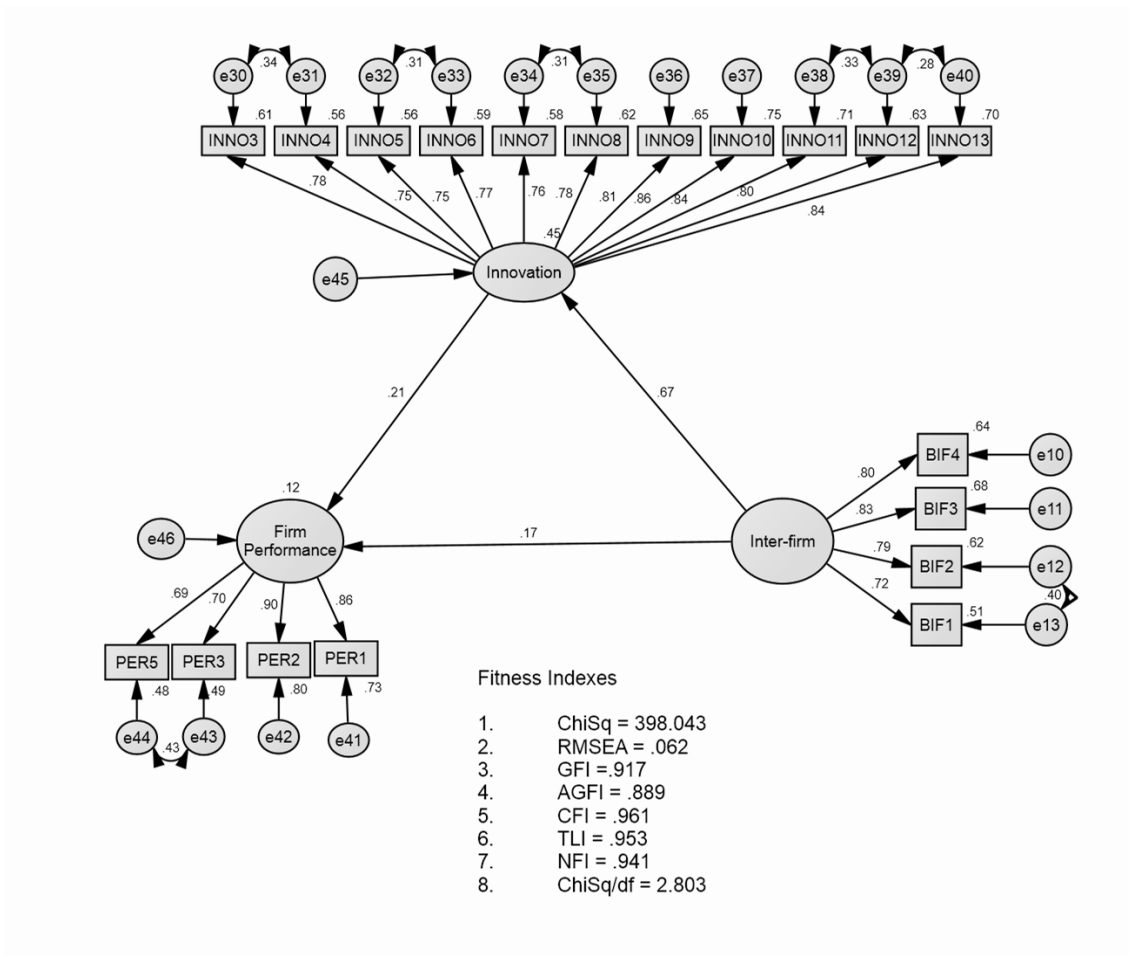
Figure 5.2: The result shows the direct effect of Inter-firm on firm performance

Table 5.15: The hypothesis testing for the causal effect of Mediator (innovation) on firm performance

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Inter-firm → firm Performance	0.359	0.161	2.237	0.025*	significant
Inter-firm → Innovation	0.799	0.067	11.901	0.001	significant
Innovation → Firm Performance	0.374	0.129	2.900	0.004	significant

\* significant at  $p = 0.05$

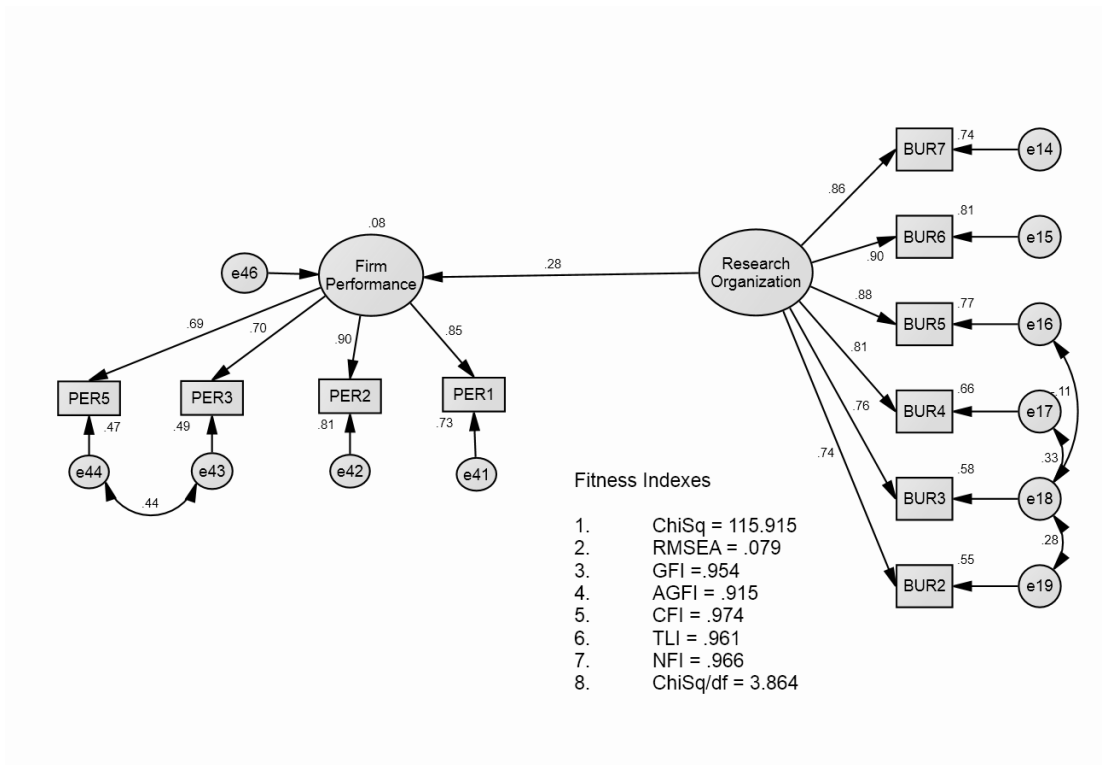
Type of mediation occurred is **Partial Mediation**.



**Figure 5.3: The result shows the indirect effect of business network on firm performance when mediator (innovation) enters to the model**

#### 5.8.4.2 University and Public Research organization and performance

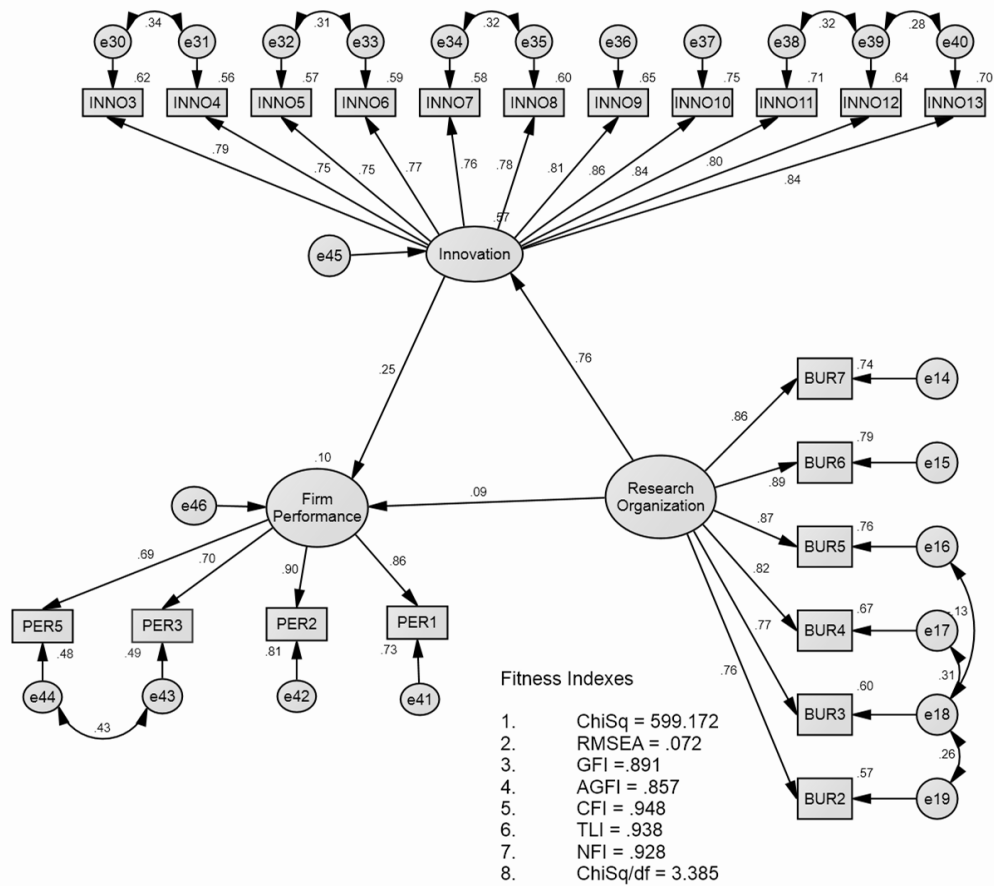
Innovation fully mediates the relationship between a university and a research organization. This is because, as shown in table 5.17 and figure 5.5, the relationship between research organization and innovation is significant and innovation is also significantly related to performance. Before innovation enters as a mediator, university and public research organization are not significantly related.



**Figure 5.4: The result shows the direct effect of research organization on firm performance**

**Table 5.16: The hypothesis testing for the causal effect of research organization on firm performance**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Research organization → Firm Performance	0.405	0.074	5.488	0.001	Significant



**Figure 5.5: The result shows the indirect effect of research organization on firm performance when mediator (innovation) enters to the model**

**Table 5.17: The hypothesis testing for the causal effect of mediator (innovation) on firm performance**

Construct	Estimate	S.E.	C.R.	p	Result
Research Organization → firm Performance	0.136	0.118	1.152	0.249	Not significant
Research Organization → Innovation	0.611	0.037	16.398	0.001	significant
Innovation → Firm Performance	0.447	0.147	3.042	0.002	significant

\*significant at  $p = 0.05$

Type of mediation occurred is **Full Mediation**.

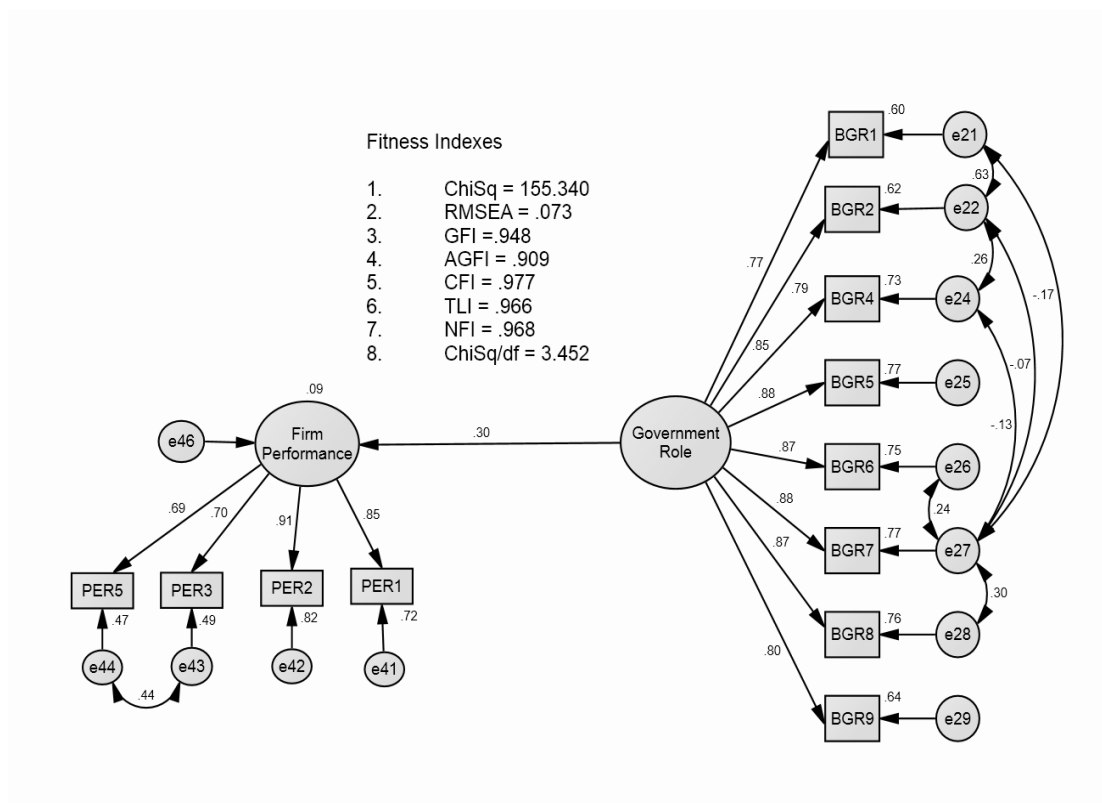


### 5.8.4.3 Government role and performance

Table 5.18 shows that there is a positive relationship between government role and firm performance. However, after innovation enters the model, as shown in table 5.19 and figure 5.7, the government's role is significantly related to innovation and innovation is significantly related to firm performance. Hence, partial mediation occurs.

**Table 5.18: The hypothesis testing for the causal effect of government role on firm performance**

Construct	Estimate	S.E.	C.R.	p	Result
Government Role → Firm Performance	0.387	0.066	5.900	0.001	Significant



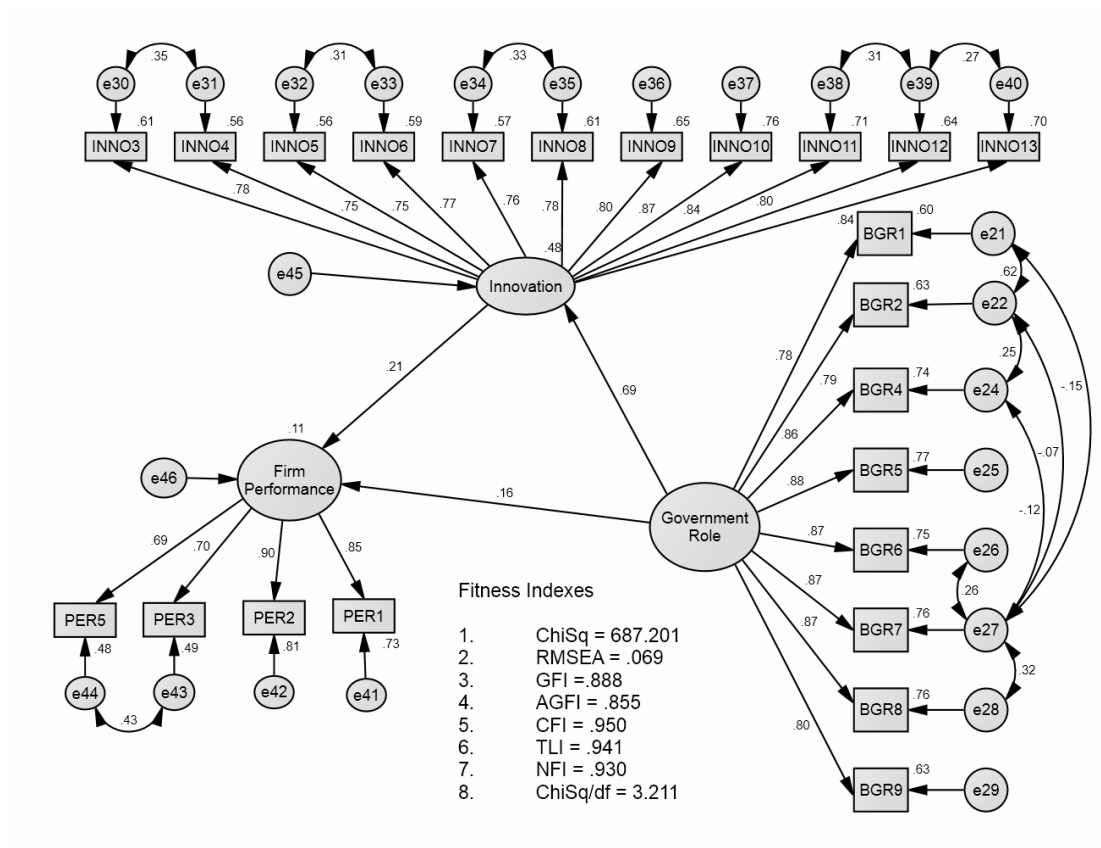
**Figure 5.6: The result shows the direct effect of government role on firm performance**

**Table 5.19: The hypothesis testing for the causal effect of mediator (innovation) on firm performance**

Construct	Estimate	S.E.	C.R.	p	Result
Government role → firm Performance	0.205	0.092	2.244	0.025*	significant
Government role → Innovation	0.497	0.036	13.919	0.001	significant
Innovation → Firm Performance	0.372	0.128	2.899	0.004	significant

\*significant at p = 0.05

Type of mediation occurred is **Partial Mediation**.



**Figure 5.7: The result shows the indirect effect of government role on firm performance when mediator (innovation) enters to the model**

### **5.8.5 Moderating Effect (Dynamic Capabilities as a moderator)**

According to Awang (2012), a moderating variable is defined as a variable that 'moderates the effects' of an independent variable on its dependent variable. The social science researcher, in particular, defines a moderator as a variable that 'interferes' in the relationship between an independent variable and its corresponding dependent variable. For illustration, let M be the moderator variable in the X-Y relationship, in which case the moderating role of M is 'to alter' the effects of X on Y.

Before introducing a moderator into the model, the effects of the independent variable X on its dependent variable Y must exist and be significant (Awang, 2012). Thus, when a moderator M enters the model, the causal effects will change due to some 'interaction effect' between the independent variable X and the moderator M that just entered. As a result, the 'effects' of X on Y could either increase or decrease. In other words, the effect of the independent variable on its dependent variable would depend on the level of the moderator variable.

For latent constructs or variables, analysing the moderating effect is more complicated. Alternatively, the multi-group CFA has been suggested as a method for assessing the effect of the moderator variable in the model. The researcher only needs to identify the path of interest where the moderator variable is to be assessed. In this study, dynamic capabilities are chosen as a moderator to test whether it moderates the effect between business networks to innovation and firm performance. Dynamic capabilities are divided into two groups; namely, low dynamic capabilities and high dynamic capabilities, and these groups will be analysed separately. The path will be constrained with parameter = 1 and the model is termed a constrained model while the other one is the unconstrained model. The step by step process for multi-group CFA is discussed.

#### **5.8.5.1 The inter-firm/firm performance relationship**

In order to check the moderating effect of dynamic capabilities on the relationship between business network and firm performance, it will base on low dynamic

capabilities and high capabilities. Further, it will be checked based on unconstrained (Table 5.20 and 5.21) and constrained (Table 5.22 and 5.23). See appendix 15 and 16.

**a) Low Dynamic Capabilities**

Unconstrained

**Table 5.20: Testing the moderating effect of for inter-firm – firm performance relationship (low dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Inter-firm → Firm performance	1.113	0.371	2.999	0.003	Significant

**Table 5.21: The Chi-square value and DF for the unconstrained model for Inter-firm – Firm performance relationship (low dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	19	12.623	17	0.761	0.743
Saturated model	36	0.000	0		
Independence model	8	660.412	28	0.000	23.586

Constrained

**Table 5.22: The Chi-square value and DF for the constrained model for Inter-firm – firm performance relationship (low dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	18	12.719	18	0.808	0.707
Saturated model	36	0.000	0		
Independence model	8	660.412	28	0.000	23.586

**Table 5.23: The moderation test for inter-firm – firm performance relationship for low dynamic capabilities group data**

	Constrained Model	Unconstrained Model	Chi-square difference	Result on moderation	Result on hypothesis
Chi-square	12.719	12.623	0.096	Not significant	Not supported
DF	18	17	1		

**The hypothesis statement:**

Dynamic capabilities moderate the relationship between inter-firm and firm performance.	Not supported
---	---------------

From table 5.23, the result shows that the moderation is not significant since the difference in the chi-square value between the constrained and unconstrained model is less than 3.84. For the test to be significant, the difference in the chi-square value must be higher than the value of chi-square with 1 degree of freedom, which is 3.84. The test of the hypothesis for moderation that was carried out found that the moderator (dynamic capabilities) **does not moderate** the causal effects of inter-firm and firm performance.

## b) High Dynamic Capabilities

For high dynamic capability, for the unconstrained model, the relationship between inter-firm and firm performance is not significant. Hence, we are unable to proceed to the next step (constrained).

### Unconstrained

**Table 5.24: Testing the moderating effect of for inter-firm – firm performance relationship (high dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	$p$	Result
Inter-firm → Firm performance	0.027	0.096	0.284	0.776	Not significant

From table 5.24 and appendix 17 the direct effect of inter-firm on firm performance is not significant ( $\beta = -0.027$ ,  $p = 0.776$ ). Therefore, no moderating effect exists for this model. A moderating effect only exists if there is a direct effect between inter-firm and firm performance.

In conclusion, based on the constrained and unconstrained model for both low and high dynamic capabilities, the result shows that **no moderation** effect occurs, since the standardised estimates for **low dynamic capabilities** and **high dynamic capabilities** are **not significant**.

### 5.8.5.2 The inter-firm/innovation capabilities relationship

#### a) Low Dynamic Capabilities

The moderation of dynamic capabilities of the relationship between inter-firm and innovation capabilities under low dynamic capabilities and the unconstrained model shows that there is a significant relationship between inter-firm and innovation capabilities, as shown in table 5.25 and 5.26 and appendix 18. For the constrained

model, as shown in appendix 19, table 5.27 and 5.28 reveal that there is no moderation effect.

Unconstrained

**Table 5.25: Testing the moderating effect of for Inter-firm – innovation capabilities relationship (low dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Inter-firm → Innovation	0.742	0.187	3.964	0.001	Significant

**Table 5.26: The Chi-square value and DF for the unconstrained model for Inter-firm – innovation capabilities relationship (low dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	37	161.703	83	0.000	1.948
Saturated model	120	0.000	0		
Independence model	15	1419.035	105	0.000	13.515

Constrained

**Table 5.27: The Chi-square value and DF for the constrained model for Inter-firm – innovation capabilities relationship (low dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	36	163.191	84	0.000	1.943
Saturated model	120	0.000	0		
Independence model	15	1419.035	105	0.000	13.515

**Table 5.28: The moderation test for inter-firm – innovation capabilities relationship for low dynamic capabilities group data**

	Constrained Model	Unconstrained Model	Chi-square difference	Result on moderation	Result on hypothesis
Chi-square	163.191	161.703	1.488	Not significant	Not supported
DF	84	83	1		

**The hypothesis statement:**

Dynamic capabilities moderate the relationship between inter-firm and innovation capabilities.	Not supported
--	---------------

From table 5.27 and 5.28, the result shows that the moderation is not significant since the difference in the chi-square value between the constrained and unconstrained model is less than 3.84. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84.

The test of the hypothesis for moderation that was carried out found that the moderator (dynamic capabilities) **does not moderate** the causal effects of inter-firm and innovation capabilities.

**b) High dynamic capabilities**

High dynamic capabilities show that full moderation occurs in the relationship between inter-firm and innovation capabilities. Table 5.29, 5.30 and appendix 20 shows that a significant relationship exists between inter-firm and innovation under unconstrained.

Unconstrained

**Table 5.29: Testing the moderating effect of for Inter-firm – innovation capabilities relationship (high dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Inter-firm → Innovation	0.513	0.056	9.080	0.001	Significant



**Table 5.30: The Chi-square value and DF for the unconstrained model for Inter-firm – innovation capabilities relationship (high dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	37	297.807	83	0.000	3.588
Saturated model	120	0.000	0		
Independence model	15	3169.725	105	0.000	30.188

Constrained

**Table 5.31: The Chi-square value and DF for the constrained model for Inter-firm – innovation capabilities relationship (high dynamic capabilities)**

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	36	338.195	84	0.000	4.026
Saturated model	120	0.000	0		
Independence model	15	3169.725	105	0.000	30.188

**Table 5.32: The moderation test for inter-firm – innovation capabilities relationship for high dynamic capabilities group data**

	Constrained Model	Unconstrained Model	Chi-square difference	Result on moderation	Result on hypothesis
Chi-square	338.195	297.807	40.338	significant	supported
DF	84	83	1		

**The hypothesis statement:**

Dynamic capabilities moderate the relationship between inter-firm and innovation capabilities.

supported

The result shown in table 5.31, 5.32 and appendix 21 indicates that the moderation is significant since the difference in the chi-square value between the constrained and unconstrained model is more than 3.84. The difference in the chi-square value is

40.338, while the difference in the degrees of freedom is 1. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84.

In conclusion, based on the constrained and unconstrained model for both low and high dynamic capabilities, the result shows that the type of moderation is **full moderation** since the standardised estimates for low dynamic capabilities is not significant while the standardized estimates for high dynamic capabilities is significant. If both estimates are significant, then partial moderation occurs.

### 5.8.5.3 The university and public research organization/firm performance relationship

#### a) Low Dynamic Capabilities

The moderation of dynamic capabilities in the relationship between a university and a public research organization and firm performance under low dynamic capabilities and the unconstrained model shows that there is significant relationship between the three, as shown in table 5.33, 5.34 and appendix 22. For the constrained model, as shown in appendix 23, table 5.35 and 5.36 reveal that there is a moderation effect.

#### Unconstrained

**Table 5.33: Testing the moderating effect of for Research organization – Firm performance relationship (low dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Research Organization →Firm-performance	0.394	0.176	2.242	0.025	Significant

**Table 5.34: The Chi-square value and DF for the unconstrained model for research organization – firm performance relationship (low dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	25	75.058	30	0.000	2.502
Saturated model	55	0.000	0		
Independence model	10	996.013	45	0.000	22.134

Constrained

**Table 5.35: The Chi-square value and DF for the constrained model for research organization – firm performance relationship (low dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	24	84.705	31	0.000	2.732
Saturated model	55	0.000	0		
Independence model	10	996.013	45	0.000	22.134

**Table 5.36: The moderation test for research organization – firm performance relationship for Low dynamic capabilities group data**

	Constrained Model	Unconstrained Model	Chi-square difference	Result on moderation	Result on hypothesis
Chi-square	84.705	75.058	9.647	significant	supported
DF	31	30	1		

**The hypothesis statement:**

Dynamic capabilities moderate the relationship between research organization and firm performance relationship. supported

From table 5.35 and 5.36, the result shows that the moderation is significant since the difference in the chi-square value between the constrained and unconstrained model is more than 3.84. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84.

The test of the hypothesis for moderation that was carried out found that the moderator (dynamic capabilities) **moderates** the causal effects of research organization and firm performance.

### b) High Dynamic Capabilities

For high dynamic capabilities shows that full moderation in the relationship between a university, a public research organization and firm performance. Table 5.37 and appendix 24 shows that a significant relationship exists between a university, a public research organization and firm performance under unconstrained.

#### Unconstrained

**Table 5.37: Testing the moderating effect of for research organization – firm performance relationship (high dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Research organization →firm performance	0.019	0.079	0.248	0.804	not significant

As a result, as indicated in the table above, the direct effect of research organization on firm performance is not significant ( $\beta = 0.019$ ,  $p = 0.804$ ). Therefore, there are no moderating effects existing in this model. Moderating effect only exists if there is a direct effect between research organization and firm performance.

In conclusion, based on the constrained and unconstrained model for both low and high dynamic capabilities, the result shows that the type of moderation is full moderation since the standardised estimate for low dynamic capabilities is significant while that for high dynamic capabilities is not. If both estimates are significant, then partial moderation occurs.

#### 5.8.5.4 The university and public research organization/innovation capabilities relationship

##### a) Low Dynamic Capabilities

Table 5.38, 5.39 and appendix 25 show the significant relationship between a university, a public research organization and innovation capabilities under the unconstrained model.

##### Unconstrained

**Table 5.38: Testing the moderating effect of for research organization – innovation capabilities relationship (low dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Research Organization →Innovation	0.571	0.087	6.530	0.001	Significant

**Table 5.39: The Chi-square value and DF for the unconstrained model for research organization – innovation capabilities relationship (low dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	43	236.713	110	0.000	2.152
Saturated model	153	0.000	0		
Independence model	17	1800.728	136	0.000	13.241

Constrained

**Table 5.40: The Chi-square value and DF for the constrained model for Research organization – innovation capabilities relationship (low dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	42	251.631	111	0.000	2.267
Saturated model	153	0.000	0		
Independence model	17	1800.728	136	0.000	13.241

**Table 5.41: The moderation test for research organization – innovation capabilities relationship for Low dynamic capabilities group data**

	Constrained Model	Unconstrained Model	Chi-square difference	Result on moderation	Result on hypothesis
Chi-square	251.631	236.713	14.918	significant	supported
DF	111	110	1		

**The hypothesis statement:**

Dynamic capabilities moderate the relationship between research organization and innovation capabilities relationship. supported

In table 5.40, 5.41 and appendix 26, the result shows that the moderation is significant since the difference in the chi-square value between the constrained and unconstrained model is more than 3.84. For the test to be significant, the difference in the chi-square value must be higher than the value of chi-square with 1 degree of freedom, which is 3.84. The test of the hypothesis for moderation that was carried out found that the moderator (dynamic capabilities) **moderates** the causal effects of research organization and innovation capabilities

## b) High Dynamic Capabilities

For high dynamic capabilities, the moderation effect in the relationship between a university, a public research organization and innovation capabilities. Table 5.42, 5.43 and appendix 27 show that the significant relationship between a university, a public research organization and innovation capabilities under unconstrained.

### Unconstrained

**Table 5.42: Testing the moderating effect of for research organization – innovation capabilities relationship (high dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Research organization →Innovation	0.463	0.045	10.403	0.001	significant

**Table 5.43: The Chi-square value and DF for the unconstrained model for research organization – innovation capabilities relationship (high dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	43	383.794	110	0.000	3.489
Saturated model	153	0.000	0		
Independence model	17	3898.455	136	0.000	28.665

### Constrained

**Table 5.44: The Chi-square value and DF for the constrained model for research organization – innovation capabilities relationship (high dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	42	461.585	111	0.000	4.158
Saturated model	153	0.000	0		
Independence model	17	3898.455	136	0.000	28

**Table 5.45: The moderation test for research organization – innovation capabilities relationship for high dynamic capabilities group data**

	Constrained Model	Unconstrained Model	Chi-square difference	Result on moderation	Result on hypothesis
Chi-square	461.585	383.794	77.791	significant	supported
DF	111	110	1		

**The hypothesis statement:**

Dynamic capabilities moderate the relationship between research organization and innovation capabilities. supported

From table 5.44, 5.45 and appendix 28, the result shows that the moderation is significant since the difference in the chi-square value between the constrained and unconstrained model is more than 3.84. The difference in the chi-square value is 77.791, while the difference in the degrees of freedom is 1. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84.

In conclusion, based on the constrained and unconstrained model for both low and high dynamic capabilities, the result shows that the type of moderation is partial, since the standardized estimates for low dynamic capabilities and high dynamic capabilities are significant.

**5.8.5.5 The government role/firm performance relationship**

**a) Low Dynamic Capabilities**

The moderation of dynamic capabilities in the relationship between government role and firm performance under low dynamic capabilities and the unconstrained model shows that there is no significant relationship between government role and firm performance, as shown in table 5.46. Hence, we were unable to proceed to the constrained model.



Unconstrained

**Table 5.46: Testing the moderating effect of for government role – firm performance relationship (low dynamic capabilities)**

<b>Construct</b>	<b>Estimate</b>	<b>S.E.</b>	<b>C.R.</b>	<b><i>p</i></b>	<b>Result</b>
Government Role → Firm Performance	0.267	0.151	1.769	0.077	Not significant

**b) High Dynamic Capabilities**

Unconstrained

**Table 5.47: Testing the moderating effect of for government role – firm performance relationship (high dynamic capabilities)**

<b>Construct</b>	<b>Estimate</b>	<b>S.E.</b>	<b>C.R.</b>	<b><i>p</i></b>	<b>Result</b>
Government Role → Firm Performance	0.122	0.082	1.484	0.138	Not significant

Based on the unconstrained model for both low and high dynamic capabilities (see appendix 29 to 30 and table 5.47), the result shows that there is no moderation effect since the standardised estimate for low dynamic capabilities and high dynamic capabilities is not significant.

