THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL, INNOVATION CAPABILITY WITH FIRM AGE AND FIRM PERFORMANCE

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ABSTRACT

The recognition of intellectual capital and innovation capability as a key success factor in an increasingly competitive, global economy has the groundwork for researchers to explore new practices of management. Intellectual capital is defined as a combination of human, structural and relational capital that creates value and consequently determines the performance of a firm whilst innovation capability refers to the ability of a firm to transform an idea into a something new which carries an economic value. The study focuses on small and medium enterprises because they make up the bulk of firms in the Malaysian economy and the Government has spent a lot of money, time and effort to develop them. The study begins with an extensive literature review concerning the research problems and issues, theoretical concept, definition and measurement of intellectual capital, human capital (HC), structural capital (SC), relational capital (RC), innovation capability, firm age and firm performance. Next, using the survey data collected from small and medium enterprises, it provides a comprehensive set of empirical evidence that look into the mediating role of innovation capability and the moderating role of firm age in the relationship between intellectual capital, HC, SC, RC and firm performance. There are three conclusive findings of the study. First, intellectual capital, RC and innovation capability have influence on performance; second, intellectual capital and SC have influence on innovation capability; and third, innovation capability mediates the effect of intellectual capital and SC on firm performance. Based on these findings, the researcher lists several recommendations in the form of management science that can be used by policy-makers and business owners to improve business performance. Finally, this study highlights the limitations of the study and suggests directions for future studies.

Keywords: intellectual capital, innovation capability, firm age, performance

ABSTRAK

Faktor utama kejayaan dalam ekonomi global yang semakin berdaya saing ialah pengiktirafan modal intelek dan keupayaan inovasi. Hal ini telah menjadi asas bagi penyelidik untuk meneroka amalan baru dalam pengurusan. Modal intelek boleh ditakrifkan sebagai gabungan modal insan, modal struktur dan modal hubungan yang menghasilkan nilai dan seterusnya menentukan pencapaian firma. Manakala keupayaan inovasi merujuk kepada keupayaan firma untuk mengubah idea menjadi sesuatu bentuk yang baru dan mempunyai nilai ekonomi. Kajian ini memberi tumpuan kepada perusahaan kecil dan sederhana kerana ia membentuk sebahagian besar firma dalam ekonomi Malaysia dan kerajaan telah menghabiskan banyak wang, masa dan usaha untuk memajukan perusahaan ini. Kajian ini dimulai dengan kajian literatur yang luas mengenai permasalahan dan isu kajian, konsep teori, definisi dan pengukuran modal intelek, modal insan (HC), modal struktur (SC), modal hubungan (RC), keupayaan inovasi, umur firma dan pencapaian firma. Seterusnya, dengan menggunakan data kajian yang diperoleh dari perusahaan kecil dan sederhana, kajian ini menyediakan satu set bukti empirikal komprehensif yang melihat peranan perantara bagi keupayaan inovasi dan peranan penyederhanaan umur firma dalam hubungan antara modal intelek, HC, SC, RC dan pencapaian firma. Hasil kajian menunjukkan bahawa terdapat tiga penemuan konkulsif kajian. Pertama, modal intelek, RC dan keupayaan inovasi mempunyai pengaruh ke atas pencapaian; kedua, modal intelek dan SC mempunyai pengaruh ke atas keupayaan inovasi; dan ketiga, keupayaan inovasi merupakan pengantara kepada modal intelek dan SC yang memberi kesan ke atas pencapaian. Berdasarkan penemuan ini, penyelidik telah menyenaraikan beberapa cadangan dalam bentuk sains pengurusan yang boleh digunakan oleh pembuat dasar dan pemilik perniagaan untuk meningkatkan prestasi perniagaan. Akhir sekali, kajian ini mengetengahkan batasan kajian dan mencadangkan hala tuju kajian pada masa akan datang.

Kata kunci: modal intelek, keupayaan inovasi, umur firma, pencapaian

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LIST OF OPERATIONAL DEFINITIONS

Construct	Latent concept that the researcher can define in conceptual terms but cannot be directly measured.
Indicator	Items that form a composite measure. A construct is measured by multiple indicators.
Human capital	The knowledge, abilities, experiences and attitudes possess by the organizational members.
Incremental innovation	A significant extension of existing products or process characteristics either improvement or refinement of the product or process.
Intellectual capital	A combination of human, structural and relational capital that creates value and consequently determines performance of a firm.
Innovation	New outcomes either incremental or radical generated from implementation of creative ideas.
Innovation capability	The ability of a firm to transform an idea into a something new which carries an economic value.
Performance	How well a firm does something.
Radical innovation	The outcome of totally a new product or process into the market.
Relational capital	All the knowledge embedded in the relationships with external parties which include alliances, customers, investors, distribution networks, partners and suppliers.
Structural capital	A collection of knowledge in an organization embedded in systems, databases and program.

LIST OF ABBREVIATIONS

BSC	Balance Scorecard
CEE	Capital Employed Efficiency
CR	Composite Reliability
EVA	Economic Value Added
GDP	Gross Domestic Product
HC	Human Capital
HCE	Human Capital Efficiency
IAM	Intangible Assets Monitor
IPRs	Intellectual Property Rights
MaGIC	Malaysian Global Innovation and Creativity Center
MPC	Malaysia Productivity Corporation
MyIPO	Intellectual Property Corporation of Malaysia
PLS	Partial Least Square
PNS	Perbadanan Nasional Berhad
RBV	Resource Based View
NEAC	National Economic Advisory Council
NSDC	National SME Development Council
RC	Relational Capital
RI	Residual Income
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
ROS	Return on Sales
R&D	Research and Development
SC	Structural Capital
SCE	Structural Capital Efficiency
SME	Small and Medium Enterprise

SMECorp	Small and Medium Enterprise Corporation
SMIDEC	Small and Medium Industries Development Corporation
SPSS	Statistical Package for Social Science
SRI	Strategic Reform Initiatives
TNA	Training Need Analysis
VA	Value Added
VAHC	Value Added of Human Capital
VAIC	Value Added Intellectual Coefficient

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Rapid changes are taking place, be it in social, technological, political and economic context occasioned by the effect of globalization. Globalization implies a borderless world where borders are disappearing with unprecedented movement of people, goods and services as well as capital. In a borderless world, without adequate knowledge it is difficult for firms to assess potentials and threats of the global business. Those people with wide knowledge and skills in most aspects of business and technical areas such as in human resource, accounting, information technology and engineering will have more mobility and are widely accepted around the globe than those with less knowledge. To some extent, what makes them different from others is that the former possess greater ability to adapt to new knowledge and new environment and create value. Value is something that is relatively worth which determine wealth creation.

In addition, a firm should be capable of developing new ideas, employ new processes, manufacture new products, deliver new services and develop a more efficient supply chain in order to stay competitive and be a step ahead. Similarly, they should have the capability to innovate, thus being an important reason for firms to employ people with passion and commitment towards work and foremost, people with sufficient knowledge. A study by Marr, Schiuma and Neely (2004) stressed that the foundation of firm's capability is based on knowledge. It is knowledge that distinguishes amongst firms as knowledge of each firm varies. Firms with more knowledge will be less

uncertain regarding their effectiveness and they will be able to learn and notice changes on the market faster.

A study completed by Omerzel and Antoncic (2008) on 168 small and medium enterprises (SMEs) in Slovenia proved that almost 18.0 percent of the variability in firm performance can be accounted with knowledge. Alsaaty (2011) further decribed knowledge comes from experience, learning, talents and collaborative effort through times. Those firms with high knowledge qualities and skills are able to create opportunities, innovate and sustain. Thus, the knowledge possesses by a firm is proven a crucial asset.

Shepherd, Douglas and Shanley (2000), Drucker (2000) and Matlay (2005) shared the same view when they cited that the most common reason for business failure is lack of quality in terms of knowledge and experience. This statement was seconded by Minniti and Bygrave (2001) where they found that the success of an organization relies on the experiences and ability to process particular information, making sense of the idea and transforms it into an opportunity. Nonaka and Tekeuchi (1995) in their theory of knowledge-based organization further stressed the importance of knowledge towards the well-being of an organization.

Knowledge is a term that no single agreed upon the definition. From an epistemological perspective, knowledge refers to the intellectual capital entity that can be treated either as an asset or a resource (Chan, 2009; Marr, Schiuma, & Neely, 2004). Knowledge is a collection of facts, information and experience which is known. Chisholm (1982) defines knowledge as justified true belief whilst Kant (1960) describes knowledge as memory which is retained and which will be of service in real life.

On top of that, firms have to constantly improve and manage their knowledge and skills, which are directly related to managing intellectual capital. Intellectual capital refers to a combination of human, structural and relational capital that determines the future performance of a firm. Delgado-Verde, Castro, and Navas-Lopez (2011) defines intellectual capital as organizational knowledge stock. It determines the future prosperity of a firm and no longer based solely on physical capital or the amount of physical resources available.

Furthermore, regardless of the type of business a firm is engaged, be it from manufacturing to service, intellectual capital will determine the survival of a firm. The significance lies in the fact that it is valuable and inimitable resources in terms of the knowledge encapsulate within the system and processes give the firm an advantage over its competitors. It is obvious that firms which concern on intellectual capital development are a step ahead and possess state-of-the-art technology, which leads to greater innovation capability thus greater profitability.

Innovation capability refers to the ability of a firm to transform an idea into something new which carries an economic value. The economic value would then increase profit and consequently firm performance. That is why Chaveerug and Ussahawanitchakit (2008) and Fruhling and Siau (2007) found in their study that innovation capability has a significant relationship with firm performance. To some extent, the economic value would not only increase profits of the firm but also build competitive advantage over its competitors.

On the other hand, innovation involves the creation, diffusion, transformation and use of new ideas, practices, product, services and technology to foster economic growth and development (Andrawina & Govindaraju, 2009). Drucker (2000) classifies

innovation as the specific function of entrepreneurship that creates new wealth-producing resources or endows existing resources with enhanced potential for creating wealth. It needs to be realized and possess the economic benefits to be perceived as innovation.

There are numerous reasons why a firm is interested in being an innovative firm. Amongst them are the ability to provide positive impacts in term of organizational renewal, financial rewards, productivity gain, market dominance, stock price movement and organizational competitiveness (Alsaaty, 2011). These reasons are still valid as many areas of life are unpredictable, changing and challenging.

Discussing further, 'new realities' illustrated by Drucker (2000) need people with the quality to accommodate, anticipate and initiate changes. In order to produce such quality, firms need quality intellectual capital. Quality intellectual capital will enhance their capability to innovate and to create value. According to Bismuth and Tojo (2008), innovation can be improved with special skill of managing it. Without proper action to manage intellectual capital, the potential of it could be realized and functioning effectively. Thus, discussions about the art of managing intellectual capital have gained more attention not only amongst practitioners but also academicians.

Looking at the facts where both intellectual capital and innovation play a crucial role to the performance of a firm, the Government of Malaysia has decided to shift the economic framework from industry-based economy to knowledge-based economy. Knowledge-based economy refers to an economic system which is based on the generation and utilization of knowledge that contributes the economic growth and wealth creation. In a knowledge based economy, the growth has no longer depends

solely on investment in physical assets but is driven by productivity and innovation supported by intellectual capital.

Malaysia believes that knowledge-based economy will color its position in the global competitive market. The knowledge-based economy provides a platform to sustain a rapid rate of economic growth and enhances local and international competitiveness. It is characterized by the recognition of knowledge as a source of competitiveness that will strengthen the nation's capability to innovate, adapt and create indigenous technology; design, develop and market new products; thereby enhances the transition from an input driven to a productivity driven economy.

Given the importance of intellectual capital and innovation in contributing to the performance and competitive advantage of a firm and the economy of a nation, the need to understand matters pertaining to both constructs which contribute to firm performance rise. The study seeks to explore the role of these constructs and to discover the gap exists amongst them, so that performance will be improved.

1.2 Problem Statement

As at December 2007, there were 799,592 registered firms in Malaysia. For the month of May 2008, a total of 18,530 new firms have registered with Companies Commission of Malaysia (Olaisen, 2009) and the increased number of firms shows the positive impact of Government efforts to promote business growth and entrepreneurship in Malaysia. However, the situation does not reflect the business success as many ventures failed to survive and sustain.

For instance, the global financial crisis occurred in the year 2008 had adversely affected the credit market in Malaysia and created great uncertainty not only to banks, multinational companies and large firms but also to Small and Medium Enterprises (SMEs). The common aftermaths are lower purchasing power which leads to lower productions and job cuts. SMEs are affected in larger degree especially those in trading and supplying business to other businesses.

According to SME Annual Report (2008), between 1 October 2008 and 30 June 2009, there were 28,323 retrenchments in Malaysia based on the data obtained from the Ministry of Human Resource. Out of this figure, an analysis done by Small and Medium Industries Development Corporation (SMIDEC) showed that nearly 33.0 percent of the retrenched workers were by SMEs. The analysis also indicated that 78.0 percent of a total number of 1,039 firms that undertook the retrenchment exercise were SMEs, whilst the balance consists of large firms. The effect prolonged when the Managing Director of SME Bank forecasted that non-performing loans of SMEs in Malaysia were to rise in the year 2010 compared with 7.8 percent accounted for the year 2008 (Ibrahim, 2010). Business Times also reported that SME financial outstanding stood at RM130 billion in February 2011 accounting for 38.3 per cent of total business loan (BERNAMA, 2011).

Discussing further, SMEs are the backbone of the economy. According to year 2010 statistics, they consist of 97.3 percent of total establishment and 52.7 percent of total employment in Malaysia (Secretariat of the National SME Development Council, 2013). Due to this, the Government has spent a lot of money, time and effort to develop SMEs. However, Raduan, Naresh and Lim (2006) revealed that the survival rate of SMEs in Malaysia is 10.0 percent for the 10 years mark. It is because SMEs

possessed lack of skilled workers and their relational capital were not very strong (Hooi, 2012). For instance, Saleh and Ndubisi (2006) made an evaluation on SME development in Malaysia and concluded that lack of quality human capital due to insufficient knowledge on market and customer was their most significant challenge. Abdullah, Hamali, Deen, Saba and Abg Abdurahman (2009) shared the same view when their findings on Bumiputera SMEs operating in Malaysia disclosed that the common reason for business failure were inability to compete, poor management competency and lack of experience. Similar factors of business failure were found in Singapore and Iran through studies completed by Lau Geok and Jasmine Lim Wang (1996) and Arasti, Zandi and Talebi (2012).

In relation, a survey conducted by SME Corporation Malaysia revealed that 49.0 percent of firms did not identify the training needs of employees to improve their skills and competencies and 63.0 percent of them did not provide any career development plans for their employees (Secretariat of the National SME Development Council, 2013). It is possibly because they do not have sufficient fund to train their employees or they are not able of seeing the essence of training in improving their firm performance.

All these findings pointed that SMEs in Malaysia are lack of experienced and skilled workers. It is the main reason for their underperformed and business failures. According to Laforet (2008), SMEs need to have sufficient knowledge and skills to overcome problems and risks associated with small business to avoid business failures (Laforet, 2008). Shepherd, Douglas and Shanley (2000); Drucker (2000); and Matlay (2005) further added that SMEs need to deal with issues pertaining to lack of quality workers in terms of knowledge and experience in order to perform. Minniti and

Bygrave (2001) shared the same view when they concluded that the success of an organization relies on the experiences and ability to process particular information, making sense of the idea and transforms it into an opportunity. The opportunity will then turned into value which later on will produce wealth.

The study also found that the productivity level in the SMEs in Malaysia was notable to be significantly much lower than large enterprises. The Census on Establishments and Enterprise conducted in the year 2011 revealed that SMEs have contributed 97.3 percent of total business establishments and employed 52.7 percent of total employment in Malaysia; but they have generated only 28.5 percent of gross output and 30.2 percent of value added. The remaining 71.5 percent of gross output and 69.8 percent of value added came from large firms (Department of Statistics, 2011). Hence, it appears that SMEs did not have the capability to perform well in the economy as they were not yet major contributors to the economic output although they represented the majority of the business sectors. Something has to be done to increase their contribution of gross output and value added to the economy.

Moreover, firms should rely on unique and innovative ideas to survive and compete in the fast changing and aggressive market (Deeds, DeCarolis, & Coombs, 1999). Hashim (2011) agreed with them and made remarks that SMEs in developed countries depend on innovation to stay and compete. This is because innovation is associated with improved performance (Chaveerug & Ussahawanitchakit, 2008; Fruhling & Siau, 2007; Rujirawanich, Addison, & Smallman, 2011; Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). Yet, SMEs in Malaysia still engaged less in innovation activities compared to large enterprises (Rasiah, 2001; Ngah & Ibrahim, 2009). They need to

enhance their capability to innovate as Malaysia is moving towards being a high income nation.

For instance, Chief Executive Officer of Human Resources Development Fund, Amiruddin Mazlan revealed that 200,000 and 130,000 patents were filed by SMEs in Korea and Taiwan in the year 2011. However in Malaysia, only 6,000 patents were filed and of this figure, only 1,000 were filed by Malaysian. The reason was that Malaysia spent only 0.63 percent on research and development (R&D) and innovation as a percentage of Gross Domestic Product (GDP) compared to Korea (3.0%) and Taiwan (2.3%) (Amirnuddin, 2012). The data also confirmed Saleh and Ndubisi (2006) claimed that SMEs in Malaysia faces challenges of low level of R&D, limited skill level of human resources and low levels of technological capability. Ngah and Ibrahim (2009) further elaborated that SMEs do not involve in innovation activity actively and extensively due to lack of expertise and financial capabilities, thus becoming barriers for them to create value and perform.

Despite the importance of SMEs to the national economy, researches on the SMEs' intellectual capital and innovation capability are very limited. Little attention has been given to look into studies on SMEs in Malaysia (Abu Bakar L. J., 2011). Thus, this study is significantly important to develop resilient and competitive SMEs. Findings and recommendations of this study will assist the Government as well as business owners to develop SMEs because any marginal direction of SME performance could result a major economic impact.

Concerning firm age, there are not many studies that look into the relationship between firm age and performance. Abu Bakar (2011) and Sorenson (2000) suggested that researchers should look into the impact of aging of firms on innovation

capability. They agreed that firm age is associated with firm performance. Thus, the researcher will include firm age in the study to examine its relationship with intellectual capital, innovation capability and firm performance.

1.3 Research Questions

Previous empirical evidences regarding the effect of intellectual capital, HC, SC, RC, innovation capability and firm age on performance were mixed. The study attempts to explore their intrinsic connections. In this regard, the researcher assumes that innovation capability plays a mediating role and firm age plays a moderating role between the relationship of intellectual capital and its components, and firm performance. The researcher will include various discussions on intellectual capital, innovation capability, firm age and firm performance in Chapter 2 with a focus on the following research questions:

i. Are there any significant relationship between intellectual capital and its components, and firm performance?
ii. Is there any significant relationship between innovation capability and firm performance?
iii. What are the effects of firm age on intellectual capital, innovation capability and firm performance?
iv. What are the effects of intellectual capital and its components on innovation capability?
v. Does innovation capability mediate the relationship between intellectual capital and its components, and firm performance?

vi. Does firm age moderate the relationship between intellectual capital and innovation capability?

1.4 Research Objectives

The research objectives are constructed to obtain answers for the research questions of the study. There are six research objectives, which are:

i. to explore the relationship of intellectual capital and its components, with firm performance.
ii. to determine the relationship of innovation capability with firm performance
iii. to figure out the relationship of firm age with intellectual capital, innovation capability and firm performance.
iv. to discover the relationship of intellectual capital and its components, with innovation capability.
v. to explore the mediating effect of innovation capability between the relationship of intellectual capital and its components, and firm performance.
vi. to investigate the effect of firm age in moderating the relationship between intellectual capital and its components, and innovation capability.

1.5 Research Hypotheses

There are 20 research hypotheses derived from the research objectives. The hypotheses are listed below:

H1 Intellectual Capital influences Innovation Capability.

H1a Human Capital influences Innovation Capability.

H1b Structural Capital influences Innovation Capability.

H1c Relational Capital influences Innovation Capability.

H2 Intellectual Capital influences Firm Performance.

H2a Human Capital influences Firm Performance.

H2b Relational Capital influences Firm Performance.

H2c Structural Capital influences Firm Performance.

H3 Innovation Capability influences Firm Performance.

H4 Innovation Capability mediates the effect of Intellectual Capital on Firm Performance.

H4a Innovation Capability mediates the effect of Human Capital on Firm Performance.

H4b Innovation Capability mediates the effect of Structural Capital on Firm Performance.

H4c Innovation Capability mediates the effect of Relational Capital on Firm Performance.

H5 Firm age moderates the effect of Intellectual Capital and Innovation Capability.

H5a Firm age moderates the effect of Human Capital and Innovation Capability.

H5b Firm age moderates the effect of Structural Capital and Innovation Capability.

H5c Firm age moderates the effect of Relational Capital and Innovation Capability.

H6 There is a significance difference between the quality of intellectual capital of matured firms and young firms.

H7 There is a significance difference between the capability to innovate of matured firms and young firms.

H8 There is a significance difference between the performance of matured firms and young firms.

1.6 Scope of Research

The study attempts to discuss the role of intellectual capital, innovation capability and firm age that contribute to the performance of SMEs. The researcher will generalize findings and responses gathered from SMEs operating in Malaysia. The respondents will exclude those respondents working in multinational companies and large firms to resolve the research problem. The scope of this study involves SMEs that operate in Malaysia; thus the definition of SME is taken from the Malaysian point of view, using the definition set by NSDC in the year 2005 and it will serve as a reference for this study.