**5.8.5.6 The Government Role/innovation capabilities relationship**

**a) Low Dynamic Capabilities**

The moderation of dynamic capabilities in the relationship between government role and innovation capabilities under low dynamic capabilities and the unconstrained model shows that there is significant relationship between them, as shown in table 5.48, 5.49 and appendix 31. For the constrained model, as shown in appendix 32, table 5.50 and 5.51 reveal that there is a moderation effect.

Unconstrained

**Table 5.48: Testing the moderating effect of for government role – innovation capabilities relationship (low dynamic capabilities)**

<b>Construct</b>	<b>Estimate</b>	<b>S.E.</b>	<b>C.R.</b>	<b><i>p</i></b>	<b>Result</b>
Government Role →Innovation	0.311	0.075	4.146	0.001	significant

**Table 5.49: The Chi-square value and DF for the unconstrained model for government role – innovation capabilities relationship (low dynamic capabilities)**

<b>Model</b>	<b>NPAR</b>	<b>CMIN</b>	<b>DF</b>	<b><i>p</i></b>	<b>CMIN/DF</b>
Default model	51	307.949	139	0.000	2.215
Saturated model	190	0.000	0		
Independence model	19	2267.726	171	0.000	13.262

Constrained

**Table 5.50: The Chi-square value and DF for the constrained model for government role – innovation capabilities relationship (low dynamic capabilities)**

<b>Model</b>	<b>NPAR</b>	<b>CMIN</b>	<b>DF</b>	<b><i>p</i></b>	<b>CMIN/DF</b>
Default model	50	342.097	140	0.000	2.444
Saturated model	190	0.000	0		
Independence model	19	2267.726	171	0.000	13.262

**Table 5.51: The moderation test for government role – innovation capabilities relationship for low dynamic capabilities group data**

	Constrained Model	Unconstrained Model	Chi-square difference	Result on moderation	Result on hypothesis
Chi-square	342.097	307.949	34.148	significant	supported
DF	140	139			

**The hypothesis statement:**

Dynamic capabilities moderate the relationship between government role and innovation capabilities relationship. supported

From table 5.50, 5.51 and appendix 32, the result shows that the moderation is significant since the difference in the chi-square value between the constrained and unconstrained model is more than 3.84. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84. The test of the hypothesis for moderation that was carried out found that the moderator (dynamic capabilities) **moderates** the causal effects of government role and innovation capabilities.

**b) High Dynamic Capabilities**

For high dynamic capabilities, the moderation effect in the relationship between government role and innovation capabilities. Table 5.52, 5.53 and appendix 33 shows the significant relationship between government role and innovation capabilities under unconstrained.

Unconstrained

**Table 5.52: Testing the moderating effect of for government role – innovation capabilities relationship (high dynamic capabilities)**

Construct	Estimate	S.E.	C.R.	<i>p</i>	Result
Government Role →Innovation	0.464	0.054	8.651	0.001	significant

**Table 5.53: The Chi-square value and DF for the unconstrained model for government role – innovation capabilities relationship (high dynamic capabilities)**

Model	NPAR	CMIN	DF	<i>p</i>	CMIN/DF
Default model	51	470.943	139	0.000	3.388
Saturated model	190	0.000	0		
Independence model	19	4556.887	171	0.000	26.648

From table 5.52, 5.53 and appendix 34, the result shows that the moderation is significant since the difference in the chi-square value between the constrained and unconstrained model is more than 3.84. The difference in the chi-square value is 40.134, while the difference in the degrees of freedom is 1. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84. In conclusion, based on the constrained and unconstrained model for both low and high dynamic capabilities, the result shows that the type of moderation is partial moderation, since the standardised estimate for low dynamic capabilities and high dynamic capabilities is significant.

## 5.9 Hypotheses Testing

**Table 5.54: Hypothesis Testing**

Hypotheses	Variables	Estimate	S.E	C.R	<i>p</i> value	Finding
<b>H1</b>	<b>Inter-firm collaboration for SMEs are positively associated with their innovation capability</b>					
<i>H1a</i>	<i>Collaboration with customers for SMEs are positively associated with their innovation capability</i>	0.432	0.062	6.934	0.001	Supported
<i>H1b</i>	<i>Collaboration with suppliers for SMEs are positively associated with their innovation capability</i>					
<i>H1c</i>	<i>Coopetition with competitors for SMEs are positively associated with their innovation capability</i>					

Hypotheses	Variables	Estimate	S.E	C.R	P value	Finding
H2	<b>University and Research Organization collaboration for SMEs positively associated with their innovation capability</b>	0.264	0.084	4.883	0.001	Supported
H3	<b>The government role for SMEs is positively associated with their innovation capability</b>	0.169	0.041	4.164	0.001	Supported
H4 H4a H4b H4c H4d	<b>Innovation Capability positively influences firm performances</b> <i>Product Innovation positively influence firm performance</i> <i>Process Innovation positively influence firm performance</i> <i>Market Innovation positively influence firm performance</i> <i>Organizational Innovation positively influence firm performance</i>	-0.015	0.171	-0.087	0.930	Not Supported
H5 H5a H5b H5c	<b>There is mediating effect of innovation capability on the relationship between inter-firm and firm performance</b> <i>Innovation capability mediates the effect of collaboration with customer on firm performance</i> <i>Innovation capability mediates the effect of collaboration with supplier on firm performance</i> <i>Innovation capability mediates the effect of coopetition with competitor firm performance</i>	0.359	0.161	2.237	0.025	Supported (Partial Mediation)
H6	<b>Innovation capability mediates the effect of collaboration with Research organization on firm performance</b>	0.136	0.118	0.152	0.249	Not Supported (Full Mediation)
H7	<b>Innovation capability mediates the effect of the government role on firm performance</b>	0.205	0.092	2.244	0.025	Supported (Partial Mediation)
H8 H8a H8b H8c H8d H8e	<b>Dynamic capability positively influence firm performance</b> <i>Sensing capability positively Influence firm performance</i> <i>Absorptive capability positively influence firm performance</i> <i>Adaptive capability positively influence firm performance</i> <i>Coordination capability positively influence firm performance</i> <i>Reconfiguration capability positively influence firm performance</i>	0.703	0.258	2.729	0.005	Supported
H9	<b>Dynamic capability moderates the effect of inter-firm collaboration and innovation capability</b>	β estimates for <b>low dynamic capabilities</b> is <b>not supported</b> while the β estimates for <b>high dynamic capabilities</b> is <b>supported</b> .				Full Moderate

Hypotheses	Variables	Estimate	S.E	C.R	<i>p</i> value	Finding
H10	Dynamic capability moderates the effect of collaboration with research organization and innovation capability	β estimates for low dynamic and high dynamic capabilities is supported.				Partial Moderate
H11	Dynamic capability moderates the effect of the government role and innovation capability	β estimates for low dynamic and high dynamic capabilities is supported.				Partial Moderate
H12	Dynamic capability moderates the effect of inter-firm collaboration and firm performance	β estimates for low dynamic and high dynamic capabilities is not supported.				No Moderation
H13	Dynamic capability moderates the effect of collaboration with university and public research organization and firm performance	β estimates for low dynamic and high dynamic capabilities is supported.				Partial Moderation
H14	Dynamic capability moderates the effect of the government role and firm performance	β estimates for low dynamic and high dynamic capabilities is not supported.				No Moderation
H15	<b>Business network positively influence firm performance</b>					
H15a	<i>Inter-firm collaboration positively influence firm performance</i>	0.194	0.228	0.850	0.395	Not Supported
H15b	<i>University and Public Research Organization positively influence firm performance</i>	-0.153	0.159	-0.964	0.335	Not Supported
H15c	<i>Government role positively influence firm performance</i>	0.188	0.129	0.913	0.361	Not Supported

## 5.10 Concluding Remarks

The study began with 463 respondents who were owners, CEOs, managers and executives from Malaysian SMEs companies. This chapter highlights the fact that a total of 399 questionnaires were completed for further analysis after data cleaning. Sixty-four of the cases (46 from outliers and 18 from multivariate outliers) had been removed. This study used SPSS version 23 software to present the demographic profile of the respondents and the descriptive statistic of the construct to analyse the completed surveys. Next, this research used AMOS version 23 in order to carry out Structural Equation Modelling (SEM). There are two stages when conducting structural equation modelling: namely, the measurement model or confirmatory factor analysis and the structural model (Hair et al., 2010). This research parallels that of Hair et al., (2010), which validated the CFA through two stages: (1) the

Goodness of fit indices and (2) Construct Validity. The results of this study highlighted that all of the goodness of fit indices and construct validity were above the minimum criteria. Consequently, this study conducted a structural model and hypotheses testing. The results revealed that ten of the fifteen hypotheses proposed in the research are supported. The following chapter will further discuss these results with reference to the past literature.

## **Chapter 6 : Discussions**

### **6.1 Introduction**

The previous chapter reviewed the research hypotheses and reported the results. This chapter aims to interpret and discuss the demonstrated results, which can help to answer the research questions and achieve the research objectives. This study has examined the determinants of SMEs' firm performance, which are business networks, innovation capabilities and dynamic capabilities. The function of dynamic capabilities as moderation and innovation capabilities that mediate the relationship between the business network and firm performance is discussed in this chapter. The purpose of this research is to explain that relationship, as there are many failures in firm performance due to a lack of understanding of the function of business networks (Abosag et al., 2016). Furthermore, the role of dynamic capabilities and innovation capabilities had been discussed to strengthen the relationship between business networks and firm performance.

This research proves that the importance of combining external and internal resources is a vital determinant in enriching firm performance (Gronum et al., 2012; Niesten and Jolink, 2015). The combination of theories resources base views and dynamic capabilities can explain further the interests of the relationship between external sources and internal resources for firm performance in a volatile environment. The conceptual model for this research is developed based on these combination theories. The unit analysis is focused at the firm level, and this approach is consistent with classical economics, in which an individual nascent entrepreneur is regarded as a firm. Consequently, the research presented the results of 399 completed data surveys of SMEs in Malaysia to validate the conceptual model and research hypotheses proposed. This chapter will revisit and discuss the results of these hypotheses proposed in the previous literature.



## 6.2 Instrument Validation

Instrument validation is applied to implement a new method or test. This research has implemented convergent and discriminant validity to verify the measurement of each construct. Convergent validity was used to measure the volume of variance “that the latent variables captured from their indicators about the amount due to measurement error” (Boohene, 2009: p. 128). The convergent validity is appraised by factor loading, composite reliability and average variance extracted (AVE) (Hair Jr et al., 2016). As a rule, the factor loading for all of the constructs should have all standardised regression weights of above 0.50, and all of the critical ratios (t-value) should be greater than 1.96. The AVE value that is good and recommended in the literature as being acceptable is 0.5 (Bagozzi et al., 1991). However, Magner et al. (1996) argue that the minimum value of 0.4 for AVE is also indicative of adequate validity. The value of AVE by Naudé et al., (2014) of above 0.41 is within an acceptable range. The instrument in this research exceeded the minimum requirement for the factor loading, t values, AVE and composite reliability, respectively.

All of the latent constructs used in the measurement model have a high level of convergent validity. Discriminant validity (the ability of some indicators to have a low correlation with the indicators of different concepts) refers to the evaluation by comparing the square roots of the average extracted values (AVEs) to the correlation between two constructs (Hair Jr et al., 2016). Significant discriminant validity was achieved when the average variance extracted was greater than the squared correlation estimates between the constructs. The significant level of discriminant validity for this research as AVE is greater than the squared correlation estimates for all of the constructs.

Reliability was traditionally estimated by the Cronbach’s Alpha ( $\alpha$ ) coefficient (Cronbach, 1951). As a rule of thumb, the figure for excellent reliability is  $\leq 0.90$ , high reliability is 0.70-0.90, moderate reliability is 0.50-0.70, and  $\leq 0.50$  is low reliability (Hinton et al., 2004). This study will adopt internal reliability, which uses the Cronbach’s alpha as a scale for reliability, with a minimum of 0.7 ( $\geq 0.7$ ) as the lower

bound for acceptability (Tavakol and Dennick, 2011). Comprehensively, the instrument of this research showed a high level of validity and internal validity.

### 6.3 Primary findings

Primary Finding	Literature Support	Implication	Further research
Business networks (inter-firm, university and research organization, and government role) have a positive relationship with innovation capabilities.	(Aaboen et al., 2016; Charterina et al., 2016; La Rocca and Snehota, 2014; Martin-Rios, 2014; Schwartz and Bar-el, 2016)	The importance of business network in contributing to innovation capabilities. Hence, firms should invest in improving their business networks as external resources.	Mixed method or longitudinal research may generate more interesting results. This suggests that further examination of the mechanisms linking resources and performance is likely to be fruitful.
Innovation Capability negatively influences firm performance.	(Alejandro and Heywood, 2016; Behrens and Patzelt, 2016; Heidenreich and Kraemer, 2016; Hyll and Pippel, 2016; Kafetzopoulos and Psomas, 2015; Lofsten, 2016; Lungeanu et al., 2016; Martin et al., 2016; Rubera and Kirca, 2012; Stanko et al., 2015; Van der Panne et al., 2003)	As there is no direct impact on innovation capabilities and firm performance, firms should collaborate with others factors like business networks to improve firm performance.	Mixed method or longitudinal research may generate more interesting results by combining tangible and intangible resources.
There is mediating effect of innovation capability on the relationship between business	(Bello et al., 2015; Burgos-Mascarell et al., 2016; Clausen et al., 2013; Mbizi et al.,	Focusing on the combination with other factors to improve firm performance.	Future research might explore the barriers of business networks and innovation

network (inter-firm, University and Research organization, government role) and firm performance.	2013; Radas et al., 2015; Schubert and Schubert, 2016; Tomlinson and Fai, 2013; Tomlinson, 2010; Zeng et al., 2010)		capabilities to firm performance. The exploration of these possibilities will enrich the understanding of how the interaction of resources and capabilities can positively or negatively affect firm performance.
Dynamic capability positively influences firm performance.	(Girod and Whittington, 2017; Hermanto and Martin-Cruz, 2016; Laaksonen and Peltoniemi, 2016; Pezeshkan et al., 2016)	Dynamic capabilities as tools or a capability has been proven in this and previous research to increase firm performance; hence it is reasonable to focus more on dynamic capabilities. Further, this research contributes to the theory of dynamic capabilities.	It may prove fruitful if the research collects data equally for each type of SME (micro, small and medium size).
Dynamic capability moderates the effect of business network collaboration (inter-firm, University and Research organization, government role) and innovation capability.	(Andriana Roseli et al., 2016; Martin-Rios, 2014; Rothaermel and Alexandre, 2009; Schenkel and Teigland, 2016; Swift, 2016; Wilden et al., 2016)	The combination of external and internal resources will improve the innovation capability. Firms that focus on these factors will enhance their ability to produce competent products that put them ahead of their	Further research can also focus on the informal network (social network) together with the formal network (business networks) to examine the extent to which exploring and exploiting dual capabilities (DCs and ICs) can help

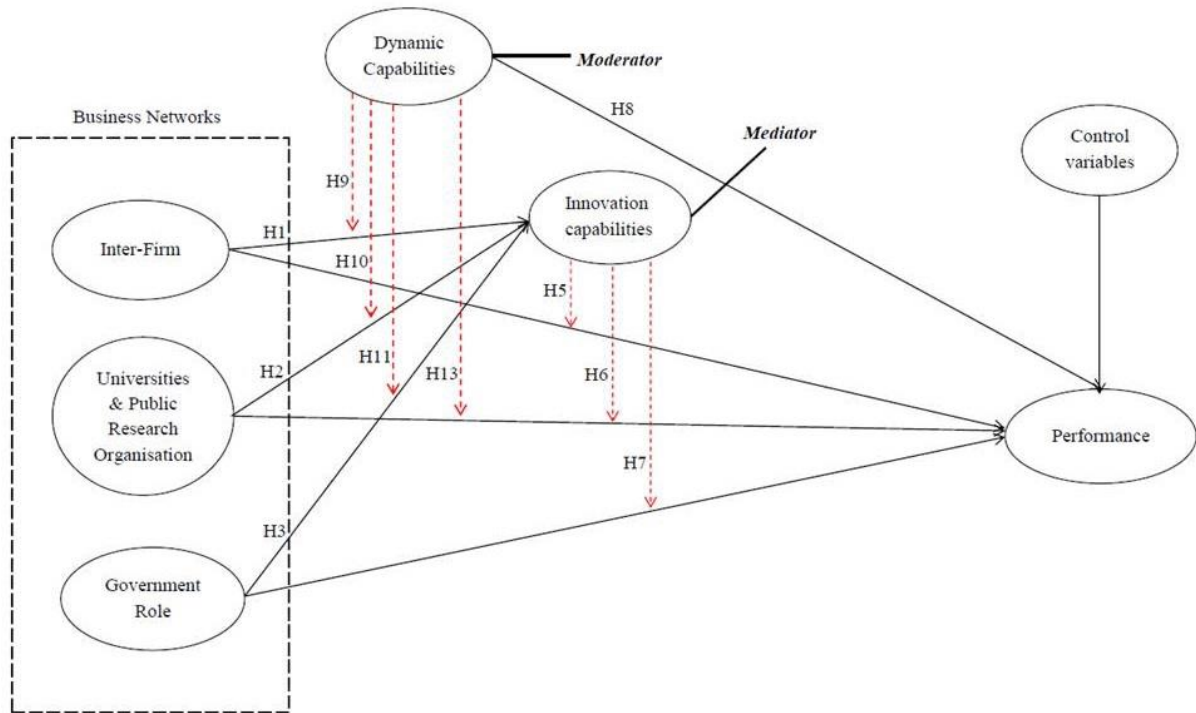
		competitors.	to improve firm performance.
Dynamic capability does not moderate the effect of inter-firm collaboration and firm performance.	(Ewa Stanczyk-Hugiet, 2011; Larsen, 2016; Zahra et al., 2006)	The finding suggests the importance of collaboration between business networks and managerial capabilities, and the proper allocation of misallocated resources. The research reveals that a lack of coordination capability negatively impacts on the process of firm performance.	Future research might explore the use of multiple respondents per firm in order to minimise the effects of systematic response bias.
Dynamic capability moderates the effect of collaboration with university and public research organization and firm performance.	(Jongbloed, 2015; Perkmann et al., 2013)	Collaboration will benefit firms and university and public research in contributing towards boosting firm performance.	Future research might investigate other groups of respondents in order to generalize our findings.
Dynamic capability does not moderate the effect of the government's role and firm performance	(Laaksonen and Peltoniemi, 2016; Satiman et al., 2015)	This research suggests that owners or managers must be aware of the government policy and rules and regulations. Further, firms need to increase their operational capabilities to become more aware about inter-	Future research might investigate other groups of respondents in order to generalize our findings.

		rivalry, coordination costs, governance problems, unintended knowledge spillover, cultural crashes, and learning races between partners, divergent goals, and organisational rigidity.	
Business network negatively influences firm performance.	(Abosag et al., 2016; Parker, 2008; Samaha et al., 2011; Shutyak and Van Caillie, 2015; Snehota and Håkansson, 1995)	The firm needs to develop the business dimension to realise the potential of its commercial base (Lofsten, 2016). The manager should explore possibilities for future development.	The study enables future researchers to build on the field's consensual definition of resources, and thereby represents an important step towards conceptual clarity. As the focus of this study was financial performance, further studies can explore the combination of financial and non-financial performance, as non-financial assets are intangible benefits. like employee satisfaction, client satisfaction, internal business process efficiency, innovation ability and performance enhancement from intangible assets

			<p>(Chiun Lo et al., 2016; Ha et al., 2016).  Further research can also focus on the informal network (social network) together with the formal network (business networks) to improve firm performance.</p>
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#### 6.4 The surprising results of the hypotheses testing

Figure 6.1 illustrate the final conceptual model together with the surprising results. The findings from the primary data show that there are four surprising results. Firstly, there is no significant relationship between innovation capabilities and firm performance. Secondly, dynamic capabilities do not moderate the relationship between inter-firms and firm performance. Thirdly, dynamic capabilities do not moderate the relationship between government role and firm performance. Finally, there is no direct effect between business networks and firm performance.



**Figure 6.1: Final Conceptual Model**

#### 6.4.1 Business networks and innovation capabilities

Business networks refer to a set relationships connecting one business enterprise with other business and non-business organisations (Guercini and Ranfagni, 2016; Hakansson et al., 2009; Snehota and Håkansson, 1995). The business relationships evolve as a result of the relationships between the parties (Holm et al., 1996). A business network can be considered an interconnected web exchange relationship, in which companies interact with them for the purpose of doing business (Halinen and Jokela, 2016). The business networks consist of various stakeholders. These are customers, suppliers, competitors, university and research organisations and the government (Aaboen et al., 2016; Codini, 2015; Shamsuzzoha et al., 2016; Svensson et al., 2016).

This research is parallel to previous research that found that all of the hypotheses under the business networks (inter-firm, universities and public research organisations and government role) and innovation are significant (H1, H2, H3) (La Rocca and Snehota, 2014). The findings of this study revealed that inter-firm has an

important and positive impact on the innovation capabilities of the firm. The results showed that there is a positive impact on innovation capabilities, as indicated by the t-value of 6.968 and a significant  $p$ -value of  $\leq 0.05$ ; hence, hypothesis 1 is supported. Next, the finding for universities and research organisations also has a positive impact on the firm's innovation capabilities. As a result, there was a t-value of 4.889 and a significant  $p$ -value of  $\leq 0.05$ ; hence, hypothesis 2 is supported. After that, it was found that government role also has a positive impact and influences a firm's innovation capabilities. The result also indicates that the t-value of 4.122 and a significant  $p$ -value of  $\leq 0.05$  support hypothesis 3. This research's empirical result was that all types of business networks as external resources influence a firm's innovation capabilities. The importance of business networks generates valuable benefits to the firms that utilise them. The business network will improve firms' learning and development processes, innovative and competitive advantage, growth and survival (Parker, 2008).

The development of the inter-firm relationships between the members is ultimately the firm's property and therefore must be sustained. The inter-firm relationship will increase the sharing of information between the members, so businesses can manoeuvre strategically in a variety of network configurations, participating in collaborative and proximal networks that provide information about accessing other resources and efficient innovation (Martin-Rios, 2014). The same applies to universities and research organisations that also foster the firm's innovation capabilities as they are a resources mediator (a bridge between research and business parties), resources recombined (business partner) and resources renewal (new ways of interacting on the network level) (Aaboen et al., 2016), while there is no doubt that the government's role influences the effectiveness of a firm's innovation capabilities, as mentioned by (Smallbone and Welter, 2001).

The government plays a vital role in fostering the innovation capabilities of the firm and the global gains for society (or for all sectors of the economy)(Schwartz and Bar-el, 2016). The government can intervene in the process of innovation, especially by supporting R&D, encouraging collaboration between government and industry, providing subsidies, improving the infrastructure and education, and elaborating on appropriate regulations, legislation and incentives (Schwartz and Bar-el, 2016). The



government's role will increase the proliferation of new business in the industries. Indirect support from the government through their level of aggregate demand, interest rate and taxation, laws and legislation direct support policies and programmes to assist in overcoming size related disadvantages for small firms, plus the development of economic institutions likes business support infrastructure, banks and other financial intermediaries.

Furthermore, through their influence on the value placed on enterprises within society, which involves both methods of teaching or curriculum implemented in schools or higher education institutions, up to university level (Gibb, 1993), the entrepreneurship and business level will give early exposure to students to face the real world. According to 'Pelan Pembangunan Pendidikan Malaysia 2015-2025', higher education', the implementation of 'Holistic graduates, Entrepreneurship and Balanced' in higher education in Malaysia is designed to prepare all graduates to face the challenges of the real world, as that circumstance will increase the understanding of the business nature in the early stage and they might be able to manage the uncertainty in the future. Besides that, by encouraging people to start a business through the behaviour of politicians and government officials when dealing with entrepreneurs (Mugler, 2000), this may also be considered one of the motivations to launch the business.

In conclusion, the collaboration of firms with the actors in business networks will benefit the firm's innovation capabilities. The knowledge sharing routines between them exert a significantly positive effect on innovation performance as its enriches the firm's resources (Charterina et al., 2016).

#### **6.4.2 Innovation capability and firm performance (sub from model)**

Innovation capability refers to the firm's ability, compared with its competitors, to execute collective resources, knowledge, and skills regarding innovation activities related to new products, services, processes or management, marketing or work organisation to create value added for the firms and their stakeholders (Hogan et al., 2011). Innovation is classified into four groups: product innovation, process

innovation (technological innovation), marketing innovation and organisational innovation (non-technological innovation) (OECD, 2005; Shafia et al., 2016). According to Lall (1992), technological innovation refers to the ability and knowledge to absorb effective, proficiency and improve the existing technologies and renew them. As Saunila (2016) argues, the determinant of innovation capability consists of leadership culture, work climate and well-being, ideation-and organising structures, know-how development, exploiting external knowledge, regeneration and individual activity.

This research is not aligned with previous studies on the hypothesis that innovation capabilities (product, process, marketing and organisational) and firm performance are not significant (H4, a,b,c,d). The finding of this study revealed that innovation capabilities have no considerable or adverse impact on firm performance. The result showed that there is a negative impact on firm performance, as indicated by the t-value of -0.088 and a significant *p*-value of 0.930; hence, hypothesis H4 is not supported. The previous study supported this research and asserted that innovation capabilities are essential for the firm, but do not guarantee firm performance (Lofsten, 2016). Although the overall result of Kafetzopoulos and Psomas (2015) supports the importance of innovation capability in manufacturing companies, there is no direct effect on the relationship with innovation capability and manufacturing firms' financial performance which is different from the traditional innovation research and philosophy.

Furthermore, Lungeanu et al., (2016), based on their longitudinal research, prove that financial slack positively responds to poor innovative performance in relation to diversification and new sourcing. In other words, the firm will decrease the portfolio's diversification and new sourcing. Poorer innovation capabilities of the company will affect firm performance. The ability of the company rapidly to survive, develop, discover and commercialise is a vital source of competitive advantage. The firm with few financial resources will reduce the investment in R&D activities as a part of the innovation capabilities principles and affect the firm's performance.

Likewise, Stanko et al., (2015), found that, for high market innovative products, firms are less able to profit due to the high costs incurred. The firm needs to align its

market innovative with the technological resources which firms need to expand more to meet their customers' needs and maximise their returns on an innovative market product; for instance, firms like BMW and Pandora.com needs to allow newly developed technological resources to achieve their goals by targeting smaller niches (one aspect of market innovativeness) to generate more profit (Salvador et al., 2009).

Van der Panne et al., (2003) found that there are a few factors that lead to the failure or success of innovation and decrease the viability of the firm; fFor instance, firm culture- (firm and organisational, experience, R&D team and intensity, strategy related to innovation), project (management style, complementarity and top management's support), product (relative price and quality, innovativeness, technological advance) and market (concentration of target market – niche market, marketing, timing market introduction, competitive pressure). The failure of the firm to fit with these factors (a positive impact) tends to be detrimental to the process of innovation related with firm performance. As a remedy, all departments should be involved in the process of innovation to enhance the firm performance.

Furthermore, a high failure rate of innovation consequently affects firm performance reporting by the innovation literature ranging around 50% (Castellion and Markham, 2013). This scenario shows that innovation is unable to generate future revenue for the firm. The failure of innovation is also due to a lack of decision capabilities to terminate the unprofitable projects by managers and inherently impacts on firm performance (Behrens and Patzelt, 2016).

Consequently, licensing is one of the factors that contribute to a failure in innovation (Alejandro and Heywood, 2016) and it challenges most Malaysian SMEs, such as halal food manufacturing industries in Malaysia (Siaw and Abdul Rani, 2012). They have to deal with regulations like licenses from the Department of Environment, Department of Islamic Development Malaysia, Ministry of Health and the Local Council. New start-up firms for all races (Chinese, Malay, and Indian) must meet these challenges in their first three years of operation besides other difficulties; for instance, marketing, technology, operation, finance, production and management, for firm performance and sustainability (Siaw and Abdul Rani, 2012). Understanding

these factors and the relationship between external and internal contribute to the failure of the firm has become vital for Malaysian SMEs.

Other than that, the failure of innovation results from the firm's inability to catch up with customer demand and fulfil their requirements (Martin et al., 2016). The high failure rate of innovation is because new products are rejected by consumers due to their resistance to innovation (Heidenreich and Kraemer, 2016). Consequently, the most important factor for successful innovation capabilities is how the firms produce or deliver the product or service to consumers. The products or services offered to consumers must meet their requirements and be accepted by or satisfactory to them. Companies must work hard to find a way to achieve that or face failure.

The resistance to innovation can be classified into two distinct forms; active innovation (the formation of a negative attitude) and passive innovation (a predisposition to resist innovation) (Heidenreich and Kraemer, 2016; Heidenreich et al., 2016). The combination of elements of innovation capabilities (product innovation, process innovation, market innovation and organisation innovation) will determine the success or failure of firms. According to Hyll and Pippel (2016), the main related factors contributing to the failure of product or process innovation is the relationship between the partners in a business environment (customers, suppliers, public and research organisations and the government). They suggest that the relationship will influence the failure of the innovation of the firm (a focus on product innovation, process innovation and R&D) as the type of partner and their cooperation will affect the likelihood of the project being terminated due to different interests among the partners will lead to poor business performance.

According to Rubera and Kirca (2012), the innovativeness of the firm tends to affect the firm's value, followed by market position and financial situation. Therefore, according to them, bigger firms will have more innovativeness as a large firm can deploy more resources to sustain the innovativeness. The focus of this study is SMEs that are not large enterprises with the ability to sustain their innovativeness, and the respondents are more ignorant about innovation capabilities, which has an adverse effect on firm performance. Overall, the factors that affect the negative relationship between innovation capabilities and firm performance are financial

slacks, high market innovative products, firm size, underestimating customer needs and also the type of industry.

#### **6.4.3 Business Network, Innovation Capabilities and Firm Performance (Mediator)**

This section examines the mediator role of innovation capabilities in the relationship between business networks and firm performance. Innovation capability is one of the most important dynamics for SMEs to improve firm performance and achieve a high level of competitiveness, in both the local or international markets (Saunila, 2016). According to Stanko et al., (2015), an innovation capability plays a major role between resources (business networks) and firm performance. The function of innovation capabilities as a mediator between business networks and firm performance refers to the indirect effect, surrogate effect, intermediates effect, or intervening effect (MacKinnon et al., 2002). The mediating effect consists of the total effect (the direct effect + indirect effect) and indirect effect (the independent effect on the mediator + the mediator effect on the dependent) (Shafia et al., 2016).

Innovation capabilities play a vital role in improving the relationship between business networks and firm performance. Previous results indicate that other capabilities feature with the business networks to influence firm performance. It means that the relationship between the organisational and external actors (customers, suppliers, competitors, universities and research organisations and government role) without internal capabilities (innovation capabilities) is not necessary to influence firm performance. The firms should know how to manage the external resources and use their internal resources to produce new products or services and so increase firm performance. Ismail (2015) revealed the importance of organisational capability as a mediator with a view to improving firm performance.

Other research found that business networks would firstly facilitate innovation capability (Sarasini, 2016) and that innovation capability would enhance firm performance (Mandal and Rao Korasiga, 2016; Walker et al., 2015). The function of innovation capability as a mediator to influence financial performance has also been

discussed (Bello et al., 2015; Shafia et al., 2016). The extant study also documented the positive relationship between a firm's innovativeness and its performance (Atuahene-Gima and Ko, 2001; Atuahene-Gima, 1995; Qian and Li, 2003; Zahra et al., 2000). However, prior research has not empirically discussed the relationship in combination with business and firm performance. The importance of firm innovativeness through their high-value service solutions, differentiating offerings and better satisfying user requirements through novel products will enhance the financial performance (Lowendahl, 2005). Furthermore, the innovative firm will offer excellent service and delivery, attracting new customers that will fuel the growth of revenue (Maister, 2012). To conclude, the intervention of innovation capabilities as a mediator shows the improved relationship between the business network and firm performance.

#### **6.4.3.1 The mediating effect of innovation capability on the relationship between inter-firm and firm performance**

The result of this research supports hypotheses H5 a, b and c and innovation capability, partial mediation between business networks and firm performance. The results indicate that inter-firm and firm performance are significant, inter-firm and innovation capabilities are vital and innovation capabilities with firm performance are also essential; and, further, that innovation capability partially mediates the relationship between inter-firm and firm performance. This means that innovation capabilities partially influence the relationship between inter-firm and firm performance.

The relationship or collaboration between one firm and another (inter-firm), like customers, suppliers and competitors, has also contributed towards spurring innovation capabilities (Tsai, 2009). Tomlinson and Fai (2013) explored SME innovation/cooperation and found that this collaboration significantly influences innovation capabilities, especially for product and process innovation. Consequently, innovative output was related to firm performance (Mbizi et al., 2013). Tomlinson (2010) studied cooperation ties and innovation in UK manufacturing, and confirmed the positive relationship between inter-firm (suppliers, customers and competitors)

and innovative performance. Furthermore, Zeng et al., (2010) supported Tomlinson's research with a similar study (cooperation networks and innovation performance) but focusing on SMEs in China. According to their study, close relationships and collaboration with customers and suppliers had a direct and significant positive impact on firm performance for SMEs.