1.7 Significance of Research

Pursuing the research objectives, the significances of the study are:

i. Previous researches showed that there were conflicting results between intellectual capital and firm performance, firm age and firm performance, and innovation capability and firm performance; indicating that there is a gap where their relationship with firm performance remain unclear. This study provides a new conceptual framework and a comprehensive empirical evidence to fill the gap; thus contribute to the literature on intellectual capital, firm age, innovation capability and firm performance.

ii. Prior to archival evidence, there are limited studies that look into the relationship between intellectual capital and part of its components, and firm performance, firm age and firm performance, and innovation capability and firm performance; but no study is found looking into the relationship between these constructs and empirically link them with firm performance simultaneously. Therefore, this study will fill the gap in an effort to explore their intrinsic connections.

iii. Firms may be ignorant of the vital role of intellectual capital in rejuvenating innovation capability that promotes creating value and wealth. Taken this factor into consideration, the study is designed to highlight the importance of intellectual capital and innovation capability. It explores how intellectual capital and innovation capabilities are perceived and managed for the benefits of firms, and will give some light to firms to have more definite and direct understanding of the intellectual capital blend and innovation capability that are useful for their success in business.

iv. SMEs are the crucial player in developing the economics of nations. They make up the bulk of firms in the economy and the Government of Malaysia has spent a lot of money, time and efforts to develop SMEs. SMEs also have a lower survival rates compared to the larger firms. Due to these reasons, the study is significant to improve SMEs performance especially in the context of Malaysian scenario. Understanding their needs and addressing results on intellectual capital and innovation capability in relation to firm performance gathered from this study provides the Government and business owners on measures to identify, recognize and manage intellectual capital and innovation

capability. Thus, this study offers the basis for more extensive and intensive efforts to improve performance of SMEs in Malaysia.

v. The way of doing business is changing rapidly in a highly competitive market. In order to be a step ahead, firms need to equip themselves with knowledge so that they will be better able to perform and innovate. This study will highlight recommendations based on the findings on how improved intellectual capital and to enhance innovation capability, hoping that it will result better performance. Such recommendations would also enable the Government and business owners to formulate strategies for developing SMEs.

1.8 Organization of the Thesis

This thesis is structured as follows. Chapter 1 provides an overview of the study which includes background of the study, followed by the problem statement, research questions, research objectives, research hypotheses and scope of research. It also highlights a brief discussion on the importance of intellectual capital and innovation capability to firm performance.

Chapter 2 further deliberates the literature review of intellectual capital, HC, SC, RC, firm age, innovation capability, firm performance and SMEs in Malaysia. It highlights in depth discussions about intellectual capital, innovation capability and firm age that have effect firm performance. The researcher has explained how the conceptual model of this study is derived and the underpinning theory that supports the model in the chapter. Included are definitions of SME used in Malaysia, Thailand, Canada, United Kingdom, Philippines and other countries.

Chapter 3 contains information pertaining to the methodological part of this study consisting data collection and sampling procedures, measurement and instrument design. The researcher has highlighted the origin of items used in the study instrument. Included with this chapter is a discussion on the pilot test of the study.

Chapter 4 presents the statistical analysis of this study. This section covers the overview of the data collection, preliminary examination of data, demographic profile of respondents and SMEs, multivariate analysis, bivariate analysis, and hypotheses testing and results. There are 20 hypotheses for this study. The researcher used the Smart-PLS and SPSS software to generate results for hypotheses testing.

Chapter 5 delivers the conclusion and recommendation of this study. It is divided into five sections. The first section highlights the research findings which include hypotheses testing and results to achieve six research objectives of the study. Second section discusses on recommendations based on the research findings, followed by limitation of the study and directions for future studies. The final section confers the contribution of study.

The thesis ends with the reference and appendices section. The reference section contains a list of secondary source which is gathered from documentation and archival evidence such as articles, journals, reference books, annual reports, websites and other materials related to the study. The appendices section consists of a set of study instrument or questionnaire used for each mail and online survey together with the cover letter, as well as SPSS and Smart-PLS outputs.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will elaborate on the constructs of intellectual capital, innovation capability, firm age and firm performance. The researcher will discuss the role of intellectual capital together with its components, innovation capability and firm age in determining firm performance. Included are profiling about SMEs in Malaysia and definitions used to describe SMEs by various countries.

2.2 Intellectual Capital

Literatures on intellectual capital indicate that studies pertaining to knowledge, skills, competence and networking are based on the assumption that intellectual capital creates firm's value. Due to this, a number of writings related to intellectual capital had gained attention during the 1990s (Steward, 1997; Galabove & Ahonen, 2011). According to Bontis (2001) John Kenneth Galbraith, an economist was the first person who used the notion intellectual capital in the year 1969. Then, the Management Guru, Peter Drucker further described intellectual capital in his illustration of knowledge society in the year 1993. He claimed that knowledge is another resource other than the traditional factors of production: labor, capital and land (Drucker, 1993). This idea has evolved from the members of the field with a few attempts to define, identify, give structure to and measure knowledge in the form of intellectual capital in the science of management.

A glance through the literature suggests that the term intellectual capital is synonymous to intangible asset where the word 'intellectual' implies 'knowledge' which is intangible and 'capital' implies 'asset'. Deloitte Global Services Limited (2012) defined intangible asset as 'an identifiable non-monetary asset without physical substance'. It can be harnessed, used repeatedly and capable of creating and adding value along with tangible assets. However, the significant difference between the two terms is intangible asset does not decrease in value. It enhances value as a result from the process of utilizing available knowledge and exchanging of knowledge with another party. In contrast, tangible assets experience depreciation of value from time to time. For a better understanding about intellectual capital, the chapter will begin with defining the term.

2.2.1 Definition of Intellectual Capital

There are plenty of generic definitions of intellectual capital in the literature and not one established definition amongst scholars existed. This is due to the different accepted definition of intellectual capital and different methods of measuring intellectual capital (Joshi, Cahill, & Sidhu, 2011). Different definitions by various scholars evident that there are still attempts to define the paradigm of intellectual capital; indicating the terminology of intellectual capital in the management science would have not yet developed. Although no consensus has been reached on the definition, scholars agreed that knowledge is a dominant element of intellectual capital and it is beneficial to firm performance.

Intellectual capital is defined as 'a group of knowledge assets that are owned and/or controlled by an organization and most significantly drives organization value

creation mechanisms for targeted company key stakeholders' (Alipour, 2012) and Sharabati, Jawad and Bontis (2010) added that it represents 'the wealth of ideas and the ability to innovate'. Table 2.1 lists the definitions of intellectual capital captured from various literatures. For the purpose of this study, intellectual capital is defined as a combination of human, structural and relational capital that creates value and consequently determines performance of a firm.

Table 2.1
Definition of Intellectual Capital

Author (Year)	Definition of Intellectual Capital
Edvinsson and Malone (1997)	The possession of the knowledge, applied experience, organizational technology, customer relationship and professional skills that provide Skandia with a competitive edge in the market.
Bontis (1998)	The pursuit of effective use of knowledge (the finished product) as opposed to information (the raw material).
Kamath (2007)	Any creation of the human intellect or mind.
El-Bannany (2008)	Knowledge and experience which skilled staff can use to gain a competitive advantage for the company through applying some creative strategies.
Sharabati, Jawad and Bontis (2010)	The wealth of ideas and the ability to innovate.
Alipour (2012)	The group of knowledge assets that are owned and/or controlled by an organization and most significantly drive organization value creation mechanisms for targeted company key stakeholders.

Source: Own illustration

Guthrie (2001) further coined that most scholars treated intellectual capital as being synonymous with intangible asset. He added that the definition used by the Organization for Economic Co-operation and Development draws a line by placing intellectual capital as a subset of intangible assets. It is used together with other assets in production. Nevertheless, he agreed that intellectual capital does have the ability to enhance value, increase profits and consequently creates wealth.

2.2.2 Components of Intellectual Capital

Many scholars have different views on the components of intellectual capital. The researcher has an agreement with some scholars in this field on the number of components of intellectual capital. They classified intellectual capital into three components, namely human capital, structural capital and relational capital (Kamukama, Ahiauzu, & Ntayi, 2010; Clarke, Seng, & Whiting, 2011; Halim, 2010; Galabova & Ahonen, 2011; Chan, 2009; Sharabati, Jawad, & Bontis, 2010; Ngah & Ibrahim, 2009). Some authors shared the same view on the number of components of intellectual capital with a little change seeing in structural capital; where it is further divided into two, customer capital and organizational capital (Corcoles, Penalver, & Ponce, 2011). For a better view, Table 2.2 listed the definition of the components of intellectual capital gathered from the numerous authors.

Table 2.2
Intellectual Capital Constructs

Intellectual Capital Constructs	**Authors**	**Definition**
Human Capital	Edvinsson and Malone (1997)	All individual capabilities, the knowledge, skills, and experience of the company's employees and managers.
	Steward (1997)	The capabilities of the individuals required to provide solutions to customers.
	Halim (2010)	What a single employee brings into the value adding processes.
	Phusavat, Comepa, Sitko-Lutek and Ooi (2011)	The collective capabilities of a firm's workforce.
Structural Capital	Edvinsson and Malone (1997)	The embodiment, empowerment, and supportive infrastructure of human capital.
	Steward (1997)	Organizational capabilities of the organization to meet market requirements.
	Bontis (1998)	The knowledge that stays within the firm.

Table 2.2 (Continued)

Intellectual Capital Constructs	Authors	Definition
	Halim (2010)	What happens amongst the people, how the people are connected within the company, and what stays when the employee leaves the company.
	Delgado-Verde, Castro and Navas-Lopez (2011)	All intangible assets that shape the real firm structure and culture which fosters the knowledge flow and integrates different functions of a firm to improve the firm effectiveness through coordination.
	Joshi, Cahill and Sidhu (2010)	The knowledge that is created by an organization and cannot be separated from the entity.
Relational Capital	Bontis (1998)	All the relations the firm has established with its stakeholder groups such as customers, suppliers, community, and government.
	Seleim and Khalil (2011)	The links and connection of employees with their coalition partners such as customers and suppliers.
	Joshi, Cahill and Sidhu (2010)	The ability of an organization to create relational value with its external stakeholders.
	Halim (2010)	The relations of the company to external stakeholders.

Source: Own illustration

In relation, Corcoles, Penalver and Ponce (2011); Subramaniam and Youndt (2005); Youndt, Subramaniam and Snell (2007); and Wexler (2002) added that the three components are closely interrelated, meaning that in term of knowledge acquisition, they have influence on each other. Knowledge acquisition refers to external learning which gives benefits to firms in term of expanding knowledge base and enhancing the capability to recognize opportunities (Lopez-Saez, Navaz-Lopez, Martin-de-Castro, & Cruz-Gonzalez, 2010).

Bringing the objectives to improve firm performance, this study will provide a comprehensive set of empirical evidence on the role of intellectual capital and its components in a firm as shown in Figure 2.1. The researcher has elaborated the three components of intellectual capital in the following discussion.

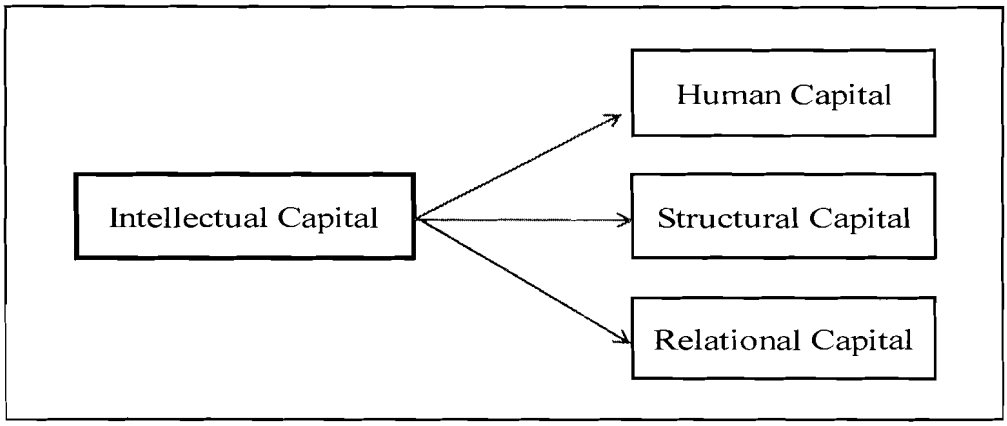


Figure 2.1
Components of Intellectual Capital
Source: Own Illustration

2.2.2.1 Human Capital

Human capital (HC) refers to the knowledge, abilities, experiences and attitudes possess by the organizational members. Other researchers define HC as the knowledge, skills (Roos & Roos, 1997; Joshi, Cahill, & Sidhu, 2011; Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011; Martinez_Roman, Gamero, & Tamayo, 2011). It represents the collective capabilities of a firm's workforce that determine performance (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). Alipour (2012) stressed that the economic potential of a nation is dependent on the quality of its HC. In this matter, different individual has different level of understanding and different quality of knowledge where better quality of HC implies better in problem solving and value creation skills, thus better performance results.

HC manages and contributes to the knowledge stock of a firm, both to SC and RC. Accepting that knowledge of a firm is derived from HC, the researcher agreed with some of the researchers in the area that it represents the largest share in intellectual capital (Ahmad & Mushraf, 2011; Cabrita & Vaz, 2006). Sveiby (1997) shared the same view and added that the inputs of people are in the form of knowledge which determines the functioning of an organization.

2.2.2.2 Structural Capital

Structural capital (SC) refers to a collection of knowledge in an organization embedded in systems, databases and program. Bontis (1998) defined SC as 'the knowledge that stays within the firm'. Halim (2010) further defined SC as 'what happens amongst the people, how the people are connected within the firm and what stays when the employee leaves the company'.

Initially, SC is created by HC to guide employees on the work flow, work culture, rules and procedures in a firm. It is developed from time to time, adapting the changes in a business environment to ensure that a firm is functioning effectively towards profit making activities. SC comprises all intangible assets that shape the real firm structure and culture which fosters the knowledge flow and integrates all knowledge across different functions within a firm (Delgado-Verde, Castro, & Navas-Lopez, 2011). Examples of SC are structure, systems, databases and corporate culture.

Referring to the previous literatures, the researcher found that different scholars have different views on SC. Some may even further divide SC into several sub components. For example, Corcoles, Penalver and Ponce (2011) divides SC into

organizational capital and technological capital whilst Phusavat, Comepa, Sitko-Lutek and Ooi (2011) divides SC into organizational capital and customer capital.

Organizational capital refers to the codified knowledge derived from the interaction within the organization for sustaining organizational capability. Organizational capital is 'a non-human storehouses of knowledge of an organization' (Alipour, 2012). It resides in systems, tools, and operating philosophy that speeds the flow of knowledge through the organization (Edvinsson & Malone, 1997).

Organizational capital includes codified and institutionalized knowledge within an organization (Seleim & Khalil, 2011). Example of organizational capital is organizational routines, corporate culture and values and internal procedures. Later, technological capital refers to 'the technological resources available in an organization' (Corcoles, Penalver, & Ponce, 2011) and customer capital refers to the 'value of relationship with the people with whom it does business such as suppliers, markets, customers and industry associations' (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011).

2.2.2.3 Relational Capital

Relational capital (RC) represents all the knowledge embedded in the relationships with external parties which include alliances, customers, investors, distribution networks, partners and suppliers. It involves interactions across the firm's boundary. Halim (2010) and Joshi, Cahill, and Sidhu (2011) defined RC as the ability of an organization to create relational value with is external elements or external

stakeholders. RC includes the links and connection of employees with their coalition partners such as customers and suppliers (Seleim & Khalil, 2011).

RC or some scholars put similar definition with customer capital (Kamath, 2007; Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011; Ngah & Ibrahim, 2009; Cheng, Lin, Hsiao, & Lin, 2008; Seleim & Khalil, 2011; Bontis, 1998) is an intangible asset which is gathered through successful relationships with agents of the firm's environment such as customers, suppliers or allies (Delgado-Verde, Castro, & Navas-Lopez, 2011). It is used together with other resources in production activities.

2.2.3 Benefits of Intellectual Capital

The importance of intellectual capital in determining firm performance has gained recognitions from all over the world. To some extent, several countries have begun publishing guidelines and installing requirements for firms to publish financial statement containing the intangible assets (Austrian Federal Ministry for Science and Research, 2011; The Danish Trade and Industry Development Council, 1998; Guthrie, 2001). Even, some of them are way ahead in the measurement, reporting and management of their intellectual capital as they realized that conventional financial statements are insufficient in supplying information about a firm's value and its ability to create value and make profits. They weighted intellectual capital as firm's nonfinancial resources that represent the ideas for future wealth. Thus, adding the intellectual capital statement as a supplement to the financial statements indicates the recognition and its significant part play in determining the book and market value of a

firm. Guthrie (2001) has summarized the milestone of the recognition of intellectual capital from the early 1980s to the late 1990s as shown in Table 2.3.

Table 2.3
Milestones - A Chronological Review of Significant Contributions to the Identification, Measurement and Reporting of Intellectual Capital

Period	Progress
Early 1980s	General notion of intangible value (often generically labeled 'goodwill').
Mid 1980	The 'information age' takes hold and the gap between book value and market value widens noticeably for many companies.
Late 1980s	Early attempts by practitioner consultants to construct statements/accounts that measure Intellectual Capital (Sveiby, 1988).
Early 1990s	• Initiatives to systematically measure and report on company stocks of Intellectual Capital to external parties (e.g. Celemi and Skandia; SCSI, 1995). • In 1990, Skandia AFS appoints Leif Edvinsson 'Director of Intellectual Capital'. This is the first time that the role of managing Intellectual Capital is elevated to a position of formal status and given an air of corporate legitimacy. • Kaplan and Norton introduce the concept of a Balanced Scorecard (1992). The Scorecard evolved around the premise that 'what you measure is what you get'
Mid 1990s	• Nonaka and Takeuchi (1995) present their highly influential work on 'the knowledge creating company'. Although the book concentrates on 'knowledge', the distinction between knowledge and Intellectual Capital is sufficiently fine as to make it relevant to those with a pure focus on Intellectual Capital. • Celemi's Tango simulation tool is launched in 1994. Tango is the first widely marketed product to enable executive education on the importance of intangibles. • Also in 1994, a supplement to Skandia's annual report is produced which focuses on presenting an evaluation of the company's stock of Intellectual Capital. 'Visualizing Intellectual Capital' generates a great deal of interest from other companies seeking to follow Skandia's lead (Edvinsson, 1997). • Another sensation is caused in 1995 when Celemi uses a 'knowledge audit' to offer a detailed assessment of the state of its Intellectual Capital. • Pioneers of the Intellectual Capital movement publish bestselling books on the topic (Kaplan and Norton, 1996; Edvinsson and Malone, 1997; Sveiby 1997). Edvinsson and Malone's work, in particular, are very much about the process and the 'how' of measuring Intellectual Capital.

Table 2.3 (Continued)

Period	Progress
Late 1990	• Intellectual Capital becomes a popular topic with researchers and academic conferences, working papers, and other publications find an audience. • An increasing number of large scale projects (eg. the MERITUM project; Danish; Stockholm) commence which aims, in part, to introduce some academic rigor into research on Intellectual Capital. • In 1999, the OECD convenes an international symposium in Amsterdam on Intellectual Capital (OECD, 1999; 2000).

Source: Guthrie (2001)

In addition, intellectual capital reporting complements the financial statement of a firm which demonstrates a broader, comprehensive and transparent image. In some cases, it becomes an important tool to exhibit the truthful image of a firm. For instance, a knowledge intensive organization such as a consultation firm need to provide reports on intellectual capital to get people either potential bankers or investors to pay more attention to the firm. This is due to the fact that they are not able of seeing through the potential of intellectual capital possess by the firm which has the potential in creating value and making profits.

Also, attracting investors to allocate money into a firm requires gaining trust from them; and reporting intellectual capital will not only implies the potential of value creation but also denotes greater trust. In this sense, trust is given by investors to use their money to run business when they have the confidence that the firm is capable of doing business and making profits. Thus, intellectual capital statement is important in establishing more information about the firm's value and value creation.

Furthermore, reporting an intellectual capital would create confidence and pride to the employees where better intellectual capital implies better image and greater competency and capabilities of a firm in creating value. Value in this manner refers to

something that is relatively worth which determines wealth creation. Being employees of a firm that possess strong intellectual capital will make themselves proud and increase their self-esteem, consequently motivates them to work towards enhancing the value and increasing profit of the firm.

There are many indicators that may represent HC, SC and RC in the intellectual capital statement. Campos and de Pablos (2007) have summarized them in the form of intellectual capital statement as depicted in Table 2.4, Table 2.5 and Table 2.6.