#### **6.4.3.2 Innovation capability mediates the effect of collaboration with research organisations on firm performance**

While the result indicates that innovation capabilities fully mediate between a research organisation and firm performance, it further shows the indirect effect of research organisation on firm performance when a mediator (innovation) enters the model. This is due to the relationship between the university and public research organisation resulting in significant innovations. However, universities and research organisations do not significantly influence firm performance.

The communication and knowledge transfer among and within universities and public research organisations, the government and firms are essential to foster innovation and influence firm performance (Burgos-Mascarell et al., 2016). According to Burgos-Mascarell et al. (2016), triple helix collaboration, such as with universities (erudite), the government (abnegation) and industry (amity), will create a spillover of knowledge, help to foster innovation capabilities and improve firm performance. In other words, that collaboration encourages engagement in innovation and influences firm performance. However, this kind of knowledge (a firm's resources) needs to be managed to enhance the efficiency of the firm effectively. Because of that, the interface of innovation capabilities (as a mediator) in this research between business networks and firm performance improves those relationships.

#### **6.4.3.3 Innovation capability mediates the effect of the government role on firm performance**

The result shows the indirect effect of the Government's role on firm performance when a mediator (innovation) enters the model. However, the type of mediator is

partially mediated, as the results show that the government role and firm performance, government role and innovation, and innovation and firm performance are all significant. This research aligns with previous studies to highlight the relationship between business networks and firm performance mediated by innovation capabilities. Bello et al., (2015) found that the function of innovativeness as a mediator supports the financial performance of the firm. Furthermore, the successful of innovation as a mediator depends on the culture of the firms, their experience with innovation, the explicit recognition of the collective character of innovation flow and the multi-task character of the R&D team (Van der Panne et al., 2003). The innovativeness of the firm in using external resources through business networks will improve the firm performance.

According to Mbizi et al., (2013), their descriptive survey found that innovation capability is one of the major attributes that boost firm performance. Furthermore, environmental factors like government support were considered to be inadequate for SME operations and also contributing towards enhancing firm performance. The government's roles in innovation policy, through the design or discretionary measure to ensure the promotion of the generation, application, diffusion and commercialisation of new business, will boost the performance of the firm through innovation capabilities (Schubert and Schubert, 2016). Radas et al., (2015) suggested that a direct grant (subsidies) with tax incentives will strengthen the R&D orientation, spur the innovation capabilities and consequently increase firm performance.

Furthermore, the empirical research by Clausen et al., (2013) shows that subsidies stimulate R&D spending, which is related to innovation performance. Subsidies increase the innovation output (Herrera and Sánchez-González, 2013), the number of innovations (Czarnitzki and Lopes-Bento, 2014) and the sales of the firm through novelty (Hottenrott and Lopes-Bento, 2014). Meanwhile, the tax will improve the expenditure of the firm on R&D projects (Kobayashi, 2014), lead to a higher amount of product innovation and also increase sales of new and improved products (Czarnitzki et al., 2011). The government's support for the marketing activities of the firm will build the marketing knowledge (understanding of the quality standards, market segments and distribution systems in viable markets) (Malik and Kotabe,



2009). This means that the public instruments allow improvement in the quality of innovation instead of in its quantity.

#### **6.4.4 Dynamic capabilities and firm performance (sub from model)**

Dynamic capabilities refer to the ability of the firm to use the existing resources in parallel to generate new resources and competencies (Pezeshkan et al., 2016). According to Teece, (2007), the dynamic capabilities will help firms to achieve business sustainability (related to firm performance) by reconfiguring their capabilities and competencies to keep up with a volatile environment. These dynamic capabilities are an evolutionary or complimentary consideration to the Resource-Based View (Chakrabarty and Wang, 2012). The instrument of dynamic capabilities for this research consists of sensing capabilities, absorptive capacity, adaptive capability, coordination capabilities and reconfiguration capabilities.

Sensing capabilities refer to the market response capability when firms sense a change in the environment and customer needs (Wang, 2013). The sensing capability is divided into the proactive and responsive types (Wang, 2013). The proactive capabilities represent the firm's attempt to find out and understand how to satisfy the potential expectations of the customers. Responsive sensing refers to when firms only try to understand and satisfy their customer's current need. (Wang, 2013) suggested that proactive capabilities influence the competitive advantage more than responsive capabilities. Absorptive capacity refers to the firm's ability to recognise the value of new opportunities, assimilate them, develop them into new ones and apply them to commercial ends (Cohen and Levinthal, 1990; Schenkel and Teigland, 2016). Adaptive capability refers to the skill of the organisation to identify and seize opportunities from external resources (Wang and Ahmed, 2007). Coordination capabilities are the way in which the managers within firms coordinate and integrate the activities related to their internal resources (Malik and Kotabe, 2009). Reconfiguration delineates the firm's capabilities to take advantage of opportunities through their ability to determine the external opportunities via scanning and changing the firm's structure regarding asset and technology change (Malik and Kotabe, 2009; Teece, 2007).

This research is consistent with previous findings that dynamic capabilities influence firm performance (Girod and Whittington, 2017). The findings of this study revealed that dynamic capabilities have a significant and positive impact on firm performance. The results showed that there is a positive impact on firm performance, as indicated by the *t*-value of 2.725 and a significant *p*-value of  $\leq 0.05$ ; hence hypotheses H8a-e are supported. The empirical results for all types of dynamic capabilities (sensing, absorptive, adaptive, coordination and reconfiguration) for this research influence firm performance. This research is in line with Laaksonen and Peltoniemi (2016), whose empirical studies in the past 17 years show that dynamic capabilities are positively and significantly related to firm performance.

Furthermore, the findings of this research indicate that dynamic capabilities have a positive relationship with firm performance, as (Pezeshkan et al., 2016) also found. They argue that dynamic capabilities should have a positive correlation with competitive advantage and firm performance. The dynamic capabilities approach argues that the uniqueness of resources and capabilities must be parallel regarding reallocation and reconfiguration to address the volatile environment (Teece, 2009, 2007; Teece et al., 1997). Dynamic capabilities recover the aspect of renewing the firms in the face of changing business environments and the ability to absorb, adapt, integrate or coordinate and reconfigure both resources and capabilities to address the volatile environment (Hermano and Martin-Cruz, 2016). The objective of dynamic capabilities to explain the sources of competitive advantage and firm performance is the ultimate aim of dynamic capabilities (Laaksonen and Peltoniemi, 2016). Furthermore, this research aligns with Eisenhardt and Martin, (2000) and Teece et al., (1997), in using dynamic capabilities as a firm-level variable and definition of dynamic capabilities that are more prevalent.

#### **6.4.5 Business Network, Dynamic Capability and Innovation Capability**

As mentioned in the previous chapter, innovation capability might be influenced by internal or external factors. The business networks can be considered an external factor and dynamic capabilities an internal factor. According to (Lungeanu et al.,

2016), the ability of the firm to renew the innovation process will lead to superior long-term financial performance. The collaboration between the three entities (firms, universities or public research organisations and governments) to foster innovation capabilities consequently improves firm performance, need and others capabilities (DC) to avoid negative outcomes (Burgos-Masarell et al., 2016). The administration should have capabilities like sensing, absorptive, adoptive, and coordination in view to supervise this collaboration and know how to reconfiguration those resources to fit the firm's needs.

The importance of a combination of resources controlled by others especially for new formation business has been examined by various scholars (Aaboen et al., 2016; Oberg and Shih, 2014; Snehota, 2011). Tapanainen (2016) argues that there is a relationship between dynamic capabilities, innovation capabilities and other resources (through the business network) and a link with firm performance. The firm's ability to engage and understand the needs of external resources and finding the internal evaluations to improve their process will result in the better spending of those resources and contribute to superior performance (Takahashi et al., 2016).

This research also corroborates the previous literature with regards to the function of dynamic capabilities as a moderator in the relationship between the business network and innovation. H9 predicted a positive moderating effect of dynamic capabilities on the relationship between inter-firm and innovation capabilities. The moderating effect of dynamic capabilities between inter-firm and innovation capabilities is fully moderated, and H9 is supported. The result for low dynamic capabilities shows that the moderation is not significant since the difference in the chi-square value between the constrained and unconstrained model is less than 3.84 (1.488). For the test to be meaningful, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84, and dynamic capabilities does not moderate the causal effects of inter-firm and innovation capabilities.

However, for high dynamic capabilities, the result shows that the moderation is significant since the difference in the chi-square value between the constrained and unconstrained model is more than 3.84. The difference in the chi-square value is

40.338, while the difference in the degrees of freedom is 1. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84.

As a conclusion, based on the constrained and unconstrained model for both low and high dynamic capabilities, the result shows that the type of moderation is full moderation since the standardised estimates for low dynamic capabilities are not significant while the standardised estimates for high dynamic capabilities are. This means that a firm with high dynamic capabilities will influence the relationship between inter-firm and innovation capabilities (Martin-Rios, 2014).

The moderating effect of dynamic capabilities on the relationship between universities and research organisations and innovation capabilities is partially moderate. The result of the standardised estimates for both high and low dynamic capabilities is significant. Hence, H10 is supported. The result for low dynamic capabilities and high dynamic capabilities for unconstrained and a constraint is significant, as the difference in the chi-square is greater than 3.84. The value in the difference of the chi-square for low dynamic capabilities is 14.918 and, for high dynamic capabilities, it is 77.791, while the difference in the degree of freedom is 1, so the dynamic capabilities moderate the causal effects of research organisations and innovation capabilities. Subsequently, firms with either high or low dynamic capabilities will partially influence the relationship between a research organisation and firm performance. The firm can use the capabilities to maximise the external resources to improve the innovation capabilities consequences and increase firm performance, and the moderating effect on the relationship between the government's role and innovation capabilities is partially moderated.

The result for low dynamic capabilities as a moderator is significant since the difference in the chi-square value between the constrained and unconstrained model is 34.148. Likewise, high dynamic capabilities are also significant, as the difference between the chi-square value between the constrained and unconstrained model is 40.134; hence, H11 is supported. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84 (the 'critical' value of the chi-square statistic). Therefore, the

firm with high or low dynamic capabilities will influence the relationship between government role and innovation capabilities. A firm with those capabilities will use the external resources to enhance their innovation capabilities to improve firm performance and sustain in the market (Andriana Roseli et al., 2016). However, dynamic capabilities play their role as a moderator between the government role and innovation capabilities. The result is based on the constrained and unconstrained model for both low and high dynamic capabilities, and the result shows that the type of moderation is partial since the standardised estimates for low dynamic capabilities and high dynamic capabilities is significant.

Hence H90-H11 are aligned with Schenkel and Teigland (2016), as the firm's ability (dynamic capabilities) to tap into external resources and sense, adopt, adapt, modify and reconfigure the resources will spur the innovation capabilities through a variety of open solutions for innovation. Wilden et al., (2016) suggest that the constant use of sensing and reconfiguring processes have a vigorous, positive relationship with technological and marketing capabilities. According to them, the sensing capability of the firm needs to focus on identifying the existing products, processes and markets in combination with strong market values that will enable the firms to coordinate change through the coordination between departments.

In line with Swift (2016), the absorptive capacity (one of the characters of dynamic capabilities) of the firm will influence the use of exploitation and exploration of R&D and so, consequently, foster innovation capabilities and influence firm performance. This means that those capabilities are beneficial to the firm in exploiting the existing resources and exploring the new resources to fit customer demand and become a thriving enterprise. With this capability, firms can identify the valuable external resources and assimilate those resources in their innovation process, which leads to superior performance. Furthermore, the firm can optimise awareness of new opportunities to increase the exploration of R&D. Rothaermel and Alexandre (2009) also support the function of the absorptive capability as moderation. Their research suggests that this ability moderates the relationship between ambidexterity and firm performance. Through the absorptive capability, the firm can prioritise the valuable resources or project of the firm, minimise the cost and maximise the profit.

Dynamic capabilities are filters to ensure the flow of new knowledge in and out of the businesses and translate the relevant external resources into a local context, used by others within the firms and disseminate to the target group in the enterprise (Schenkel and Teigland, 2016). Dynamics capabilities as a moderator in this study filter the external resources (business networks) with internal capabilities or resources (innovation capabilities) to spur on firm performance. Also, this research aligns with (Wilden et al., 2016), who argue that configuring the relationship between dynamic capabilities with other organisational and external factors will impact on the strategic posture of the firm and, subsequently, its performance.

To conclude, the intervention dynamic capabilities as a moderator influence the relationship between business networks and innovation capabilities.

#### **6.4.6 Business Network, Dynamic Capability and Firm Performance (Moderator)**

This research shows varying results for dynamic capabilities as a moderator between business networks and firm performance. The next section will explain in detail the relationships between dynamic capabilities as a moderator and each element of the business networks with regard to firm performance.

##### **6.4.6.1 Dynamic capability moderates the effect of inter-firm collaboration and firm performance**

Regarding the moderation effect between dynamic capability between business networks and innovation capabilities, business networks and firm performance showed a different outcome. The result of this research (low dynamic capabilities) shows that the moderation is not significant since the difference in the chi-square value between the constrained and unconstrained model is less than 3.84 (0.096). The test of the hypothesis for moderation that was carried out found that the moderator (dynamic capabilities) does not moderate the causal effects of inter-firm and firm performance. As well as with high dynamic capabilities, the results show that there is no direct effect on inter-firm and firm performance as ( $\beta = -.027$ ,  $p = .776$ ).

No moderation effect exists for this model, as a moderating effect exists when there is a direct effect on inter-firm and firm performance.

Overall, based on the constrained and unconstrained model for both low and high dynamic capabilities, the result shows that there is no moderation effect since the standardised estimates for low dynamic capabilities and high dynamic capabilities are not significant. Hence the H12 is not supported. The finding shows that dynamic capabilities do not influence the relationship between inter-firm and firm performance as they do not have a connection in the first place. This is because other factors disrupt their relationships, such as failed collaboration between business networks or managerial distraction and resource misallocation. (Larsen, 2016) emphasised the importance of coordination capabilities to manage external and internal resources and enhance firm performance. The research reveals that a lack of coordination capability negatively impacts on the process of firm performance. Further, Zahra et al., (2006) also reveal that the implementation of dynamic capability will become worse and damage the firm performance if the firm misuses that capability. Also, (Ewa Stanczyk-Hugiet, 2011) stresses that the inter-firm relationships will reduce the firm performance even though these are related to other firm capabilities (DC) due to the long term relationship. These relationships will put the firm in a comfort zone which makes it difficult to change and adapt to the volatile environment.

#### **6.4.6.2 Dynamic capability moderates the effect of collaboration with university and public research organisations and firm performance**

H13 postulates a positive moderating effect of dynamic capabilities on the relationship between universities and public research organisations and firm performance. Dynamic capabilities fully moderate the relationship between universities and research organisations and firm performance, hence supporting H13. The finding shows that the standardised estimates for low dynamic capabilities are significant while the standardised estimate for high dynamic capabilities is not significant. The result for low dynamic capabilities indicates that the moderation is significant since the difference in the chi-square value between the constrained and unconstrained model is more than 3.84. The difference in the chi-square value is

9.647, while the difference in the degrees of freedom is 1. For the test to be significant, the difference in the chi-square value must be higher than the value of the chi-square with 1 degree of freedom, which is 3.84. The test of the hypothesis for moderation that has been carried out found that the moderator (dynamic capabilities) controls the causal effects of research organisation and firm performance. However, for high dynamic capabilities, the results indicate that the direct influence of research organisation on firm performance is not significant ( $\beta = 0.019$ ,  $p = 0.804$ ). Therefore, there is no existing moderating effect for this model.

The moderating effect only exists if there is a direct effect between a research organisation and firm performance. Overall, the dynamic capabilities as moderation fully moderate the relationship between universities and research organisations and firm performance. This signifies that a company with dynamic capabilities will influence the relationship between universities and research organisations and firm performance. This finding is supported by Jongbloed (2015), who argued that collaboration between universities, research organisations and the private sector will increase the stress (the challenge of balancing the mission and demand); however, in the real site, this collaboration will benefit both sides regarding contributing towards boosting firm performance. Perkmann et al., (2013) suggested promoting that engagement, as their activities are always beneficial to both parties. The intervention of dynamic capability as a moderator will mostly influence that relationship and contribute to the firm's growth and performance (Macpherson et al., 2004).

#### **6.4.6.3 Dynamic capability moderates the effect of the government role and firm performance**

Dynamic capabilities do not play their part as a moderator between government role and firm performance. Based on the unconstrained model for both low and high dynamic capabilities, the result shows that there is no moderation effect because the standardised estimates for low dynamic capabilities and high dynamic capabilities are not significant; hence, H14 is not supported. The result showed a negative impact on the relationship between government role and firm performance, as shown



by the  $t$ -values of 1.768 and a significant  $p$ -value of 0.077 for low dynamic capabilities. For high dynamic capabilities, the result indicates a  $t$ -value of 1.488 and a significant  $p$ -value of 0.138. This demonstrates the firms with either high or low dynamic capabilities do not moderate the relationship between government role and firm performance. These abilities are insufficient to influence the firm's performance. This is because other factors distort this relationship. These factors include failed collaboration between business networks, which includes inter-rivalry, coordination costs, governance problems, unintended knowledge spillover, culture clashes, learning races between the partners, divergent goals, and organisational rigidity (Wang et al., 2015).

Furthermore, this research resonates with (Laaksonen and Peltoniemi, 2016) regarding the function of dynamic capabilities as a moderator between ordinary and firm performance. They also stress that superior dynamic capabilities do not lead to superior performance if the operational capabilities of the firm are under par. The firm enters the market with little experience regarding the current situation such as the policy offered by the government - for example, the implementation of the Trans-Pacific Partnership (TPPA) by the Malaysian government which the firm needs to compete with international firms in the local industry. SMEs need to be aware of their competitor, customer or supplier to compete in the market with lower cost and to maximise the profit. Furthermore, Satiman et al., (2015) stress the lack of capability of the firm to use to the full the training programmes subsidised by the government.

The overall result shows the function of dynamic capabilities as a moderator of multi-effect and firm performance. Based on the analysis, dynamic capabilities play their role as a moderator in the relationship between the business network and innovation capabilities. However, in the relationship between business networks and firm performance, dynamic capabilities do not fully play its role as a moderator. This means that firms with a dynamic capability have more influence on resource orchestration by contributing to innovation capabilities than on firm performance. This shows that the combination of capabilities (dynamic capabilities and innovation capabilities) will affect the firm performance (Ellonen et al., 2009; Xie et al., 2015).

#### **6.4.7 Business Network and firm performance**

A company's performance can be connected to two main areas: operational performance and financial performance (Saunila, 2016). The financial performance focuses on results (profitability), while the operational performance centres on the antecedents of the results (productivity or quality). This research is only focusing on financial performance (sales growth, profit growth, profitability, ROS, and ROI).

The business network is considered one of the determinants of firm performance. As mentioned above, this research concentrates on inter-firm, university and public research organisations and government role as business networks. Many companies improve their competitive advantage and firm performance through effective participation in inter-firm information sharing (Martin-Rios, 2014). The grandiose purpose of the networks is cost, risk control, time, rapid access to new skills and especially variety option of the resources (Dumitraşcu et al., 2014).

The relationship between the firm and competitors, financing, pricing strategies and contracts with patent councils and consultants may also be vital for the firm's performance (Lofsten, 2016). This means that performance is not limited to certain partners, customers, suppliers, research organisations or even the government. The focus of this study is on intangible resources, as there is no significance between business networks and firm performance, it's could be the firms intentionally focusing on financial resources (tangible resources) support compared with knowledge sharing and the firm's capabilities (intangible resource). Most Malaysian SMEs have been offered financial facilities by the government (Nor et al., 2016). There is miscommunication among the respondents in this research regarding sharing information which leads them to financial resources, as there are no direct questions with regard to the issues.

The business networks in this research do not influence firm performance. The results indicate that all elements under business networks (inter-firm, universities and public research organisations and government role) have an adverse impact on the firm's performance; hence, hypotheses 15a-c are not supported. The result

showed that there is negative impact among inter-firm on performance as indicated by the  $t$ -value of 0.851 and a significant  $p$ -value of 0.395. Similarly, the results for universities, public research organisations and government role also show a negative impact on firm performance, as they indicate a  $t$ -value of -0.962 and a significant  $p$ -value of 0.335 and a  $t$ -value of 0.915 and a significant  $p$ -value of 0.361, respectively. This result shows that it is insufficient to enhance a firm's performance with only external resources through a business network.

As suggested by Parker (2008), the government should play their role in fostering networks. The government's role is to provide subsidies and indirect policies such as transport infrastructure which reduces the costs of meeting with other firms, and improve information and communication technologies. Furthermore, sharing information from government agencies related to R&D information regarding failed projects between R&D teams might be helpful in improving the selection of appropriate R&D, and consequently improve the efficiency of innovation and boost firm performance.

This research argues that the effect of business networks is marginal and there is no relationship with firm performance. The failure of the business network to improve firm performance could be due to several reasons. These are: the relationship between the actors or members is not close or sincere, a refusal to join networks as there is no coercion, false interpretation between the members, the miscommunication of information between the network members, the cost of coordinating the members, information does not spill out to non-members (just disclosed to members), the non-reciprocation of knowledge by the network members and the excessive growth of a network (Parker, 2008).

Even though there is government involvement in business networks for improvement, there is still a gap, poor interpretation by firms, the miscommunication of information, and the mission is not completed (Parker, 2008). Some of them are ignorant about the benefits of the networks *per se*, and so the business network fails. Furthermore, the location also becomes one of the reasons for the failure of business networks. A comparison between an urban area with excellent communication facilities and sound technologies and a rural area without these

facilities means that the business network in cities are more efficient compared with those in the rural areas (Parker, 2008).

The results support the research conducted by Shutyak and Van Caillie (2015), who found that the SMEs in the country can survive without direct aid from the government due to the “increasing returns” due to the newly established institution of entrepreneurship. Subsequently, the government roles are superfluous in influencing the firm performance, as other factors have a greater influence on them. Furthermore, the failure of business relationships may be due to the burdens in the relationship, stress in the relationship, the adverse side of the business relationship, relational misconduct and detrimental intentions (Abosag et al., 2016). As pointed out by Snehota and Håkansson (1995), even though business relationships are valuable in certain ways, they may also contain some negative aspects. The argument again supports Samaha et al., (2011), who demonstrate that understanding, long-term relationships are invariably critical for long-term success. Furthermore, Abosag et al., (2016) argued that business relationships are not right or wrong but all have simultaneous positive and dark-side effects. Nevertheless, a conflict will arise if the manager fails to understand the business relationship and it is wrongly implemented. Additionally, the uncertainty of the environment also contributes to the failure of the business network related to market volatility and the changing rules and regulation. In conclusion, firms with various resources without the firm’s ability cannot influence firm performance.

## **6.5 Concluding Remarks**

This chapter has discussed the result of the research hypotheses from Chapter 5. It discussed the instrument validity of the measurement used in the survey for data collection from SMEs in Malaysia. Thereafter, the results were examined and supported by the previous literature. The discussion highlighted is valuable for its significant contribution to the knowledge of the determinants of SME performance. This shows that the firms solely with their resources through a business network will not necessarily increase their firm performance. This study also argued that external resources need other capabilities like dynamic capabilities and innovation

capabilities to influence the firm performance significantly. The combination of these two capabilities will affect firms that are seeking to utilise external resources to fit their internal needs and produce competitive goods or services, parallel with their customers' needs, compared with other firms. These characteristics will influence the firm performance.

Furthermore, the findings suggest that the combination of the two theories (RBV and dynamic capabilities) is beneficial for perpetuating firm performance in a volatile environment. The RBV emphasises the uniqueness of resources and highlights the positive consequences of external resources and knowledge filling the gap in internal capabilities (dynamic and innovation capabilities) (Spithoven and Teirlinck, 2014). The results of this research establish three relationships: business network → innovation capabilities → firm performance, business network → dynamic capabilities → innovation capabilities and business networks → dynamic capabilities → firm performance.

Overall, the result of this research shows that the determinant of a firm's performance is an alliance of several resources and capabilities. The following chapter further discusses the practical and theoretical contribution of this research.

## **Chapter 7 : Conclusion**

### **7.1 Introduction**

Many firms, particularly small businesses, cannot meet the demands of the market (Park and Yoo, 2017). Resources and capability are critical success factors for strategy and performance (Beleska-Spasova et al., 2012; Merrilees et al., 2011). Since the resources and capabilities are important for spurring on firm performance, this research focused on the intervention of dynamic capabilities and innovation capabilities between business networks and firm performance. So far, little is known about the success of these two capabilities that potentially enhance firm performance. Further, there is a dearth of empirical research on the dyadic relationship of business networks in collaboration with these capabilities. A misunderstanding of this relationship leads to the failure of most SMEs, specifically Malaysian SMEs.

Firm performance in a turbulent business environment strongly depends on a combination of resources and capabilities of the company (Ricciardi et al., 2016). This research presented an extensive overview of the existing literature to show how capability influences firm performance through the combination of business networks and innovation capabilities. This study is empirical research that used a combination of RBV and DC to examine that collaboration.

The dynamic capabilities view and RBV have become the leading framework for firms that aim for long-term growth or survival (Wan Nur Syahida and Mohd Zulkifli, 2014; Wilden et al., 2016). The theoretical model comprises business networks (external resources), dynamic capabilities (sensing, adoptive, adaptive, coordination and reconfiguration), innovation capabilities (product, process, market, organisational) and firm performance. This thesis aligns with the existing research that found that DC and RBV essentially influence firm performance. Also, a set of hypotheses been developed together with the theoretical model.

This chapter concludes the entire thesis by providing an overview of the important areas covered. This chapter will revisit the research aims and objective and the finding for each objective. After that, the finding will highlight the basis for the four research questions set out in chapter one. Subsequently, the research will present the theoretical and practical contributions. Finally, this research will outline the limitations and recommendations for future research.

## **7.2 Conclusions of the Study**

Chapter seven summarises the findings of the study which achieved the aim and objective of the research. The purpose and objective of the thesis are: to examine the moderating and mediating role of dynamic capabilities and innovation capability regarding the business networks and firm performance of SMEs in Malaysia. The objectives are explored through the theoretical lens of dynamic capabilities and the resource-based theory, which underpins the relationship between the variables. Further, this chapter makes an in-depth theoretical and practical contribution. It also states the limitations of the study and recommendations for future research.

The thesis extensively examined the literature on the theories of resources and capabilities presented in chapter two. In this chapter, the researcher presents an in-depth, critical review of the resources related to the RBV. The resources imply the importance of the business relationship between firms, particularly the relationships with other firms, universities, public research organisations and the government. Further, the principles of the theories of the RBV and dynamic capabilities were analysed. Overall, the literature analysis shows that the relationship between the variables (business networks, dynamic capabilities, innovation capabilities) are mostly related to firm performance and proves their relationship.

Chapter three presented a justification of the selected theory (RBV) in combination with dynamic capabilities. Further, the model of the thesis was presented to show the relationship between the constructs and to develop a new theoretical framework (Figure 3.1). All 15 hypotheses were critically analysed and justified to reveal their relevance to the thesis, in line with the aim of the thesis. This thesis concludes that

higher external resources (business networks) with dual capabilities (dynamic capabilities and innovation capabilities) will have a greater influence on firm performance.

The analysis and discussion presented in chapter six provide an understanding of the key antecedents that influence the performance of Malaysian SMEs (Chiun Lo et al., 2016). The result of this study resonates with previous studies on the theories related to strategic management. This thesis employed the SEM because it fits the justification of analysing the theories involved in various corrosion experiments in concurrence with a group of variables, comprising both dependent and independent variables. These theories were examined in light of the data and information collected using SEM. Table 5.54 presents a summary of the findings for all 15 hypotheses, four of which were not supported.

The findings revealed that a firm equipped with resources and capabilities is more likely to develop a competitive advantage and enhance its performance in a volatile environment. The result of this research aligns with that of (Wang et al., 2015) regarding the direct and indirect effect of dynamic capabilities (moderator) on firm performance. Pertinent to the research question, the findings answered the research questions stated in chapter one.

This research found that business network does not significantly influence firm performance. The results found that inter-firms had an adverse impact on firm performance, with a  $t$ -value of 0.851 and a significant  $p$ -value of 0.395. Also, research organisations and firm performance were not significantly related, with a  $t$ -value of -0.962 and a  $p$ -value of 0.335. Similarly, there is no significant relationship between government role and firm performance, with a  $t$ -value of 0.915 and a  $p$ -value of 0.361. Similarly, innovation and firm performance had a  $t$ -value of -0.088 and a  $p$ -value of 0.930. These results demonstrate that there is no direct relationship between business network and innovation with regard to firm performance. The negative interaction, communication and engagement in the business networks causes uncertainty in the underlying relationship (Abosag et al., 2016). However, dynamic capabilities are positively related to firm performance (Lin and Wu, 2014). The results indicate a  $t$ -value of 2.724 and a  $p$ -value of less than 0.05.



This research found that only dynamic capability has a direct relationship with firm performance, as the  $t$ -values are more than 1.96 and the  $p$ -values are  $\leq 0.05$ , whereas there is no direct correlation between business network and innovation, as the  $t$ -values and  $p$ -values are below the required level. A firm with solely a dynamic capability can still enhance their performance. However, there is no impact on a company's performance that has a relationship with the other actors in the business network. Likewise, a firm's performance is not influenced by a sole innovation capability. This, therefore, implies that SMEs should emphasise the importance of dynamic capabilities for firms, as their function in influencing firm performance has been proven (Onn and Butt, 2015). However, business network and innovation capabilities are negatively related to firm performance. Consequently, SMEs must identify which one is more important than the others to boost their performance and move ahead in the market.

However, this research found that there is a positive relationship between businesses network (external) and innovation capabilities (internal), consequently leading to better firm performance. According to Barney (1991), the characteristics of external and internal resources (focusing on intangible resources) are: valuable, rare, difficult to imitate and non-substitutable, which will contribute towards sustaining a competitive advantage and ultimately spur firm performance. Business networks are considered an antecedent of innovation capabilities (Sarvan et al., 2012). The result for an inter-firm relationship with innovation shows a  $t$ -value of 6.968 and a  $p$ -value of  $\leq 0.05$ .

The results indicate that research organisation has a positive relationship with innovation capabilities, and consequently is significantly related to firm performance, with a  $t$ -value of 4.889 and a  $p$ -value of  $\leq 0.05$ . Similarly, government roles are notably related to innovation capabilities and firm performance, as illustrated by a  $t$ -value of 4.122 and a significant  $p$ -value of  $\leq 0.05$ . This relationship shows that there is direct effect between business networks and innovation capabilities, which helps to increase firm performance. Furthermore, this research suggests that SMEs should consider combining the firm's innovation capabilities and business networks instead of focusing only on business networks. The findings provide a more nuanced understanding of the function of business networks; substantial contribution to

successful innovation capabilities, including product, process, market and organisational innovation. Business networks, as external resources, influence the firm's performance, as they are the input of the firm and contribute an output, which is superior firm performance.

However, combining business networks, dynamic capabilities and innovation improves the relationship between them and firm performance. Conceding that, the intervention of innovation capabilities as a mediator can improve the relationship between the business network and firm performance. Regarding the mediator, the findings show that innovation capability partially mediates the relationship between inter-firm and firm performance and is either directly or indirectly related to firm performance. The results further indicate a correlation between inter-firm and firm performance, with a *t*-value of 2.230 and a *p*-value of 0.025, as do inter-firm and innovation, with a *t*-value of 11.925 and a *p*-value of 0.001. Moreover, innovation and performance shows a *t*-value of 2.90 and a *p*-value of 0.004.

The intervention of innovation capability in the relationship between universities and government roles is considered fully mediated. The finding establishes that the direct relationship between universities and research organisations is not significant, with a *t*-value of 1.152 and a *p*-value of 0.149. However, universities and research organisations are significantly related, with a *t*-value of 16.514 and a *p*-value of 0.001. On the other hand, innovation and firm performance are significantly related, with a *t*-value of 3.041 and a *p*-value of 0.002. Full mediation occurs if the direct effect is reduced and no longer significant. This shows that innovation capabilities play a role as mediator (Xu et al., 2014).

Dynamic capabilities also play a role as a moderator in the relationship between business network and innovation capability as well as in that between business network and firm performance. The finding shows that dynamic capability fully moderates the relationship between inter-firm and innovation capabilities, since the standardised estimates for low dynamic capabilities is not significant while the standardised estimates for high dynamic capabilities are considerable, while the type of moderation of dynamic capabilities between university and research organisations on firm performance is quite moderate. The results illustrate that dynamic capability

moderates the causal effects on research organisations and innovation capabilities with a difference in the value of the chi-square. For low dynamic capabilities, this is 14.918 and, for high dynamic capabilities, it is 77.791, while the difference in the degrees of freedom is 1.

In the relationship between government role and innovation capabilities, dynamic capabilities' partial moderation is significant because of the standardised estimates for low dynamic capabilities and high dynamic capabilities. The results illustrate that dynamic capability moderates the causal effects of research organisations and innovation capabilities, with a value in the difference in chi-square for low dynamic capabilities of 34.148 and for high dynamic capabilities of 40.134, while the difference in the degrees of freedom is 1.

Notwithstanding the different findings, the function of dynamic capabilities as a moderator between business network and firm performance achieved various results. The findings for the moderation effect of dynamic capabilities in the relationship between inter-firm and firm performance shows that no moderating effect occurs since the standardised estimates for low dynamic capabilities and high dynamic capabilities are not significant. The result shows that the Chi-square difference for low dynamic capabilities is 0.096, which is lower than 3.84, with 1 degree of freedom. Likewise, the results for high dynamic capabilities indicate that there is no direct effect on inter-firm and firm performance, as ( $\beta = -0.027$ ,  $p = 0.776$ ).

The finding for dynamic capabilities as a moderator between universities and research organisations regarding firm performance showed differently as fully moderate. The result shows that the Chi-square difference for low dynamic capabilities is 9.647, which is higher than 3.84, with 1 degree of freedom. As well as high dynamic capabilities, the results indicate that there is no direct effect on universities, research organisations and firm performance, as ( $\beta = -0.027$ ,  $p = 0.776$ ). Nonetheless, dynamic capabilities do not moderate the relationship between government role and firm performance. The result indicates an adverse impact on the relationship between government role and firm performance, as indicated by a  $t$ -value of 1.768 and a significant  $p$ -value of 0.077 for low dynamic capabilities. For

high dynamic capabilities, the result shows  $t$ -values of 1.488 and a significant  $p$ -value of 0.138, even though firms with high dynamic capabilities or low capabilities do not moderate the relationship between government role and firm performance.

The findings show that, although the type of moderation and mediation are both partially or fully moderated and mediated, dynamic capabilities and innovation capabilities still play their role as moderators or mediators. However, the result revealed that dynamic capabilities fully play their role as moderators only in the relationship between business network and firm performance, instead of between business network and firm performance, which are partially related. This research suggests that firms generally, and specifically Malaysian SMEs, should consider all of the resources and combine them with dual capabilities (dynamic capabilities and innovation capabilities) to boost their firm's performance in a turbulent environment.

### **7.3 Novelty and Theoretical Contribution**

The novelty of the research is related to the comprehensive development of a theoretical model that examines the antecedents of firm performance influences. The theoretical framework relates to the external and internal resources that are connected to merge the resource-based view and dynamic capabilities. To date, very limited research has addressed these combined relationships. Also, the role of the business network as external resources and innovation capabilities as internal resources has been empirically discussed. That combination enhances the existing theoretical framework. The aim of this study is to examine the moderating and mediating role of dynamic capabilities and innovation capabilities regarding business networks and consequently the firm performance of SMEs in Malaysia. The main theoretical contributions of this thesis are highlighted below.

This research contributes to strategic management, dynamic capabilities theory and the resource-based view in five ways. Firstly, this study contributes to dynamic capabilities theory by combining, for the first time, the external factors (business networks) and internal factors (innovation capabilities) regarding firm performance. Generally, this research finds that business networks and innovation capabilities

have a negative effect on performance (Shutyak and Van Caillie 2015; Lofsten, 2016; Kafetzopoulos and Psomas 2015). However, these factors combining with dynamic capabilities as a moderator improves the relationship between business networks and innovation capabilities regarding firm performance. These distinct outcomes may help to explain the importance of combining these factors in order to contribute towards increasing firm performance (Laaksonen and Peltoniemi, 2016; Makkonen et al., 2014; Nieves and Haller, 2014; Pezeshkan et al., 2016) Furthermore, this is the first time that the five elements of dynamic capabilities, which consist of sensing, absorptive, adaptive coordination and reconfiguration capabilities, have been combined to increase firm performance, both directly and indirectly. The results of this research should enhance the understanding of combining these elements instead of applying single elements to firm performance, as mentioned by previous research; for instance sensing, absorptive (Hotho et al., 2012; Zahra and George, 2002), adaptive (Zhou and Li, 2010), coordination (Buckley, 2011; Eriksson et al., 2014) and reconfiguration (Teece, 2007). As a result, this research complements previous research by offering new knowledge about sensing, absorption, adaption, coordination and reconfiguration capabilities and how collaboration with other factors could enhance firm performance under unforeseen market conditions (Carlos, 2011; Nieves and Haller, 2014).

Secondly, the results of this research shed light on the indirect relationship between dynamic capabilities, innovation capabilities and firm performance. This is the first study to focus on the combination of dynamic capabilities as a moderator and innovation capabilities as a mediator in the relationship between business network and firm performance. The results of this research should discriminate between direct relationships these variables to firms performance (Jeng and Pak, 2014) and the indirect relationship. This research contributes to the literature by empirically validating the proposed conceptual model by surveying 463 SMEs owners or employees in Malaysia.

Thirdly, the findings of this research provide support for both the resource-based view (RBV) theory and dynamic capabilities. RBV and dynamic capabilities are renowned resources in the field of strategic management. RBV is known as the theory for producing a firm's competitive advantage as long as the resources of the

firm are valuable, rare, inimitable and non-substitutable (VRIN) (Barney, 1991). Consequently, the resources of the firm must be valuable regarding the relative cost and benefit, rare in the sense of scarcity versus demand, and difficult to imitate (others' resources cannot provide functional substitutes). On the other hand, dynamic capabilities have expanded the RBV theory in order to deal with the volatile environment. As this research focuses on intangible resources, the results show that external resources and internal capabilities complement each other in enhancing firm performance (Saeed et al., 2015). This research supports research by (Saeed et al., 2015), who suggest the need to combine both resources and capabilities. However, this research adds the new element of business networks as external resources, consisting of universities, public research organisations and the government role, instead of only customers and competitors. Hence, these resources and dynamic capabilities will prevent competitors from imitating the firm's resources, particularly when dealing with the current volatile market (Lin and Wu, 2014). Consequently, this research increases our understanding of the combination of these hybrid theories with the new elements of business network and the five elements of dynamic capabilities (sensing, absorptive, adaptive coordination and reconfiguration).

Accordingly, firms must be aware of their external resources (business networks) and internal resources (dynamic capabilities), as these complement each other (Sardana et al., 2016). As mentioned above, this research focused only on intangible resources. The analytical results of this research demonstrate the integration of both resources and dynamic capabilities, specifically, the contribution to RBV. It clearly states the importance of external collaboration, and dynamic capabilities transform the firm's resources into a competitive advantage and affect the firm's performance in a volatile environment.

Fourthly, the results enrich our understanding of the link between external resources, internal capabilities and firm performance (Zhang and Wu, 2017). They support the view that it is very important to study firm performance in relationship to external business networks and internal capabilities. The findings of this research offer preliminary support to Zhang and Wu (2017) by providing another view of the elements of business networks which consist of inter-firm, university and public research organisation and government role. Furthermore, the result also supports previous

research related to internal capabilities or resources (dynamic capability and innovation capabilities) in contributing to firm performance (Laaksonen and Peltoniemi, 2016; Pezeshkan et al., 2016). However, the result of this research gives new exposure about the negative association between innovation capabilities and firm performance (Kafetzopoulos and Psomas, 2015; Lungeanu et al., 2016). This research proves that innovation capabilities do not necessarily enhance firm performance (Kim et al., 2012; Perunović et al., 2016)..

Fifth, this research also contributes to the strategic management research by advancing the understanding of combining resources and capabilities to improve firm performance. Specifically, this research advanced the conceptual work on DCs. It aligns with the studies of Eisenhardt and Martin (2000), Pavlou and El Sawy (2011), Teece (2007), Teece et al., (1997) and Wang and Ahmed (2007), as well as with RBV (Kraaijenbrink et al., 2010). Lin and Wu (2014), focusing on the relationship between business networks and tangible resources, examined the effect of DC on business networks, innovation and consequently firm performance. This research drew on evidence from a survey of Malaysian SMEs and focused on the decision-makers within the firm.

Lastly, in term of contribution to the quantitative level, this research used Confirmatory Factor Analysis (CFA) to assess the fitness of the measurement model within the area of study. The CFA is resolved using the SEM. The goal of SEM is to dictate the extent to which a model is underpinned, and what data were assembled during the research (Schumacker and Lomax, 2010). SEM has become the preferred method for confirming (or not) the theoretical model quantitatively, as SEM is capable of statistically testing complex phenomena (Wawmayura et al., 2015).

#### **7.4 Practical Contribution/Managerial Implications**

From a practical perspective, the findings of this research suggest that managers should fully understand and use the business networks in combination with other capabilities (DC and IC) to override the importance of financial support from others (personal or the government). Such collaboration will help the firm to generate more

income through their services or products as long as they have the capability to manipulate the resources. For example, the power of marketing capabilities (one of the measures of innovation capabilities) will influence the customer regarding the services or products offered by the firms. Customers will be offered financial resources through their part payment for the services provided by the company. As long as the firm can provide excellent services to the customers and build trust with them, automatically it becomes capital for the firm. However, without these capabilities, it could be very hard for the firm to generate the income that would ultimately increase the firm performance.

This research makes a practical contribution to both managers and policy makers in emerging economies. It is evident from the results, (chapter 5) that managers can identify and foster the understanding of the implementation a firm's capabilities (dynamic capabilities and innovation capabilities) towards the external resources. Likewise, companies can be guided by the findings and conclusion of this thesis as a guideline for a better understanding of the importance of business networks as external resources that fit with the firm's ability to increase its performance. It is clear that most of the failures of business performance are due to a lack of understanding and use of the business networks. In general, Malaysian culture for SMEs is always related to capital funding by the government (Brander et al., 2015; Mohamed Zabri and Lean, 2014; Zabri et al., 2011). This research will change their focus to the importance of business networks (knowledge spill-over) rather than financial assistance from the government.

Furthermore, the findings of this research prove the need for Malaysian SMEs to focus on understanding the importance of innovation capabilities as the drivers of firm performance, as was also suggested by (Bashar Bhuiyan et al., 2016). Moreover, Manez et al., (2013) found that the importance of the relationship between process innovation and improved firm productivity were closely related, ultimately improving firm performance. Innovation capabilities also always considered a key antecedent of the survival, sustainability, and performance of firms, particularly SMEs (Pelser, 2014; Pullen et al., 2012). On the other hand, innovation is one of the most frequently quoted variables to benchmark the performance of the firm and economic growth (Rezazadeh, 2017).



Also, the manager should be cognisant of the significance of the business network to the enterprise. They should be expert in exploring and adapting the external resources. The correct interpretation and understanding of business network roles will improve firm performance; otherwise, the business will fail. They should know how to manage a business relationship regarding the choices, opportunities and limitations, and be able to control them (Abrahamsen et al., 2016).

Further findings of this research suggest the managerial use of collaboration with inter-firm, university, public research organisations and government support in diagnosing, selecting and implementing the new resources. Combining these actors with the firm's level of organisational capabilities (dynamic capabilities and innovation capabilities) will have a synergistic effect on firm performance. Such collaboration between the internal and external is proven to increase the performance of the firm. This is in line with previous literature, even though from a different perspective (Gomez et al., 2014; Radnejad and Vredenburg, 2015).

Next, this research provides important managerial implications for resources and capabilities collaboration. First, to engage with external resources (business networks), noting the importance of dynamic capabilities and innovation capabilities is imperative to leverage firm performance. Without these capabilities, collaboration between them is likely to fail, and firms should refrain from engaging with external partners. Secondly, due to the volatile environment and changes in industries technologies, the high demand for dynamic capabilities and innovation capabilities become crucial to validate and manage the firm's external resources. However, the investment in these capabilities should be carefully considered in light of the current and anticipated environmental characteristics.

This research found a positive relationship between dynamic capabilities and firm performance in highlighting the significance of investing in dynamic capabilities. As supported by Pezeshkan et al., (2016), investing in dynamic capabilities will help the firm to gain competitive advantages or increase the firm performance. Similarly, Teece (2014:p. 27) noted: "While no firm will succeed forever in a particular market, strong dynamic capabilities allow a firm to ride successive waves of change across

lines of business by renewing and leveraging the (fungible) services of their valuable and difficult-to-replicate resources”.

For policy makers, the findings show that they should focus more on educating the SMEs through programmes on understanding and the importance of business networks instead of giving them loans, as some of them misuse such facilities and are unable to repay them. Such financial investment is a waste of the country's resources. Every year, the Malaysian government spends millions of dollars on loans to SMEs with the intention of helping and building up SMEs and increasing the income, as 99.2% of established businesses in Malaysia are SMEs (Halim et al., 2015). The most dominant form are micro industries (55.3%), followed by small-sized businesses (39.5%), then medium-sized business (5.2%) (SME Corporation Malaysia, 2010; SMIDEC, 2010). Further, policy makers have thus encouraged SMEs to pay more attention to managing bundles of external and internal capabilities in a volatile market in emerging economies. They can encourage SMEs via their policies by using local institutions, inter-firm linkages and groups of industries in order to produce and reinforce the micro-level bonds which can support global competitiveness. Furthermore, they can reduce the regulatory burden, diminish the administrative burden and reduce compliance costs for SMEs. The subsidies offered by the government also encourage the development of SMEs. Wonglimpiyarat, (2011) stresses the importance of government policy in countries like Malaysia and Thailand for developing technology and contributing towards enhancing the firm's innovation, and consequently increasing firm performance. Furthermore, they can encourage additional networking opportunities, build relationships with other professionals or help to connect SME clients with each other to create mutually supportive environments and information channels.

## **7.5 Research Limitations**

There are several limitations of this research that could assist future studies. The following are the limitations. First, this research surveyed a small sample size. A bigger sample size would have created more potential to generalise the study. The difficulty in collecting data from the firm's decision makers (owner, CEO, manager,

senior manager and executive) imposed a limit on the sample size. Decision makers, like the CEO, have little or no time to spend answering the research questions related to the staff of the firm (Naudé et al., 2014). To overcome this limitation, the researcher chose to see them face to face instead of sending the questionnaires via email, the web or post. Their perception is different when the researcher meets them personally. Their respect increases when they learn that the researcher is a PhD student from overseas, particularly from the United Kingdom. According to them, overseas students have more experience and higher standards compared to local students (Tagg, 2014). Furthermore, in line with the convenience sampling technique, the stratified sampling technique was applied in this research, so the respondents can be concentrated in certain geographical locations, based on their availability. However, based on the analysis in Chapter 5, the number of responses was sufficient and above the minimum requirement for conducting the analysis. Therefore, based on this reason, the low response rate is justifiable and was not an issue.

The second limitation was culture. This study was confined to Malaysian culture. Therefore, a different result might have been achieved in other contexts or cultures. Such cross-sectional data measured dependent and independent data at the same time and in the same place. Although these kinds of data are well established in organisational research, they still suffer from limitations in preparing the path-dependent nature of the cause and effect relationship. Replicating this research in another context or culture might improve the generalised findings. As the result shows, the negative relationship between business network and firm performance, may differ according to culture or context, which will give a different result, or there is a positive relationship with performance, as in the previous research (Masiello et al., 2015; Nimlaor et al., 2014; Tehseen et al., 2015). However, it seems reasonable that the research results can still be generalised in terms of the importance of combining external resources and internal capabilities to contribute to firm performance, as the features or characteristics of SMEs are similar across all countries (Brief, 2000). Berisha and Pula, (2015) argue that, based on the quantitative and qualitative indicators, the characteristics of SMEs are more or less the same for all countries.

Thirdly, the survey instrument was based on a Likert-scale, leading to criticism of self-serving bias in the data (Sardana et al., 2016). There could be inaccurate responses due to perceptual biases in misunderstanding or euphoria about answering the survey. Furthermore, the imprecise responses given may be related to the firm as the respondents simply tick to respond to the survey.

Fourthly, the data for this research covered all categories of SME (micro, small and medium) and all categories of industries, and did not estimate the total respondents for each category. Such criteria will influence the biasness of the results, as we cannot determine the respondents' rate.

Fifthly, this research focused on firm-level instead of the individual level. This study did not include the individual skills or characteristics that may influence different results. However, based on previous literature, the perspective of the firm level has been less explored in the empirical research, and there is a need for further studies (Gupta et al., 2006; Keupp et al., 2012).

Finally, this research is limited to the business network as an external resource instead of combining it with social networks. The combination of formal and informal relationships will enhance the resources of the firms.

## **7.6 Future Research**

While significant information has been gathered for this study, there are some possibilities for future research. The first recommendation would be to repeat this study in the same context, however, using a different a qualitative method to obtain feedback from the respondents and avoid misunderstandings regarding the questions. For instance, future researchers might use observation, interviews or documentary evidence to explain the relationship between the variables, which will produce a better understanding of this relationship in the proposed model.

Another possibility for future research is to conduct a longitudinal study to understand the historical development, together with the role of business networks,

dynamic capabilities, and innovation capabilities that impact firm performance. Furthermore, this kind of method provides a fruitful avenue for better understanding the relationship between the variables (IV, mediator, moderator and DV). Employing a longitudinal design, with conceptualisations, will elicit richer and robust empirical results.

This research was conducted in a single country with a small-sized sample, and therefore the generalised findings are specific to the context. Furthermore, the samplings frame for this research was restricted to confirmatory factors analysis as the analytical tools and validation of the proposed model. Cross-cultural research between developed and developing countries might be conducted (replicating the research) to obtain more evidence of the successful determinants that influence firm performance. For example, there is no direct effect on business networks and innovation capabilities regarding firm performance in this research. However, the result might be different for developed countries. These kinds of research are necessary to verify universal applicability and will enhance our understanding of the research context. Furthermore, using largescale of data and another choice of analytical tools and validation of the proposed model (exploratory factors analysis) might produce a substantial and deeper understanding of the phenomena. Furthermore, this technique helps to reduce the measurement question of inventory by removing the less significant and increasing the accuracy (Field, 2013; Hair et al., 2010; Netemeyer et al., 2003).

This research focused on the firm level. Another avenue for research might be focusing on an individual level (their characteristic or skills) instead of the firm's level and equally divide the categories of SMEs and industries to avoid an imbalance (Ljungquist, 2014). This kind of research will examine how a company with different sectors and categories of SMEs (same data) differ in terms of leveraging their external networks through various types of capabilities (dynamic capabilities and innovation capabilities). Furthermore, by focusing on an individual level, it is beneficial to seek more individual capability to exploit the firm's capabilities fully (DCs and ICs).

Further, future research can explore the barriers to business networks and innovation capabilities regarding firm performance. The exploration of these possibilities will enrich our understanding of how the interaction between resources and capabilities can positively or negatively affect firm performance.

As the focus of this study was on financial performance, further studies can explore the combination of financial and non-financial performance as non-financial assets are intangible benefits, like employee satisfaction, client satisfaction, internal business process efficiency, innovation ability and performance enhancement from intangible assets (Chiun Lo et al., 2016; Ha et al., 2016). In future, researchers might focus on how to utilise, mobilise and strategise the resources in the business network (Abrahamsen et al., 2016) relationship with firm performance instead of only focusing on the relationship with other variables (innovation and dynamic capabilities) to contribute to superior performance.

This research used a single method; using the mixed method approach may allow future researchers to explore the intrinsic characteristics of the dyadic relations between firms that are mediated or moderated by other capabilities (DCs and ICs).

Further research can also focus on the informal network (social network) together with the formal network (business networks) to examine the extent to which exploring and exploiting the dual capabilities (DCs and ICs) can help to improve firm performance.

## **7.7 Concluding Remarks**

This chapter presents the conclusion of the study that attempted to investigate the relationship between external resources (business networks) and internal capabilities (dynamic capabilities and innovation capabilities) in contributing to firm performance in terms of both the direct and indirect effect. This research developed and estimated an empirical model based on 463 Malaysian SMEs. The structural equation modeling results show that all of the variables meet the minimum requirement of the fitness index. However, there are multiple results for the relationship between the

independent variables and dependent variable. The result shows that innovation capabilities and business network are not significantly related to firm performance. However, the intervention of dynamic capabilities as a moderator improves those relationships. As this research found mixed results, particularly for business network elements and innovation capabilities, managers should carefully evaluate their network strength and internal capabilities, and implement leveraging strategies accordingly. Additionally, the implications of the study for business practice and theoretical contribution have been explained. Finally, the limitations of this research should prove fruitful areas for future research and assist future researchers in doing their research.

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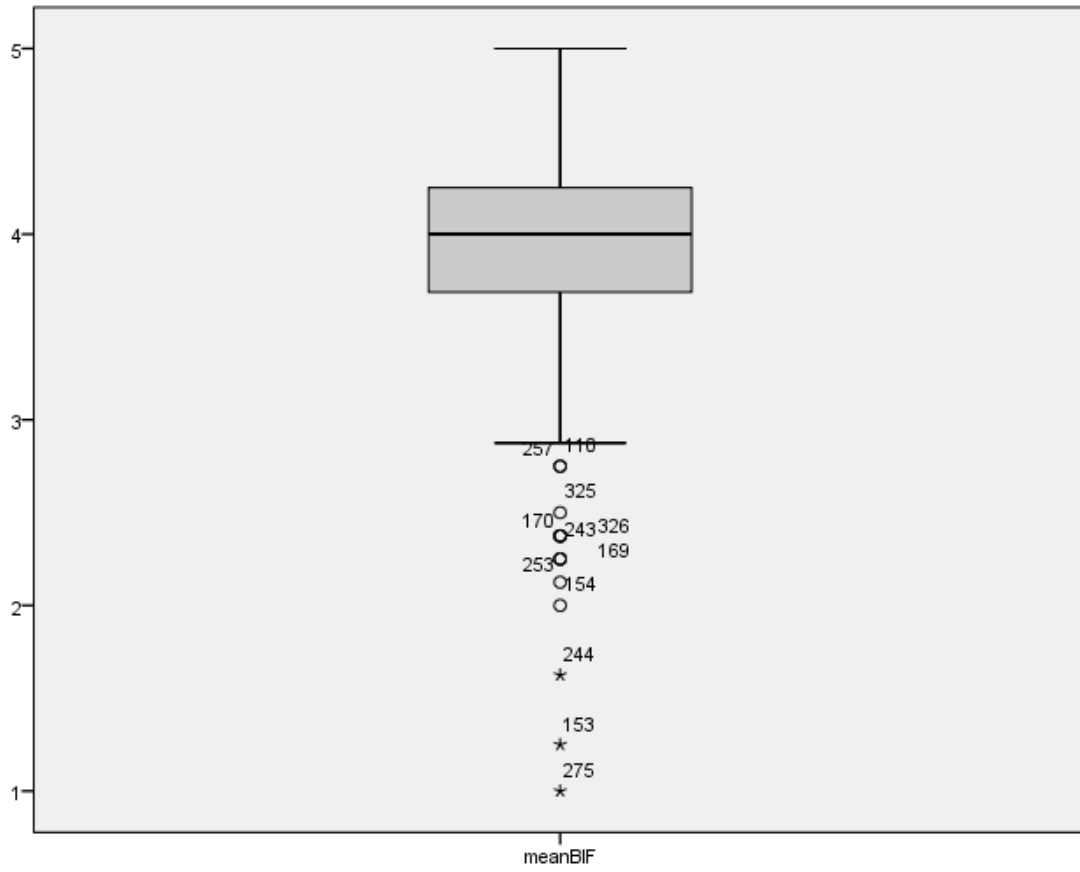
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## Appendices

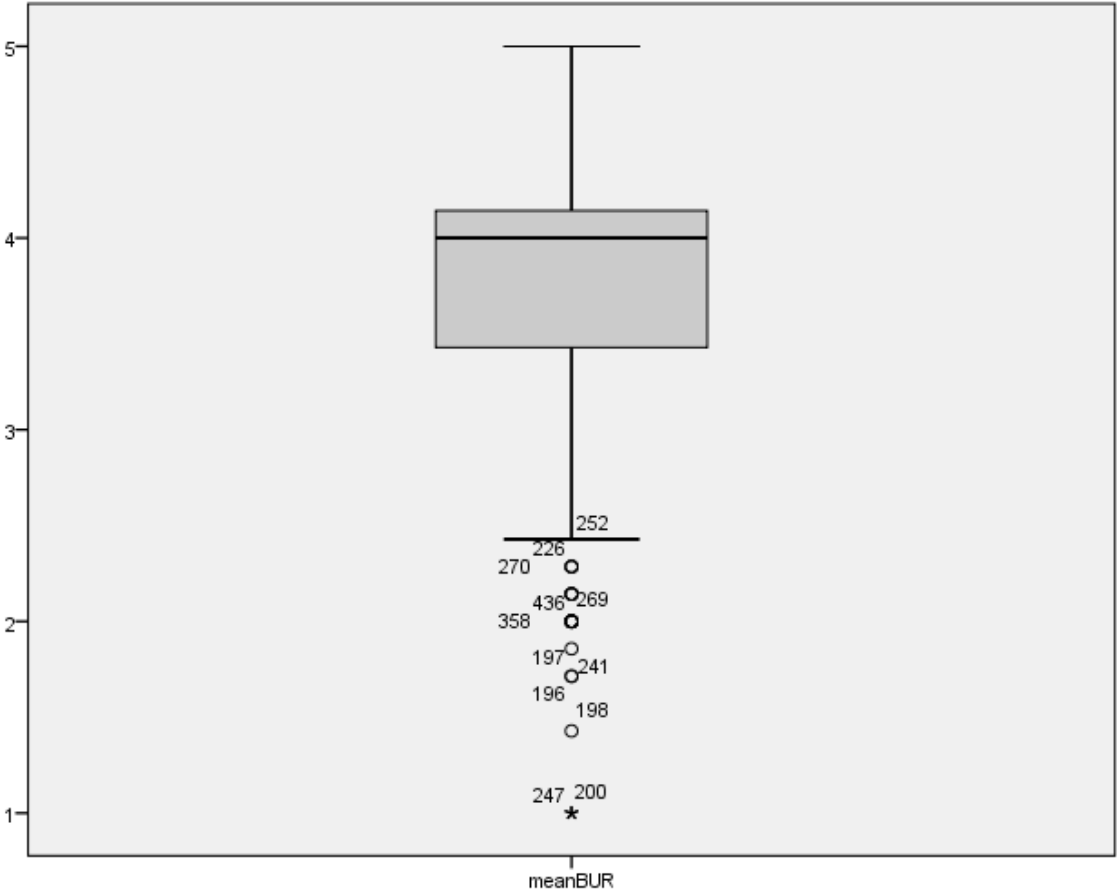
Appendix 1: The outliers present in the business network variable (N = 463)



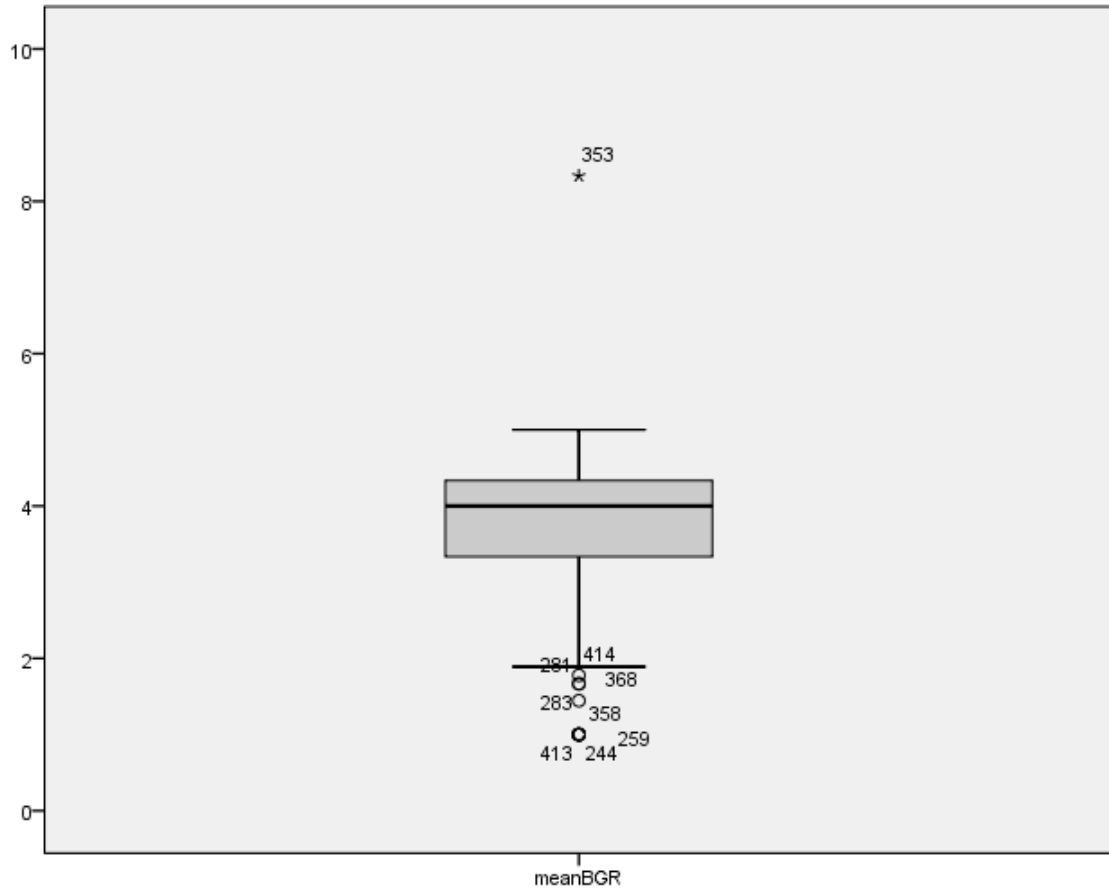
Appendix 2: The outliers present in the inter firm variable (N = 463)



Appendix 3: The outliers present in the research organization variable (N=463)

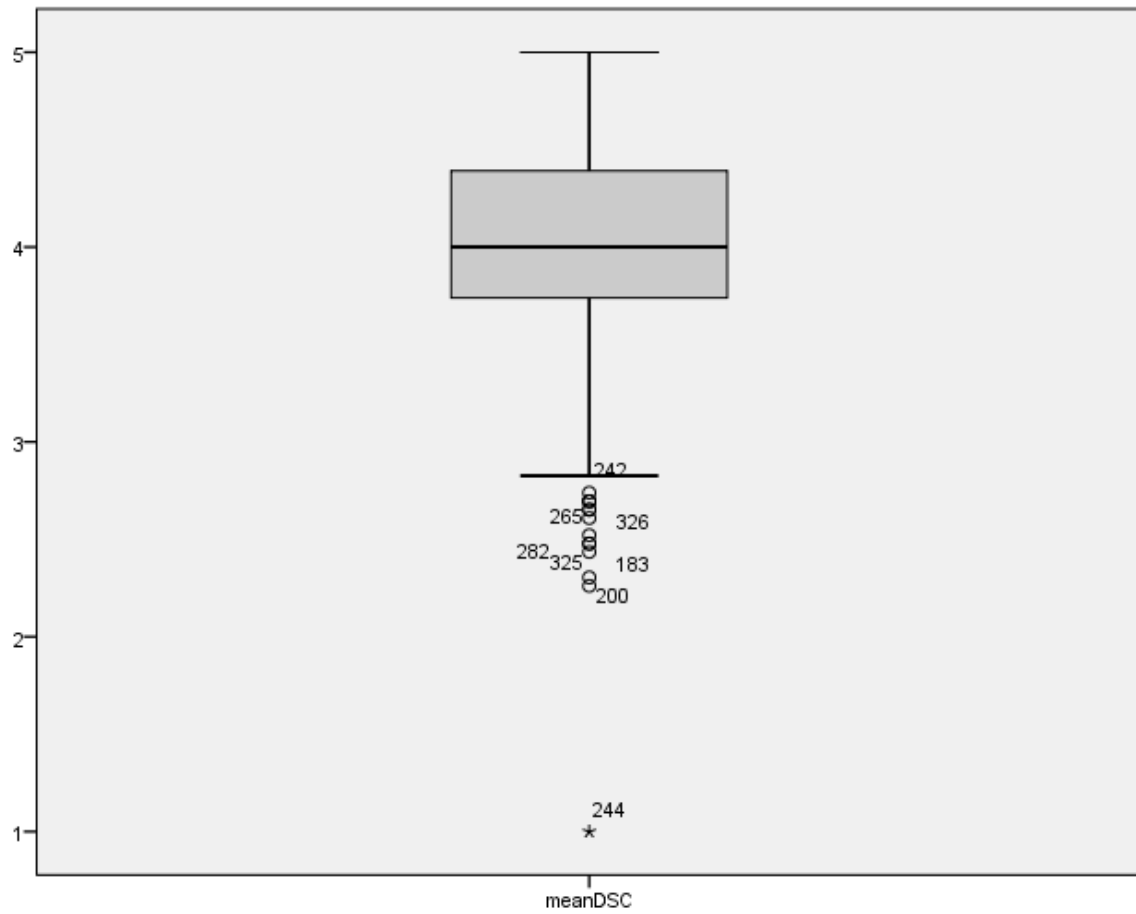


Appendix 4: The outliers present in the government role variable (N = 463)