Table 2.4
Human Capital Indicators

Human Capital Sub Construct		
Indicators	**Year**	
	Year $_{T-1}$	**Year $_{T}$**
Employee Profile		
• Total number of staff		
• Distribution of staff (Production, Distribution, IT Department, etc)		
• Age distribution		
• Average age of employees		
• Gender distribution (male, female)		
• Number of managers		
• Percentage of research staff		
• Number of full-time employees		
Adaptability Capacity		
• Number of employees who permanently work abroad		
• Number of employees who have participated in international projects during the year		
Staff Turnover		
• Beginners		
• Resigned		
• Circulation percentage of personnel		
• Percentage of unwanted personnel circulation		
Educational Capital		
• Unskilled personnel		
• Skilled personnel		
• Length of education		
• Number of employees fluent in English language		
• Number of awards		
• Professional publications per employee		
• International experience (travelling activities)		

Table 2.4 (Continued)

Human Capital Sub Construct		
Indicators	**Year**	
	Year $_{T-1}$	**Year $_{T}$**
Education Renewal		
• Number of competence development plans		
• Number of career development plans		
Commitment and Motivation		
• Percentage of individual goal achievement		
• Average seniority		
• Permanent contracts		
• Percentage of staff with variable retribution/ total staff		
• Employees with shares and convertible bonus programs		
• Number of award winning employees		
• Suggestion systems (money prizes, point prices)		
• Percentage of promoted staff/total staff		
• Percentage of staff feeling explicit recognition Percentage of staff feeling their opinion is taken into account		
Permanent Training		
• Percentage of employees who received training during the year		
• Training		
▪ Training day per employee		
▪ Average number of training hours per employee/year		
▪ Ration training hours/working hours (annual)		
▪ Training investment (employee/year) Ratio training cost/wages (annual)		
▪ Satisfaction index about training		
▪ Average index of application of the training received in daily tasks		
▪ Mentoring pairs		
• Permanent learning through external agent relations		
▪ Number of alliances and collaboration with academics institutions and research centers		
Results		
• Satisfaction with the opportunity for on-the-job skills development		
• Total satisfaction with the opportunity for on-the-job skill development		
• Employee satisfaction index		
• Absence due to sickness (days/employee)		
• Personal injury with loss of working hours		
• Costs attributable to external faults		

Source: Campos and de Pablos (2007)

Referring to Table 2.4 and Table 2.5, there are eight indicators in each statement of HC and SC. The former are employee profile, adaptability capacity, staff turnover, educational capital, education renewal, commitment and motivation, permanent

training and results whilst the latter are infrastructure, knowledge-based infrastructure, customer support, administrative processes, innovation capital, quality, organizational management model and social and environmental commitment.

Table 2.5
Structural Capital Indicators

Structural Capital Sub Construct (Organizational Capital and Technological Capital)		
Indicators	**Year**	
	Year $_{T-1}$	**Year $_{T}$**
Infrastructure		
• Investment		
◦ Investment in premises and office equipment		
◦ Investment in computer equipment		
◦ IT expenses per employees		
• Servers		
◦ Number of servers per worker		
◦ Number of hits on Website per day		
◦ Average number of homepage hits per month		
• Office		
◦ PC's per office		
• Number of employees connected via e-mail		
• Reliability of hardware and software		
• Employees with the option of teleworking		
• Employees with corporate mobile phone		
• Employees with corporate laptop		
Knowledge-based Infrastructure		
• Number of best practices on the Intranet		
• Number of employees with Intranet access/total staff		
• Shared documents on the Intranet		
• Number of databases to which the firm has access		
• Number of employees with internet access/total staff		
• Number of shared knowledge databases		
• Number of participants in best practice processes		
• Number of knowledge management projects		
• Database searches		
Customer Support		
• Number of national offices		
• Number of offices abroad		
Administrative Processes		
• Average response time for calls to switchboards		
• Percentage of inquiries handled within the same day		

Table 2.5 (Continued)

Structural Capital Sub Construct (Organizational Capital and Technological Capital)		
Indicators	**Year**	
	Year $_{T-1}$	**Year $_{T}$**
Innovation Capital		
• Innovation results		
• Number of product/services		
• Number of new products/services		
• Volume sells linked to new product/services introduced last year		
• Total innovation		
• % of group turnover		
• Average turnover project		
• Innovation investment		
• Number of shared ideas and experiences		
• Average number of ideas per employee		
• Investment in product development		
• Investment in process improvement		
• Centers of Excellence		
• Ongoing projects		
Quality		
• Accreditations and certifications		
• Number of ISO-9000 certifications		
• Number of quality committees		
• Number of employees with formation on total quality		
• Employee participation in internal improvement and technological innovation project		
Organizational Management Model		
• Maximizing benefits of leadership and cohesion		
• Average experience of executive team		
• Shared organizational values		
• Shared organizational values		
• Business and advanced management models		
• Investment in management models		
• Number of own business models		
• Shared strategic management		
• Number of users of strategic planning system		
• Number of employees who participated in the building of the organizational strategic plans		
Social and Environmental Commitment		
• Investment in cultural support and solidarity projects		
• Environmental investment in the business		
• Number of labor audits to installation of the firm		

Source: Campos and de Pablos (2007)

Campos and de Pablos (2007) has also presented the statement of RC using five indicators, namely client profile, customers' profile, public image, investor capital and intensity, collaboration and connectivity, as shown in Table 2.6.

Table 2.6
Relational Capital Indicators

Relational Capital Sub Construct (Business Capital and Social Capital)		
Indicators	**Year**	
	Year $_{T-1}$	**Year $_{T}$**
Client Profile		
• Number of public clients		
• Number of semi-public clients		
• Number of private clients		
• Number of clients abroad		
Customers' Portfolio		
• Contract portfolio		
◦ Number of contracts		
◦ Points of sale		
◦ First time customers		
• New stakeholders		
• Brand		
◦ Clients' impression of the firm		
◦ Customer loyalty index		
◦ National/International market share		
◦ Market share of closest competitor (both national and international)		
◦ Number of customer suggestions		
◦ Number of offices with customer satisfaction measuring systems		
◦ Customer satisfaction index		
• Strategic portfolio		
◦ 5 largest customers during the year		
◦ Duration of existing customer relationships		
◦ Percentage of customers who would recommend our firm		
◦ New strategic customers during the year		
◦ Investment on relational marketing		
• Number of clients from the same business sector		
Public Image		
• Exposure to the media		
• Spontaneous notoriety index		
• Number of unsolicited applications		
Investor Capital		
• Number of contacts with investor and analysts		
• Number of solved consultations from shareholder's information office		
• Number of favorable recommendations from analysts		

Table 2.6 (Continued)

Relational Capital Sub Construct (Business Capital and Social Capital)		
Indicators	**Year**	
	Year $_{T-1}$	**Year $_{T}$**
Intensity, Collaboration and Connectivity		
• Number of business conferences attended		
• Lectures at scientific conferences		
• Sponsorship agreements		
• Professional networks		
• Employees involved in boards (business, political, scientific)		
• Number of countries in which the firm operates		
• Average number of employees per office		
• Number of alliances with business schools		
• Number of commercial alliances		

Source: Campos and de Pablos (2007)

Discussing further, the quality of people, organizational structure and relationships will determine the competitive edge of a firm in the economy. The firm will be able to produce superior product which will result better performance. According to Bramhandkar, Erickson and Applebee (2007), intellectual capital will lead to a unique and sustainable competitive advantage. Ray, Barney, and Muhanna (2004); Morgan, Kaleka and Katsikeas (2004); and Tayles, Pike and Sofian (2007) shared the same view when they found that competitive advantage has a significant relationship with performance. It is because intellectual capital has the potential to establish firm's unique capability and competency.

For example, ASTRO Malaysia Holdings Sdn. Bhd., a paid broadcasting operator in Malaysia was established in the year 1996. The company offers a broadcasting service over 153 channels throughout the country (Astro Holdings Sdn. Bhd., 2012). Due to high investment required in the intellectual capital and equipment, producing the same service with at least the same level of quality as Astro is difficult, thus become a barrier for new competitors to enter and compete in the market place. As a result,

Astro owns the competitive advantage in the broadcasting service business in Malaysia, allowing the company to enjoy long term profit.

Moreover, unique resources of firm's intellectual capital provide the advantage in other several ways. First, a good functional intellectual capital will facilitate a firm to enter new market and market superior products (Hayton, 2005). For instance, a firm with a combination of knowledgeable employees, strong database management and good relationship with suppliers as well as holding a well-known brand name possesses the ability to create new demand. Also, the potential of its product to be accepted by customers in a market place is very high.

Second, in times of economic difficulties, a strong image and relationship generated from a set of quality intellectual capital will not only secure demands but also supply. Looking at the demand side, product brand name and functionality existed from a blend of a quality intellectual capital will have high influence on purchasing decision of customers, thus securing demand for products or services offered by the firm. Securing supply on the other hand implies a high tendency of a firm getting enough supply of inputs from its supplier even during a time when there is a limited stock of inputs available (due to having a strong RC with them).

Intellectual capital also provides some forms of legal protection preventing other firms from making or copying the invention such as copyright and design right. Copyright is an expression fixed in some tangible forms such as literary works, pictorial, graphics, motion picture and sculptural works where others need to get permission from the owner to use the expression. Design right is an intellectual property that gives the owner the right to prevent others from copying the original design.

2.2.4 Measurement of Intellectual Capital

The emerging of knowledge economy not only employs measurement systems to evaluate performance but to include a different dimension evaluating intellectual capital as an important resource for growth. Even though there are various methods used to elaborate intellectual capital (due to different accepted definition of intellectual capital); barriers are more likely associated with the identification of appropriate specific measurements based on the fact that the nature of intellectual capital is synonymous to intangible asset.

Intellectual capital is being the hidden contributor of value and wealth that establishes position of a firm from others. It cannot be traded on the market as no asset's price is available from which can be used to value the asset. Due to this, designing metric for intellectual capital measurement is a complicated task with different paradigm existed in the literatures.

However, it is not possible to measure intellectual capital as it is found that researchers in early literatures started to measure intellectual capital based on accounting and financial metrics (Bontis, 2004). Due to its significant role play that distinguishes performance of a firm from others, the researcher found that scholars have developed many methods to measure intellectual capital. Sveiby and Charles (2004) have listed 28 methods pertaining to measuring intellectual capital whilst Andrissen (2004) found that there are more than 25 methods. This scenario indicates that agreement amongst members in the field for a single method for measuring intellectual capital is still missing. However, due to the concept of parsimony, the researcher will not discuss them in depth. The researcher will include a brief

explanation of several popular methods which are significant and lie within the framework of this study.

The researcher has listed six popular and well-known methods of measuring intellectual capital. The methods are Economic Value Added, Value Added Intellectual Coefficient, Balance Scorecard, Skandia Navigator Scheme, Intangible Assets Monitor and Bontis Intellectual Capital. Other than these methods, there are Market Value Added (MVA), Tobin's Q ratio, Intellectual Capital Services' IC Index, The Technology Broker;s IC Audit, Real Option Theory and Citation-weighted patents (den Berg, 2007). In order to have a better understanding of these methods, the researcher will include a brief explanation of each method in the next paragraph.

2.2.5.1 Economic Value Added Method

The origin of Economic Value Added (EVA) was dated all the way back to the year 1980 when Alfred Marshall introduced an accounting performance measure called the Residual Income (RI) concept (den Berg, 2007). RI represents the remaining values after all compensation of stakeholders and providers of capital are being paid. Few scholars tried to differentiate RI and EVA, but Bontis (2001) viewed both are the same method where the latter received more attention after the year 1993 when Stern Stewart & Company promoted EVA in their consultation business to measure corporate performance (den Berg, 2007).

EVA was set to provide an indication of productivity of intellectual capital. It stressed on maximizing incremental earnings over capital cost (Yu A., 2011). Nevertheless, few formulas are found in previous studies using this method. Stern Steward &

Company calculated EVA by looking at the differences between a company's net operating income after taxes and its cost of capital of equity and debt (Shimin & Dodd, 2001). Chan (2009) and Bontis (2001) on the other hand, calculated EVA by deducting net sales from operating expenses, taxes and capital charges.

The complication of using EVA was raised by Bontis, Dragonetti, Jacobsen and Roos (1999), where Stern Steward & Company uses 164 different areas of performance adjustment to solve problems such as trying to develop the accounting of intangibles and long-term investment that lack a high degree of certainty. These varieties of performance adjustments are likely to end up with meaningless findings as managers will have to engage with a trade-off between complexity, accuracy and ease in making comparisons between companies or over time (Bontis, 2001).

Moreover, to get a positive EVA, a firm's rate of return must exceed its required rate of return and therefore it depends on the act of creativity produced by the intangibles. However, it implies no specific measures of intangible assets needed and managers are no better off determining which specific intangible resources contributes to the firm performance (Bontis, Dragonetti, Jacobsen, & Roos, 1999). Therefore, using EVA in measuring intellectual capital is arguable when applied to quantifying the value of intangible assets.

2.2.5.2 Value Added Intellectual Coefficient Method

Value Added Intellectual Coefficient (VAIC) is an Austrian method developed by Pulic in the year 1998 (Clarke, Seng, & Whiting, 2011). It uses a firm's accounting data, namely then income statement and balance sheet for measuring intellectual

capital and its components, and was categorized as financial valuation method. This method was found widely used by researchers to measure intellectual capital of firms in the finance and banking industry (Joshi, Cahill, & Sidhu, 2011; Kamath, 2007; Ting & Lean, 2009; Wah Chu, Chan, & Wu, 2011; Clarke, Seng, & Whiting, 2011; Chan, 2009).

VAIC involves measuring value creation efficiency of intellectual capital. It incorporates both intellectual capital and physical capital in the assessment of an organization's competence for value creation (Joshi, Cahill, & Sidhu, 2011). Merely similar to Bontis Intellectual Capital Method, VAIC divides intellectual capital into three namely Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE). Joshi, Cahill, & Sidhu (2011) defined HCE as the indicator of value added by the human resources employed by the business; SCE as the value creation generated by the structural capital; and CEE as the total of the Value Added (VA) generated by the capital employed. According to Kamath (2007), VAIC is calculated as shown in Table 2.7.

Table 2.7
VAIC Calculation

No.	Item	Formula
1.	Output	Total income
2.	Input	Cost of bought-in materials, components and services
3.	Value Added (VA)	Output – Input
4.	Human Capital (HC)	Payroll cost
5.	Structural Capital (SC)	VA-HC
6.	Capital Employed (CE)	All the physical and material assets
7.	HCE	VA/HC
8.	SCE	SC/VA
9.	CEE	VA/CE
10.	VAIC	HCE + SCE + CEE

Source: Kamath (2007)

VAIC has the ability to access financial performance of intellectual capital in a standardized and quantitative measurement. However, VAIC limitation is seen in its inability to measure firms with negative book value of equity or operating profit, which results in a negative value of 'value-added', which carries no meaning (Chan, 2009).

2.2.5.3 Balance Scorecard Method

Balance Scorecard (BSC) was introduced by Robert S. Kaplan and David P. Norton in the year 1992. They stressed on the necessities of balancing four perspectives namely financial, customer, internal business processes, and learning and growth in the firm's strategy management as shown in Figure 2.2. BSC seeks to determine the cause and effect relationships between each measure and performance driver; and every measure and performance driver must be explained in a given context (Yu A., 2011). The method looks very firm specific, thus carries meaningful results when comparing across firms and industries. However, it was criticized as it does not encompass the intangible assets, because it emphasizes only on balancing each perspective rather than creating value (Allee, 1999).

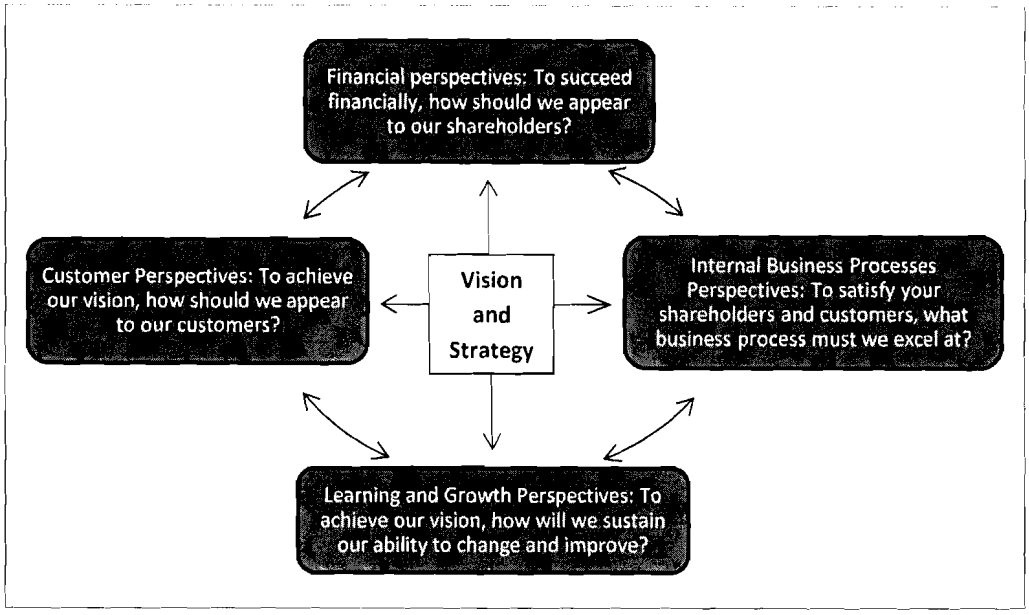


Figure 2.2
Balanced Scorecard
Source: Kaplan & Norton (1992)

2.2.5.4 Skandia Navigator Scheme

Skandia Navigator Scheme or Skandia Market Value Scheme was developed by the Swedish financial services company, Skandia led by Leif Edvinsson (den Berg, 2007). For this Scheme, percentage and ratios represent some extend of monetary measures. It identifies two areas of market values classified as financial capital and intellectual capital, ranking at the same level. Human capital is ranked alongside structural capital, due to the logical consideration where people are the contributors to the structural capital. Structural capital is subdivided into customer capital and organizational capital, with innovation capital and process capital falls under organizational capital. Figure 2.3 illustrates the model of Skandia Market Value Scheme.

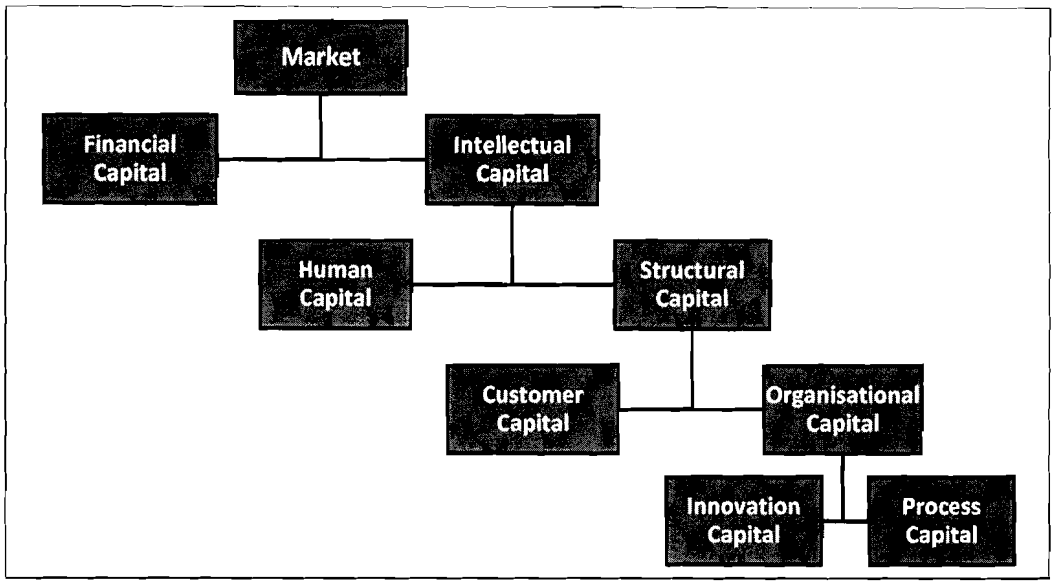


Figure 2.3
Skandia Market Value Scheme
Source: Edvinsson and Malone (1997)

The conceptualization of this scheme is to achieve a balance of both financial and non-financial elements visualizing its intellectual capital, reflecting better market value. It involves reporting up to 163 metrics to measure five areas of focus namely financial, customer, process, renewal and development, and human capital making up the Navigation Scheme (Bontis, 2001). Table 2.8 summarizes some of these metrics.

The Skandia Navigator Scheme provides a better appreciation of future value creation where it offers insight on greater opportunity towards an understanding of what and how the employees contribute to value creation. It uses proxy measures of intellectual capital in the assumed value added (Sveiby, 1997). However, the measurement of intangible assets can be criticized because it is based on a balance sheet approach where it demonstrates a snapshot in time and cannot represent dynamic flows of an organization (Bontis, 2001).

Table 2.8
Sample of Skandia Intellectual Capital Measures

Area	Metric
Financial Focus	• Revenue/employee ($) • Revenue from new customer/total revenue ($) • Profits resulting from new business operations ($)
Customer Focus	• Days spent visiting customers (#) • Ratio of sales contacts to sales closed (%) • Number of customers gained versus lost (%)
Process Focus	• PCs/employee (#) • IT capacity – CPU (#) • Processing time (#)
Renewal and Development Focus	• Satisfied employee index (#) • Training expense/administrative expense (%) • Average age of patents (#)
Human Focus	• Managers with advanced degrees (%) • Annual turnover of staff • Leadership index (%)

Source: Bontis (2001)

2.2.5.5 Intangible Assets Monitor Method

Intangible Assets Monitor (IAM) was developed by Sveiby in the year 1992. He criticized using money as a proxy for human effort (Bontis, 2001) and introduced a new framework containing a knowledge perspective where financial measures to measure visible equity are jointly used with non-financial measure to measure intangible assets, thus resulting a complete indication of financial success and shareholder value as illustrated in Table 2.9.