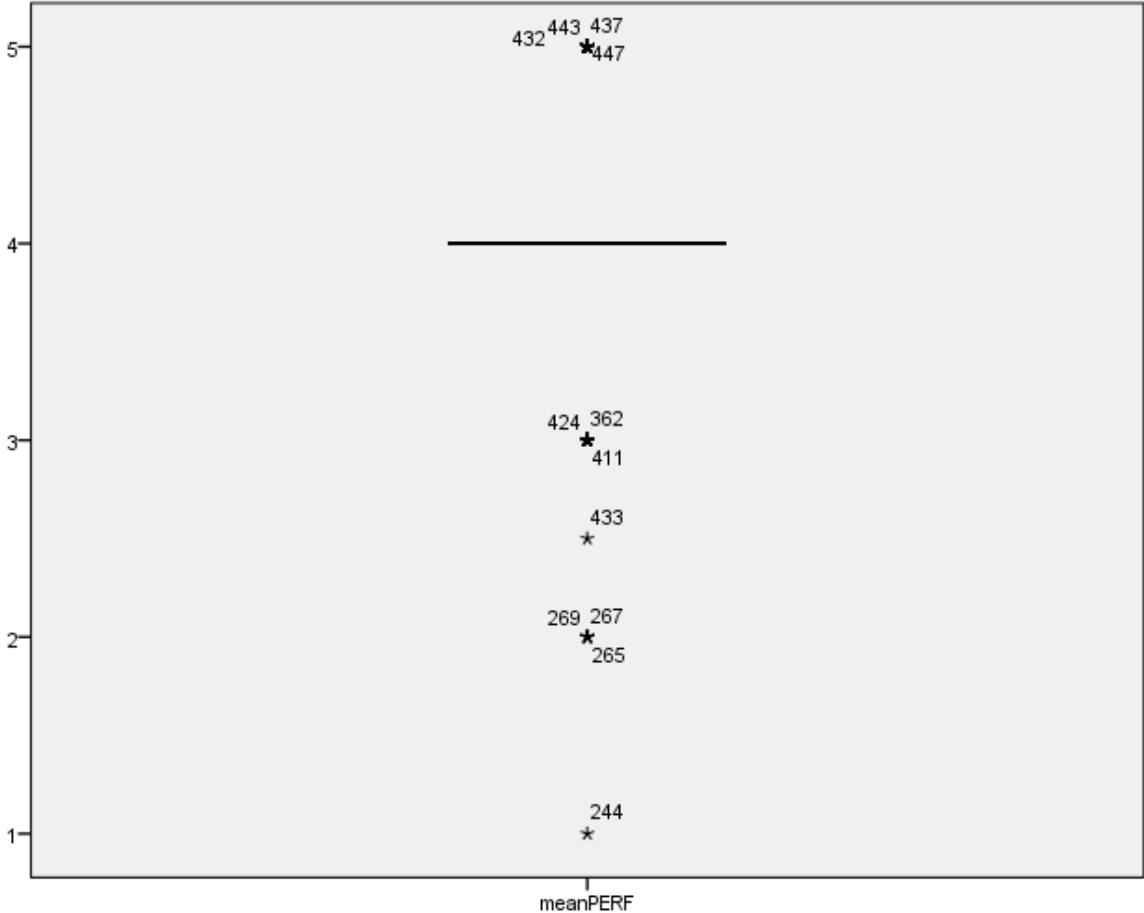
Appendix 5: The outliers present in the dynamic capabilities variable (N = 463)



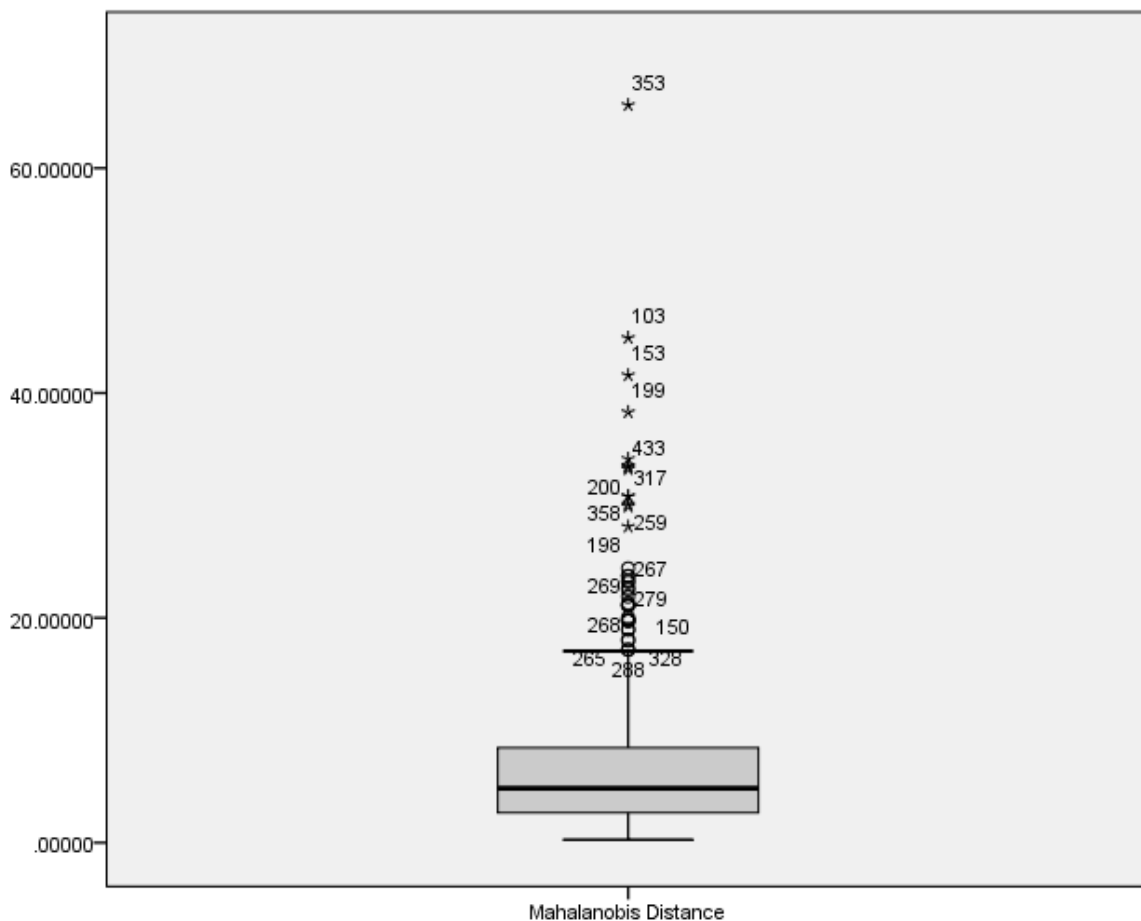
Appendix 6: The outliers present in the innovation variable (N = 463)



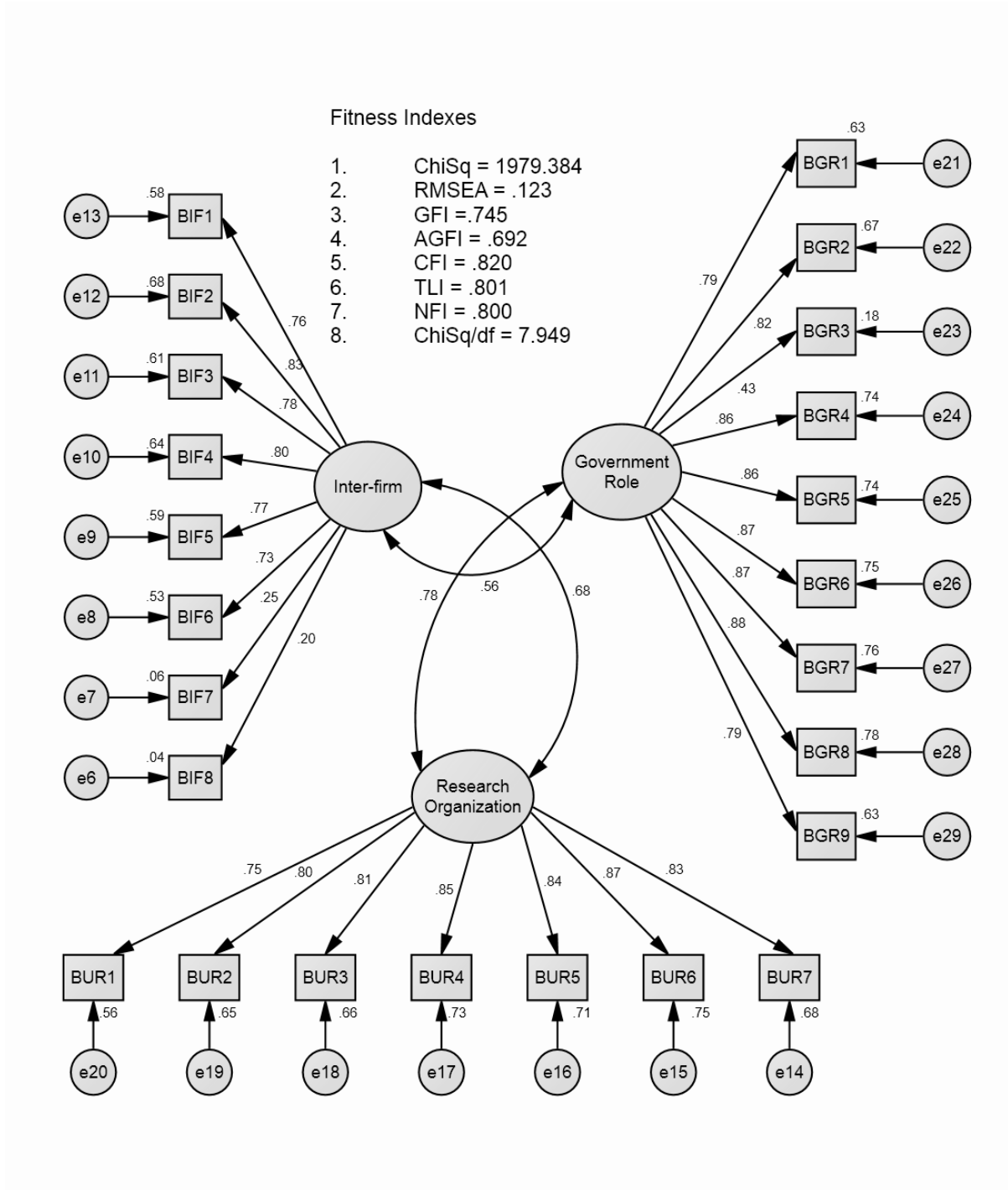
Appendix 7: The outliers present in the firm performance variable (N = 463)



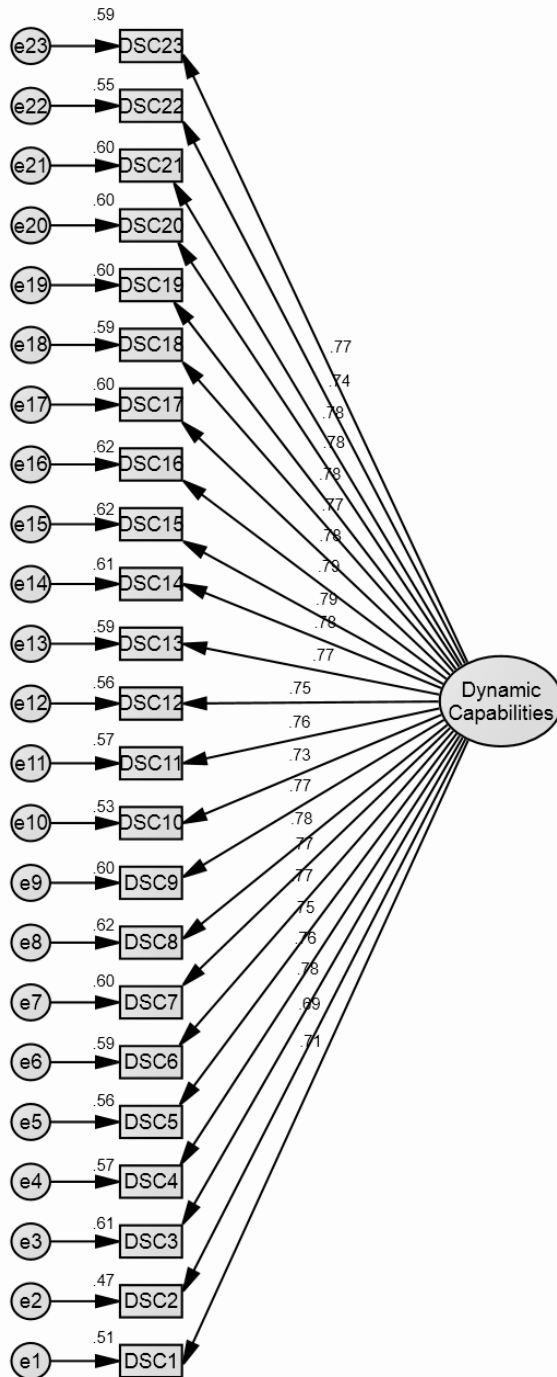
Appendix 8: The diagram shows the outliers present at all the variables (N=463)



Appendix 9: The measurement model for measuring the business network



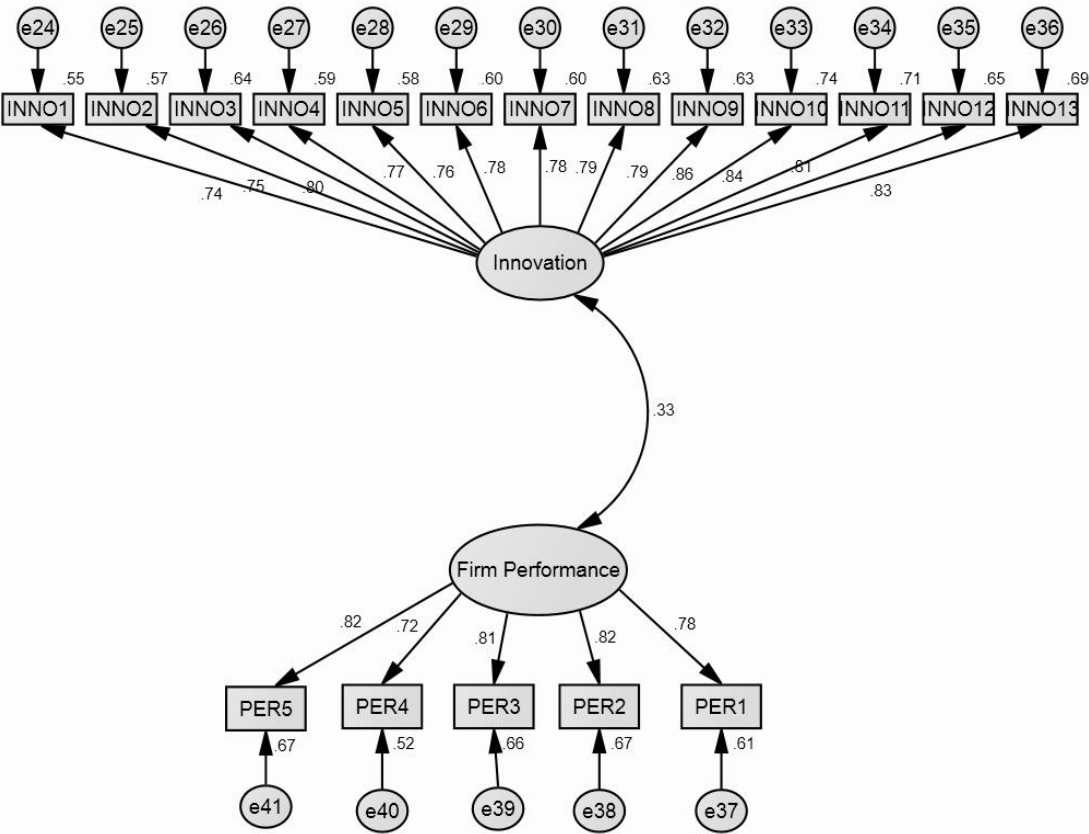
Appendix 10: The measurement model for measuring the dynamic capabilities



Fitness Indexes

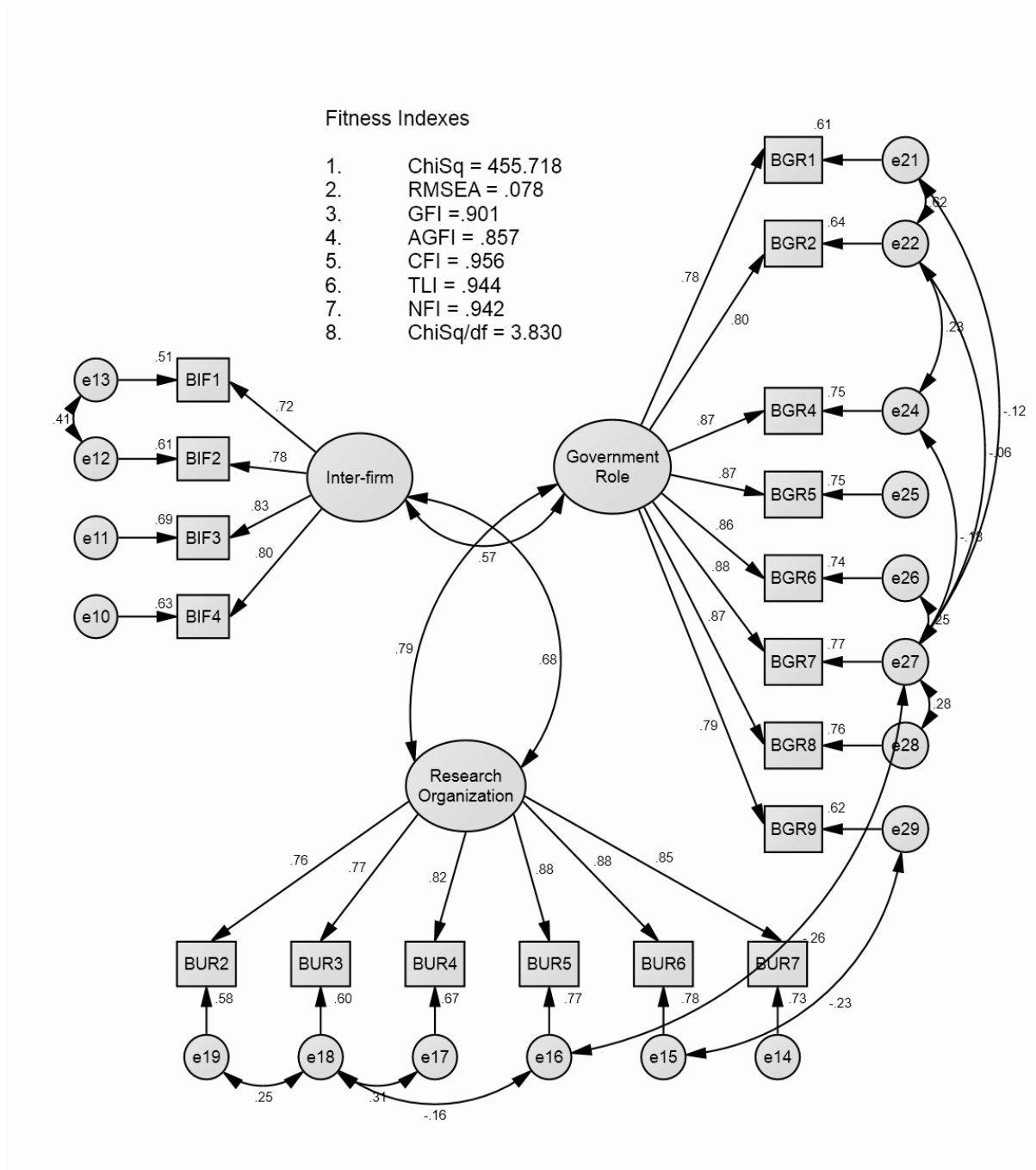
1. ChiSq = 1919.780
2. RMSEA = .126
3. GFI = .709
4. AGFI = .651
5. CFI = .819
6. TLI = .801
7. NFI = .800
8. ChiSq/df = 8.347

Appendix 11: The measurement model (pool CFA) for measuring the innovation and firm performance



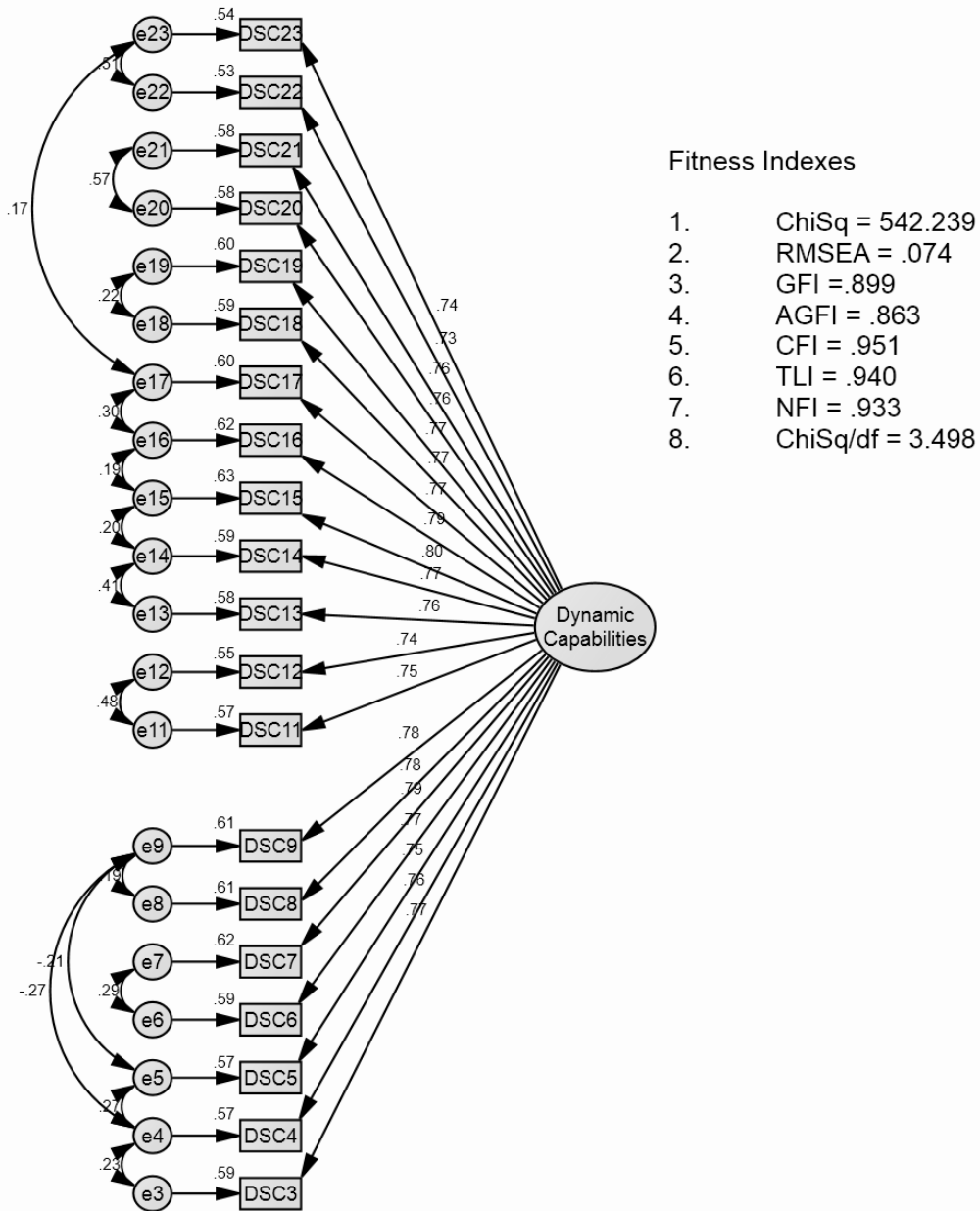
- Fitness Indexes
1. ChiSq = 838.965
  2. RMSEA = .107
  3. GFI = .823
  4. AGFI = .774
  5. CFI = .892
  6. TLI = .876
  7. NFI = .874
  8. ChiSq/df = 6.261

Appendix 12: The measurement model for measuring the business network after modification to meet the requirement of fitness indexes

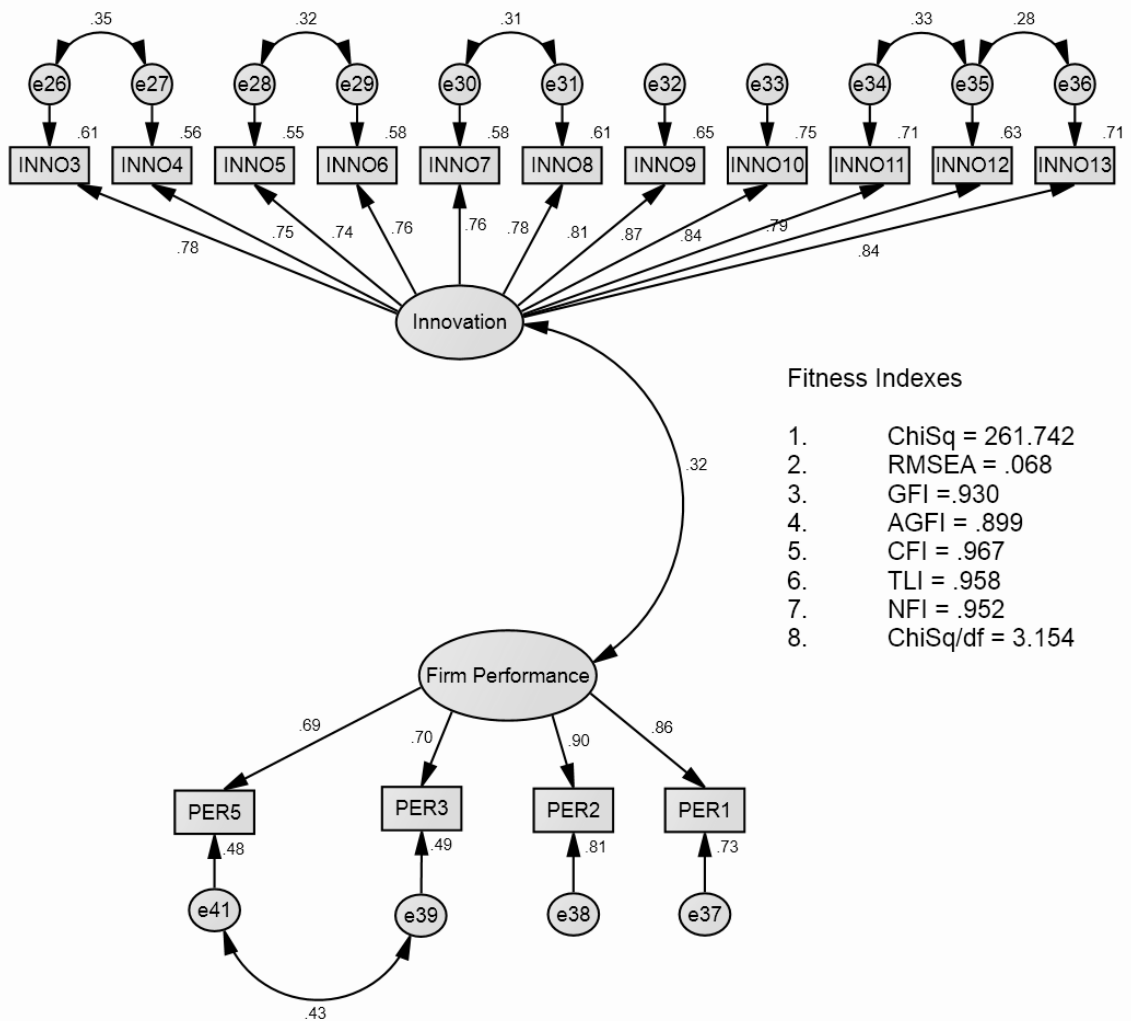




Appendix 13: The measurement model for measuring the dynamic capabilities after modification to meet the requirement of fitness indexes



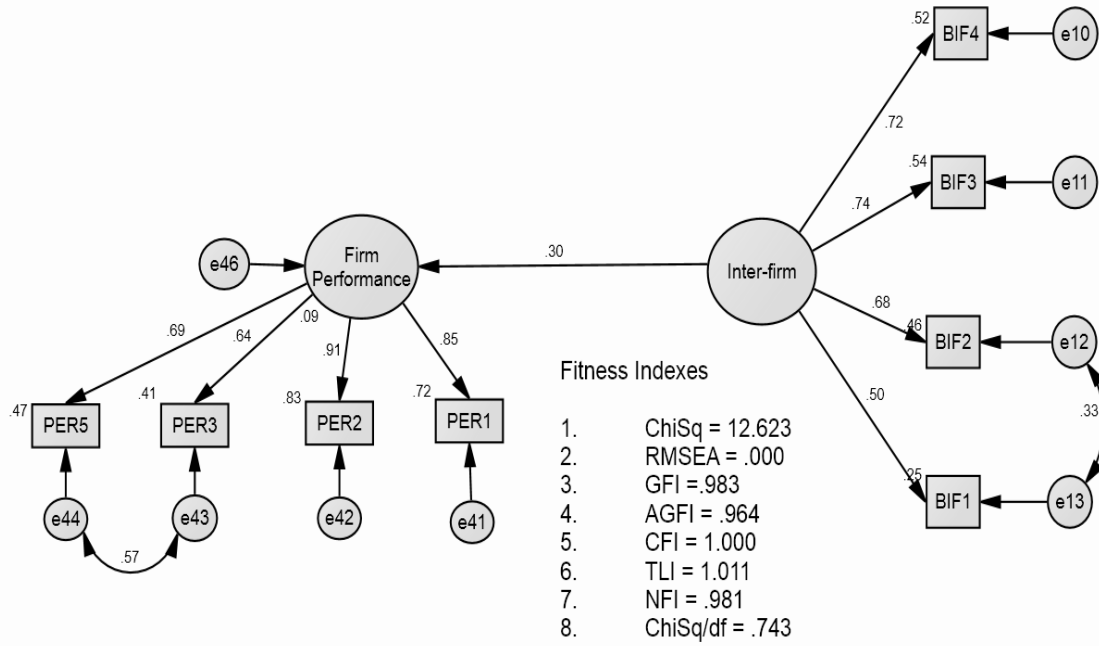
Appendix 14: The measurement model for measuring the innovation and firm performance after modification to meet the requirement of fitness indexes



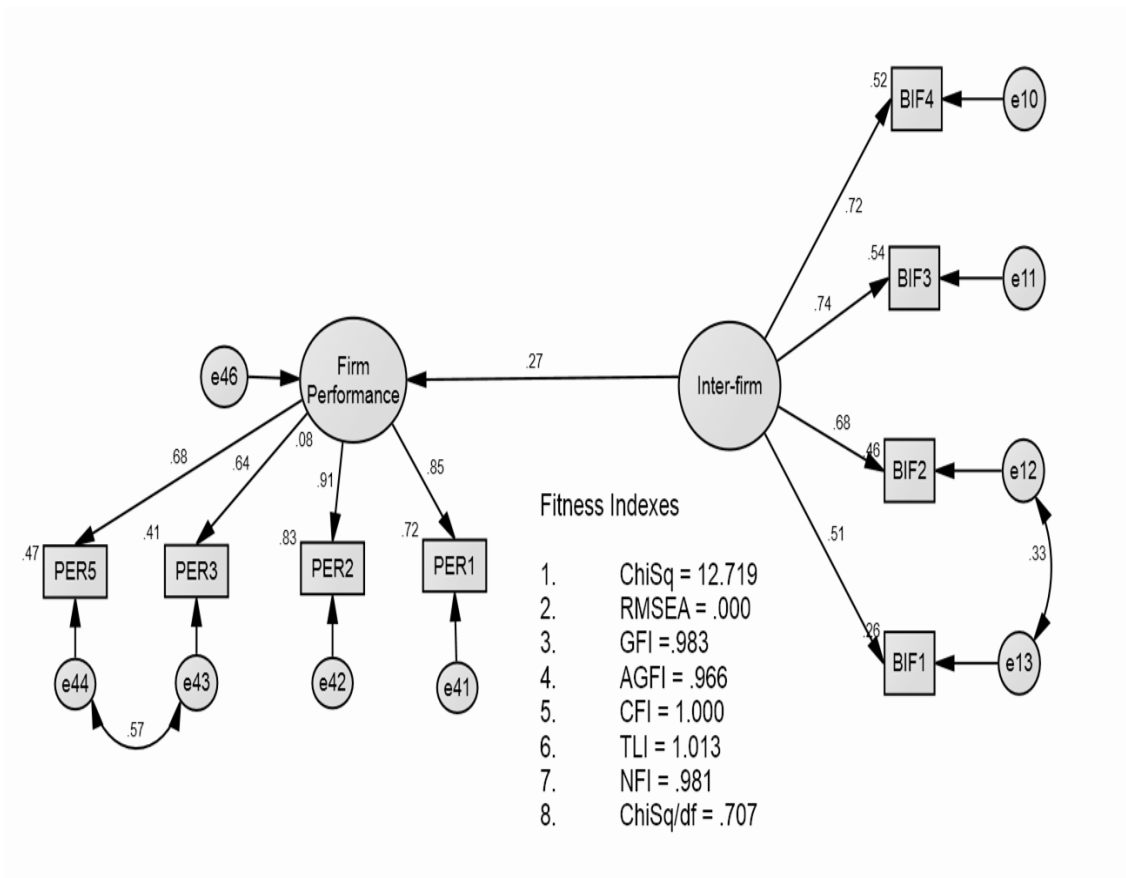
Fitness Indexes

1. ChiSq = 261.742
2. RMSEA = .068
3. GFI = .930
4. AGFI = .899
5. CFI = .967
6. TLI = .958
7. NFI = .952
8. ChiSq/df = 3.154

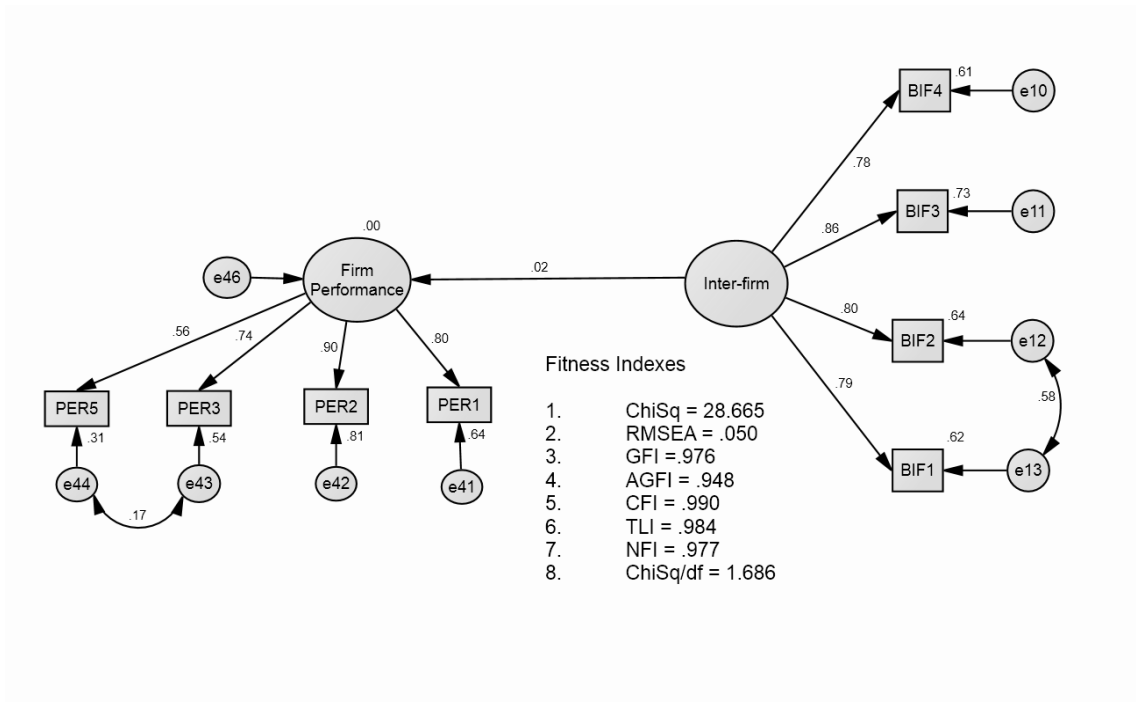
Appendix 15: Low dynamic capabilities group: The result for the unconstrained model for Inter-firm – Firm performance relationship



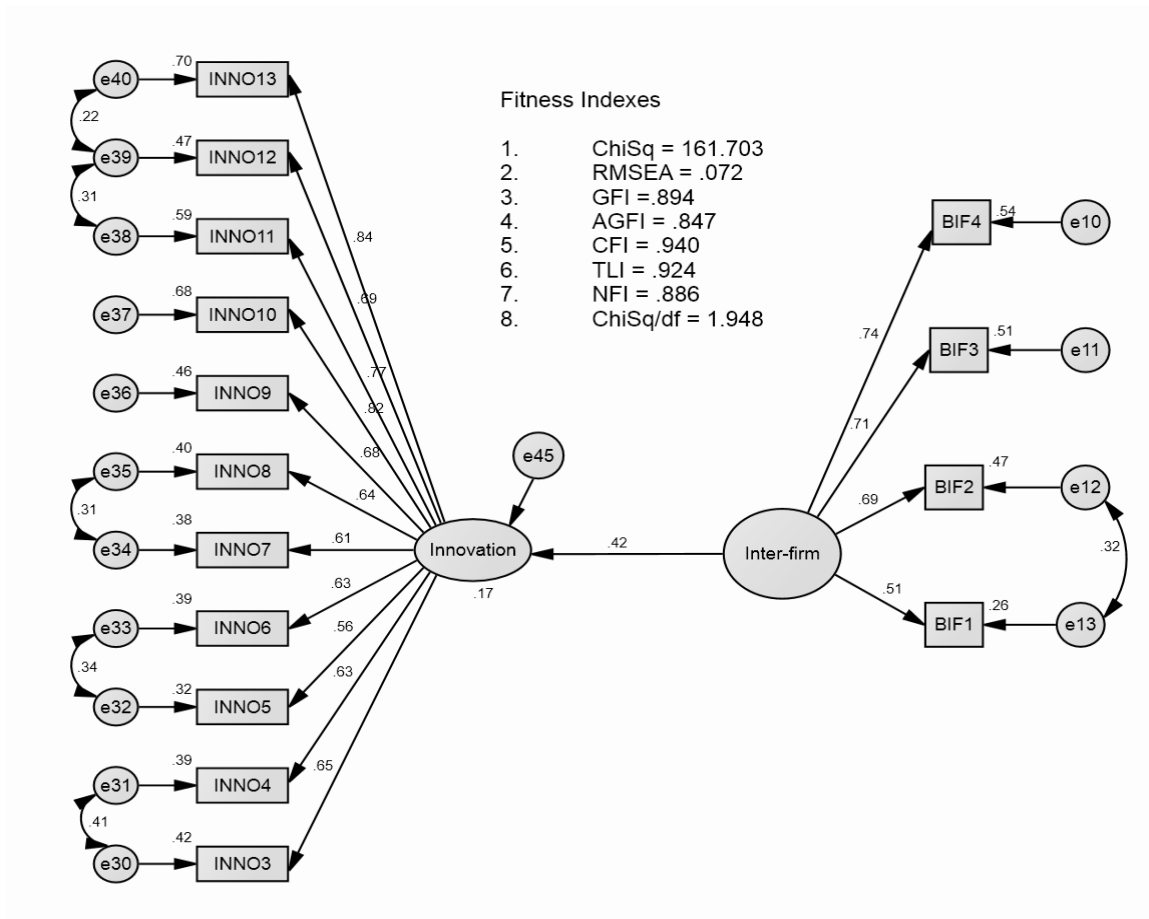
Appendix 16: Low dynamic capabilities group: The result for the constrained model for Inter-firm – Firm performance relationship



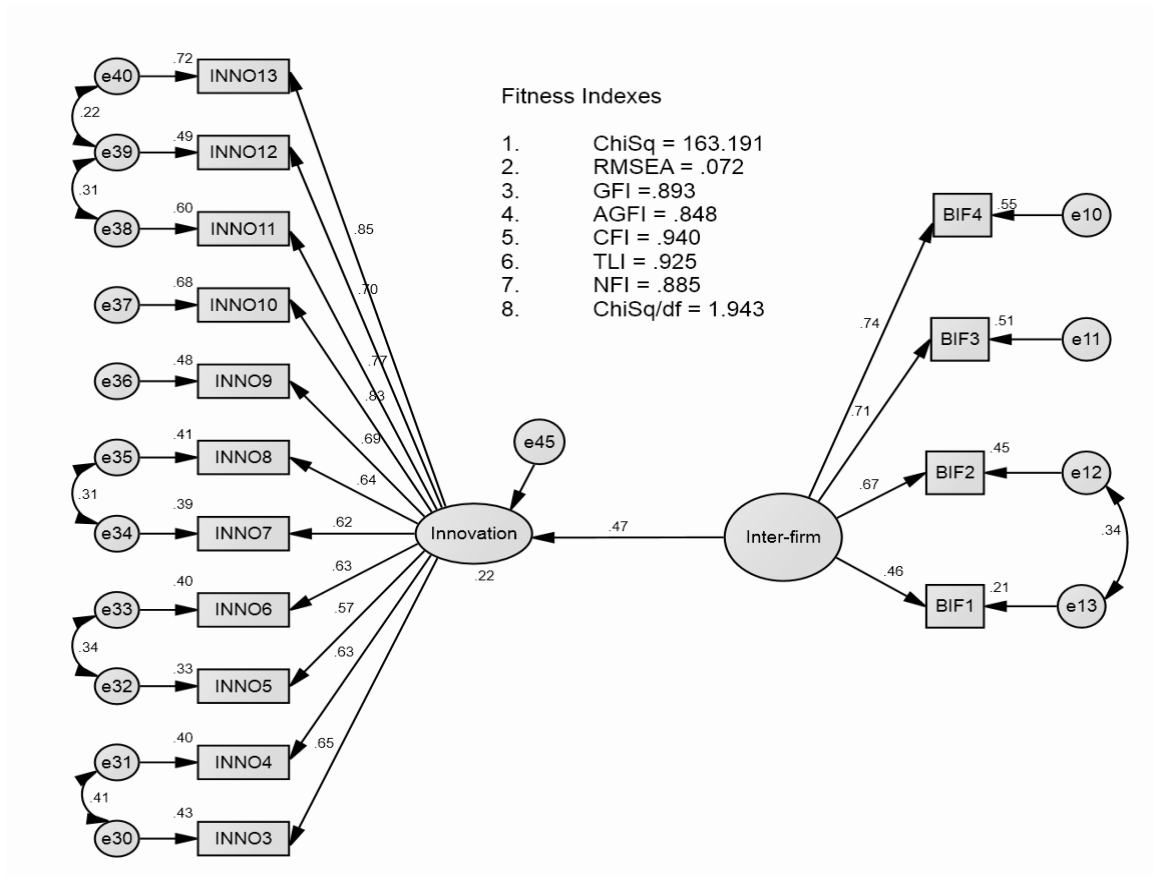
Appendix 17: High dynamic capabilities group: The result for the unconstrained model for Inter-firm – Firm performance relationship



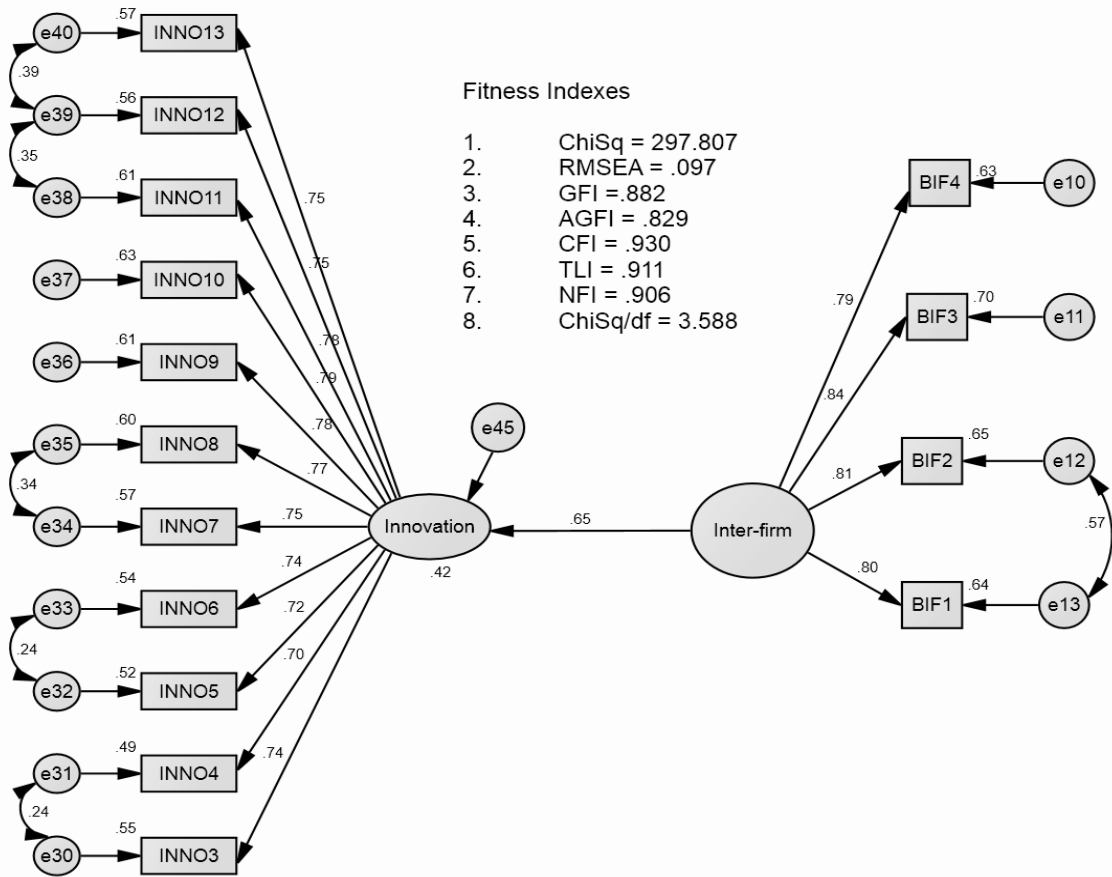
Appendix 18: Low dynamic capabilities group: The result for the unconstrained model for Inter-firm – innovation capabilities relationship



Appendix 19: Low dynamic capabilities group: The result for the constrained model for Inter-firm – innovation capabilities relationship

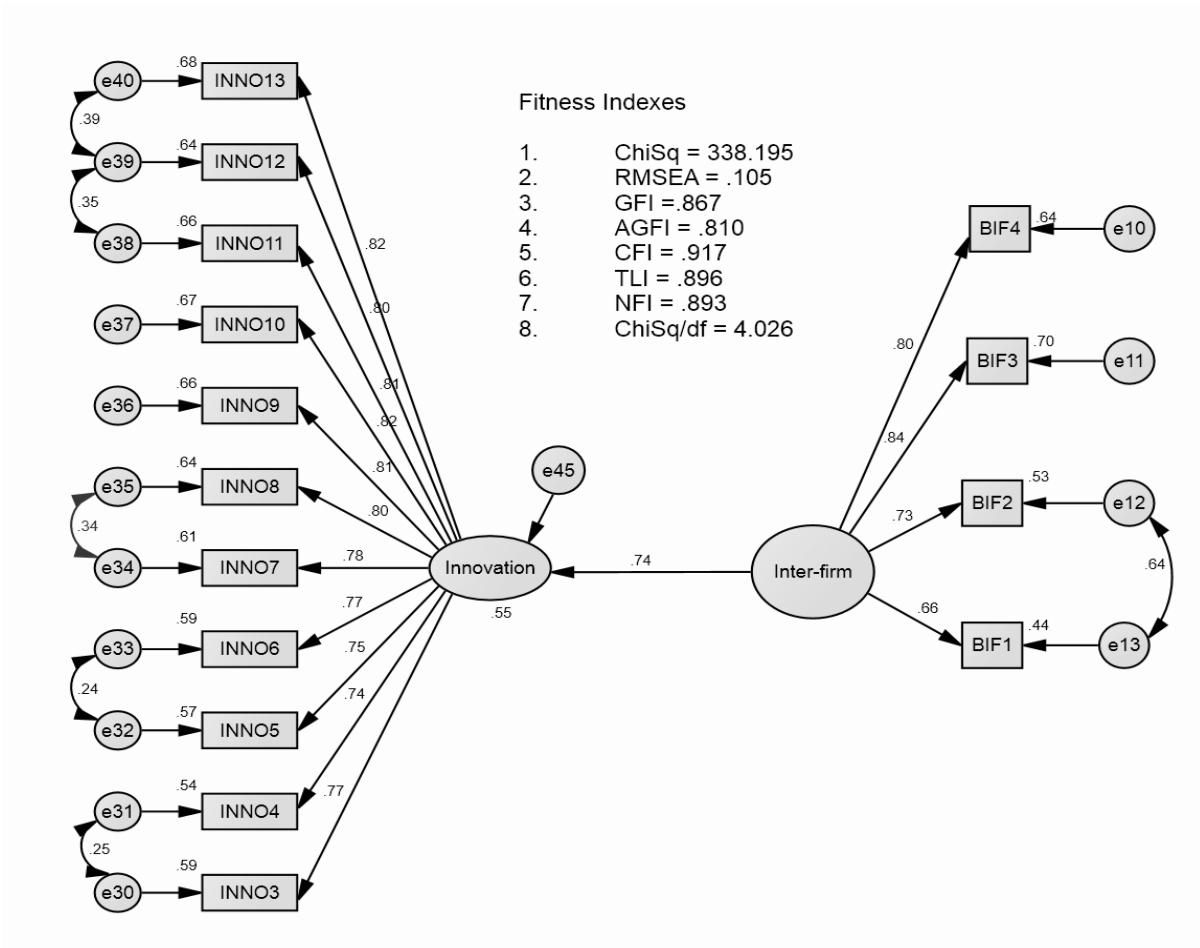


Appendix 20: High dynamic capabilities group: The result for the unconstrained model for Inter-firm – innovation capabilities relationship

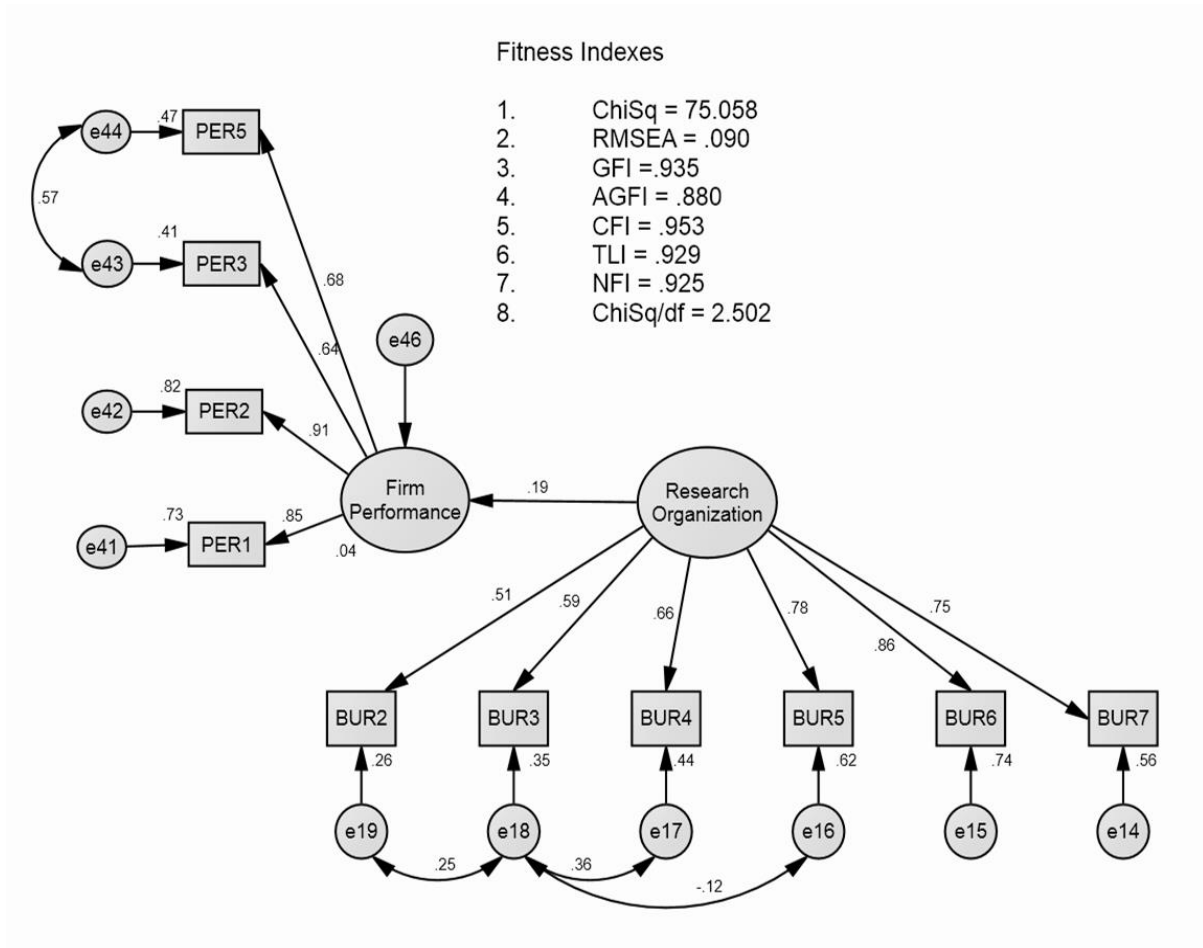




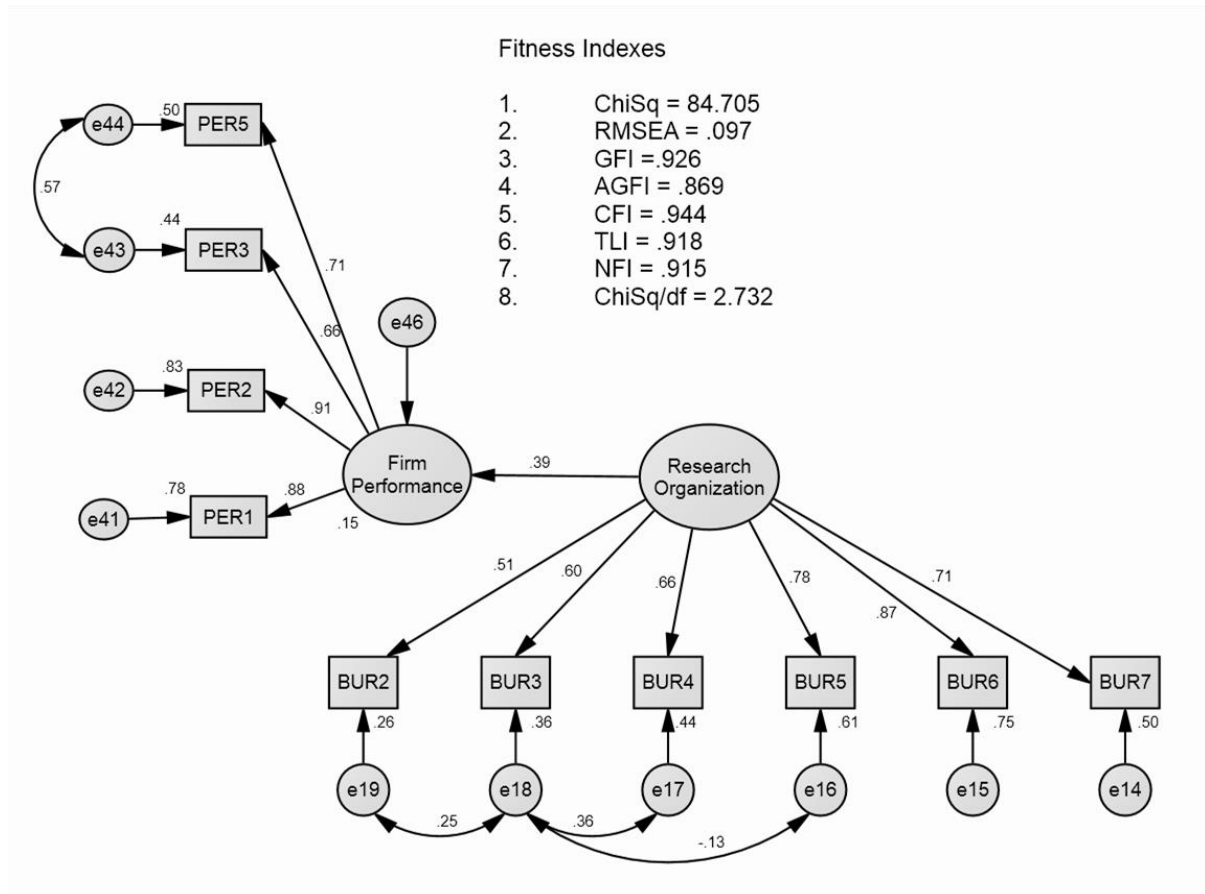
Appendix 21: High dynamic capabilities group: The result for the constrained model for Inter-firm – innovation capabilities relationship



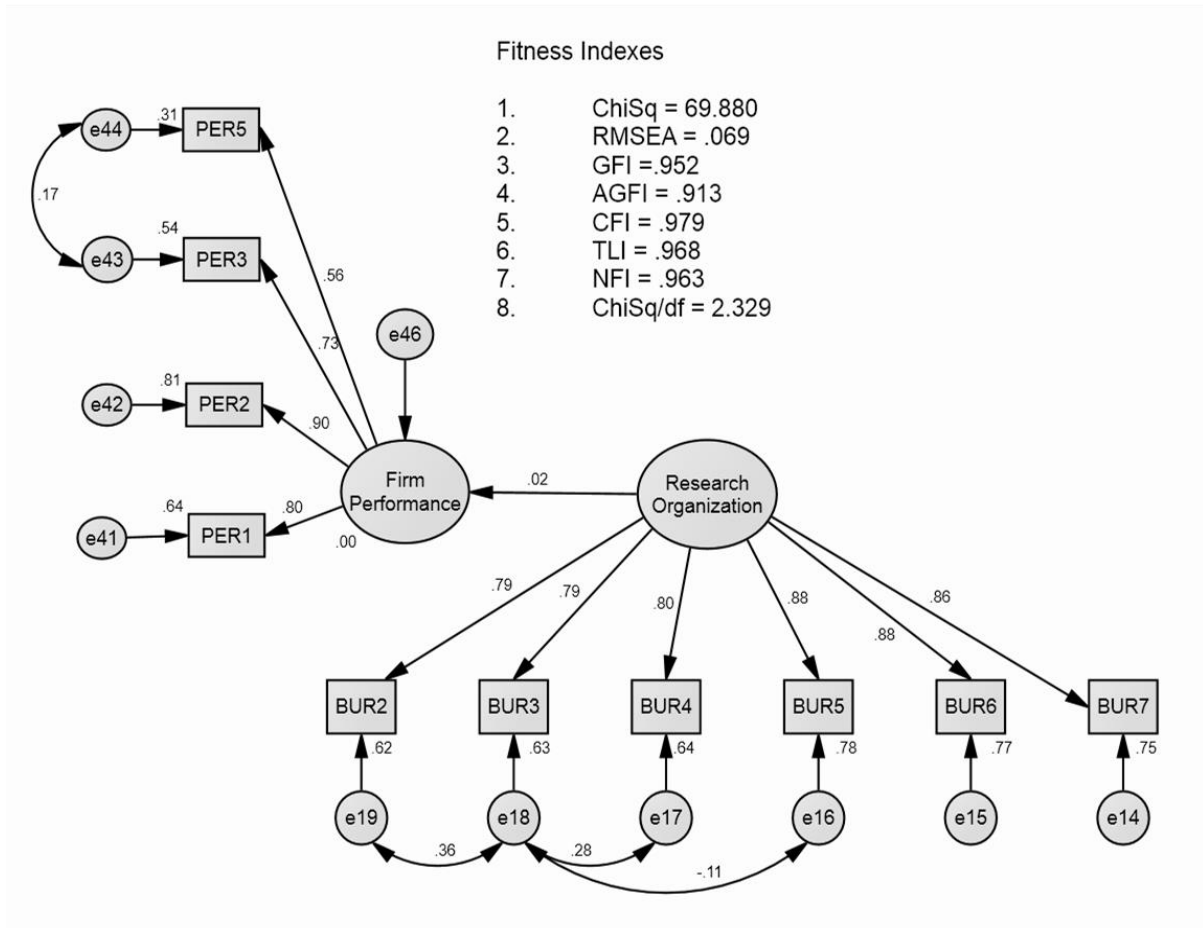
Appendix 22: Low dynamic capabilities group: The result for the unconstrained model for Research organization – Firm performance relationship



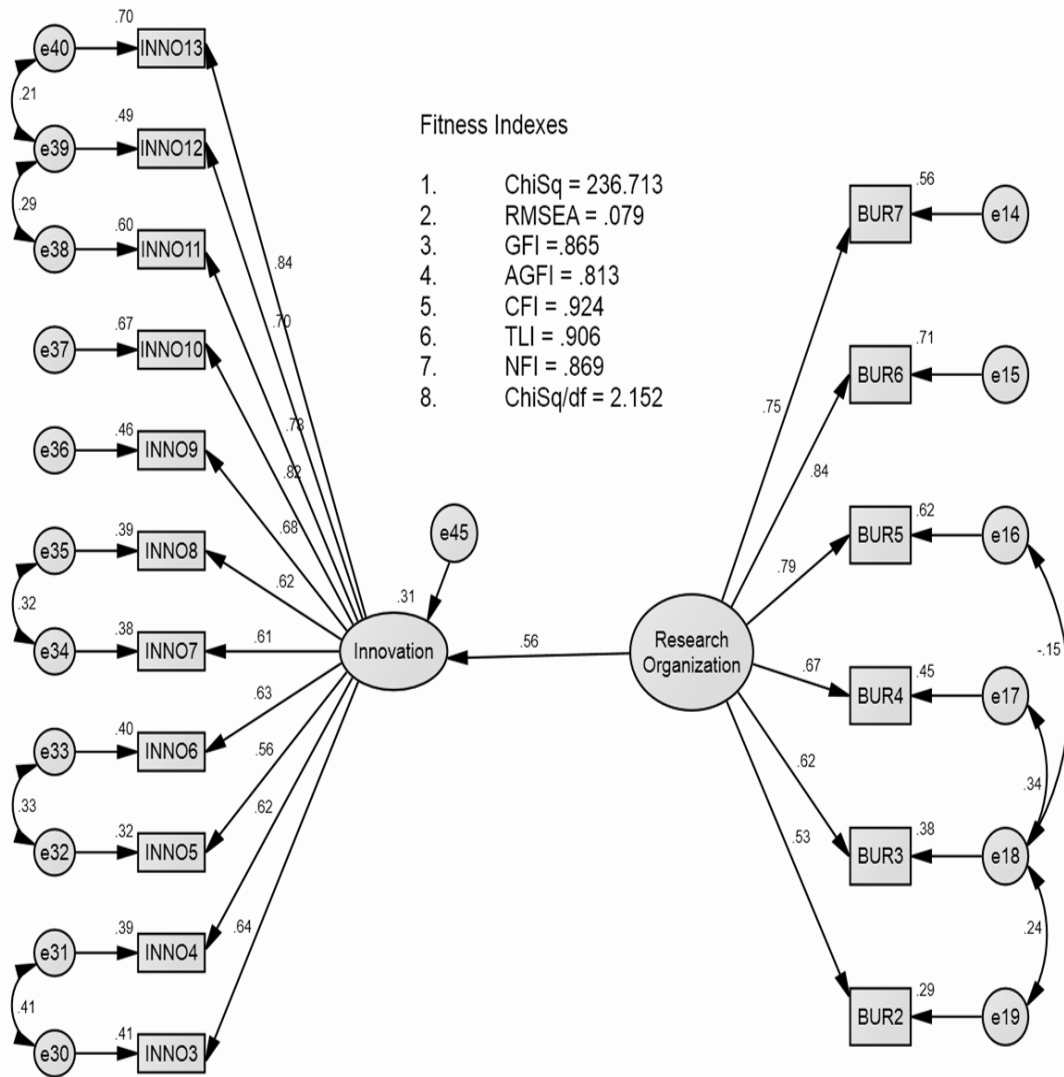
Appendix 23: Low dynamic capabilities group: The result for the constrained model for Research organization–Firm performance relationship