Table 2.9
Seeing Intangible Assets

Visible Equity (Book value)	**Intangible Assets** (Stock Price Premium)		
Tangible assets minus visible debt	**External Structure** (brands, customer and supplier relations)	**Internal Structure** (management, legal structure, manual systems, R&D, software)	**Individual Competence** (education, experience)

Source: Bontis (2001)

Concerning the IAM, Sveiby (1997) classified intangible assets into three, namely external structure, internal structure and individual competence. He coined that external structure consists of brands, and customer and supplier relations; internal structure refers to the legal structure, organization's management, manual systems, R&D, attitudes and software; and individual competence includes experience and education. Interestingly, IAM has similar constructs and measures that are labeled differently from other methods. For instance, individual competence also known as HC and internal structure as SC, similar to the Skandia Navigator and the Bontis Intellectual Capital Method.

Table 2.10
Sample Measures of an Intangible Assets Monitor

Indicators	**Intangible Assets**		
	External Structure	**Internal Structure**	**Individual Competence**
Growth and Renewal	• Profit/customer. • Growth in market share. • Satisfied customer index. • Quality index.	• IT investments. • Time devoted to R&D.	• Number of years' education. • Competence turnover.
Efficiency	• Sales per employee. • Profit per customer. • Win/loss Index.	• Proportion of support staffs. • Values.	• Value added per employee. • Change in proportion of employee. • Profit per professional.
Stability	• Proportion of large companies. • Age structure. • Devoted customer (repeat orders).	• Age of organization. • Support staff turnover. • Value/attitudes Index.	• Professional turnover. • Relative pay. • Seniority.

Source: Sveiby (2001) and Bontis (2001)

In the IAM conceptual model, Sveiby identified three measurement indicators for each three intangible assets to provide management control in creating shareholders'

value namely, growth/renewal, efficiency and stability as illustrated in Table 2.10. He recommended managers to choose a few of the measurement indicators for each intangible asset depends on the organization's strategy (Bontis, 2001).

2.2.5.3 Bontis Intellectual Capital Method

Nick Bontis who's known as one of the world's leading expert on intellectual capital area developed a different method in the year 1998. He classified intellectual capital measurement into three; HC, SC and RC or customer capital and assigned indicators for each classification (Bontis, 1998; Sharabati, Jawad, & Bontis, 2010). Using survey data from a pilot study, his intellectual capital method possess a very strong and positive relationship between Likert-type measures of intellectual capital and business performance (Bontis, 1998). Furthermore, Bontis Model explanatory power was significantly high and substantive where R^2= 0.56 and p-value <0.01 (Bontis, 2001).

The researcher agreed with Marr, Schiuma and Neely (2004) that measures using monetary terms are questionable whereby one could not express knowledge assets in monetary terms. Also, it is arguable to use financial metrics as they are very sensitive to interest rate and exchange rate assumptions. Pondering to these issues, the researcher decided not to use monetary based method for measuring intellectual capital. The researcher will use Bontis Intellectual Capital method to presents a more comprehensive picture of a firm's well-being. The method is found capable of measuring intellectual capital even of different level of financial standing existed amongst firms. Also, the method produces more dependable results as it uses different measures for each indicator, avoiding using financial metric to convert each

intellectual capital indicators into monetary figures which open critics from several academicians and practitioners.

Furthermore, the study limits the access to financial statements of SMEs in Malaysia; and some of them might refuse to furnish full financial statements that can be used for analysis. Therefore, it becomes another reason for the researcher not to use any monetary based method to measure intellectual capital. In short, each method of measuring intellectual capital has its own advantages and disadvantages. The researcher has summarized arguments pertaining to the methods of measuring intellectual capital in Table 2.11.

Table 2.11
Arguments on the Methods of Measuring Intellectual Capital

Method	Advantage	Disadvantage
EVA	• Uses 164 different areas of performance adjustment to solve problems such as trying to develop the accounting of intangibles and long-term investment.	• The varieties of performance adjustments are likely to end up with meaningless findings as managers will have to engage with a trade-off between complexity, accuracy and ease in making comparisons between companies or over time. • Implies no specific measures of intangible assets.
VAIC	• The ability to access financial performance of intellectual capital in a standardized and quantitative measurement.	• Limitation is seen in its inability to measure firms with negative book value of equity or operating profit, which results in a negative value of 'value-added', which carries no meaning.
BSC	• Method looks very firm specific, thus carries meaningful results when comparing across firms and industries.	• It was criticized as it does not encompass the intangible assets, because it emphasizes only on balancing each perspective rather than creating value.

Table 2.11 (Continued)

Method	Advantage	Disadvantage
Skandia Navigator Scheme	• A better appreciation of future value creation where it offers insight on greater opportunity towards an understanding of what and how the employees contribute to value creation where it uses proxy measures of intellectual capital in the assumed value added.	• The measurement of intangible assets can be criticized because it is based on a balance sheet approach where it demonstrates a snapshot in time and cannot represent dynamic flows of an organization • Arguable when applied using financial metrics to measure intangible assets.
IAM	• Financial measures are used to measure visible equity which are jointly used with non-financial measure to measure intangible assets, thus resulting a complete indication of financial success and shareholder value.	
Bontis Intellectual Capital Method	• Capable of measuring intellectual capital even of different level of financial standing existed amongst firms. • Method produces more dependable results as it uses different measures for each indicator. • Not using financial metrics to convert each intellectual capital indicators into monetary figures. • The best choice to use in a situation where there is a barrier to access financial statements.	

Source: Own illustration

2.3 Innovation Capability

Many scholars could not deny that innovation has influence on firm performance. It is perceived as a critical source of competitive advantage and thus, has gained widespread attention from academicians and practitioners. They studied innovation in

a variety of contexts including in relation to the business development, technology, policy design and social systems. Despite thousands of researches on innovation has been published, its relative importance and their relation with performance remains unclear and underexplored. This section will explore and discuss the construct of innovation capability in depth.

2.3.1 Definition of Innovation Capability

There are various definitions of innovation capability listed in the literature. Browsing from previous articles, some researchers referred innovation capability as innovation or innovative organization or innovativeness. The difference is found exists in term of different sets of measurement approaches (Kumar & Che Rose, 2010). For this study, the researcher defines innovation capability as the ability of a firm to transform an idea into a something new which carries an economic value. Value is something that is relatively worth which determines wealth creation. The process to transform the idea is determined by the resources available, which refer to both tangible and intangible assets. These resources are used to build up firms' capacities to produce new product and services, exploit new market and create a new way of doing business.

According to Withers, Drnevich and Marino (2011), innovation capability refers to 'the degree to which a firm possesses resources and capabilities presumed necessary for innovation'. Laforet (2011) refers innovation capability as 'availability of resources, collaborative structure and process to solve problems'. Table 2.12 lists the definition of innovation capability captured from different authors.

Table 2.12
Definition of Innovation Capability

Author (Year)	Definition of Innovation Capability
Francis (2005)	An organizational property that underpins an ample flow of multiple, value-creating and novel initiatives.
Akman and Yilmaz (2008)	An important factor that facilitates an innovative organizational culture, capabilities of understanding and responding to the external environment and characteristics of internal promoting activities
Elmquist and Le Masson (2009)	Consists in generating new ideas and knowledge to take advantage of market opportunities.
Malaysia Productivity Corporation (2009)	The capability to generate new ideas which lead to higher performance, create new opportunities, increase future capacity, technological leadership as well as increased knowledge base through managing technological changes.
Wonglimpiyarat (2010)	The ability to make major improvements and modifications to existing technologies, and to create new technologies.
Laforet (2011)	Availability of resources, collaborative structure and process to solve problems.
Withers, Drnevich and Marino (2011)	The degree to which a firm possesses resources and capabilities presumed necessary for innovation.

Source: Own illustration

2.3.2 Definition of Innovation and Capability

Innovation capability comes from the word 'innovation' and 'capability'. Innovation has been defined in several different ways by scholars and practitioners. A Google search on the term using the keyword 'innovation' produced thousands of definitions. Innovation is originated from the Latin word *'novo'*, meaning 'to make something new' (Sarri, Bakouros, & Petridou, 2010). Felekoglu (2007) illustrated the origin of the word innovate and innovation as shown in Figure 2.4.

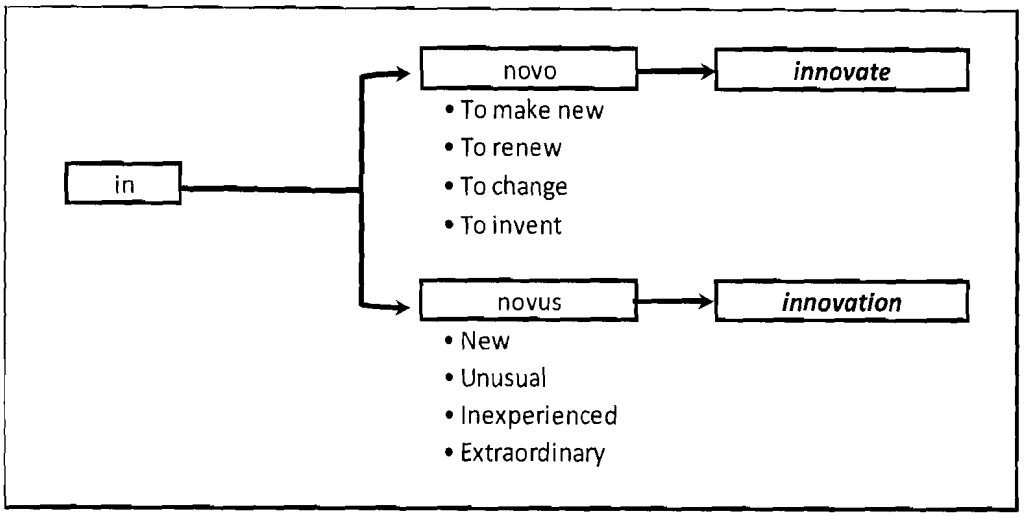


Figure 2.4
Origin of the Word Innovation
Source: Felekoglu (2007).

Innovation refers to new outcomes either incremental or radical generated from implementation of creative ideas. Reviewing from previous literature, Joseph Schumpeter was the first scholar who coined the concept of innovation as 'gales of creative destruction' (Felekoglu, 2007). According to him, innovation is reflected in novel outputs which are different from others. Following this idea, Drucker (2000) further defines innovation as an outcome of an innovative process or to the innovation process itself where it involves a process of identifying opportunities and turning them into working ideas. Crossan and Apaydin (2010) define innovation as 'production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems'.

Innovation promotes critical thinking which generate creative ideas and explores the possibilities of implementation of those ideas (Waychal, Mohanty, & Verma, 2011). It involves the adoption of an idea, process, technology, or product into commercial

values. Without commercial values, it is not perceived as innovation. Also, new ideas which are not useful are not considered as innovation; they are called mistakes (Van De Van, 1986).

Innovation involves the process of identifying and matching external opportunities with internal opportunities in order to deliver new superior product and explores new markets (Ibrahim, Zolait, & Subramanian, 2009). Elaborating this point further, innovation must imply newness and is subject to the question of what is new, how new and new to whom (Kamukama, Ahiauzu, & Ntayi, 2010; Massa & Testa, 2011; Johannessen, Olsen, & Lumpkin, 2001). Newness refers to any idea, practice, or material artifact is perceived to be new by the economic unit that adopts an innovation, either a firm or an industry (Johannessen, Olsen, & Lumpkin, 2001). In other words, new to the firm implies innovation that was not produced by the firm before where as new to the industry implies innovation that offers new value and benefits to customers.

On the other hand, capability has much to do the ability of a firm to generate and develop ideas and create opportunities which will guarantee the firm's future undertakings. Capability is 'the processes and functions that enable a firm to deliver high quality product and services with speed, efficiency and high customer service' (Allee, 1999). It is a firm's capacity to deploy resources to affect a desired end (Amit & Schoemaker, 1993).

Makadok (1998) defined capabilities as 'a specific resource type that serves the purpose of improving productivity of the other resources of the firm'. It is through capabilities that enable firms to create value and stay competitive. Difficulties associated with replication make capabilities a critical ingredient for a firm's survival.

Nothnagel (2008) further added that capability can be distinguished into five categories, namely technological capability, organizational capabilities, R&D capabilities, manufacturing capabilities, marketing capabilities, competitive capabilities and learning capabilities.

Given the importance of innovation to a firm's position in a market place, this section will include factors that drive firm to innovate. Before that, the researcher will elaborate on the types of innovation and the degree of innovation.

2.3.3 Types of Innovation

Referring to previous studies, some researchers divided innovation into two types, namely product innovation and process innovation whilst some others divided innovation into three types adding organizational innovation as another type of innovation. OECD (2005) distinguishes innovation based on four types, namely product innovation, process innovation, marketing innovation and organizational innovation. For this study, the researcher measures innovation capability based on the five types of innovation, namely product innovation, process innovation, market innovation, strategic innovation, and behavioral innovation; sharing the same view with Abu Bakar (2011); Ibrahim, Zolait and Subramanian (2009) and Wang and Ahmed (2004). The definition of each type of innovation is as follows:

2.3.3.1 Product innovation

Product innovation is defined as 'the market introduction of new goods or services or significantly improved good or services with respect to its capabilities, such as quality

and user friendliness' (Malaysia Productivity Corporation, 2009). It is a means for generating revenue through safeguarding and improving quality as well as for saving cost (Ojasalo, 2008). Neely, Filippini, Forza, Vinelli, and Hii (2001) mentioned that product innovation includes changes to design, components and product architectures. It is also known as service innovation and represents the end product offered by a firm.

2.3.3.2 Process innovation

Process innovation is defined as 'the use of new or significantly improved production process, distribution method or support activity for its goods and services' (Malaysia Productivity Corporation, 2009). It refers to an improvement of process flow or the introduction of a new process flow from an original process into a usable technique and reflects changes in the way firms produce end products. Neely, Filippini, Forza, Vinelli and Hii (2001) further divided the process innovation into information technology innovation and manufacturing technology innovation. Examples of process innovation are the introduction of a new system for handling payment or the implementation of new strategies to penetrate new markets.

2.3.3.3 Market innovation

Referring to previous studies, market innovation is also known as marketing innovation (Ibrahim, Zolait, & Subramanian, 2009; Wang & Ahmed, 2004). Felekoglu (2007) defines marketing innovation as 'the implementation of a new marketing method involving significant changes in product design or packaging,

product placement, product promotion or pricing'. Similarly, Malaysia Productivity Corporation (2009) defines marketing innovation as 'the implementation of new or significantly improved designs or sales method to increase the appeal of a firm's good and services or to enter new markets'. Johne (1999) added that it is concerned with accurately interpreting buying preference in a market place. Marketing innovation involves satisfying customer needs, penetrating a new market or positioning new products in the market place with the objectives of increasing firm's sales.

2.3.3.4 Strategic innovation

Strategic innovation is 'the creation of growth strategies, new product categories, services or business models that change the game and generate significant new value for consumers, customers and the corporation' (Palmer & Kaplan, 2012). It takes place when firms identify gaps or opportunities in the market place and make plan to fill the gaps. It involves a comprehensive planning utilizing all available resources to create value. Wang and Ahmed (2004) added that strategic innovation focus on matching the organizational objectives with existing resources in order to leverage limited resources creatively. It highlights the ability of to identify and match external opportunities with internal capabilities with the objectives to deliver innovative product and and explore new market (Ibrahim, Zolait, & Subramanian, 2009).

2.3.3.5 Behavioral innovation

Behavior refers to a response of an individual or group to an action, environment, person or stimulus (WebFinance Inc, 2013) whilst behavioral innovation refers to

underlying construct that reflect the 'sustained behavioral change' of an organization towards innovation (Avlonitis, Kouremenos, & Tzokas, 1994). It involves a willingness to change of individuals, teams and managements that enable the formation of an innovative culture, the overall internal receptivity to new ideas and innovation (Wang & Ahmed, 2004). Abu Bakar (2011) concluded in her study that behavioral innovation will shape the innovative organizational behavior and culture and bring the firm towards new thoughts and ideas on its product.

2.3.4 Degree of Innovation

The degree of innovation is based on the magnitude of innovation which is classified into two; incremental innovation and radical innovation (Subramaniam & Youndt, 2005; Lin, Chen, & Chiu, 2010). The researcher defines incremental innovation as a significant extension of existing products or process characteristics either improvement or refinement of the product or process. Subramaniam and Youndt (2005) defines it as the capability to generate innovations that refine and reinforce existing products or services. Incremental innovation involves a process of improving performance and function of current product, services or technology (Lin, Chen, & Chiu, 2010). It attempts to meet the demand of customers in a market place by making minor changes to products or services and modifying existing functions and practices.

On the other hand, radical innovation refers to the outcome of totally a new product or process into the market. Subramaniam and Youndt (2005) define radical innovation as the capability to generate innovations that significantly transform existing products

and services. It involves a lengthy process of learning, networking, knowledge creation and gathering (Alsaaty, 2011) and is based on proprietary technology and R&D.

In addition, radical innovation will only refer to something which is significantly new to the world. It exhibits a high degree of newness offer entirely new performance features. Radical innovation operates in unfamiliar technology and business domains relying on emergent or undeveloped knowledge (Kelley, O'Connor, Neck, & Peter, 2011). It relies on the ability to create new knowledge and making the old one obsolete, thus involving fundamental change in a firm.

Furthermore, radical innovation draws upon transformed prevailing knowledge, with innovations making prevailing technologies obsolete and morphing out old knowledge into something significantly new. In contrast, incremental innovation draws upon reinforced prevailing knowledge, with consequent innovation taking advantage of and improving upon prevailing knowledge (Subramaniam & Youndt, 2005). Firms with high quality of intellectual capital possess higher capability of producing radical innovation than those with low quality of intellectual capital. This is based on the fact that producing a totally new product requires high degree of new knowledge with major improvement. It opens up new technological trajectories and initiate new growth industries compared to the latter which occurs within technological trajectories and industries (Kleinknecht & Mohnen, 2002).

Moreover, the level of ambiguity and risk are higher for radical innovation compared to incremental innovation. It is because radical innovation requires huge capital investment and quality intellectual capital; and the probability to succeed in producing a new product with commercial value is uncertain. It creates a need for empowerment

to drive a firm to move for radical innovation (Kelley, O'Connor, Neck, & Peter, 2011).

2.3.5 Drivers of Innovation

There is a growing number of studies which have been conducted to determine what drives innovation. It is because innovation activities are perceived to have benefits on firm performance (Rhee, Park, & Lee, 2010). Basically, there are five drivers of innovation as mentioned below:

i. Increasing competition

Products are becoming more homogeneous in a competitive market where the number of competitors is increasing from time to time. This situation creates a need for firms to come out with a new superior product which is different and unique from others. In order to do so, firms have to be as being innovative will enhance their capability to turn ideas into something which are different, unique and carry commercial values.

ii. Changing of market demands

Market demands are changing due to the changes in demographic, preference, technology and cultures. These changes have created gaps in term of perception, want and needs in the market place. The phenomenon drives firms to innovate where they have to identify the gaps and turn them into market opportunities.

iii. Increasing volatility of natural resources

Firms need to have a constant supply of inputs of natural resources in order to be able to control production output. Volatility supply of natural resources makes firm more

difficult to plan and produce product that meet the market demand. Volatility occurs due to weather conditions, and demand and supply of natural resources in the market place. This scenario creates a situation where firms will have to search or produce alternative inputs that can substitute the natural resources, thus become a push factor that drive them to innovate.

iv. Increasing complexity and interaction

Changes of consumers' preference, culture and political influence makes business more complicated. Also, a growing number of interactions between two parties or more such as between public sector and private sector, local firm owners and foreign investors or firms' owners and politician creates better ideas. It changes the way of doing business and opens for new opportunities, thus drives firms to become more innovative.

v. Increasing environmental concerns

People are more concerns with environmental practices as population grows and resource becomes scarce. They advocate the preservation, restoration, improvement of the natural environment and support the creation of alternative resources. For this reason, firms are driven to innovate to express their concern on the environment.

2.3.6 Benefits of Innovation

The business landscape continues to evolve with increasing competition both in the domestic and international market. In order to stay ahead and be successful in a competitive market, a firm should be able to determine perception, wants and needs of

the market so that it can innovate and create superior products which are different from others. The better the capability of a firm to innovate, the greater the firm distinguishes its product and the greater the firm position itself amongst its competitors.

In addition, firms can no longer depend their business merely on domestic market. They need to seek opportunity and compete in the global market place. In order to compete in the global competition, being innovative is paramount. Other than enjoying lower cost (Neely, Filippini, Forza, Vinelli, & Hii, 2001) and increasing productivity (Alsaaty, 2011), innovative firms are capable of introducing or improving products or processes; define and redefined the firm or product positioning in a new market place (Francis, 2005; Darroch & McNaughton, 2002).

Kleinknecht and Mohnen (2002) added that innovation enhances demand. As the researcher mentioned in the previous section, new product produced need to have a commercial value to be considered as innovation. Thus, firm has to produce superior product to gain commercial value where Prahalad and Hamel (1990) characterized it as having considerable benefit, competitively unique and difficult to imitate from the customer's perception. Superior product would then drives people to make purchase; some may even willing to pay extra to own it. As a result, the firm's sales will increase resulting profit gain and a better position amongst its competitors.

Furthermore, previous studies revealed that innovation has its own objectives which is to create value (Waychal, Mohanty, & Verma, 2011) and increase performance and growth of an organization (Rujirawanich, Addison, & Smallman, 2011; Joshi, Cahill, & Sidhu, 2011). These objectives will drive a firm to move to a better position and gain a better result. For instance, Bigliardi, Colacino and Dormio (2011) studied the

characteristics of SMEs belonging to the Italian Manufacturing Sector. They found that innovative firms are market anticipation and customer focused aiming to produce superior products.