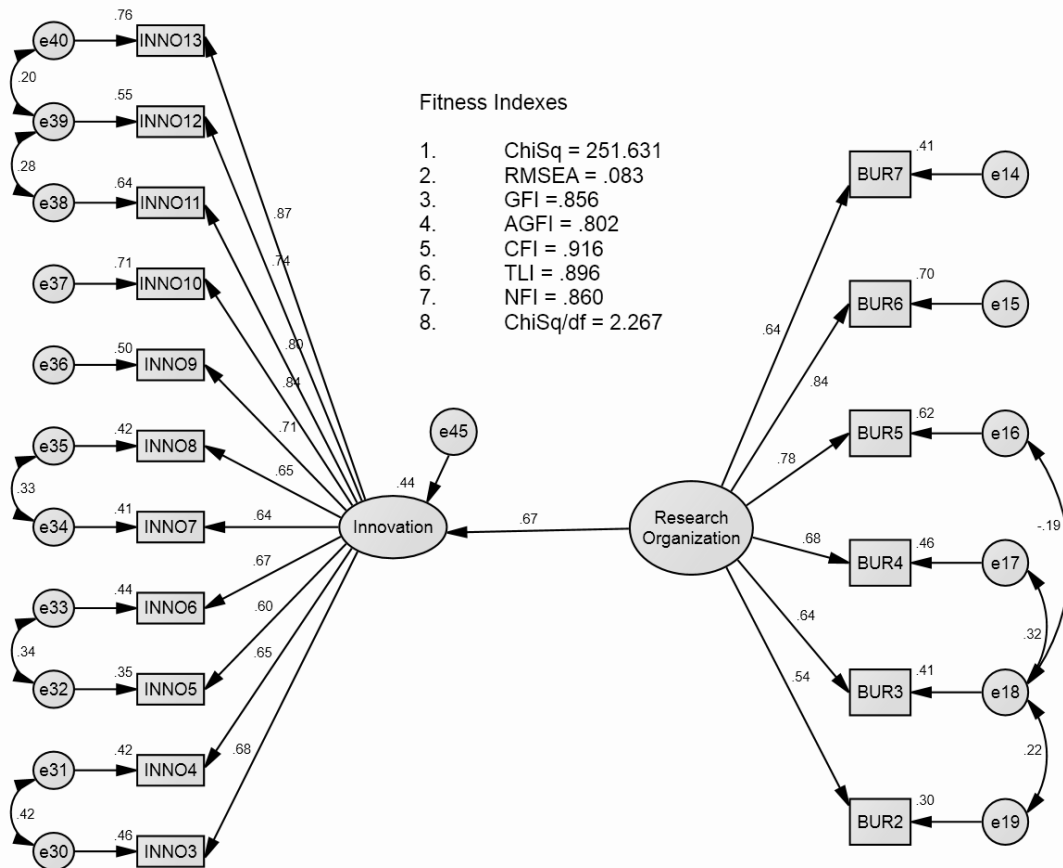
Appendix 24: High dynamic capabilities group: The result for the unconstrained model for research organization – firm performance relationship



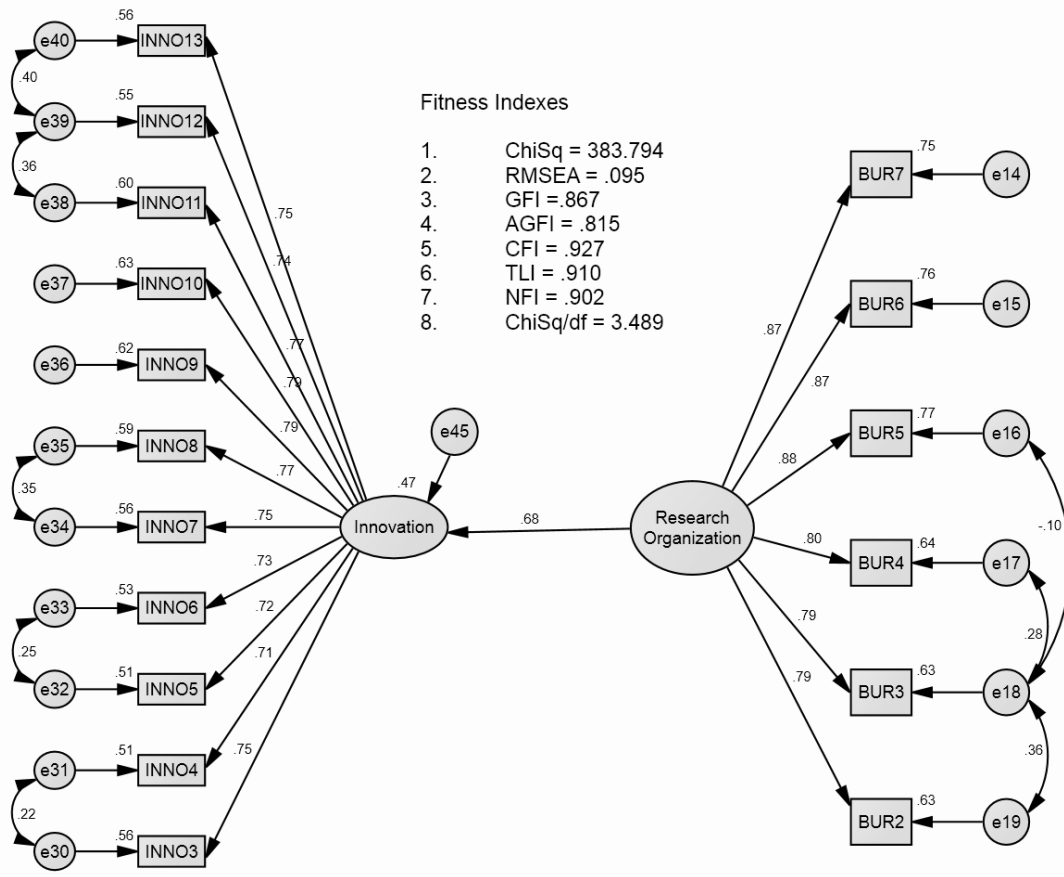
Appendix 25: Low dynamic capabilities group: The result for the unconstrained model for Research organization – innovation capabilities relationship



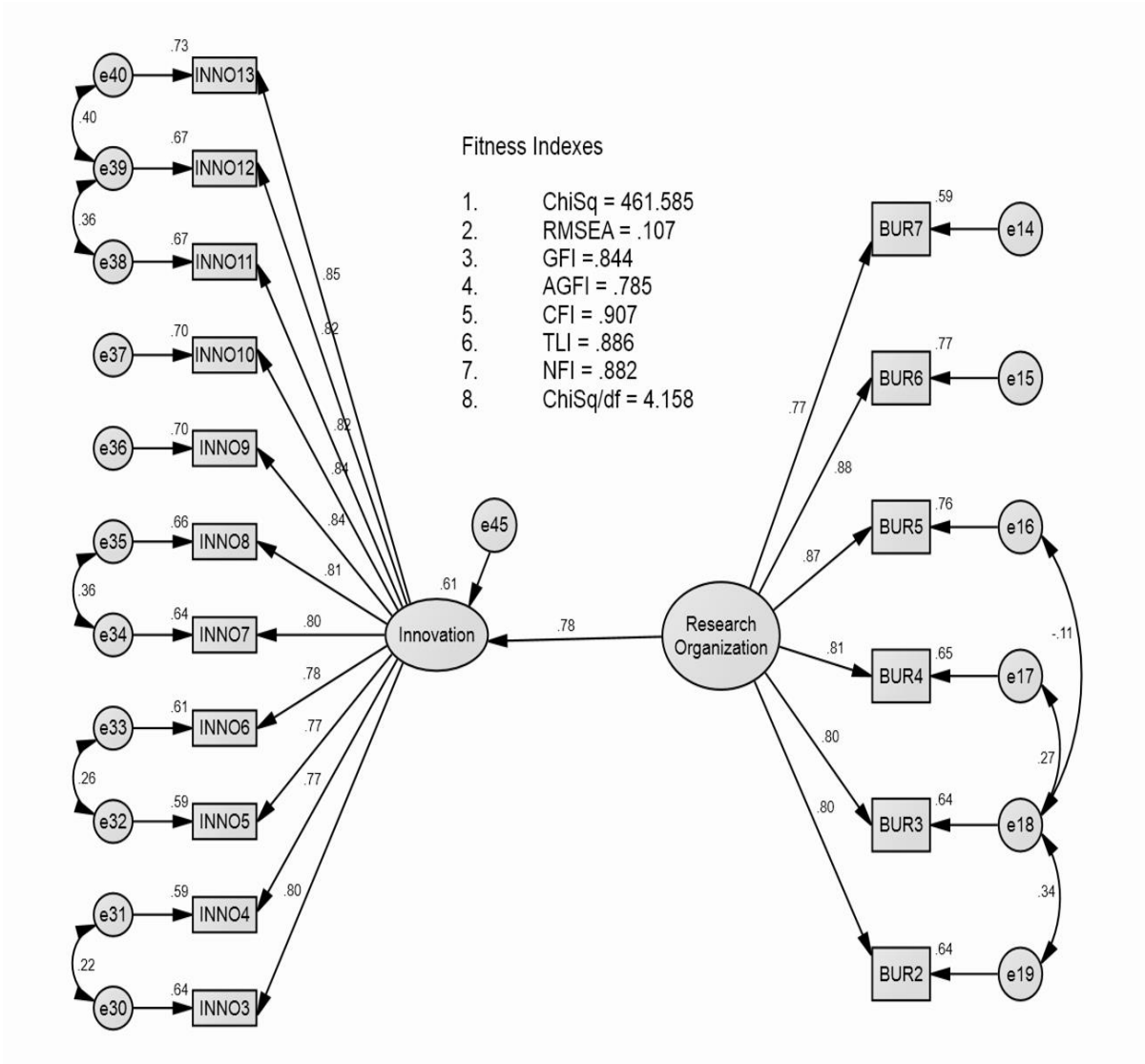
Appendix 26: Low dynamic capabilities group: The result for the constrained model for Research organization – innovation capabilities relationship



Appendix 27: High dynamic capabilities group: The result for the unconstrained model for research organization – innovation capabilities relationship

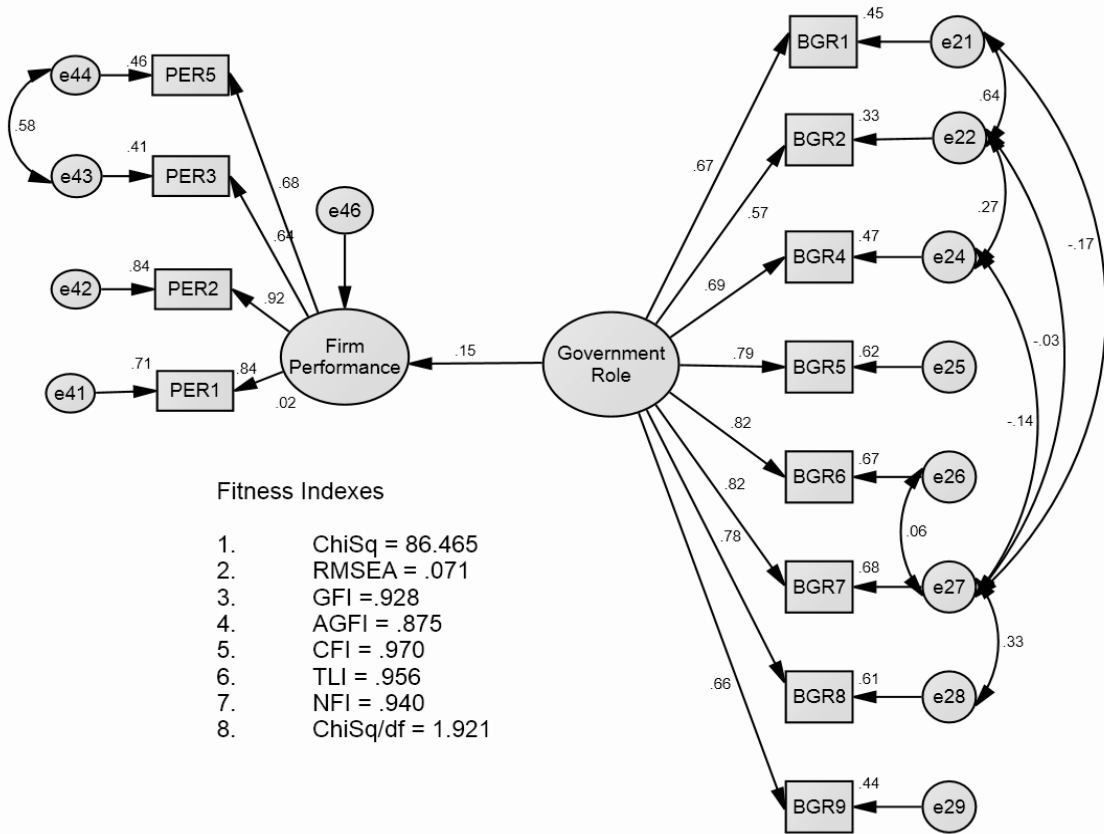


Appendix 28: High dynamic capabilities group: The result for the constrained model for research organization – innovation capabilities relationship

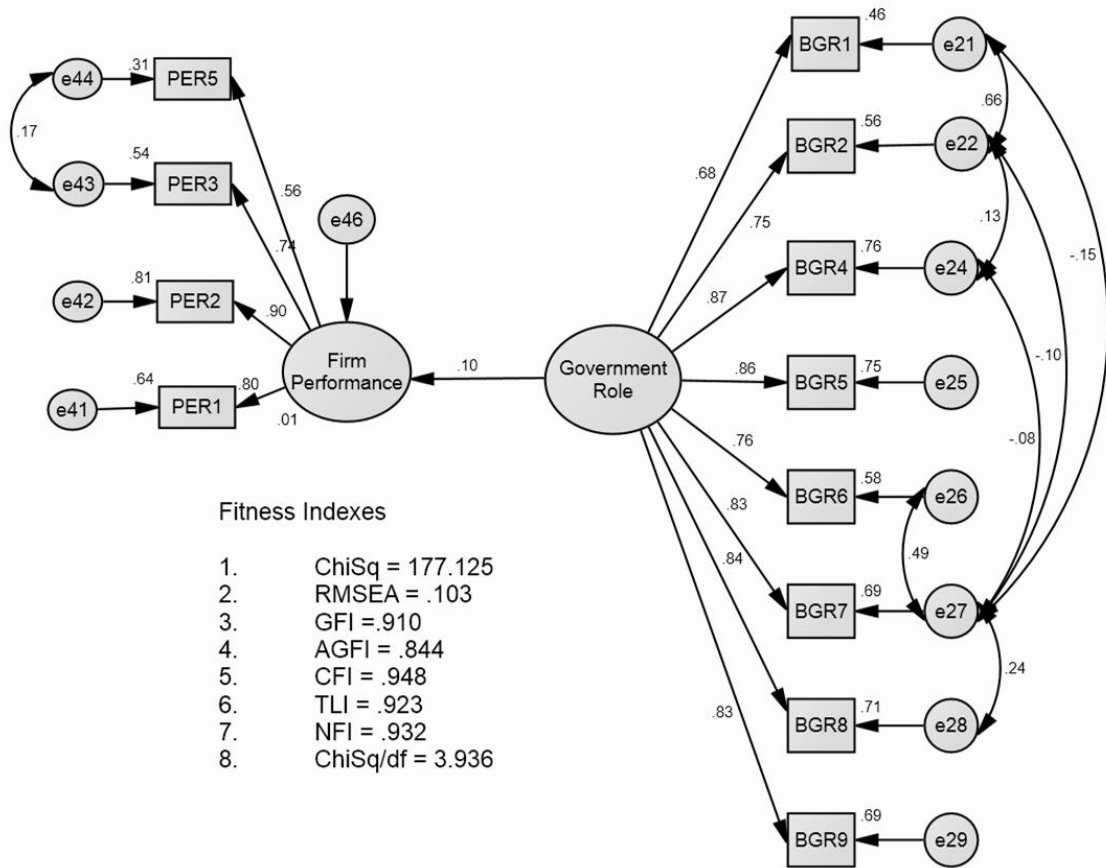




Appendix 29: Low dynamic capabilities group: The result for the unconstrained model for Government Role – Firm performance relationship

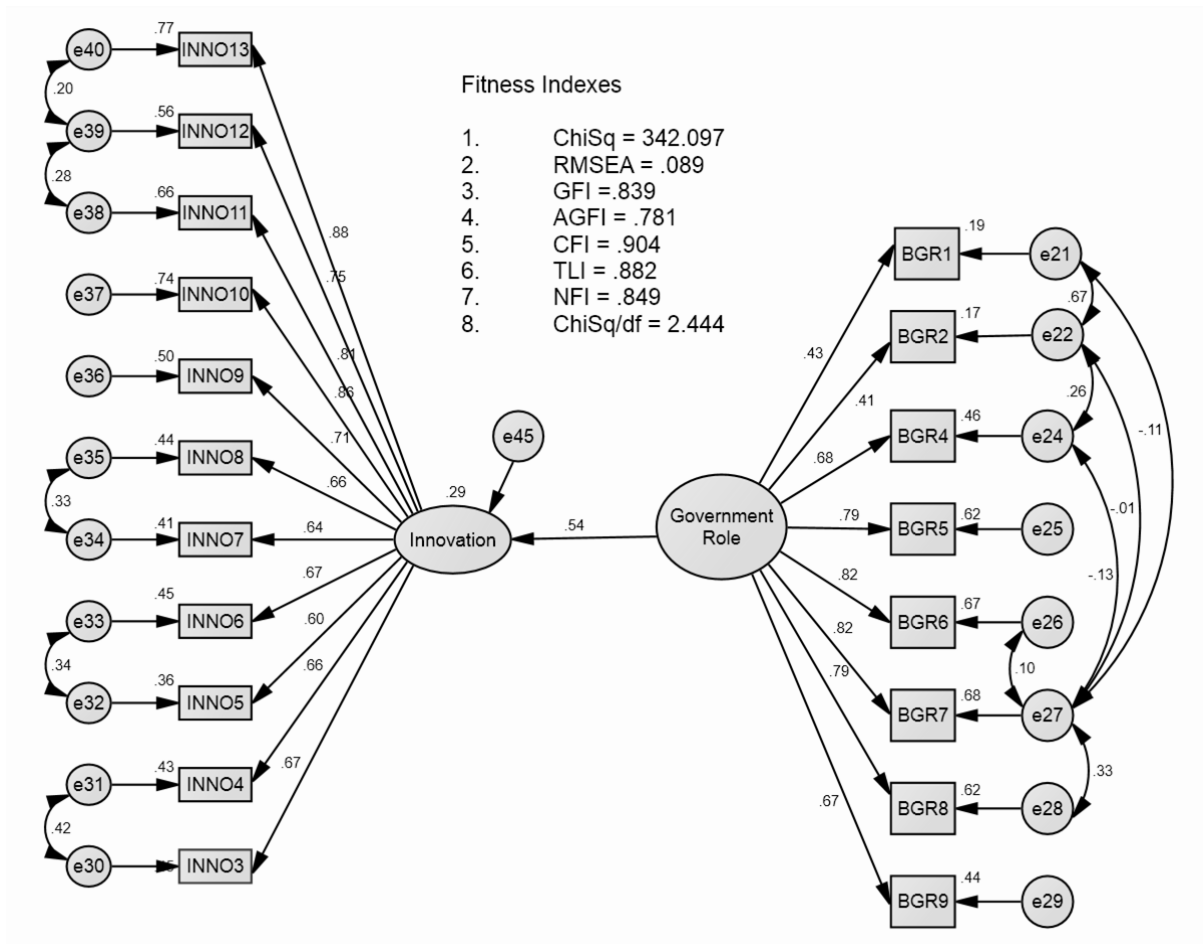


Appendix 30: High dynamic capabilities group: The result for the unconstrained model for Government Role – Firm performance relationship

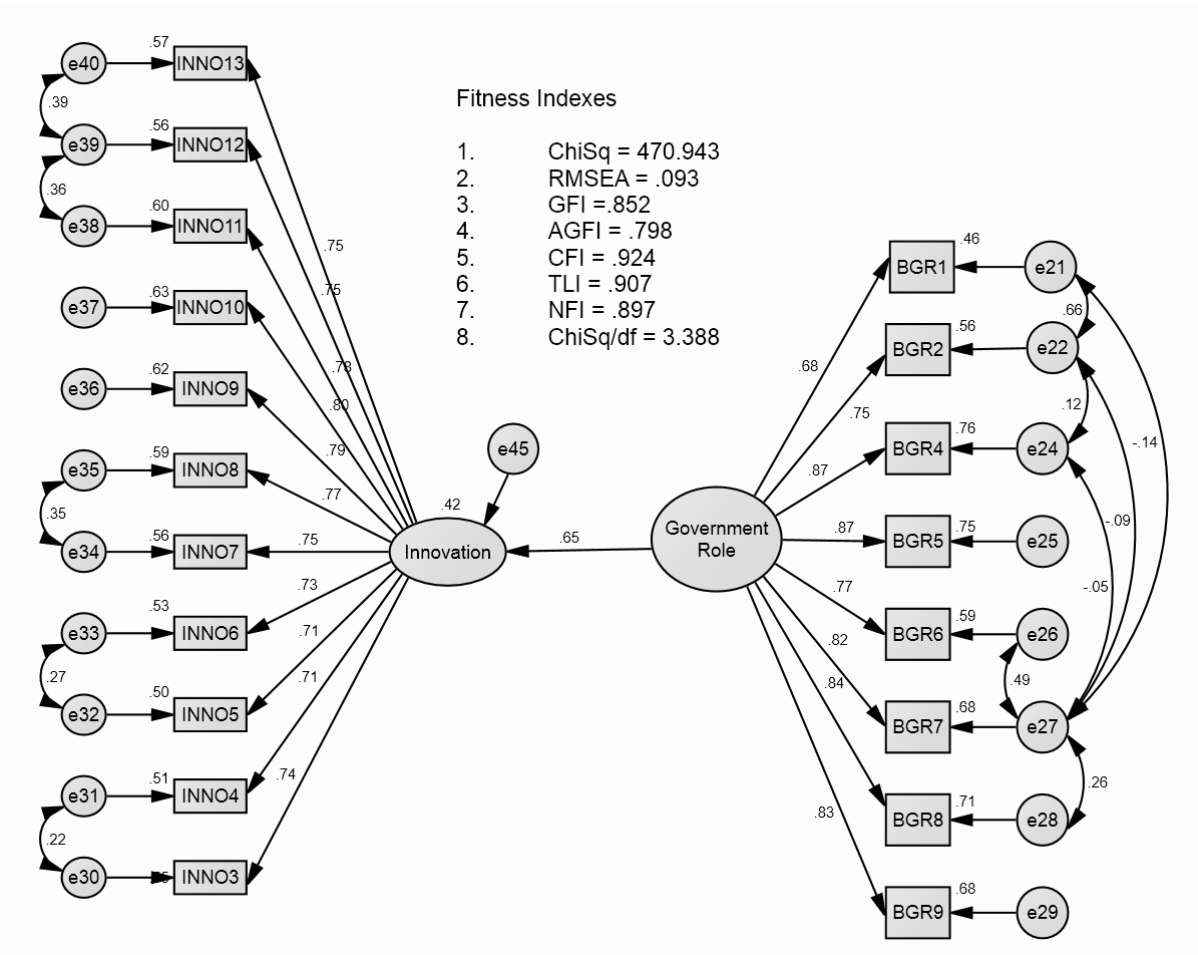




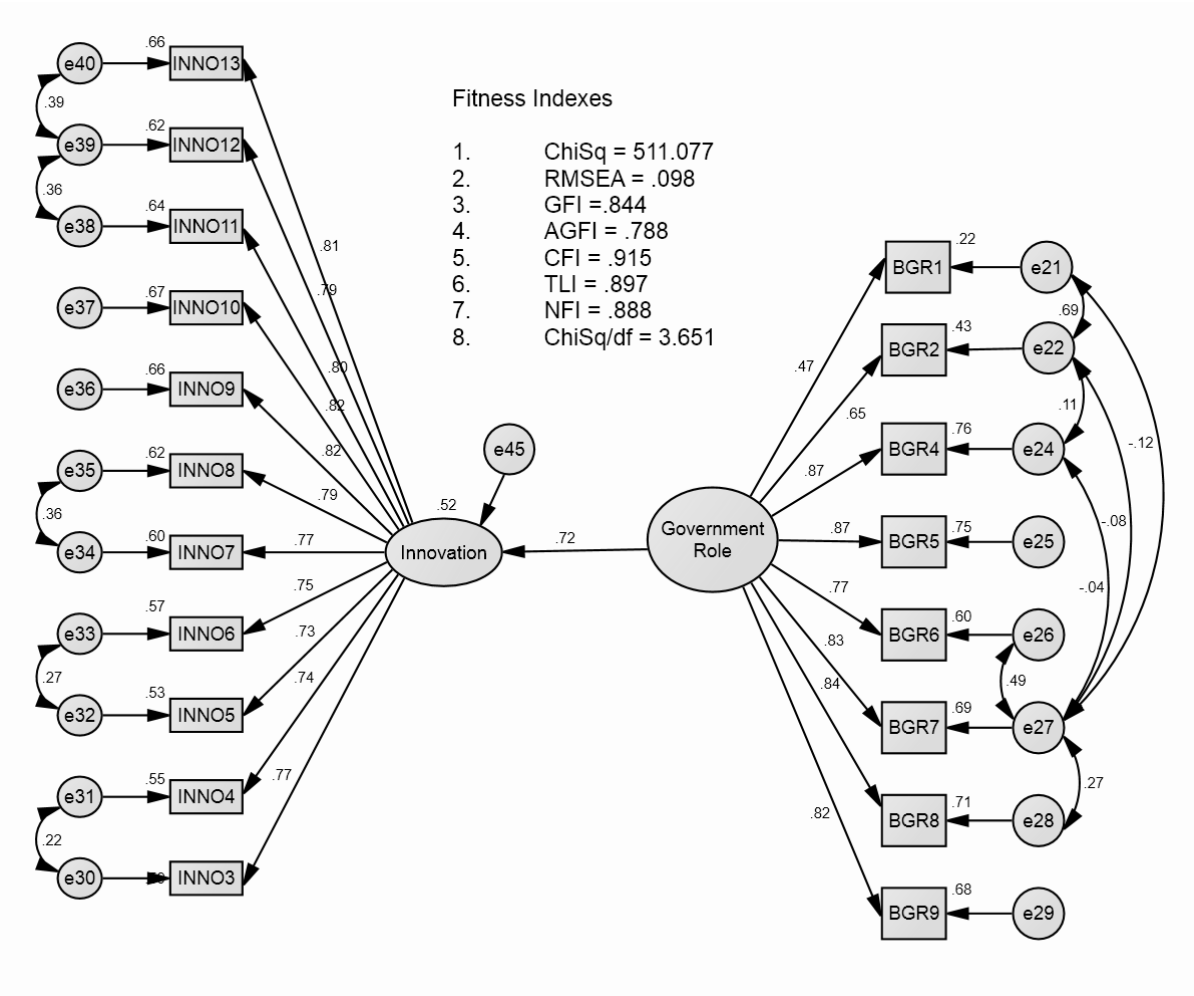
Appendix 32: Low dynamic capabilities group: The result for the constrained model for Research organization – innovation capabilities relationship



Appendix 33: High dynamic capabilities group: The result for the unconstrained model for government role – innovation capabilities relationship



Appendix 34: High dynamic capabilities group: The result for the constrained model for research organization – innovation capabilities relationship



## Appendix 35: Questionnaire [Pre-Test]



*Dear Sir/Madam*

I am a PhD student at Business School, Brunel University London, United Kingdom. I am conducting a study examining *the relationship between business network and Malaysian SMEs performance, focusing on the role of firm's innovation and dynamic capabilities*. You are invited to participate in this research study by completing the following questionnaire.

The following questionnaire will require approximately 10 to 15 minutes to complete. There is no compensation for responding nor is there any known risk. In order to ensure that all information will remain confidential, please do not include your name, or contact details. Your identification WILL NOT be recorded or shared with anyone. If you choose to participate in this research, please answer all questions and return the completed questionnaires promptly.

This section attempts to capture a profile of demographical information of the participants, which will be coded as anonymously

## PART A: DEMOGRAPHIC

1. Gender  
 Male  Female
2. Age  
 20 - 30 years  31 – 40 years  41 – 50 years  
 51 years and above
3. Education  
 SPM  STPM  Diploma  
 Degree  Master  PhD  
 Others: specify
4. Type of Company  
 Sole Proprietor  Partnerships  Public Limited Co
5. Position in the company  
 Owner  CEO  Manager  
 Executive
6. The annual turnover of our organisation is  
 Below RM300,000  RM300,001 – RM15,000,000  
 RM15,000,000 – RM50,000,000
7. Number of employees (Full-time)  
 below 5  6 - 75  76 - 200
8. Our organisation has been established for  
 Below 5 years  6 – 10 years  11 – 15 years  
 16 – 20 years  Above 21 years
- Type of industry
  - Manufacturing  Services  Construction
  - Forestry  Agriculture, Fishery and Livestock
  - Education  Others: specify



## PART B: BUSINESS NETWORK

Please rate the extent of your company's collaborations. Please TICK ONE answer only. Rate according to the following criteria: 1 = Very Low 2 = Low 3 = Neutral 4 = High 5 = Very High						
1	Suppliers	1	2	3	4	5
2	Customers	1	2	3	4	5
3	Competitors	1	2	3	4	5
4	Universities or Public Research Organisation	1	2	3	4	5
5	Government	1	2	3	4	5

## PART C: INTER-FIRM

Evaluate your relationship with other company. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
6	We are developing a network of connected relationships.	1	2	3	4	5
7	Cooperation with external business players is at the heart of our business management strategy.	1	2	3	4	5
8	Our company builds partnerships with suppliers and communicates with them quite often.	1	2	3	4	5
9	Our company often interacts with suppliers to stimulate, develop and test new product ideas.	1	2	3	4	5
10	Our company builds partnerships with customers and communicates with them quite often.	1	2	3	4	5
11	Our company often interacts with customers to stimulate, develop and test new product ideas.	1	2	3	4	5
12	Our company builds partnerships with competitors and communicates with them quite often.	1	2	3	4	5
13	Our company often interacts with competitors to stimulate, develop and test new product ideas.	1	2	3	4	5

## PART D: UNIVERSITY OR PUBLIC RESEARCH ORGANISATION

Evaluate your relationship with Universities or Public Research Organisation. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
14	Cooperation with universities or public research organizations is beneficial.	1	2	3	4	5
15	We can increase the limited capability of the firm for knowledge absorption (via training, internship, consultancy and informal information).	1	2	3	4	5
16	We can obtain information on R&D tendencies	1	2	3	4	5
17	We can earn benefits related to productive activities.	1	2	3	4	5
18	We can use labs and other resources available in public research organisations.	1	2	3	4	5
19	We can test our products or processes.	1	2	3	4	5
20	We can develop new patterns and licenses.	1	2	3	4	5

## PART E: GOVERNMENT ROLES

Evaluate the Government Roles to your organisation. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
21	The government provides technical assistance to my company.	1	2	3	4	5
22	The government helps in training the manpower of my company.	1	2	3	4	5
23	Cultivating cooperative relationships with applicable government agencies by actively participating in various government-sponsored activities	1	2	3	4	5
24	Taking the initiative in developing cooperative relationships with government agencies through dialogue, meetings, and idea exchange on concerned issues.	1	2	3	4	5
25	The legal system efficiently protects our interests (such as patents and trademarks).	1	2	3	4	5
26	The legal system prevents us from being cheated on.	1	2	3	4	5
27	The legal system ensures customers' payment.	1	2	3	4	5
28	The legal system ensures that we get our money back.	1	2	3	4	5
29	The government policies impact our company activities	1	2	3	4	5

PART F: DYNAMIC CAPABILITIES

Evaluate dynamic capability related to your company. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
30	We frequently scan the environment to identify new business opportunities.	1	2	3	4	5
31	We often review our service development efforts or products to ensure they are in line with what customers want	1	2	3	4	5
32	We spend a great deal of time implementing ideas for new services or products and improving our existing services.	1	2	3	4	5
33	We frequently scan the environment and regularly approach external institutions to collect and acquire industry information.	1	2	3	4	5
34	When recognizing a business opportunity, we can quickly rely on existing knowledge.	1	2	3	4	5
35	We are proficient in transforming tech knowledge from external sources into new products.	1	2	3	4	5
36	We regularly match new technology from outside with ideas for new products.	1	2	3	4	5
37	We have the competences to transfer and use newly acquired knowledge.	1	2	3	4	5
38	We know the strategic moves of our competitors well.	1	2	3	4	5
39	We know the product needs of our customers well.	1	2	3	4	5
40	Our company is able to respond appropriately to market changes.	1	2	3	4	5
41	Our company is able to sustain our advantages during constant industry changes.	1	2	3	4	5
42	Employees are encouraged and supported to innovate.	1	2	3	4	5
43	To coordinate partner-related activities, we have established internal processes (e.g., for marketing, project coordination, etc.) within our company.	1	2	3	4	5
44	To aid cooperation with partners, we have established cross-company processes, which are processes that reach across company boundaries.	1	2	3	4	5
45	We analyze what we desire to achieve with certain partners.	1	2	3	4	5
46	We remind ourselves of our partners' goals, potentials and strategies.	1	2	3	4	5
47	We discuss regularly with our partners how we can support each other to achieve success.	1	2	3	4	5
48	We ensure appropriate allocation of resources (e.g., information, time, reports, etc.)	1	2	3	4	5
49	Rapid organizational response to market changes	1	2	3	4	5
50	Rapid organizational response to competitor's actions	1	2	3	4	5
51	Efficient and effective communication with cooperative organization	1	2	3	4	5
52	Encouragement for an innovative culture	1	2	3	4	5

## PART G: INNOVATION

Evaluate innovation capabilities in your company. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
53	Our company often raises the quality and competitiveness of our products.	1	2	3	4	5
54	Our company often boosts our corporate image and brand awareness and profitability of our products	1	2	3	4	5
55	Our company often introduces new technologies to improve production or process procedure.	1	2	3	4	5
56	Our company often comes up with different ways to improve production or process procedure.	1	2	3	4	5
57	The profits of our company mostly come from new products and services.	1	2	3	4	5
58	The designing of the products of our company is faster than that of our competitors.	1	2	3	4	5
59	Management actively seeks innovative marketing ideas.	1	2	3	4	5
60	Improvements in product design, placement, pricing and promotional activities are readily accepted.	1	2	3	4	5
61	Firm's emphasis on developing new products or services	1	2	3	4	5
62	Firm's spending on new product or service development activities	1	2	3	4	5
63	Emphasis on creating proprietary technologies	1	2	3	4	5
64	Firm's emphasis on pioneering technological developments in its industry	1	2	3	4	5
65	Number of new products or services added by the firm and already on the market	1	2	3	4	5

## PART H: ORGANISATIONAL PERFORMANCE

Evaluate your company performance over the last three years (2012-2015)

- 66 The current average Return on Investment (ROI) of our company is better than that of the previous year.  
 Yes  No
- 67 The current average profit rate of our company is higher than that of the previous year.  
 Yes  No
- 68 The current average Return of Sale (ROS) of our company is better than that of the previous year.  
 Yes  No
- 69 The current average market share growth rate of our company is higher than that of the previous year.  
 Yes  No
- 70 The current average sales growth rate of our company is higher than that of the previous year.  
 Yes  No

*Thank you for your participation*

## Appendix 36: Questionnaire [Pilot Test]



*Dear Sir/Madam*

I am a PhD student at Business School, Brunel University London, United Kingdom. I am conducting a study examining *the relationship between business network and Malaysian SMEs performance, focusing on the role of firm's innovation and dynamic capabilities*. You are invited to participate in this research study by completing the following questionnaire.