Moreover, innovation provides benefits in the form of pattern. Patents is 'an exclusive right granted for an invention, which is a product or a process that provides a new way of doing something, or offers a new technical solution to a problem' (General Information of Patent). Patent offers firms with several benefits. First, patent grants the owner with the monopoly power and the right to exclude others from making, copying or selling the invention for a period of time (Brooking, 1996). It gives an exclusive right or legal protection and authority for the inventing firm to use the product in its business operations thus allowing the firm to enjoy long term profit. Legal protection is granted due to the consideration that a lot of money and efforts has been spent to produce such innovative product or service. It is also seen as a mechanism to inculcate innovation, thus creating a fairly competitive market.

Second, patent is also a commodity that can be sold. Creative product which is patented is worth a fortune and owner may enjoy high profits from selling it. Third, patent can be used as a security for loan because it carries value. Firms may use it as collateral and securities which facilitates firms in need of capital to apply loans from banks.

Finally, innovation drives knowledge to evolve. In this case, along the process of innovation, firms require knowledge and end up with creating new knowledge in the form of product, process, marketing, strategic or behavior. Choo, Linderman and Schroeder (2007); and Eisenhardt and Martin (2000) shared the same view when they coined that innovation promotes the creation of a new set of knowledge for future

innovation. Rothaermel and Hess (2007) further added that innovation drives continuous changes in product and process that build competitive advantage over time.

2.4 Intellectual Capital and Innovation Capability

With the growing attention being paid to organizational performance, scholars are interested to study intellectual capital and innovation capability. They agreed that the firm's capability to innovate is based on the standard of its intellectual capital. According to Bontis (1998), intellectual capital determines the innovativeness of firms. Several researchers added that intellectual capital or ability to utilize its knowledge resource is associated with innovation capability (Subramaniam & Youndt, 2005; Nonaka & Takeuchi, 1995; Ngah & Ibrahim, 2009; Menor, Kristal, & Rosenzweig, 2007). A study completed by Subramaniam and Youndt (2005); and Menor, Kristal, and Rosenzweig (2007) found that intellectual capital has a positive relationship with innovation. This is because innovative firms are those with knowledgeable and skilled employees whose potential to generate ideas and create value are high.

Similarly, having a quality intellectual capital implies the potential of firms to innovate (Kleinknecht & Mohnen, 2002). It enhances the potential to grab opportunities in a market place, thus lead to the potential of generating profits. In this case, intellectual capital is utilized to work with the ideas and translate them into valuable outputs. Drucker (2000) shared the same view and pointed that innovation involves the ability to recognize the potential of opportunities and the ability to transform them into a successful conclusion.

In addition, intellectual capital is embedded within a firm in various forms be it in production method, management practices, information system or extensive cooperation with customers. It distinguishes a firm's capability with others in term of knowledge and the output associated with it. Knowledge that have meaning and fits with the current environment are to be related to successful outcomes. For instance, Cheng, Lin, Hsiao and Lin (2008) found that innovation capital components which are innovation capital, customer capital and human capital exhibit significant positive effects on intellectual capital.

Furthermore, employees do not innovate in isolation. The major source of innovation comes from interactions and collaborations with customers, suppliers, and competitors enabling them to add to their existing knowledge. Firms that promote innovative culture through interactions and collaboration often result in successful outcomes. For instance, a study conducted by Darroch and McNaughton (2002) concluded that knowledge acquisition, responsiveness to knowledge and knowledge dissemination have influence on innovation. Few studies also revealed that HC are closely associated with innovation (Lee, Florida, & Gates, 2010) and exhibits significant, negative relationship with radical innovative capability (Subramaniam & Youndt, 2005).

In relation, innovation needs knowledge as it cannot fully capture something entirely new and build on prevailing knowledge. For instance, new products are derived from a process which begins with idea generation and end with market introduction. In order for an innovation to be commercially successful, the combination of existing business, scientific and technical knowledge will result in a new knowledge that can be used in the process of generating idea of producing new product, as well as in designing marketing strategy to penetrate market successfully.

In order to get a better view on past research studies that look into the relationship between intellectual capital and innovation capability, the researcher has summarized them in Table 2.13. Given the paramount role of innovation capability and intellectual capital for business performance, the lack of studies exploring the constructs of these two terms and empirically link them with firm performance is an important research gap. Therefore, this study will fill the gap in an effort to explore their intrinsic connections.

Table 2.13
Summary of the Research Studies of the Relationship between Intellectual Capital and Innovation Capability

Authors (Year)	Independent Variable	Dependent Variable	Findings
Landry, Amara and Lamari (2000)	Social capital: i. Percentage of sales dedicated to R&D ii. Number of different advanced technologies used by firms iii. Participation assets iv. Relational assets v. Financial assets vi. Marketing assets vii. Trust assets viii. Pressure from competitors	Decision to innovate	• Indicates a significant influence to innovate.
Darroch and McNaughton (2002)	i. Knowledge management instrument: ii. Knowledge acquisition iii. Responsiveness to knowledge iv. Knowledge dissemination	Innovation	• Knowledge acquisition and Responsiveness to knowledge are more important for innovation than Knowledge dissemination.
Subramaniam and Youndt (2005)	Intellectual capital: i. HC ii. Social capital iii. Organizational capital	Innovative capability: i. Incremental innovative capability ii. Radical innovative capability	• HC exhibited a significant, negative relationship with Radical innovative capability. • Social capital was significantly and positively related to both Incremental and Radical innovative capability. • Organizational capital to positively influence Incremental innovative capability.

Table 2.13 (Continued)

Authors (Year)	Independent Variable	Dependent Variable	Findings
Cheng, Lin, Hsiao and Lin (2008)	Innovation capital components: i. Innovation capital (INN) ii. Customer capital (CUS) iii. Human capital (HUM) iv. Process capital (PRO)	Value drivers of intellectual capital	• INN, CUS and HUM exhibit significant positive effects on Intellectual capital. • PRO indicates negative impact on Intellectual Capital.
Lee, Florida and Gates (2010)	i. HC ii. Creativity iii. Industry R&D	Innovation: Number of patent	• HC and Industrial R&D are closely associated with innovation • Innovation associated positively with Cultural creativity.

Source: Own illustration

2.5 Firm Age

Based on previous literatures, the researcher assumes that firm age has an influence on innovation capability and consequently improved firm performance. This is due to the reason that new firms are perceived lack of resources either in term of financial capabilities of intellectual capital capabilities. This section will discuss the relationship of firm age with intellectual capital and innovation capability.

2.5.1 Firm Age, Intellectual Capital and Innovation Capability

The dimension of time has received an increasing attention as revealed by the previous studies. According to Savino and Petruzzelli (2012), Sorensen and Stuart (2000) have been amongst the first to analyze firm age and its relationship with innovation. Their empirical study showed that the old and experience firms generate more innovations but are generally incremental and of lower quality. Similarly,

Withers, Drnevich and Marino (2011) claimed that older firms have higher levels of innovation activity than younger firms and concluded that firm age plays an important moderating role when examining SMEs. Zahra (2003) added that age of a firm determines the ability to innovate positively due to accumulated experience and knowledge. It implies the quality of intellectual capital developed through long term continuous learning where older firms are more able to exploit the benefits of knowledge age than younger ones.

In addition, Mosakowski (1993) further revealed that high cost is associated with developing unique or specialized resources and firms will generally perform better in innovation activities later time due to the return accruing to these resources. Those with a higher stock of resources accumulated through time tend to have a greater level of confidence in taking on the risk associated with innovation activities as they have strong intellectual capital built over time and will be better able to overcome the challenges associated with such activities.

In relation, older firm are more likely associates with experience workforce (Arora, Gambardella, & Magazzini, 2009). Experience workforce implies more matured knowledge and better relationship with the external parties built overtime. They present a greater learning and relationship continuity to the past, thus enhances the capability of the firm to innovate.

Furthermore, firm age reflects the firm's ability to spend on innovation activities. SMEs are not likely to spend more on innovation activities because innovation is linked to risk and their accumulated financial resources are limited compared to large firms. Ahmad (1998); and Ibrahim, Zolait and Subramanian (2009) further added that innovation frightens firms due to the risk associated with it and as a result most firms

remain averse to give commitment and invest in innovation activities. Similarly, knowing that innovation is allied with risk, most matures firms are willing to bear the consequences of spending on innovation activities, either gaining profit or suffering loss. It is because they have reached a stable financial standing that can tolerate with any losses if failure or mistake occurs.

Conversely, Felekoglu (2007) has reviewed few studies and found that younger firms perform better in innovation activities. Thus, there is no clear relationship of firm age and innovation performance, indicating that there are no agreements reached amongst researchers in the area. For instance, Kapelko (2006) made remarks that matured firms are not flexible enough to make rapid adjustment, implying barriers to innovate. Huego and Jaumandreu (2002) supported his notion by making remarks that new entrant firm possess higher probability of innovation rather than matured firms. This is due to the fact that older firms often own antiquated machines, plants and equipment that limit their innovation capability. Their organizational rigidities limit their growth by inhibiting change as they become harder to change over time. Thus, it raises interest of the researcher to explore the moderating role of firm age between intellectual capital and innovation capability.

2.6 Firm Performance

It is implied that there is an association between intellectual capital and firm performance with an assumption that innovation capability mediates the process and firm age moderate the effect. Expectation is that when a firm utilizes its intellectual capital in the most efficient and effective manner, and where firm age determines the quality of the intellectual capital, innovation emerges and leads to creating value and

future profit. The value and profit produced can be measured by observing the performance of the firms.

Performance is measured based on two concepts either an objective concept based on absolute measures of performance or a subjective concept based on self-reported measures. Objective measures are directly taken from external recorded and audited accounts using absolute measures (Wall, *et al.*, 2004). It has typically used more specific financial indicators such as return on assets and profits.

Meanwhile, subjective measures are based on the respondents' ratings of their company performance (Wall, *et al.*, 2004). Researchers prefer to employ subjective measures because financial data from firms are generally confidential and are publicly hard to obtain. Even some of them, especially those small entities might not having proper financial records (Kapelko, 2006).

Nothnagel (2008) further explained that in general firm performance is measured according to level of performance, either firm-level performance or lower level performance. He elaborated that firm level performance is known as organizational performance whilst lower level performance is known as operational performance. Table 2.14 and Table 2.15 distinguished the difference between both levels by including several examples of indicators used in previous studies.

Table 2.14
Indicators of Firm-level Performance (Organizational Performance)

Firm-level Performance (Organizational Performance)	
Group	**Operationalization**
Accounting Returns	• ROAA = net income/average assets over the year (Barnett *et al.*, 1997);

Table 2.14 (Continued)

Firm-level Performance (Organizational Performance)	
Group	**Operationalization**
	• ROA = return on assets (Bharadwaj, 2000; Combs & Ketchen, 1999; Daily, Certo & Dalton, 2000; De Caroli, 2003; Deephouse, 2000; Harrison *et al.*, 1993); current firm performance = 3-year average ROA; continuing firm performance = 6- year average ROA (Robins & Wiersema, 1995); • ROS = return on sales (Bharadwaj, 2000; Delios & Beamish, 1999; Farjoun, 1998); • OI/A = operating income to assets ratio; OI/S = operating income to sales ratio focus on operating returns only (Bharadwaj, 2000).
Stock Markets	• Abnormal stock market returns associated with the announcement of acquisitions (ex ante measure); pretax operating cash flows normalized by the market value of assets before and after the acquisition is implemented (Anand & Singh, 1997); • Market-to-book value = approximates the stock market's perception of the value of the firm's present and future income and growth potential (stock market perspective) (Combs & Ketchen, 1999; Daily, Certo, & Dalton, 2000; De Carolis, 2003; Farjoun, 1998); • Long-term anticipated performance = change in a firm's value, operationalized by the cumulative abnormal return over an event window, expressed as a percentage of the firm's stock price (abnormal returns capture changes in market valuation, based on the expected future cash flow from business operations for the foreseeable future) (Park *et al.*, 2004); • Tobin's q = sum of market value of equity, book value of debt, and deferred taxes divided by the book value of total assets minus intangible assets (Huselid, 1995; Wiggins & Ruefli, 2002).
Growth Measures	• Sales growth (McGee *et al.*, 1995) • Market share = annual percentage increase in market share (Miller & Shamsie, 1996; Tallman, 1991, Makadok, 1999); • Firm growth = exponential growth function; natural logarithm of deflated fund assets (Roth, 1995).
Hybrids	• A subjective measure of financial performance itself, consisting of questions about the firms' overall profitability and sales growth over the previous 3-year period (Brews & Hunt, 1999; Hart & Banbury, 1994; Ray *et al.*, 2004); • Organizational performance = perceived performance compared to competing organizations (items: quality of product/service, new product development; ability to attract and retain essential employees; customer satisfaction; etc.) (Harel & Tzafrif, 1999); • Exit rate – exit defined as bankruptcy, cessation of operations, or withdrawal by an organization (performance as survival) (Rao, 1994; Henderson, 1999; Welbourne & Andrews, 1996).

Source: Nothnagel (2008)

Firm level performance is distinguished into four groups namely accounting returns, stock markets, growth measures and hybrids. Referring to Table 2.14, accounting returns uses financial ratio to measure performance whilst growth measure looks at sales growth, market share, and firm growth. Amongst the four groups, the researcher has decided to use hybrid to measure performance of firms for this study as it is widely used in previous studies (Nothnagel, 2008). The study will incorporate subjective measure of financial performance by measuring the perceived performance of the firm.

Table 2.15
Indicators of Lower-level Performance (Operational Performance)

Lower-level Performance (Operational Performance)	
Level	**Operationalization**
Service Outcomes	• Quality = changes in a college's full-time-equivalent undergraduate enrollment (Kraatz & Zajac, 2001); • Customer service process performance = multiple measures: customer service quality, self-assessment of service quality, weighted retention ratio, complaints ratios (Ray, Barney, & Muhanna, 2004).
Human Resource Outcomes	• HRM performance = several items (e.g., to what extent do you feel your human resource department is performing its job the way you would like it to be performed?) (Bennett, Ketchen, & Shultz, 1998); • HR performance = employee motivation, skills/knowledge development and retention (respondents were asked to evaluate their firm's performance in: 'developing managers' skills/knowledge; developing non-managerial employees' skill/knowledge; motivating managers; motivating non-managerial employees; retaining managers; retaining non-managerial employees') (Fey, Bjorkman, & Pavlovskaya, 2000); • HR performance (insurance agents within insurance firms) = insurer's level of satisfaction with the agent (insurer-reported); insurer's expected future benefits from maintaining this agent (insurer-reported) (Galunic & Anderson, 2000); • HR performance = turnover (De Saa-Perez & Garcia-Falcon, 2004); • HRM performance = the extent to which the operations manager felt that the department performed well, met his or her expectation, and was a value added/bottom line contributor to the business (Wright, McMahan, McCormick, & Sherman, 1998).
Technology Development Outcomes	• Product performance persistence = net month to imitate (minus the local firm's own development time) (McEvily & Chakravarthy, 2002); • IT performance = five survey items designed to measure executives' perceptions about the impacts of IT on financial performance (Powell & Dent-Micallef, 1997).

Table 2.15 (Continued)

Lower-level Performance (Operational Performance)	
Level	**Operationalization**
Infrastructure Outcomes	• Acquisition outcome success = retention (successful vs. divestiture (unsuccessful) of the acquired company (dummy variable) (Bergh, 2001); • Strategic planning performance = internally anchored performance measure evaluating planning capabilities and effectiveness (Brews & Hunt, 1999); • Acquisition performance = measured by self-reported measures of changes in market shares, sales, intrinsic profitability, and relative profitability compared to the industry average since the acquisition (Capron, 1999); • Alliance performance = focusing on learning performance; inter-organizational learning as a capability; index = success of inter-organizational learning with the alliance; items on performance are evaluated by experts (Lane & Lubatkin, 1998).
Operations Outcomes	• Production performance = cost improvement (two years improvement in manufacturing cost as a percentage of sales); quality (percent of product passing final inspection without rework); volume flexibility (percentage change in production between the months with the highest and lowest production rates); delivery speed (time between beginning of production until the date the product was delivered) (Bates & Flynn, 1995); • R&D performance = drug discovery measured through counts and important patents (Henderson & Cockburn, 1994); • Project performance = 217 projects, measured in product development time (Hoopes & Postrel, 1999); • Manufacturing performance = managers had to assess how well their plant were performing relative to their competitors (in terms of cost, quality, speed, flexibility) and objective measures (first-pass quality, i.e. percentage of products that meet quality standards after all operations are initially completed; measures of speed i.e. delivery speed (days), on time delivery, throughput time (days)) (Klassen & Whybark, 1999); • Project performance = competence development, measured by the ability to achieve or exceed objectives (corporate initiative projects); items reflect how well the project is performing with respect to achieving basic objectives (such as staffing, budget, revenue, quality, reliability, cost, efficiency, user/client satisfaction, service objectives, major deadlines) (McGrath, MacMillan, & Venkataraman, 1995); • Process development performance = lead time (number of months between the start of the process development project and its successful completion) (Pisano, 1994); • Outsourcing performance = level of satisfaction for both in-house and outsourced information service functions along three dimensions: 1) satisfaction with overall cost; 2) satisfaction with the quality of the output or service; and 3) satisfaction with responsiveness to problems or inquiries (Pappo & Zenger, 1995); • TQM performance = 8 items related to TQM programs, e.g. 'our quality program has dramatically increased productivity', 'our quality program has improved our competitive positions' (Powell, 1995); • Manufacturing performance = cost as percentage of sales; conformance quality; percentage of on-time deliveries; days from receipt of raw materials to customer receipts (cycle time); length of the fixed production schedule (flexibility) (Schroeder, Bates, & Junttila, 2002).

Source: Nothnagel (2008)

Table 2.15 consists of outcome measures that were narrowed down into a specific value chain activity rather than disaggregated performance level (Nothnagel, 2008). The outcome measures are grouped into five inter alia service outcomes, human resource outcomes, technology development outcomes, infrastructure outcomes and operations outcomes. For instance, product performance persistence and IT performance fall under the technology development outcomes group.

Next section further explores the relationship between intellectual capital and firm performance, innovation capability and firm performance, and firm age and firm performance. The relationships between these constructs were used to design the conceptual framework of this study.

2.6.1 Intellectual Capital and Firm Performance

Delgado-Verde, Castro and Navas-Lopez (2011) stressed that knowledge is one of the main determinants for the existence of a firm. This factor drives the interest of scholars to study intellectual capital and firm performance (Bramhandkar, Erickson, & Applebee, 2007; Clarke, Seng, & Whiting, 2011). Previous studies conducted by Jo and Lee (1996); Murali, Abdul and Yusop (2009); Prieto and Revilla (2006); and Littunen and Niittykanges (2010) showed a positive relationship between knowledge of entrepreneur and performance. Also, several studies conducted by Kamukama, Ahiauzu and Ntayi (2010); Sharabati, Jawad and Bontis (2010); Phusavat, Comepa, Sitko-Lutek and Ooi (2011); and Clarke, Seng and Whiting (2011) found that there are a positive association between HC, SC, RC and performance.

However prior to archival evidence, inconsistencies do exist in the effect of intellectual capital on firm performance. The inconsistency refers to the conflicting results in the relationship between both constructs. For example, Chan (2009) found that HC is negatively associated with some indicators of performance. In contrast, Kamukama, Ahiauzu and Ntayi (2010); and Phusavat, Comepa, Sitko-Lutek and Ooi (2011) concluded that HC is positively associated with performance. On the other hand, Joshi, Cahill and Sidhu (2011) found that SC and RC has little or no impact on overall performance.

Conversely, Sharabati, Jawad and Bontis (2010); Kamukama, Ahiauzu and Ntayi (2010); Clarke, Seng and Whiting (2011); and Phusavat, Comepa, Sitko-Lutek and Ooi (2011) concluded that SC and RC are associated with performance. For a better view, the reseacher has provided a summary of past researches pertaining to the relationship between intellectual capital and performance in Table 2.16. Nevertheless, despite previous contributions, the relationship between intellectual capital and performance remains unclear. Concerning this, two questions are raised: Are there any other factors that mediates the effect between both contsruct? Do the components of intellectual capital has direct influence of performance? These questions indicate that there is a gap between intellectual capital and its components, and performance and this study will look into the gap.

Table 2.16
Summary of the Research Studies of the Relationship between Intellectual Capital and Performance

Author (Year)	Independent Variable	Method	Dependent Variable	Findings
Ting and Lean, (2009)	Intellectual capital: i. HCE ii. SCE iii. CEE	VAIC	ROA	• There is a significant positive effect of HCE and CEE on ROA. • SCE has a negative effect with ROA but it is not significant.