The following questionnaire will require approximately 10 to 15 minutes to complete. There is no compensation for responding nor is there any known risk. In order to ensure that all information will remain confidential, please do not include your name, or contact details. Your identification **WILL NOT** be recorded or shared with anyone. If you choose to participate in this research, please answer all questions and return the completed questionnaires promptly.

This section attempts to capture a profile of demographical information of the participants, which will be coded as anonymously

### PART A: DEMOGRAPHIC

1. Gender  
 Male  Female
2. Age  
 20 - 30 years  31 – 40 years  41 – 50 years  
 51 years and above
3. Education  
 SPM  STPM  Diploma  
 Degree  Master  PhD  
 Others: specify \_\_\_\_\_
4. Type of Company  
 Sole Proprietor  Partnerships  Public Limited Co
5. Position in the company  
 Owner  CEO  Manager  
 Executive
6. The annual turnover of our organisation is  
 Below RM300,000  RM300,001 – RM15,000,000  
 RM15,000,000 – RM50,000,000
7. Number of employees (Full-time)  
 below 5  6 - 75  76 - 200
8. Our organisation has been established for  
 Below 5 years  6 – 10 years  11 – 15 years  
 16 – 20 years  Above 21 years

9. Type of industry
- |  |   |                                       |
|--|---|---------------------------------------|
| <input type="checkbox"/> Manufacturing | <input type="checkbox"/> Services                           | <input type="checkbox"/> Construction |
| <input type="checkbox"/> Forestry      | <input type="checkbox"/> Agriculture, Fishery and Livestock |                                       |
| <input type="checkbox"/> Education     | <input type="checkbox"/> Others: specify _____              |                                       |

**PART B: BUSINESS NETWORK**

Please rate the extent of your company's collaborations. Please TICK ONE answer only.

Rate according to the following criteria:

- 1 = Very Low
- 2 = Low
- 3 = Neutral
- 4 = High
- 5 = Very High

1	Suppliers	1	2	3	4	5
2	Customers	1	2	3	4	5
3	Competitors	1	2	3	4	5
4	Universities or Public Research Organisation	1	2	3	4	5
5	Government	1	2	3	4	5

**PART C: INTER-FIRM**

Evaluate your relationship with other company. Please TICK ONE answer only.

Rate according to the following criteria:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neither Agree or Disagree
- 4 = Agree
- 5 = Strongly Agree

6	We are developing a network of connected relationships.	1	2	3	4	5
7	Cooperation with external business players is at the heart of our business management strategy.	1	2	3	4	5
8	Our company builds partnerships with suppliers and communicates with them quite often.	1	2	3	4	5
9	Our company often interacts with suppliers to stimulate, develop and test new product ideas.	1	2	3	4	5
10	Our company builds partnerships with customers and communicates with them quite often.	1	2	3	4	5
11	Our company often interacts with customers to stimulate, develop and test new product ideas.	1	2	3	4	5
12	Our company builds partnerships with competitors and communicates with them quite often.	1	2	3	4	5
13	Our company often interacts with competitors to stimulate, develop and test new product ideas.	1	2	3	4	5

**PART D: UNIVERSITY OR PUBLIC RESEARCH ORGANISATION**

Evaluate your relationship with Universities or Public Research Organisation. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
14	Cooperation with universities or public research organizations is beneficial.	1	2	3	4	5
15	We can increase the limited capability of the firm for knowledge absorption (via training, internship, consultancy and informal information).	1	2	3	4	5
16	We can obtain information on R&D tendencies	1	2	3	4	5
17	We can earn benefits related to productive activities.	1	2	3	4	5
18	We can use labs and other resources available in public research organisations.	1	2	3	4	5
19	We can test our products or processes.	1	2	3	4	5
20	We can develop new patterns and licenses.	1	2	3	4	5

**PART E: GOVERNMENT ROLES**

Evaluate the Government Roles to your organisation. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
21	The government provides technical assistance to my company.	1	2	3	4	5
22	The government helps in training the manpower of my company.	1	2	3	4	5
23	Cultivating cooperative relationships with applicable government agencies by actively participating in various government-sponsored activities	1	2	3	4	5
24	Taking the initiative in developing cooperative relationships with government agencies through dialogue, meetings, and idea exchange on concerned issues.	1	2	3	4	5
25	The legal system efficiently protects our interests (such as patents and trademarks).	1	2	3	4	5
26	The legal system prevents us from being cheated on.	1	2	3	4	5
27	The legal system ensures customers' payment.	1	2	3	4	5
28	The legal system ensures that we get our money back.	1	2	3	4	5
29	The government policies impact our company activities	1	2	3	4	5

**PART F: DYNAMIC CAPABILITIES**

Evaluate dynamic capability related to your company. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
30	We frequently scan the environment to identify new business opportunities.	1	2	3	4	5
31	We often review our service development efforts or products to ensure they	1	2	3	4	5

	are in line with what customers want					
32	We spend a great deal of time implementing ideas for new services or products and improving our existing services.	1	2	3	4	5
33	We frequently scan the environment and regularly approach external institutions to collect and acquire industry information.	1	2	3	4	5
34	When recognizing a business opportunity, we can quickly rely on existing knowledge.	1	2	3	4	5
35	We are proficient in transforming tech knowledge from external sources into new products.	1	2	3	4	5
36	We regularly match new technology from outside with ideas for new products.	1	2	3	4	5
37	We have the competences to transfer and use newly acquired knowledge.	1	2	3	4	5
38	We know the strategic moves of our competitors well.	1	2	3	4	5
39	We know the product needs of our customers well.	1	2	3	4	5
40	Our company is able to respond appropriately to market changes.	1	2	3	4	5
41	Our company is able to sustain our advantages during constant industry changes.	1	2	3	4	5
42	Employees are encouraged and supported to innovate.	1	2	3	4	5
43	To coordinate partner-related activities, we have established internal processes (e.g., for marketing, project coordination, etc.) within our company.					
44	To aid cooperation with partners, we have established cross-company processes, which are processes that reach across company boundaries.	1	2	3	4	5
45	We analyze what we desire to achieve with certain partners.	1	2	3	4	5
46	We remind ourselves of our partners' goals, potentials and strategies.	1	2	3	4	5
47	We discuss regularly with our partners how we can support each other to achieve success.	1	2	3	4	5
48	We ensure appropriate allocation of resources (e.g., information, time, reports, etc.)	1	2	3	4	5
49	Rapid organizational response to market changes	1	2	3	4	5
50	Rapid organizational response to competitor's actions	1	2	3	4	5
51	Efficient and effective communication with cooperative organization	1	2	3	4	5
52	Encouragement for an innovative culture	1	2	3	4	5

#### PART G: INNOVATION

Evaluate innovation capabilities in your company. Please TICK ONE answer only.

Rate according to the following criteria:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neither Agree or Disagree
- 4 = Agree
- 5 = Strongly Agree

53	Our company often raises the quality and competitiveness of our products.	1	2	3	4	5
54	Our company often boosts our corporate image and brand awareness and profitability of our products	1	2	3	4	5
55	Our company often introduces new technologies to improve production or process procedure.	1	2	3	4	5
56	Our company often comes up with different ways to improve production or process procedure.	1	2	3	4	5
57	The profits of our company mostly come from new products and services.	1	2	3	4	5
58	The designing of the products of our company is faster than that of our competitors.	1	2	3	4	5





## Appendix 37: Questionnaire in English



*Dear Sir/Madam*

I am a PhD student at Business School, Brunel University London, United Kingdom. I am conducting a study examining *the relationship between business network and Malaysian SMEs performance, focusing on the role of firm's innovation and dynamic capabilities*. You are invited to participate in this research study by completing the following questionnaire.

The following questionnaire will require approximately 10 to 15 minutes to complete. There is no compensation for responding nor is there any known risk. In order to ensure that all information will remain confidential, please do not include your name, or contact details. Your identification **WILL NOT** be recorded or shared with anyone. If you choose to participate in this research, please answer all questions and return the completed questionnaires promptly.

This section attempts to capture a profile of demographical information of the participants, which will be coded as anonymously

### **PART A: DEMOGRAPHIC**

1. Gender  
 Male                       Female
2. Age  
 20 - 30 years               31 – 40 years               41 – 50 years  
 51 years and above
3. Education  
 SPM                           STPM                           Diploma  
 Degree                       Master                       PhD  
 Others: specify \_\_\_\_\_
4. Type of Company  
 Sole Proprietor               Partnerships               Public Limited Co
5. Position in the company  
 Owner                           CEO                           Manager  
 Executive
6. The annual turnover of our organisation is  
 Below RM300,000               RM300,001 – RM15,000,000  
 RM15,000,000 – RM50,000,000
7. Number of employees (Full-time)  
 below 5                       6 - 75                       76 - 200
8. Our organisation has been established for  
 Below 5 years               6 – 10 years               11 – 15 years  
 16 – 20 years               Above 21 years

9. Type of industry
- |  |   |                                       |
|--|---|---------------------------------------|
| <input type="checkbox"/> Manufacturing | <input type="checkbox"/> Services                           | <input type="checkbox"/> Construction |
| <input type="checkbox"/> Forestry      | <input type="checkbox"/> Agriculture, Fishery and Livestock |                                       |
| <input type="checkbox"/> Education     | <input type="checkbox"/> Others: specify _____              |                                       |

**PART B: BUSINESS NETWORK**

Please rate the extent of your company's collaborations. Please TICK ONE answer only.						
Rate according to the following criteria:						
1 = Very Low						
2 = Low						
3 = Neutral						
4 = High						
5 = Very High						
1	Suppliers	1	2	3	4	5
2	Customers	1	2	3	4	5
3	Competitors	1	2	3	4	5
4	Universities or Public Research Organisation	1	2	3	4	5
5	Government	1	2	3	4	5

**PART C: INTER-FIRM**

Evaluate your relationship with other company. Please TICK ONE answer only.						
Rate according to the following criteria:						
1 = Strongly Disagree						
2 = Disagree						
3 = Neither Agree or Disagree						
4 = Agree						
5 = Strongly Agree						
6	We are developing a network of connected relationships.	1	2	3	4	5
7	Cooperation with external business players is at the heart of our business management strategy.	1	2	3	4	5
8	Our company builds partnerships with suppliers and communicates with them quite often.	1	2	3	4	5
9	Our company often interacts with suppliers to stimulate, develop and test new product ideas.	1	2	3	4	5
10	Our company builds partnerships with customers and communicates with them quite often.	1	2	3	4	5
11	Our company often interacts with customers to stimulate, develop and test new product ideas.	1	2	3	4	5
12	Our company builds partnerships with competitors and communicates with them quite often.	1	2	3	4	5
13	Our company often interacts with competitors to stimulate, develop and test new product ideas.	1	2	3	4	5

**PART D: UNIVERSITY OR PUBLIC RESEARCH ORGANISATION**

Evaluate your relationship with Universities or Public Research Organisation. Please TICK ONE answer only.

Rate according to the following criteria:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neither Agree or Disagree
- 4 = Agree
- 5 = Strongly Agree

14	Cooperation with universities or public research organizations is beneficial.	1	2	3	4	5
15	We can increase the limited capability of the firm for knowledge absorption (via training, internship, consultancy and informal information).	1	2	3	4	5
16	We can obtain information on R&D tendencies	1	2	3	4	5
17	We can earn benefits related to productive activities.	1	2	3	4	5
18	We can use labs and other resources available in public research organisations.	1	2	3	4	5
19	We can test our products or processes.	1	2	3	4	5
20	We can develop new patterns and licenses.	1	2	3	4	5

**PART E: GOVERNMENT ROLES**

Evaluate the Government Roles to your organisation. Please TICK ONE answer only.

Rate according to the following criteria:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neither Agree or Disagree
- 4 = Agree
- 5 = Strongly Agree

21	The government provides technical assistance to my company.	1	2	3	4	5
22	The government helps in training the manpower of my company.	1	2	3	4	5
23	Cultivating cooperative relationships with applicable government agencies by actively participating in various government-sponsored activities	1	2	3	4	5
24	Taking the initiative in developing cooperative relationships with government agencies through dialogue, meetings, and idea exchange on concerned issues.	1	2	3	4	5
25	The legal system efficiently protects our interests (such as patents and trademarks).	1	2	3	4	5
26	The legal system prevents us from being cheated on.	1	2	3	4	5
27	The legal system ensures customers' payment.	1	2	3	4	5
28	The legal system ensures that we get our money back.	1	2	3	4	5
29	The government policies impact our company activities	1	2	3	4	5

**PART F: DYNAMIC CAPABILITIES**

Evaluate dynamic capability related to your company. Please TICK ONE answer only.

Rate according to the following criteria:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neither Agree or Disagree
- 4 = Agree
- 5 = Strongly Agree

30	We frequently scan the environment to identify new business opportunities.	1	2	3	4	5
31	We often review our service development efforts or products to ensure they	1	2	3	4	5

	are in line with what customers want					
32	We spend a great deal of time implementing ideas for new services or products and improving our existing services.	1	2	3	4	5
33	We frequently scan the environment and regularly approach external institutions to collect and acquire industry information.	1	2	3	4	5
34	When recognizing a business opportunity, we can quickly rely on existing knowledge.	1	2	3	4	5
35	We are proficient in transforming tech knowledge from external sources into new products.	1	2	3	4	5
36	We regularly match new technology from outside with ideas for new products.	1	2	3	4	5
37	We have the competences to transfer and use newly acquired knowledge.	1	2	3	4	5
38	We know the strategic moves of our competitors well.	1	2	3	4	5
39	We know the product needs of our customers well.	1	2	3	4	5
40	Our company is able to respond appropriately to market changes.	1	2	3	4	5
41	Our company is able to sustain our advantages during constant industry changes.	1	2	3	4	5
42	Employees are encouraged and supported to innovate.	1	2	3	4	5
43	To coordinate partner-related activities, we have established internal processes (e.g., for marketing, project coordination, etc.) within our company.	1	2	3	4	5
44	To aid cooperation with partners, we have established cross-company processes, which are processes that reach across company boundaries.	1	2	3	4	5
45	We analyze what we desire to achieve with certain partners.	1	2	3	4	5
46	We remind ourselves of our partners' goals, potentials and strategies.	1	2	3	4	5
47	We discuss regularly with our partners how we can support each other to achieve success.	1	2	3	4	5
48	We ensure appropriate allocation of resources (e.g., information, time, reports, etc.)	1	2	3	4	5
49	Rapid organizational response to market changes	1	2	3	4	5
50	Rapid organizational response to competitor's actions	1	2	3	4	5
51	Efficient and effective communication with cooperative organization	1	2	3	4	5
52	Encouragement for an innovative culture	1	2	3	4	5

#### PART G: INNOVATION

Evaluate innovation capabilities in your company. Please TICK ONE answer only. Rate according to the following criteria: 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree						
53	Our company often raises the quality and competitiveness of our products.	1	2	3	4	5
54	Our company often boosts our corporate image and brand awareness and profitability of our products	1	2	3	4	5
55	Our company often introduces new technologies to improve production or process procedure.	1	2	3	4	5
56	Our company often comes up with different ways to improve production or process procedure.	1	2	3	4	5
57	The profits of our company mostly come from new products and services.	1	2	3	4	5
58	The designing of the products of our company is faster than that of our competitors.	1	2	3	4	5

59	Management actively seeks innovative marketing ideas.	1	2	3	4	5
60	Improvements in product design, placement, pricing and promotional activities are readily accepted.	1	2	3	4	5
61	Firm's emphasis on developing new products or services	1	2	3	4	5
62	Firm's spending on new product or service development activities	1	2	3	4	5
63	Emphasis on creating proprietary technologies	1	2	3	4	5
64	Firm's emphasis on pioneering technological developments in its industry	1	2	3	4	5
65	Number of new products or services added by the firm and already on the market	1	2	3	4	5

#### PART H: ORGANISATIONAL PERFORMANCE

Evaluate your company performance over the last three years (2012-2015)

66. The current average Return on Investment (ROI) of our company is better than that of the previous year.  
 Yes                                       No
67. The current average profit rate of our company is higher than that of the previous year.  
 Yes                                       No
68. The current average Return of Sale (ROS) of our company is better than that of the previous year.  
 Yes                                       No
69. The current average market share growth rate of our company is higher than that of the previous year.  
 Yes                                       No
70. The current average sales growth rate of our company is higher than that of the previous year.  
 Yes                                       No

*Thank you for your participation*

## Appendix 38: Questionnaire in Bahasa Malaysia



### *Tuan/Puan*

Saya seorang pelajar PhD di Business School, Brunel University London, United Kingdom. Saya sedang menjalankan kajian mengenai hubungan antara rangkaian perniagaan dan prestasi SME di Malaysia, yang memberi tumpuan kepada peranan inovasi syarikat dan keupayaan dinamik. Anda dijemput untuk menyertai kajian penyelidikan ini dengan melengkapkan borang soal selidik berikut.

Soal selidik yang berikut akan memerlukan kira-kira 10 hingga 15 minit. Tiada pampasan dan juga tidak ada apa-apa risiko yang diketahui. Dalam usaha untuk memastikan bahawa semua maklumat akan dirahsiakan, jangan masukkan nama anda atau sebarang butiran diri. Pengenalan anda **TIDAK AKAN** direkodkan atau dikongsi dengan sesiapa sahaja. Jika anda memilih untuk mengambil bahagian dalam kajian ini, sila jawab semua soalan dan mengembalikan kertas soal selidik.

Seksyen ini cuba untuk merekod profil maklumat demografi para peserta, yang akan dikodkan sebagai tanpa nama.

### **PART A: DEMOGRAFI**

1. Jantina  
 Lelaki                       Perempuan
2. Umur  
 20 - 30                       31 - 40                       41 - 50  
 51 dan ke atas
3. Pendidikan  
 SPM                       STPM                       Diploma  
 Ijazah Sarjana Muda     Sarjana                       PhD  
 Lain-lain: *Jelaskan* \_\_\_\_\_
4. Jenis Syarikat  
 Pemilikan Tunggal     Perkongsian                       Sendirian Berhad
5. Jawatan dalam syarikat  
 Pemilik                       CEO                       Pengurus  
 Eksekutif
6. Perolehan tahunan syarikat kami adalah  
 Bawah RM300,000     RM300,001 - RM15,000,000  
 RM15,000,000 - RM50,000,000
7. Bilangan pekerja (sepanjang masa)  
 Bawah 5                       6 - 75                       76 - 200
8. Syarikat kami telah ditubuhkan selama  
 Bawah 5 tahun                       6 - 10 tahun                       11 - 15 tahun  
 16 - 20 tahun                       21 tahun dan ke atas

9. Jenis Industri
- |                          |             |                          |                                   |                          |           |
|--------------------------|-------------|--------------------------|-----------------------------------|--------------------------|-----------|
| <input type="checkbox"/> | Perkilangan | <input type="checkbox"/> | Perkhidmatan                      | <input type="checkbox"/> | Pembinaan |
| <input type="checkbox"/> | Perhutanan  | <input type="checkbox"/> | Pertanian, Perikanan dan Ternakan |                          |           |
| <input type="checkbox"/> | Pendidikan  | <input type="checkbox"/> | Lain-lain: <i>Jelaskan</i> _____  |                          |           |

#### PART B: RANGKAIAN PERNIAGAAN

Sila nilaikan sejauh mana kerjasama syarikat anda. Sila TANDA SATU jawapan sahaja.

Skala mengikut kriteria berikut:

- 1 = Sangat Rendah
- 2 = Rendah
- 3 = Neutral
- 4 = Tinggi
- 5 = Sangat Tinggi

1	Pembekal	1	2	3	4	5
2	Pelanggan	1	2	3	4	5
3	Pesaing	1	2	3	4	5
4	Universiti atau Organisasi Penyelidikan Awam	1	2	3	4	5
5	Kerajaan	1	2	3	4	5

#### PART C: INTER-FIRM

Sila nilaikan hubungan anda dengan syarikat lain. Sila TANDA SATU jawapan sahaja.

Skala mengikut kriteria berikut:

- 1 = Sangat Tidak Setuju
- 2 = Tidak Setuju
- 3 = Samada Setuju atau Tidak Setuju
- 4 = Setuju
- 5 = Sangat Setuju

6	Kami sedang mengembangkan jaringan untuk menjalinkan hubungan.	1	2	3	4	5
7	Kerjasama dengan ahli niaga yang lain merupakan strategi pengurusan perniagaan utama kami.	1	2	3	4	5
8	Syarikat kami membina perkongsian dengan para pembekal dan kerap berkomunikasi bersama mereka.	1	2	3	4	5
9	Syarikat kami sering berinteraksi dengan para pembekal untuk merangsang, membangun dan menguji janaan idea bagi produk yang baru.	1	2	3	4	5
10	Syarikat kami membina persepakatan dengan para pelanggan dan kerap berkomunikasi bersama mereka.	1	2	3	4	5
11	Syarikat kami sering berinteraksi dengan para pelanggan untuk merangsang, membangun dan menguji janaan idea bagi produk yang baru.	1	2	3	4	5
12	Syarikat kami membina perkongsian dengan para pesaing dan kerap berkomunikasi bersama mereka.	1	2	3	4	5
13	Syarikat kami sering berinteraksi dengan para pesaing untuk merangsang, membangun dan menguji janaan idea bagi produk yang baru.	1	2	3	4	5



**PART D: UNIVERSITI ATAU ORGANISASI PENYELIDIKAN AWAM**

Sila nilaikan hubungan anda dengan Universiti atau Pertubuhan Penyelidikan Awam.

Sila TANDA SATU jawapan sahaja.

Skala mengikut kriteria berikut:

- 1 = Sangat Tidak Setuju
- 2 = Tidak Setuju
- 3 = Samada Setuju atau Tidak Setuju
- 4 = Setuju
- 5 = Sangat Setuju

14	Kerjasama dengan institut pengajian tinggi atau pertubuhan penyelidikan awam memberi manfaat kepada syarikat.	1	2	3	4	5
15	Kami mampu meningkatkan keupayaan terhad syarikat bagi penyerapan pengetahuan (melalui latihan, internship, perundingan dan maklumat tidak formal).	1	2	3	4	5
16	Kami mampu memperoleh maklumat yang berkecenderungan pada penyelidikan dan pembangunan (R&D).	1	2	3	4	5
17	Kami mampu memperoleh faedah-faedah yang berkaitan dengan aktiviti-aktiviti yang produktif.	1	2	3	4	5
18	Kami boleh menggunakan makmal dan sumber-sumber lain yang terdapat di dalam universiti atau organisasi penyelidikan awam	1	2	3	4	5
19	Kami boleh melakukan uji-kaji terhadap sesuatu produk atau proses.	1	2	3	4	5
20	Kami boleh membangunkan corak dan lesen perniagaan yang baru.	1	2	3	4	5

**PART E: PERANAN KERAJAAN**

Menilai peranan Kerajaan terhadap syarikat anda. Sila TANDA SATU jawapan sahaja.

Skala mengikut kriteria berikut:

- 1 = Sangat Tidak Setuju
- 2 = Tidak Setuju
- 3 = Samada Setuju atau Tidak Setuju
- 4 = Setuju
- 5 = Sangat Setuju

21	Kerajaan menyediakan bantuan teknikal kepada syarikat saya.	1	2	3	4	5
22	Kerajaan membantu dalam melatih tenaga kerja syarikat saya.	1	2	3	4	5
23	Memupuk hubungan kerjasama dengan agensi-agensi kerajaan dengan mengambil bahagian secara aktif dalam pelbagai aktiviti yang ditaja oleh kerajaan.	1	2	3	4	5
24	Mengambil inisiatif dalam membangunkan hubungan kerjasama dengan agensi-agensi kerajaan melalui dialog, mesyuarat, dan pertukaran idea mengenai isu-isu yang berkenaan.	1	2	3	4	5
25	Sistem undang-undang melindungi kepentingan kami (seperti paten, tanda dagangan- trademark) dengan cekapnya.	1	2	3	4	5
26	Sistem undang-undang menghalang kami daripada ditipu.	1	2	3	4	5
27	Sistem undang-undang memastikan bahawa pembayaran pelanggan selamat.	1	2	3	4	5
28	Sistem undang-undang memastikan bahawa kami mendapatkan wang kami kembali.	1	2	3	4	5
29	Dasar-dasar kerajaan memberi kesan kepada aktiviti syarikat kami	1	2	3	4	5

#### PART F: KEUPAYAAN DINAMIK

Sila nilaikan keupayaan dinamik dengan syarikat anda. Sila TANDA SATU jawapan sahaja.

Skala mengikut kriteria berikut:

- 1 = Sangat Tidak Setuju
- 2 = Tidak Setuju
- 3 = Samada Setuju atau Tidak Setuju
- 4 = Setuju
- 5 = Sangat Setuju

30	Kami sering menyemak persekitaran untuk mengenalpasti peluang-peluang perniagaan yang baru.	1	2	3	4	5
31	Kami sering mengkaji semula usaha-usaha pembangunan perkhidmatan atau produk kami untuk memastikan ianya selaras dengan apa yang dikehendaki oleh para pelanggan.	1	2	3	4	5
32	Kami menghabiskan banyak masa untuk melaksanakan idea-idea perkhidmatan atau produk baru dan meningkatkan perkhidmatan atau produk kami yang sedia ada.	1	2	3	4	5
33	Kami sering menyemak persekitaran dan sentiasa mendekati institusi luaran untuk mengumpul dan memperoleh maklumat industri.	1	2	3	4	5
34	Apabila mengenal pasti peluang-peluang perniagaan, kami mampu bergantung pada pengetahuan yang sedia ada.	1	2	3	4	5
35	Kami mahir dalam mengubah pengetahuan teknologi daripada sumber-sumber luaran kepada produk-produk baru.	1	2	3	4	5
36	Kami sentiasa menyesuaikan teknologi baru yang diperoleh dari luar dengan idea-idea produk yang baru.	1	2	3	4	5
37	Kami mempunyai keupayaan untuk memindahkan dan menggunakan pengetahuan yang baru diperoleh.	1	2	3	4	5
38	Kami mengetahui segala tingkah laku strategik para pesaing kami dengan baik.	1	2	3	4	5
39	Kami sedar akan keperluan produk para pelanggan kami dengan baik.	1	2	3	4	5
40	Syarikat kami mampu bertindak balas dengan wajar terhadap perubahan pasaran.	1	2	3	4	5
41	Syarikat kami mampu mengekalkan kelebihan kami dalam keadaan perubahan industri yang berterusan.	1	2	3	4	5
42	Pekerja digalakkan dan disokong untuk membuat pembaharuan inovatif.	1	2	3	4	5
43	Bagi menyelaraskan aktiviti-aktiviti yang berkaitan dengan rakan kongsi, kami telah mengukuhkan proses dalaman (contoh; dari segi pemasaran dan penyelarasan projek, dll.) syarikat kami.	1	2	3	4	5
44	Bagi membantu kerjasama dengan rakan kongsi, kami telah mewujudkan proses silang-syarikat (cross-company process), yakni proses merentasi batasan syarikat.	1	2	3	4	5
45	Kami menganalisis apa yang hendak dicapai oleh kami bersama dengan rakan kongsi tertentu.	1	2	3	4	5
46	Kami mengingatkan antara kami mengenai matlamat, potensi dan strategi rakan kongsi kami.	1	2	3	4	5
47	Kami berbincang secara berterusan bersama rakan kongsi kami akan kaedah untuk saling membantu antara satu sama lain untuk mencapai kejayaan.	1	2	3	4	5
48	Kami memastikan pengagihan sumber bekalan (contoh; maklumat, masa, laporan, dll.) mengikut yang sewajarnya	1	2	3	4	5
49	Tindak balas organisasi yang pantas terhadap perubahan pasaran	1	2	3	4	5
50	Tindak balas organisasi yang pantas terhadap tindakan pesaing	1	2	3	4	5

51	Komunikasi yang cekap dan berkesan bersama organisasi yang bekerjasama	1	2	3	4	5
52	Galakan budaya kerja yang inovatif	1	2	3	4	5

### PART G: INOVASI

<p>Sila nilaikan keupayaan inovasi dalam syarikat anda. Sila TANDA SATU jawapan sahaja.  Skala mengikut kriteria berikut:  1 = Sangat Tidak Setuju  2 = Tidak Setuju  3 = Samada Setuju atau Tidak Setuju  4 = Setuju  5 = Sangat Setuju</p>						
53	Syarikat kami sering meningkatkan kualiti dan daya saing produk-produk kami.	1	2	3	4	5
54	Syarikat kami sering meningkatkan keberuntungan, imej korporat dan kesedaran terhadap jenama syarikat kami.	1	2	3	4	5
55	Syarikat kami sering memperkenalkan teknologi yang baru untuk meningkatkan pengeluaran atau tatacara proses.	1	2	3	4	5
56	Syarikat kami sering menggunakan pelbagai cara yang berbeza untuk meningkatkan pengeluaran atau tatacara proses.	1	2	3	4	5
57	Keuntungan syarikat kami kebanyakannya terbit daripada produk-produk dan perkhidmatan yang baru.	1	2	3	4	5
58	Rekaan produk syarikat kami adalah lebih pantas berbanding dengan reka bentuk produk para pesaing kami.	1	2	3	4	5
59	Pihak pengurusan syarikat secara aktifnya mencari idea-idea pemasaran yang berinovatif.	1	2	3	4	5
60	Penambahbaikan dalam reka bentuk produk, penempatan barangan, penentuan harga dan aktiviti-aktiviti pemasaran mudah diterima.	1	2	3	4	5
61	Penekanan syarikat terhadap pembangunan produk atau perkhidmatan baru.	1	2	3	4	5
62	Perbelanjaan syarikat dalam produk baru atau aktiviti pembangunan perkhidmatan.	1	2	3	4	5
63	Penekanan terhadap penghasilan teknologi hak milik	1	2	3	4	5
64	Penekanan syarikat terhadap mempelopori perkembangan teknologi dalam industri yang berkaitan	1	2	3	4	5
65	Bilangan produk atau perkhidmatan yang ditambah oleh syarikat dan yang telah berada di pasaran	1	2	3	4	5

### PART H: PRESTASI SYARIKAT

Sila nilaikan prestasi syarikat anda dalam tempoh tiga tahun terakhir (2012-2015)

66. Pulangan purata ke atas pelaburan (ROI) kini syarikat kami adalah lebih baik daripada yang tahun sebelumnya.  
 Ya  Tidak
67. Kadar keuntungan purata kini syarikat kami adalah lebih tinggi daripada yang tahun sebelumnya.  
 Ya  Tidak

68. Pulangan purata jualan (ROS) kini syarikat kami adalah lebih baik daripada yang tahun sebelumnya.  
 Ya  Tidak
69. Kadar purata pertumbuhan saham kini syarikat kami adalah lebih tinggi daripada yang tahun sebelumnya.  
 Ya  Tidak
70. Kadar purata pertumbuhan jualan kini syarikat kami adalah lebih tinggi daripada yang tahun sebelumnya.  
 Ya  Tidak

*Terima kasih atas penyertaan anda*