Table 2.16 (Continued)

Author (Year)	Independent Variable	Method	Dependent Variable	Findings
Chan (2009)	Intellectual capital: i. HCE ii. SCE iii. CEE	VAIC	Corporate performance: i. Market valuation (MB) ii. ROA iii. Productivity (ATO) iv. ROE	• HCE is negatively associated with MB, ROA, ATO and ROE. • SCE is negatively associated with MB and ATO • SCE is positively associated with ROA and ROE • CEE is positively associated with MB, ROA, ATO and ROE.
Sharabati, Jawad and Bontis (2010)	Intellectual capital: i. HC ii. SC iii. RC	Bontis Intellectual Capital	Business performance: i. Productivity ii. Profitability iii. Market valuation	• Intellectual capital has a substantive and significant relationship with Business performance.
Kamukama, Ahiauzu and Ntayi (2010)	Intellectual capital: i. HC ii. SC iii. RC	IAM	Financial performance	• There are a positive association between HC, SC, RC and Financial performance.
Joshi, Cahill and Sidhu (2011)	Intellectual capital: i. HCE ii. SCE iii. CEE	VAIC	Assets Performance: i. VA (Input-Output) ii. Shareholders' equity	• HCE has significant impact on VA • SCE and CEE has little or no impact on overall performance.
Wah Chu, Chan and Wu (2011)	Intellectual capital: i. HCE ii. SCE iii. CEE	VAIC	Corporate Performance i. Market Valuation (MB) ii. Profitability (ROA) iii. Productivity (ATO)	• There is a strong association between VAIC and MB. • VAIC is positively associated with ROA. • HC has no impact on ATO. • SC was negatively associated with ATO with very high significance.
Clarke, Seng and Whiting (2011)	Intellectual capital: i. HCE ii. SCE iii. CEE	VAIC	Financial performance. i. ROA ii. ROE iii. Revenue growth	• There are significant relation between HC, SC, RC and Financial performance.
Phusavat, Comepa, Sitko-Lutek and Ooi (2011)	Intellectual capital: i. HC ii. SC iii. Innovation capital	VAIC	Firm performance: i. ROE ii. ROA iii. Growth in revenue (GR) iv. Employee productivity	• Intellectual capital contributes positively with Firm performance.

Source: Own illustration

2.6.2 Innovation Capability and Firm Performance

Many scholars acknowledge that innovation capability of a firm is one of the crucial factors for it to survive and succeed. They agreed that innovation is related to firm performance (Chaveerug & Ussahawanitchakit, 2008; Fruhling & Siau, 2007; Rujirawanich, Addison, & Smallman, 2011; Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). Robust findings indicate a positive and significant relationship between innovation and performance (Chaveerug & Ussahawanitchakit, 2008; Fruhling & Siau, 2007). Battor and Battor (2010) further highlighted that 22.0 percent of profit and 28.0 percent of sales growth from 700 companies with 13,311 new products between year 1976 and year 1981 came from new product launches.

Despite the indication that innovation is important in determining firm performance, prior empirical study investigations on innovation did not provide conclusive evidence regarding the relationship between innovation capability and firm performance. There were conflicting results that link between the two variables. The researcher has summarized the conflicting results captured from previous studies in Table 2.17. Concerning the relationship, the researcher is curious about any other factors such intellectual capital or firm age that may have influence innovation capability in improving firm performance.

Referring to Table 2.17, two studies were conducted by Booz & Company on the year 2005 and year 2009. They analyzed the statistical relationships between R&D investment and business result; and revealed that R&D to sales ratio which is the percentage of an organization's revenue that it spends on R&D has no discernible relationship with most measures on financial performance (Jaruzelski & Dehoff, 2005; Jaruzelski & Dehoff, 2009). Jaruzelski and Dehoff (2005) added that using

firms listed in the Global Innovation 1000, Intel (no. 12) is found spending 130 times as much as Cymer (no. 766), but their R&D to sales ratio was only 14.0 percent in the year 2004.

In addition, Battor and Battor (2010) claimed that the failure rate of new products is somewhere between 40.0 percent and 75.0 percent; and nearly 50.0 percent new products that were introduced each year failed. This failure rate implies costs that must be borne by firms which consequently deteriorate their performance. Due to this, Ahmad (1998); and Ibrahim, Zolait and Subramanian (2009) further concluded that innovation is linked to risks, and as a result most firms remain averse to give commitment and invest in innovation activities.

Table 2.17
Summary of the Research Studies of the Relationship between Innovation Capability and Performance

Author (Year)	Independent Variable	Dependent Variable	Findings
Jaruzelski and Dehoff (2005)	R&D investment.	Business result: Financial performance.	• The percentage of an organization's revenue that it spends on R&D has no discernible relationship with most measures on Financial performance.
Fruhling and Siau (2007)	Innovation Strategy Model i. Collaborative process. ii. Performance measures. iii. Education and development. iv. Organization's distributed learning network. v. Intelligence market positioning. vi. Knowledge of products and services. vii. Collaborative market penetration. viii. The market image campaign. ix. Leadership competencies. x. Communications technology.	Innovation outcomes: E-Commerce initiatives.	• The organization that had a larger locus of innovation attributes appeared to thrive in the deployment of its E-Commerce initiatives (Qualitative case study).

Table 2.17 (Continued)

Author (Year)	Independent Variable	Dependent Variable	Findings
Akman and Yilmaz (2008)	Customer orientation. Technological orientation. i. Innovation strategy. ii. Innovation success.	Performance: Innovative capability.	• There is a positive significant relationship between Customer orientation and Innovative capability. • Technological orientation has no relationship with Innovative capability. • There is a positive significant relationship between Innovation strategy and Innovative capability. • Innovative capability has a strong and positive effect on Innovation success.
Chaveerug and Ussahawanitchakit (2008)	Innovation capability: i. Innovativeness. ii. Capability to innovate. iii. The willingness to change.	Organizational performance: i. Market performance. ii. Financial performance. iii. Product/service.	• Innovation capability has strong influence on Organizational performance.
Jaruzelski and Dehoff (2009)	R&D investment.	Business result: Financial performance.	• The percentage of an organization's revenue that it spends on R&D has no discernible relationship with most measures on Financial performance.

Source: Own illustration

Concerning the size of firms, innovation tends to flourish in SMEs compared to large firms, thus making them more capable to perform. This is because SMEs are flexible and dynamics to make rapid adjustment in their business operations and planning within a short period of time due to its simple organizational structure compared to large firms, making them more flexible and possess less bureaucratic regulations and

red tapes in decision making process. Also, SMEs have shorter development cycle, close to the market and possess a better RC with external parties compared to larger firms, resulting more accessibility to outside knowledge and support that will ease the innovation activities. Rasiah (2001) supported the view and made remarks that small firms are able to adapt to the environment through their smallness characteristics. Similarly, Hashim (2011) stated that SMEs are useful sources of innovation because they tend to be more innovative as they have more flexibility and dynamics compared to large firms.

In contrast, SMEs possess limited key resources in term of investment in plant and machinery, expertise and R&D activities which affected their ability to innovate compared to large firms. Adding to this view, most SMEs remain averse to give commitment and invest in innovation activities because innovation is known associated with risk. They cannot withstand the consequences of getting any losses if failure or mistake occurs; thus becoming the barriers for innovation to flourish. This is notably true when Ngah and Ibrahim (2009) made remarks that SMEs do not involve in innovation activity actively and extensively due to lack of expertise and financial capabilities.

2.6.3 Firm Age and Performance

Most scholars agreed that firm age determine firm growth. According to Ismail, Che Rose, Abdullah and Uli (2010) and Gaur & Gupta (2011), older firms perform than newer firms. This is because hazard rate will fall with time (Audretsch, 1991) and firm survival increases with age of the firm (Persson, 2004). Castrogiavanni (1996); Headd (2003); and Lee, Kelly, Lee and Lee (2012) added that most business failures

of SMEs were within the first year of establishment. Barret and Mayson (2007) concluded that new firms are perceived unable to achieve economies of scale and they rarely have the sufficient managerial resources and expertise in the area. Evans (1987) shared the same view when he coined that firm age determines firms' growth and the variability of firm growth. This assumption is in line with the Resource Base View theory hypothizing that older firms possess more resources than younger firms where firms obtain them over time (Williams, 2011). Therefore, the role of firm age on performance of firms needs to be considered in the study.

In addition, knowledge and experience comes with age and older firms tend to possess more systematic and developed firm routines as innovation activity requires assimilating new knowledge with preexisting firm knowledge to produce new outputs. Firms that have established such experience will be better able to improve their overall performance. Hashim (1999) shared the same view and added that it is essential for owners to have sufficient skills to overcome problems and risks associated with small business to avoid business failures. For instance, Felekoglu (2007) found that Ford Motor Company, 3M and Procter & Gamble developed a capacity for continuous innovation through experiencing multiple challenges of uncertainties for a long period of time. Another study conducted by Daily, Certo and Dalton (2000) examined the relationships between CEO international experience, CEO tenure, firm internationalization, succession events and corporate financial performance. They concluded that there is an interactive effect on the examination of corporate financial performance between CEO international experience and CEO succession.

Specifically, this study will look into SME performance. Gathering information from previous studies, small firms are subject to higher rate of failure relative to older and more established firms (Lee, Kelly, Lee, & Lee, 2012; Castrogiovanni, 1996). They added that most business failures of SMEs were within the first year of establishment. Headd (2003) agreed with the findings and stated that there was an alarming sound at US Small Business Administration that nine out of ten small businesses failed closed in their first year of operation whilst Ismail, Che Rose, Abdullah and Uli (2010) further concluded that the moderating effect of the age of the SMEs is stronger for older SMEs in the relation between organizational competitive advantage and performance.

Proceeding further, business failure happens in small firm due to the fact that older firms have established relationships and access to resources (V. Singh, J. House , & J. Tucker, 1986). Persson (2004) added remarks that the survival of firms moves the same direction with age, size and educational attainment of the employer.

For instance, a study completed by Cader and Leatherman (2011) found that of 90,134 observations, only 37,937 small business in the United States survived after five years. Based on their findings, about 15.0 percent of the firms failed before the end of first year whilst 13.0 percent cease operation before the end of second year. Majority (42.0%) of firm managed to survive after five years. He added that technology-intensive firms were more likely to cease operation the first five years of establishment. Table 2.18 illustrates their findings.

Table 2.18
Relative Frequency of All Firms Death

Survival in Years	Frequency	Percent
Below 1	13,387	14.9
Below 2	11,474	27.6
Below 3	11,635	40.5
Below 4	8,743	50.2
Below 5	6,958	57.9

Source: Cader and Leatherman (2011)

Another study by Lee, Kelly, Lee and Lee (2012) looked into the survival rate of SMEs of 1,612 independent high technology SMEs in Korea in the year 2002. They used the formal bankruptcy proceedings and discontinuance of the business for any reason to define failure in business and found that of 1,612 SMEs, 235 firms failed below five years in operation. The statistics are shown in Table 2.19 below:

Table 2.19
Number of SMEs Failed Based on Years of Establishment

Age	Total Number of Failed	Total Number of Surviving
1-2	98	221
3-5	137	415
6-10	74	312
More than 10	70	256
Total	380	1,232

Source: Lee, Kelly, Lee and Lee (2012)

However, the relationship between firm age and performance is questionable. According to Anderson and Eshima (2011), younger firms are better performing than older firms because they have better ability to capture the value from entrepreneurial strategies. This is due to the notion that younger firms possess flexible structures, routines and processes allowing them to react faster to pursue entrepreneurial opportunities with greater congruence to current market expectation. They added that older firms are more bureaucratic structures often devolve into core rigidities which hamper managerial willingness to create opportunities and keep up with the

environmental changes. Due to this argument, the study has hypothesized firm age plays a mediating role on innovation capability in improving firm performance, with an attempt discover their relationships.

2.7 Small and Medium Enterprises

Specifically this study will look into the performance of SME. In order to have a better understanding about SMEs, this section will begin with a collection of definitions of SMEs used in several countries such as Australia, Brunei, New Zealand and Malaysia. Includes are a discussion of the importance of SMEs to a country. This section will end with the need to study SMEs.

2.7.1 Definition of Small and Medium Enterprise

There are various definitions of SME adopted from various countries with no general consensuses on how to define SME. Various definitions exist because the definitions are made according to the phase of economic development and prevailing social condition which differs amongst regions (Rujirawanich, Addison, & Smallman, 2011). For instance, the Bureau of Statistics in Australia categorized small firms as enterprises with less than 20 employees and medium firms with 21 to 200 employees whilst in Brunei, small firms employs less than 10 employees and medium firms employs 10 to 100 employees.

The Ministry of Economic Development in New Zealand uses the same criteria defining SMEs as enterprises that employ 20 full time employees. Similarly, the

Government of Hong Kong categorized SMEs as those manufacturing firms that employ less than 100 employees and less than 50 employees for non-manufacturing firms (Hashim, 2011). Roach (2011) cited that SME in the Atlantic Provinces of Canada is defined as an standalone enterprise (not a subsidiary) which have less than 250 employees and achieve less than CDN$50 million in annual revenue.

Meanwhile, based on the Companies Act 1985 (Accounts of Small and Medium-Sized Enterprises and Audit Exemption) (Amendment) Regulations 2004 Section 247 and 249 of the Company Act 1985, SME is distinguished based on the size of an enterprise where small enterprise in the United Kingdom refers to a company that own an annual turnover not more than £2.8 million and an annual balance sheet total not exceeding £1.4 million and medium-sized enterprise own an annual turnover not more than £11.2 million and a balance sheet total not exceeding £5.6 million (The National Archives, 2004). European Commission (2009) divided SME in the European Union countries into three size; small, medium and micro enterprise. Small enterprise refers as a firm that employs less than 50 employees with annual turnover or annual balance sheet total not exceeding €10 million; medium sized enterprise refers to firm that employs fewer than 250 employees with annual turnover or annual balance sheet total not exceeding €43 million; and micro enterprise refers to a firm which has fewer than 10 employees with annual turnover or annual balance sheet total not exceeding €2 million.

On the other hand, Micro, Small and Medium Development Act 2006 uses different criteria defining SMEs in India. There, SMEs are distinguished into three; micro, small and medium enterprises based on investment in plant and machinery, and investment in equipment (Ghosh, 2009). The Act further sets different amount of

investment for different sector, manufacturing and service sector. Table 2.20 depicts the definition of SME in India.

Table 2.20
Definition of SME in India

Nature of Enterprise	Micro Enterprise	Small Enterprise	Medium Enterprise
Manufacturing	Investment in plant and machinery does not exceed INR 2.5 million.	Investment in plant and machinery more than INR 2.5 million but does not exceed INR 50 million.	Investment in plant and machinery more than INR 2.5 million but does not exceed INR 100 million.
Service	Investment in equipment does not exceed INR 1.0 million.	Investment in equipment exceed INR 1.0 million but does not exceed INR 20 million.	Investment in equipment more than INR 20 million but does not exceed INR 50 million.

Source: Ghosh (2009)

The definitions of SMEs in Malaysia were not the same before the year 2004 where several definitions were applied by various government agencies. Most of the definitions were more describing the SMEs involved in the manufacturing activities. According to Hashim (2011), Credit Guarantee Corporation (presently known as Credit Guarantee Corporation Berhad) characterized SME as a firm with a maximum of RM500,000 of net assets, or limited companies with a maximum of RM500,000 shareholders' fund. Meanwhile in the year 1996, Small and Medium Industries Development Corporation (SMIDEC) referred small sized enterprises as a firm that has a paid-up capital of less than RM500,000 with less than 50 full time employees; and medium sized enterprises was a firm that has a paid-up capital of RM500,001 to RM2.5 million with 51 to 75 full time employees (Hashim, 2011).

Another government agency, MITI defined small enterprise in the year 1998 as a firm with less than 50 full time employees and annual sales turnover of not more than

RM10 million. For medium sized enterprise, MITI characterized it as a firm with 51 to 150 full time employees and annual sales turnover of between RM10 to RM25 million. The same year, Bumiputera Commerce Bank Berhad (now known as the CIMB Bank) characterized SMEs as a firm that owns at least RM10 millions of shareholders' fund (Hashim, 2011).

Seeing various definitions used by several agencies, the Government realized there was a need to come out with a standardized definition of SMEs so that it will facilitate the monitoring process of the development and contributions measurement to the economy. Thus, NSDC has established a new definition of SMEs in the year 2005. The definition classified SMEs based on the number or employees or annual sales which is used in the sector of primary agriculture; manufacturing, manufacturing-related services and agro-based industries; and service and information and communication technology. The classification of economic activities is based on the Malaysian Standard Industrial Classification 2000 Codes (National SME Development Council, 2005).

Table 2.21
Number of Employees of SMEs

Size	**Primary Agriculture**	**Manufacturing, Manufacturing-Related Services and Agro Based Industries**	**Services Sector and Information and Communication Technology**
Micro	Less than 5 employees.	Less than 5 employees.	Less than 5 employees.
Small	Between 5 and 19 employees.	Between 5 and 50 employees.	Between 5 and 19 employees.
Medium	Between 20 and 50 employees.	Between 51 and 150 employees.	Between 20 and 50 employees.

Source: National SME Development Council (2005)

For primary agriculture, enterprise falls under SME possesses a number of employees of 50 or less; or a maximum annual sales turnover of RM5 million and for enterprise

involves in manufacturing; manufacturing-related services and agro based industries, the number of employees is 150 or less; or a maximum annual sales turnover of RM25 million. Finally, for enterprise operating in the service sector and information and communication technology, their number of employees is 50 or less; or a maximum sales turnover of RM1 million. The definition of SME set by the National SME Development Council of Malaysia is shown in Table 2.21 and Table 2.22.

Table 2.22
Annual Sales Turnover of SMEs

Size	Primary Agriculture	Manufacturing, Manufacturing-Related Services and Agro Based Industries	Services and Information and Communication Technology
Micro	Less than RM200,000.	Less than RM250,000.	Less than RM200,000.
Small	Between RM200,000 and less than RM1 million.	Between RM250,000 and less than RM10 million.	Between RM200,000 and RM 1 million.
Medium	Between RM1 million and RM5 million.	Between RM10 million to RM25 million.	Between RM1 million to RM5 million.

Source: National SME Development Council (2005)

However, due to changes in the economics environment, the Government has reviewed the definition of SME that comes into effect on 1 January 2004. There were few guideline principles set in the review exercise. Amongst them were definition that reflect price inflation and changing trend, definition that facilitate compilation of SME statistics in accordance to the International Standard of National Accounts, and definition that incorporate strutural changes in the economy (Secretariat of the National SME Development Council, 2013). Comparing to the previous definition, the current defintion classified the economic activities into two, manufacturing and service and other sector. Table 2.23 and Table 2.24 illustrate the definition of SMEs in Malaysia.

Table 2.23
Number of Full Time Employees of SMEs

Size	Manufacturing	Services and other sectors
Micro	Less than 5 employees.	Less than 5 employees.
Small	From 5 to less than 75 employees.	From 5 to less than 30 employees.
Medium	From 75 to not exceeding 200 employees.	From 30 to not exceeding 75 employees.

Source: Secretariat of the National SME Development Council (2013)

Referring to Table 2.23 and Table 2.24, manufacturing SME refers to an enterprise with less than 200 full time employees; or a maximum annual sales turnover of RM50 million; and for enterprise involves in services and other sectors, the number of employees is 75 or less; or a maximum annual sales turnover of RM20 million.

Table 2.24
Annual Sales Turnover of SMEs

Size	Manufacturing	Services and other sectors
Micro	Less than RM300,000.	Less than RM300,000.
Small	From RM300,000 to less than RM15 million.	From RM300,000 to less than RM3 million.
Medium	From RM15 million to not exceeding RM50 million.	From RM3 million to not exceeding RM20 million.

Source: Secretariat of the National SME Development Council (2013)

The scope of this study involves SMEs that operate in Malaysia; thus the definition of SME will be using the same definition set by National SME Development Council of Malaysia in the year 2005 and it will serve as the reference for the analysis.

2.7.2 Government Effort to Develop Small and Medium Enterprise in Malaysia

SMEs are the backbone of the Malaysian economy. They play a vital role in the Malaysian economy in term of number of business establishment, economic output,

source of employment, export potential, business linkages with large companies, innovation and new business venture. Their roles extend far beyond providing not just employment but also investment, output and income. Due to these significant contributions, the Government has set up SMIDEC in the year 1996 indicating early initiatives to develop capable and resilient Malaysian SMEs to be competitive in the domestic and international market. Then, National SME Development Council (NSDC) was established in the year 2004. NSDC is a policy making body entrusted to formulate strategies for SME development across all economic sectors and to ensure the implementation of SME development program benefits the target groups.

According to Hashim (2011) the Council's specific terms of reference are first, formulating broad policies and strategies to facilitate the overall development of SMEs across all sectors; second, increasing the focus of the roles and responsibilities of government ministries and agencies responsible for SME development; third, enhancing inter-ministry and agency cooperation, and coordination to ensure effective implementation of SMEs development policies and action plans; forth, encouraging and strengthening the role of private sector in supporting the development of SMEs; and fifth, giving emphasis to the development of Bumiputra SMEs across all economic sectors. NSDC consists of 19 members and headed by the Prime Minister as listed in Table 2.25.

Since its establishment, the Council has endorsed a total of 226 programs with a financial commitment of RM71 billion for the year 2010, 219 programs with a financial commitment of RM5.9 billion for the year 2011 and 139 programs with a financial commitment of RM7.1 billion for the year 2012 to develop SMEs (National SME Development Council, 2011; Secretariat of the National SME Development Council, 2013). The Council also has given a new image to SMIDEC by changing its

name to Small and Medium Enterprise Corporation (SMECorp) in the year 2009. With the responsibility to formulate overall policies and strategies for SMEs, SMECorp was being the central point of reference matters pertaining to SMEs as well as the coordinator of programs across Ministries and Agencies in Malaysia.

Table 2.25
Members of the National SME Development Council

No.	NSDC Members
1.	Prime Minister (Chairman)
2.	SME Corporation Malaysia (Secretariat)
3.	Minister of International Trade in Industry
4.	Minister of Domestic Trade, Cooperatives and Consumerism
5.	Minister of Agriculture and Agro-based Industries
6.	Minister of Human Resource
7.	Minister of Finance II
8.	Minister of Energy, Water and Communication
9.	Minister of Plantation Industries and Commodities
10.	Minister of Science, Technology and Innovation
11.	Minister of Tourism
12.	Minister of Rural and Regional Development
13.	Minister of Education
14.	Minister of Higher Education
15.	Minister of Housing and Local Government
16.	Minister in the Prime Minister's Department
17.	Governor of Bank Negara
18.	Director General of the Economic Planning Unit
19.	Chief Executive of the Multimedia Development Corporation

Source: Hashim (2011)

The efforts continue with the establishment of the National Economic Advisory Council (NEAC) where the New Economic Model was launched on March 2010. Recognizing the important of developing human capital in the knowledge-based economy, NEAC initiated the Economic Transformation Program where two of eight Strategic Reform Initiatives (SRI) namely (SRI 2) developing quality workforce and reducing dependency on foreign labor; and (SRI 6) building the knowledge-based infrastructure were formed to tackle issues pertaining to the development of SMEs (National Economic Advisory Council, 2011). In SRI 2, focuses are made on

generating a talented workforce involving better education and skill training programs to meet the need of a knowledge-based economy whilst SRI 6 emphasizes are made on the promotion of an environment and ecosystem that drive innovation through strengthening the delivery of high quality education.

The Government also has introduced Entrepreneurship Training Program in the year 2011 to train 500 new technopreneurs with a start-up fund amounting to RM100 million (Tun Abdul Razak M. N., 2010). The Budget 2012 extended the agenda of sustaining and strengthening the SMEs contribution to economic growth where the Government has provided RM 2 billion for the SME Financing Fund, RM500 million for the Commercialization Innovation Fund and RM30 million for the Market Validation Fund. The Government also has allocated RM100 million for the SME Revitalization and RM10 million for the SME Emergency Fund to assist SMEs in reviving their businesses due to natural disaster or economic recession as well as inflation which happen beyond their control (Tun Abdul Razak M. N., 2011). More extended measures were introduced in the Budget 2013 for the SME to further grow and contribute to the country's wealth.

For instances, the Government has allocated RM1 billion for the SME Development Scheme, RM200 million for the Halal Industry Fund and RM200 million for the Intellectual Property Financing Fund; providing more financing alternatives to support SMEs with their expansion plans locally and abroad (Tun Abdul Razak, 2012). The Government also planned to modernize the operations of hawkers and small businesses to higher standards and competitiveness through the licensing or franchising model in the year 2013. For this, soft loans up to RM25,000 for licensees

and RM500,000 for licensors are provided by the Government through Perbadanan Nasional Berhad (PNS) for the Business in Transformation program.

The Government continues playing a vital role in developing SMEs by protecting the IPRs where Intellectual Property Financing Fund scheme amounting to RM200 million is offered in the year 2013. Another RM19 million was allocated for training programs for local intellectual property evaluators conducted by Intellectual Property Corporation of Malaysia (MyIPO) to create an intellectual property right market platform (Tun Abdul Razak, 2012).

The Government efforts to develop SMEs prolong in the Budget 2014 where provisions have been made to organize specific programs for SME development amounting to RM2.6 billion (Tun Abdul Razak M. N., 2013). Apart from that, the Government has established the Malaysian Global Innovation and Creativity Center (MaGIC) with an initial allocation of RM50 million (The Star, 2013). MaGIC is a one stop centre under the National Entrepreneur Development Office, Ministry of Finance established to monitor performance of entrepreneurs, house an integrated database matters related to entrepreneurs and coordinate activities related to entrepreneurship (The Malay Mail, 2013).

Moreover, Malaysia believes that innovation will promote new ideas to be translated into commercially new products and services. In the challenging business today, firm's success depend on creativity and innovation. Firms that are capable of meeting the changing behavior of individuals as well as able adapting to innovative changes are being ensured of their existence (Read, 1996). Therefore, the Government also has initiated the Innovation Certification for Enterprise Rating and Transformation (1-InnoCERT) in the year 2010, a certification program designed to recognize and

certify innovative SMEs as well as to guide them to implement innovative systems, processes and business models through coaching and business advice (SMECorp Malaysia, 2012). The Government also had announced year 2012 as the year of the National Innovation Movement. In conjunction with the announcement, programs to inculcate innovation such as Cipta 1Malaysia Award, World Innovation Forum 2012, Jejak Inovasi program and Asia Business Angle Forum were set to launch (Tun Abdul Razak M. N., 2011).

The Government continues to strengthen innovation in all sectors and segments of society towards becoming a high-income and developed nation by 2020. Concerning this, an SME Masterplan 2012-2020 was formulated in the year 2012. The Masterplan is used as a framework to accelerate the growth of SMEs and more importantly, nurturing SME to be a significant contributor in economic growth, income and overall prosperity of the country.

No doubt that any marginal improvement of SME performance could result a major economic impact and the Government of Malaysia is trying to boost the SME performance by installing various programs facilitating their operations. Along with the efforts, Bank Negara Malaysia has set up a One-stop Center on Financial Advisory to offer advisory services for SMEs on matters pertaining to financial and non-financial programs provided by the Government (Muhammad, Char, Yasoa', & Hassan, 2010). Nevertheless, the Government alone cannot succeed in making the SMEs perform. Aiding to the Government efforts, the researcher hopes that this study will give some light not only to the Government but also to the business owners on matters pertaining to improving business performance.

2.7.3 Statistics of SMEs in Malaysia

Based on the latest Census on Establishments and Enterprise that was conducted in the year 2011, there were a total of 662,939 business establishments in Malaysia as depicted in Table 2.26. Out of 662,939 business establishments that responded to the Census, 645,136 (97.3 percent) were defined as SMEs. The SMEs cover 52.7 percent of total employment in Malaysia and the remaining 47.3 percent were working with large enterprises. In term of contribution to the economy, gross output and value added of SMEs were amounted RM507,089 million and RM213,921 million respectively.

Table 2.26
Key Indicators of SME in Malaysia

Key Indicator	**SME (%)**	**Large Enterprise (%)**	**Total**
Establishments (number)	645,136 (97.3)	17,803 (2.7)	662,939
Gross output (RM million)	507,089 (28.5)	1,270,228 (71.5)	1,777,317
Value-added (RM million)	213,921 (30.2)	493,568 (69.8)	707,489
Employment (persons)	3,669,259 (52.7)	3,294,714 (47.3)	6,963,973

Source: Department of Statistics (2011)

According to Department of Statistics (2011), most of the SMEs (580,985) were in the services sector, followed by manufacturing sector (37,861), agriculture sector (6,708) and mining and quarry (299). Also, a majority of 2,610,373 people were working with SMEs in service sector compared to 5,765 people in mining and quarry as depicted in Table 2.27.

Table 2.27
Total Employment and Establishments of SME in Malaysia According to Sector

Sector	Total Establishments	Total SMEs	Percentage of SME of Total Establishments	Total Employment by SMEs
Agriculture	8,829	6,708	76.0	78,777
Mining and Quarry	418	299	71.5	5,765
Manufacturing	39,669	37,861	95.4	698,713
Construction	22,140	19,283	87.1	275,631
Service	591,883	580,985	98.1	2,610,373
Total	662,939	645,136	97.3	3,669,259

Source: Department of Statistics (2011)

Elaborating further, Table 2.28 indicates that service was the largest sector in SMEs that contribute to Malaysian gross output amounted RM286,640 million followed by manufacturing (RM194,032 million), construction (RM20,118 million), agriculture (RM5,194 million) and mining and quarry (RM1,105 million). Looking at the size of SME, small firms in the service sector is the largest contributor of gross output (RM131,145 million) whilst micro firms in the mining and quarry sector is the smallest contributor (RM34 million).

Table 2.28
Gross Output of SME in Malaysia According to Sector for the Year 2010 (RM million)

Sector	SME	Micro	Small	Medium
Agriculture	5,194	769	1,871	2,554
Mining and Quarry	1,105	39	302	764
Manufacturing	194,032	3,853	59,540	130,639
Construction	20,118	1,219	6,001	12,898
Service	286,640	87,700	131,145	67,795
Total	587,089	93,581	198,859	214,650

Source: Department of Statistics (2011)

In term of value aded contribution, SMEs in Malaysia contributed RM213,921 million in the year 2010 where service sector held the major share (RM165,284 million) followed by manufacturing (RM38,058 million), construction (RM7,537 million),

agriculture (RM2,665 million) and mining and quarry (RM378 million) as depicted in Table 2.29. Looking at the size of SME, small firms in the service sector is the largest contributor of value added (RM76,460 million) whilst micro firms in the mining and quarry sector is the smallest contributor (RM13 million).

Table 2.29
Value Added of SME in Malaysia According to Sector for the Year 2010 (RM million)

Sector	SME	Micro	Small	Medium
Agriculture	2,665	343	937	1,385
Mining and Quarry	378	13	95	271
Manufacturing	38,058	1,344	14,348	22,366
Construction	7,537	545	2,227	4,764
Service	165,284	52,286	76,460	36,538
Total	213,921	54,530	94,067	65,323

Source: Department of Statistics (2011)

Table 2.30 indicates number of SMES according to Year of Establishment and Size. From the table, most SMEs were established less than 5 years (148,856) where 118,757 were micro enterprise and 27,188 and 2,911 were small and medium enterprise respectively. A number 25,602 SMEs were established between 5 to 45 years ago and 2,429 SMEs were found operating in the market for more than 45 years.

Table 2.30
Number of SMEs According to Year of Establishment and Size

Year	Total by Year of Establishment			
	SME	Micro	Small	Medium
Less than 5 years	148,856	118,757	27,188	2,911
5 to 14	140,405	104,885	30,055	5,465
15 to 24	42,803	29,243	10,516	3,044
25 to 34	16,260	10,740	4,249	1,271
35 to 44	4,585	3,005	1,201	379
45 to 55	1,549	1,126	312	111
55 and above	880	589	218	73
Total	355,338	268,345	73,739	13,254

Source: Department of Statistics (2011)

2.7.4 The Need to Study Small and Medium Enterprise

Apart from providing solution to the problem mentioned in Chapter 1, there are two main factors that raise a need to study small and medium enterprise. First, the important of SME to the national economy and second, the potential risk of failure of SME compared to large enterprise. They are discussed in this sub section.

2.7.4.1 The Importance of Small and Medium Enterprise to the National Economy

There is no doubt that SMEs are important to all nations. According to Hung and Effendi (2011), SME accounted more than 90.0 percent of all businesses in the APEC region with 50 to 80 percent of total workforce generating 30.0 percent of the exports in the year 2009. Habaradas (2008) added that economic activities in most ASEAN countries are based on SMEs where more than 90.0 percent of business of business establishment consists of SMEs. Several countries such as Indonesia, Korea, Vietnam and China supplied more than 70 percent of the total workforce in each country as depicted in Table 2.31.

Table 2.31
SME Contribution According to Total Number of Firms and Total Workforce in Selected ASEAN Countries

No.	Country	Year	Firms (%)	Workforce (%)
1.	China	2004	99.0	75.0
2.	Indonesia	2006	99.9	99.6
3.	Korea	2003	99.8	86.5
4.	Malaysia	2005	99.2	56.4
5.	Philippines	2004	99.6	69.9
6.	Singapore	2004	90.0	45.0
7.	Thailand	2002	99.6	69.0
8.	Vietnam	2002	99.6	77.3

Source: Habaradas (2008)

Elaborating further, Hooi (2012) found that SMEs contributed more than 50 percent of GDP in China, Germany, Indonesia, Japan and Singapore. He constructed a table to show the SMEs contribution to GDP according to selected countries as depicted in Table 2.32.

Table 2.32
SME contribution to GDP According to Selected Countries

No.	Country	Year	GDP Contribution (%)
1.	China	2010	60.0
2.	Germany	2010	57.0
3.	India	2009	17.0
4.	Indonesia	2007	57.0
5.	Japan	2010	55.0
6.	South Korea	2010	50.0
7.	Singapore	2011	>50.0
8.	Thailand	2010	37.8
9.	Malaysia	2011	32.5

Source: Hooi (2012)

In addition, Hashim (2011) made remarks that SMEs have been playing a significant role in supporting large manufacturings in industries such as automative, machinery, chemical and equipment and electrical and electronics. For example, Proton Holdings Berhad in Malaysia is reported to has a total of 287 vendors and 30,000 subvendors to produce 80 percent of the total of 20,000 to 30,000 components of Proton cars. Similarly, Motorola has lingkages with 50 SMEs as their suppliers.

Furthermore, SMEs promote innovation activities in the economy. Brinkley (2008) supported the notion and made remarks that SMEs make a significant role in knowledge economy especially in promoting industrial innovation and technological advancement. There are two factors that make SME more favorable to innovate than large firms. First, SMEs are flexible enough to make rapid adjustment in their business operations and planning within a short period of time. This is because SMEs'

organizational structure are less complicated with compared to large firms making them more flexible and possess less bureaucratic regulations and red tapes in decision making process. Rasiah (2001) supported the view when she made remarks that small firms are able to adapt to the environment through their smallness characteristics. Second, SMEs tend to have a better relationship with external parties compared to larger firms where the numbers of employees interact with the outsiders are small, making them more accessible to outside knowledge and support in innovation activities.

2.7.4.2 The Risk of Business Failure of SMEs

Scholars agreed that SMEs are more prevalent to failure than the larger firms. Amongst the reasons of failure are SMEs are found lack of resources in term of capital and knowledge. According to Thornhill and Amit (2003), small firms failed when their internal resources are exhausted to create value. They cannot withstand the risk of failure from innovation activities.

A few other studies completed by Watson and Everett (1996); Bates and Nucci (1989); and Fama and French (2004) revealed that small firms in the United States had a lower survival rates than the larger firms. Similarly, Thornhill and Amit (2003); and Lee, Kelly, Lee and Lee (2012) found that small firms possess greatest risk of failure especially those young firms. They concluded that lack of capital, knowledge and skills are the critical challenges that they have to overcome in order to survive. Franco and Haase (2010) further explained that the failure rate of SMEs is strongly linked with a lacking strategy and low educational level of employees and inadequate social capital.

In short, this study is significant to discover factors that influence SME performance as they are the backbone of a country. Their contributions are far beyond fostering economic growth. They generate employment activities and reducing poverty, thus becoming the major player in determining the economic wellbeing.

2.8 Theoretical Framework

The theoretical framework of this study confers to the relationship that link intellectual capital, innovation capability and firm age with firm performance. It proposes a complete model consisting the mediating role of innovation capability and moderating role of firm age in the relationship between intellectual capital and firm performance; which is completely new. The following will explain the conceptual model of the study and the underpinning theory beneath the model.

2.8.1 Types of Variables in the Conceptual Model

Looking at the proposed complete model as portrayed in Figure 2.5, there are four types of variable in this study, namely dependent variable, independent variable, moderating variable and mediating variable. The Figure indicates that firm performance is labeled as a dependent variable and intellectual capital as an independent variable. The researcher hypothesized that firm age plays a moderating role and innovation capability plays a mediating role in the relationship between the dependent and independent variable.

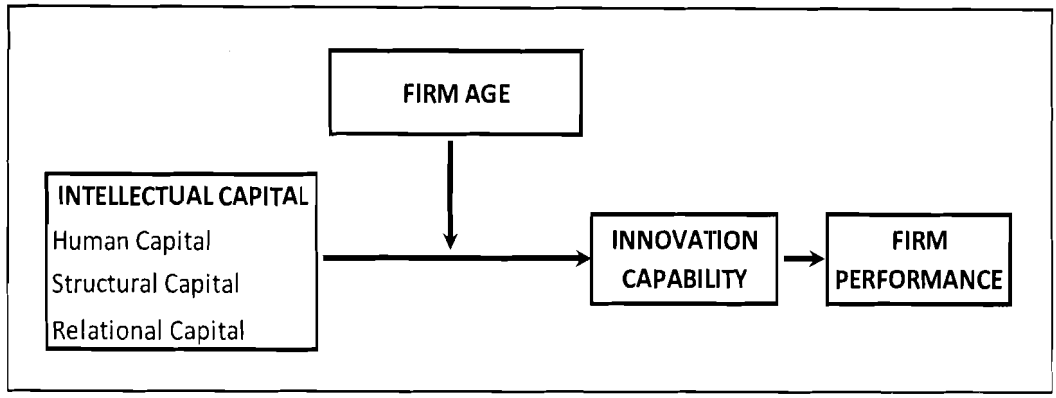


Figure 2.5
Conceptual Model
Source: Own illustration

2.8.2 Resource Based View Theory

The conceptual model of the study deals with the importance of owning specific resources lies upon the Resource Based View Theory (RBV). Looking back at the history, Wernerfelt was the scholar who initially used the term RBV in the year 1984 (Rauf, 2007). He classified firm's resources into tangible and intangible which are used in generating profits. In his article, resources are able to build firms' competitive advantage when it is difficult for competitors to obtain or imitate them. They are not limited to physical resources and refer to anything that creates value to the firm (Wernerfelt, 1984).

A few years later, Barney (1991) extended the theory categorizing resources into three groups, namely human capital, physical capital and organizational capital. These resources are heterogeneous, unique, rare and non-tradability amongst firms; and have influence on firm performance. He added that the more innovative of a new product, the higher the product varies from the competitors, thus the better the performance of the firm.

According to Amit and Schoemaker (1993), RBV looks into the stocks that are owned and controlled by a firm including the capabilities to deploy those stocks. It forwarded the issue pertaining to availability of resources that can be utilized to enhance firms' capability to gain sustainable competitive advantage (Galabova & Ahonen, 2011). In this sense, resources create competitive advantage because each firm accumulates unique bundles of resources that can potentially sustain a competitive advantage which are difficult to substitute, replicate or imitate by other firms. The competitive advantage will then result with improved performance. Newbert (2008) further added that the better value and rareness of a firm's resource-capability combinations, the more likely it will attain a competitive advantage.

RBV holds the assumption that resources are heterogeneous amongst firms and make no contributions of their own when the resources are homogenous. According to the theory, resources are a complex factor of production to build that possesses differentiation power. These resources are limited due to being most likely rare and valuable (Priem & Butler, 2001). Pondering to the assumption of RBV, if all firms had the same resources, competition will not exist as they develop and produce the same product and services. Thus, the assumption that lies upon RBV is firms are seeking valuable resources that are able to maximize their profits, that the resources are heterogeneous amongst firms.

Proceeding further, firm's competitive advantages are derived from firm-specific resources that are capable of producing valuable, rare and difficult to imitate and replicate new products or services. Seleim and Khalil (2011) referred the resources as a set of intellectual capital which plays an important role to create and sustain competitive advantage, due to its nature of non-substitutable and difficult to imitate. This is evident when Disney Corporation and Newell Company have built a set of

capabilities based on their intellectual capital potentials to create a competitive advantage in a market place (Collis & Montgomery, 1995).

In addition, resource owns reflect the capability of a firm thus determine what actions or strategies a firm can pursue (Tseng, Tansuhaj, & Rose, 2004). For example, firms with a higher number of technical employees may produce more patents than those firms with less of those employees operating in a similar environment within the same line of business. This is due to the fact that a large number of scientific employees indicates the greater the likelihood that the firm has the capability to innovate and therefore, the better able to invent new products.

Finally, RBV emphasized on the role of intangible resources and organizational capabilities which include analyzing intellectual capital in generating a firm's sustainable competitive advantages (Delgado-Verde, Castro, & Navas-Lopez, 2011). Due to the influential power of these resources, firms will be able to compete, survive and perform. Accepting this view, the study focuses on analyzing the firm specific resource, namely intellectual capital and its components in determining firm performance.

2.9 Summary

As scholars facing different views on the terminology of intellectual capital and innovation capability; including ways to measure, manage and value them, this has left a plenty of room for future studies and researches. This study will particularly discuss about the gap that is found existed between intellectual capital and firm

performance, and at the same time looks into the role of innovation capability and firm age on the two constructs.

CHAPTER THREE

METHODOLOGICAL RESEARCH

3.1 Introduction

This chapter will look into the process of data collection, discuss the questionnaire design, which is based on research questions and literature review and describe how data analysis is carried out towards generating findings of the study.

3.2 Sampling Procedure

The population of this study is SMEs operating in Malaysia. Neither those firms which are operating outside Malaysia nor multinational companies and large firms are included in this study. The researcher defines SMEs according to the definition set by the National SME Development Council in the year 2005, as mentioned in the previous chapter. The sampling frame or also known as the working population for this study is obtained from the SMI/SME Business Directory 2012, the Official Business Directory of Small and Medium Enterprises Association (Tourism Publications Corporation Sdn. Bhd., 2012); published by Tourism Publications Corporation Sdn. Bhd., a subsidiariy of Global Yellow Pages Limited. The sampling frame was used to capture primary data and generalize findings and conclusions about SMEs operating in Malaysia as its nature is associated with the population.

There are 4,862 SMEs listed in the SMI/SME Business Directory 2012. Of this amount, the sample size for the population is 357 responses as proposed by Krejcie and Morgan (1970) and the sampling calculator developed by Raosoft Inc. (Raosoft

Inc.). However, after taking account low feedback rate in Malaysia as mentioned by Abu Bakar and Ahmad (2010) and Abd Aziz and Mahmood (2011), the researcher has sent out a triple number of questionnaires than the intended sample which was 1,071 to overcome the probability of not getting the appropriate number of responses; similarly to what they did in their study.

The unit of analysis of key participants for this study is the business owners or those employees of at least holding an executive position. This is the best choice for the study as they carry responsibility on the firm's daily operations and the most important, they have the best knowledge on their firms.

This study has utilized the systematic sampling technique. The reason the researcher chose this technique is because it allows a system of random selection of subjects to occur and provides assurance that the population will be evenly sampled (Zikmund, Babin, Carr, & Griffin, 2010). Concerning the technique, the researcher has numbered all the 4,862 company names in alphabetical order. Then, the sampling internal was calculated by dividing 4,862 by 1,071, producing a sampling fraction of 4 (number 4.5 was rounded to the nearest digit, but lower than the number). Next step was to choose the random number between 1 and 4. In order to choose the random number, the researcher has thrown a stone on a piece of paper containing number 1 to 4. The stone landed on number 4 and thus, the company name listed in the allocated number 4 was the first respondent. The researcher went on selecting every 4^{th} company until the sample size has reached 1,071.

3.3 Data Collection and Analysis

Data collection and data analysis are aimed to establish a rationale within the context of intellectual capital, innovation capability and firm age and their relationships with performance. There are two types of data collection that were used in this study. First, the primary data collection consists of 1,071 sets of questionnaire that were sent to SMEs. Second, the secondary data collection containing data which was gathered from documentation and archival evidence such as articles, journals, reference books, annual reports, websites and other materials related to the study.

The researcher has used two mediums to send the questionnaires, by postal mail survey and online survey because they are commonly used in similar kind of researches. They have an advantage of wider geographical coverage where the SMEs are scattered all over Malaysia. Thus, both modes were the best solution for the researcher with consideration to budget and time constraint. In addition, the researcher has used self-administered survey which can eliminate bias where the respondents are free to answer the questionnaires with any influence. Therefore, this study has resulted reliable and valid outcomes.

In the questionnaire, the researcher has provided a clear definition of intellectual capital, innovation capability and performance. The questionnaire for this study is divided into four sections. The first section contains questions to capture the firm's profile including the firm's number of years in operation, number of employees and legal status. Also, the section comprises questions pertaining to respondent's and firm's profile such as respondent's highest education level and firm's main business and activity. Second and third sections consist of questions to measure innovation capability and intellectual capital of the firm. The final section will look into the

performance of the firm. The researcher has applied a coding system to each questionnaire copy to identify the SMEs.

Before undertaking any study, there is a necessity to understand the method of inquiry that is appropriate to use either through the qualitative or quantitative research. Qualitative research is a research that addresses business objectives through techniques which allow researchers to elaborate interpretations of particular phenomena without depending on numerical measurement whilst quantitative research addresses research objectives through empirical assessments that involve numerical measurement and analysis approaches (Zikmund, Babin, Carr, & Griffin, 2010). Comparing both methods of enquiry, the latter is based on the traditional scientific method; seek to prove hypotheses using structured questionnaires rather than the former depend on the ability of a researcher to extract meanings from unstructured responses. The researcher decided to use the quantitative approach for this study as it has been the best method of choice by most researchers in this field.

The researcher perceived that by using questionnaires to address the underlying nature of a construct is found significant based on the fact that in most cases, the key informants of SMEs are committed to hectic schedules which they are not able to spend long hours to answer questions. In order to motivate a timely and complete response, the researcher has promised to distribute a summary of research findings to the respondents at the end of the study.

The questionnaire was designed closed ended with no discussion exists with the key informants; giving a uniform frame of reference for them to answer the questions and thus avoiding measures that may reduce the validity and reliability of the study. Validity refers to a set of measure that correctly represents the concept of study which

is free from non-random error, whereas reliability refers to the consistency of the measures (Hair, Black, Babin, & Anderson, 2010). Norrman (2008) explained that a research is reliable if it measures the factors intended and consistence when it generates the same result on repeated measurement occasions. The findings are generated based on the perceptions of the key informants about their firms using statistical approach by measuring any available relationships established amongst the variables.

Since the study period is short and due to its heavy constraint, the researcher decided to choose a cross-sectional survey method. Cross-sectional study focuses on a particular phenomenon at a particular period of time, thus being the only solution for study with time constraint. Survey method is the best method for this study where it carries the intention to generalized results from the population (Zikmund, Babin, Carr, & Griffin, 2010). This study has sorted out ways to improve SME performance by looking at the role and relationship amongst intellectual capital, HC, SC, RC, innovation capability and firm age. It leads a way to other future studies which may indulge not only in cross-sectional quantitative method but may be in a cross-sectional qualitative method or longitudinal qualitative.

The data gathered underwent a process of transcription, coding, analysis and presentation of results. Two computer softwares, Statistical Package for Social Science (SPSS) version 19 and Smart-PLS 2.0 software version 2.0 M3 were used to analyze data. Appropriate statistical measures were used in the study such as independent sample test, Mann-Whitney test and Mahalanobis Distance, in line with Zikmund, Babin, Carr and Griffin (2010) connotation that data need to be analyzed with appropriate measures to generalize findings. Include in the study are analyses

using Statistical Equation Modeling to test the conceptual model which will be placed under Chapter 4.

Hair, Black, Babin and Anderson (2010) coined that researchers need to perform data checking to ensure there will be no error which could reduce nor reject the validity and reliability of the study. Hence, statistical measures looking at Cronbach's Alpha value and Composite Reliability value will be used to look at the consistency and reliability of the questionnaire. They are located in Chapter 4 together with other findings using other appropriate statistical measures pertaining to the study.

3.4 Instrumentation Design

This section covers the designing of questions or items that will represent each variable in the conceptual framework of the study. The researcher used established measures based on past literature as a reference in the questionnaire design. This is to minimize variance pertaining to patterns of relationship amongst items.

3.4.1 Indicators for Intellectual Capital

As scholars agreed that intellectual capital is crucial for firm performance, they tried to measure intellectual capital in different ways. Thus, hundreds of indicators can be found in the previous studies. Summarizing from several articles, the researcher has tabulated the indicators of each component of intellectual capital, namely human capital, structural capital and relational capital as shown in Table 3.1

The researcher has utilized most of the questions of measuring intellectual capital captured from Sharabati, Jawad and Bontis (2010). Referring to their questionnaire, intellectual capital is divided into three constructs, namely HC, SC and RC. They have performed the reliability test was performed to look at the reliability of their questionnaire and resulted a Cronbach's Alpha value ranged between 0.78 and 0.90 for each construct. All items were confirmed valid with the factor loadings were more than 0.4. The researcher has installed seven points Likert scales using subjective scales ranging from 1 (strongly disagree) to 7 (strongly agree) in the questionnaire for respondents to choose the best answer that represents their view on their firms' activities.

Table 3.1
Indicators for Intellectual Capital

Author (Year)	**Intellectual Capital**		
	Human Capital	**Structural Capital**	**Relational Capital/ Customer Capital**
Guthrie (2001)	i. Know-how ii. Education iii. Vocational qualification iv. Work-related knowledge v. Work-related competencies vi. Entrepreneurial spirit	i. Patents ii. Copyrights iii. Trademarks iv. Infrastructure assets v. Management philosophy vi. Corporate culture vii. Management processes viii. Information systems ix. Networking systems x. Financial relations	i. Brands ii. Customers iii. Customer loyalty iv. Company names v. Distribution channels vi. Business collaborations vii. Licensing agreements viii. Favorable contracts ix. Franchising agreements
Kamath (2007)	HCE	SCE	CEE
Chan (2009)	HCE	SCE	CEE
Sharabati, Jawad and Bontis (2010)	i. Learning and education ii. Experience and expertise iii. Innovation and creation	i. Systems and programs ii. R&D iii. Intellectual Property Rights	i. Strategic alliances, licensing and agreements ii. Customer and supplier relations iii. Customer Knowledge
Wah Chu, Chan, and Wu (2011)	HCE	SCE	CEE
Joshi, Cahill, and Sidhu (2011)	HCE	SCE	CEE

Source: Own illustration

Referring to Table 3.2, the researcher has adapted all items that indicate HC namely learning and education, and experience and expertise. Due to the reason that the mediating variable for this study is innovation capability, only several items under 'innovation and creation' indicator are chosen to be included in the questionnaire of this study.

Table 3.2
List of Questions for Human Capital

	Question
How do you feel about the statement on your company?	
	Learning and education
1.	The competence of company's employees as a whole is equal to the most ideal level (matching with their work requirements and responsibilities).
2.	The company gets the most out of its employees when they cooperate with one another in team tasks.
3.	The company's employees undergo continuous training programs every year.
4.	The company's employees continuously learn from others (college and outsiders).
5.	The ratio of educated personnel is on average compared with industry (number of PhD, Master and Bachelor Degree compared with what should be).
6.	The company devotes a lot of time and effort to update and develop employees' knowledge and skills.
7.	The company's market share has been continually improving over the past few years.
8.	Employees' learning and education affect company's productivity.
9.	Employees' learning and education affect company's profitability.
10.	Employees' learning and education affect company's market value (stock value).
	Experience and expertise
1.	The company's employees are experts in their respective areas.
2.	The company's employees consistently perform at their best.
3.	The company's employees generally give it their all, which makes this company different from others in the industry.
4.	The company's employees have worked for many years in the firm (employee turnover is very low).
5.	The company prides itself on being efficient.
6.	The staffs are highly professional.
7.	The company has the lowest cost per transaction of any in the industry.
8.	Employees' experience and expertise affect company's productivity
9.	Employees' experience and expertise affect company's profitability.
10.	Employees' experience and expertise affect company's market value (stock value).
	Innovation and creation
1.	The company's employees are considered creative and bright compared with other companies in the industry.
2.	The company's employees are keen to voice their opinions in group discussions.
3.	The company's employees usually come up with new ideas.
4.	Large numbers of new products are launched compared with competitors.

Table 3.2 (Continued)

Question	
5.	The company's employees are continuously encouraged to bring new knowledge and ideas to the business and share their knowledge with their colleagues.
6.	The company's employees are satisfied with their company's innovation policies and programs.
7.	The company's employees are highly motivated and committed to sharing new great ideas within the company, as it should be.
8.	Employees' innovation and creation affect company's productivity.
9.	Employees' innovation and creation affect company's profitability.
10.	Employees' innovation and creation affect company's market value (stock value).

Source: Sharabati, Jawad and Bontis (2010)

The researcher has replaced the indicator name 'innovation and creation' with 'creativity', thus question no. 6 and 7 in Table 3.3 were replacing question no. 4 and 6 in Table 3.2 to avoid redundancy. The remainings, question no. 1, 2, 3, 4, 5, 8, 9 and 10 from Table 3.2 were adapted from their questionnaire for this study.

Table 3.3
List of Questions for Creativity

Question	
How do you feel about the statement on your company?	
	Creativity
1.	The company's employees are considered creative and bright compared with other companies in the industry.
2.	The company's employees are keen to voice their opinions in group discussions.
3.	The company's employees usually come up with new ideas.
4.	The company's employees are continuously encouraged to bring new knowledge and ideas to the business and share their knowledge with their colleagues.
5.	The company's employees are highly motivated and committed to sharing new great ideas within the company, as it should be.
6.	Ideas created by company's employees are not quite like those people are expecting.
7.	The company's employees typically create new ideas by combining existing ideas.
8.	Employees' creativity affects company's productivity.
9.	Employees' creativity affects company's profitability.
10.	Employees' creativity affects company's market value (stock value).

Source: Own illustration

Using the same source, the researcher has decided to adapt all questions pertaining to measuring SC from Sharabati, Jawad and Bontis (2010) because they have been tested and were confirmed valid with the explanatory power (R^2) of 0.309. According to

Hair, Black, Babin and Anderson (2010), the larger the R^2 is, the better the explanatory power. R^2 value ranges from 1.0 (perfect prediction) to 0.0 (no prediction), where there is no acceptables threshold value of R^2. The indicators for SC are systems and programs, R&D and IPR as depicted in Table 3.4.

Table 3.4
List of Questions for Structural Capital

	Question
How do you feel about the statement on your company?	
	Systems and programs
1.	The company has succession training programs for each and every post/ position (major position).
2.	The company's culture and atmosphere are supportive and comfortable.
3.	The company's recruitment programs are comprehensive; and dedicated to hiring the best candidates available.
4.	The company has a well-developed reward system related to performance.
5.	The company supports their employees by constantly upgrading their skills and education whenever it is necessary.
6.	Staffs have sufficient influence over decisions made within the company.
7.	The company is not a "bureaucratic nightmare'.
8.	The company's systems and programs affect the company's productivity.
9.	The company's systems and programs affect the company's profitability.
10.	The company's systems and programs affect the company's market value (stock value)
	Research and Development (R&D)
1.	The company is considered a research leader.
2.	The company continuously develops work processes.
3.	The company continuously develops and reorganizes itself based on research and development (e.g. structure and responsibilities).
4.	The company follows up and adopts the latest scientific and technical development around the world.
5.	The systems and procedures of the company support innovation.
6.	The company determines appropriate and adequate budget for research and development.
7.	The company's board of management highly trust and support the Research and Development department.
8.	The company's R&D affects the company's productivity.
9.	The company's R&D affects the company's profitability.
10.	The company's R&D affects the company's market value (stock value).
	Intellectual Property Rights (IPR)
1.	The company sets clear strategies and procedures for Intellectual Property Rights management.
2.	The company monitors performance of the Intellectual Property Rights portfolio.
3.	The company pursues a multiple strategy of licensing Intellectual Property Rights, spinning out new organizations or disposing of them to other parties.
4.	The company actively encourages and rewards creation and extended use in order to maximize the income from Intellectual Property Rights.
5.	Intellectual Property is a key intellectual asset for top management, which is considered for value creation.

Table 3.4 Continued)

Question	
6.	The company utilizes the Intellectual Property Rights to maximum level.
7.	The company has a high number of Intellectual Property Rights per year compared with competitors.
8.	The company's Intellectual Property Rights affects the company's productivity.
9.	The company's Intellectual Property Rights affects the company's profitability.
10.	The company's Intellectual Property Rights affects the company's market value (stock value).

Source: Sharabati, Jawad and Bontis (2010)

Moving further, RC was measured using indicators adapted from Sharabati, Jawad and Bontis (2010) where the factor analysis indicated that the result items were confirmed valid with the explanatory power (R^2) of 0.450. In this case, the indicators for RC are strategic alliances, licensing and agreements; customer and supplier relations; and customer knowledge as shown in Table 3.5.

Table 3.5
List of Questions for Relational Capital

Question	
How do you feel about the statement on your company?	
	Strategic alliances, licensing and agreements
1.	The company is currently working on joint projects with many other organizations.
2.	The company has diverse distribution channels.
3.	High ratio of the company's business is done with strategic alliances.
4.	The company has many and diverse alliances (R&D), manufacturing, marketing, distribution).
5.	People from outside the company are consulted when the decision is made within the company.
6.	The company is able to learn and add value through its partners.
7.	The company prides itself on being partnership-oriented.
8.	The company's strategic alliances affect the company's productivity.
9.	The company's strategic alliances affect the company's profitability.
10.	The company's strategic alliances affect the company's market value (stock value).
	Customer and supplier relations
1.	A poll of the company's customers shows them to be loyal to the company, and would indicate that they are generally satisfied.
2.	When it comes to new business, the company's customer has increasingly selected company's product versus competitors' customers over the past few years.
3.	The company capitalizes on customers' want and needs by continually striving to make them satisfied.
4.	The company devotes considerable time to select suppliers.
5.	The company maintains a long-standing relationship with suppliers.
6.	The company has greatly reduced the time it takes to resolve a customer's problem.
7.	The company feels confident that their customer will continue to do business with it.

Table 3.5 (Continued)

	Question
8.	The company's relationship with customer and supplier affects company's productivity.
9.	The company's relationship with customer and supplier affects the company's profitability.
10.	The company's relationship with customer and supplier affects the company's market value (stock value).
	Customer Knowledge
1.	It is important for the company to share knowledge with its partners.
2.	The company gets as much feedback out of customers as it possibly can under different circumstances.
3.	Customer knowledge is widely distributed throughout the company.
4.	Data about customers are continuously updated.
5.	The company has relatively complete data about the suppliers.
6.	The company continually meets with customers to find out what they want from it.
7.	The company has a useful and updated information system in use.
8.	The company's knowledge about customers and suppliers affects the company's productivity.
9.	The company's knowledge about customers and suppliers affects the company's profitability.
10.	The company's knowledge about customers and suppliers affects the company's market value (stock value).

Source: Sharabati, Jawad and Bontis (2010)

3.4.2 Indicators for Innovation Capability

There are plenty of constructs that can be used for measuring innovation capability and the constructs for innovation capability are interchangeable with other constructs such as innovation and innovation performance, depending on the objectives of the study. Hui and Idris (2009) found that previous studies measure innovation based on a single (or a few) innovation constructs with R&D expenditures and patent count being the widely used proxies for organization. In order to have a better illustration, the researcher has summarizes different constructs used by different scholars to measure innovation; either in the form of organizational innovativeness, innovation performance, innovation capital components, innovation capability or others, as listed in Table 3.6.

Table 3.6
Indicators for Innovation Capability

Author (Year)	Construct	Indicators
Johannessen, Olsen, and Lumpkin (2001)	Firm innovativeness	i. New product ii. New services iii. New method of production iv. Opening new market v. New sources of supply vi. New ways of organizing
Wang and Ahmed (2004)	Organizational innovativeness	i. Product innovativeness ii. Process innovativeness iii. Market innovativeness iv. Strategic innovativeness v. Behavioral innovativeness
Cheng, Lin, Hsiao, and Lin (2008)	Innovation capital components	i. Innovation capital ii. Customer capital iii. Human capital iv. Process capital
Ibrahim, Zolait and Subramanian (2009)	Organizational innovativeness	i. Process orientation ii. Market-based orientation iii. Technology orientation iv. Product orientation v. Strategic orientation
Lin, Chen, and Chiu (2010)	Innovation capability	i. Product ii. Process iii. Administrative iv. Marketing v. Service innovation
Gunday, Ulusoy, Kilic and Alpkan (2011)	Type of innovation	i. Product innovation ii. Process innovation iii. Marketing innovation iv. Organizational innovation
Delgado-Verde, Castro and Navas (2011)	Innovation outcome	i. Number of product innovation ii. Percentage of sales with respect to new products against total sales iii. Number of new products with respect to the firm portfolio
Rujirawanich, Addison, and Smallman (2011)	Innovation	i. Product innovations ii. Process Innovations
Gallego-Alvarez, Prado-Lorenzo and Garcia-Sanchez (2011)	Innovation	i. R&D intensity

Source: Own illustration

Prior to the varieties of business nature of SMEs, it is important to consider a broad range of innovation forms to capture their influence on firm performance. Therefore,

the researcher has utilized indicators for innovation capability designed by Wang and Ahmed (2012) as shown in Table 3.7. They defined the construct of innovation capability in the form of organizational innovativess and distinguished the indicators of innovation based on the type of innovation which are behavior innovativeness, product innovativeness, process innovativeness, market innovativeness and strategic innovativeness. All of these items were measured using a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

The researcher agreed with Wang and Ahmed (2012) and Ibrahim, Zolait and Subramanian (2009) pertaining to the rationale of using organizational innovativess. According to them, organizational innovativeness can represents various key aspects of innovation where a high level of organizational innovativeness will improve organizational performance. Wang and Ahmed (2004) further added that the indicators are inter-linked where product and market innovativeness are externally-focused and market based whilst behavior and process innovativeness are internally-focused.

Table 3.7

List of Questions for Innovation Capability

	Question
How do you perceive about your company?	
	Product innovativeness
1.	In new product and service introductions, our company is often first-to-market.
2.	Our new products and services are often perceived as very novel by customers.
3.	In comparison with our competitors, our company has introduced more innovative products and services during the past five years.
4.	In comparison with our competitors, our company has a lower success rate in new products and services launch.
	Process innovativeness
1.	We are constantly improving our business processes.
2.	During the past five years, our company has developed many new management approaches.
3.	When we cannot solve a problem using conventional methods, we improvise on new methods.
4.	Our company changes production methods at a great speed in comparison with our competitors.

Table 3.7 (Continued)

Question	
	Market innovativeness
1.	In comparison with our competitors, our products' most recent marketing program is revolutionary in the market.
2.	Our recent new products and services are only minor changes from our previous products and services.
3.	In new product and service introductions, our company is often at the cutting edge of technology.
4.	New products and services in our company often take us up against new competitors.
	Strategic innovativeness
1.	Our firm's research and development or product development resources are not adequate to handle the development need of new products and services.
2.	Key executives of the firm are willing to take risks to seize and explore "chancy" growth opportunities.
3.	Senior executives constantly seek unusual, novel solutions to problems via the use of "idea men".
4.	When we see new ways of doing things, we are last at adopting them.
	Behavioral innovativeness
1.	We get a lot of support from managers if we want to try new ways of doing things.
2.	In our company, we tolerate individuals who do things in a different way.
3.	We are willing to try new ways of doing things and seek unusual, novel solutions.
4.	We encourage people to think and behave in original and novel ways.

Source: Wang and Ahmed (2004)

In addition, Wang and Ahmed (2012) has performed two realibility analysis on their questionnaire; first using all 20 questions and second using questions grouped according to the indicators. The former overall realibility analysis has resulted a Cronbach's alpha value of 0.909 whilst the later has resulted values above 0.631; thus indicating each items is perceived reliable.

3.4.3 Indicators for Firm Age

Firm age plays a moderating role in the conceptual model. There are many ways used by previous researchers to measure firm age; depending on the objective of their study. Morgan, Kaleka and Katsikeas (2004) defined firm age in terms of the number of years firm has been engaged in exporting operations whilst Ainuddin, Beamish,

Hulland and Rouse (2007) used the age of international joint venture formation to define firm age. However, the researcher measured firm age in term of the number of years the firm had been in operation.

Concerning the classification of firm age, previous studies showed different views existed amongst researchers. Referring to Table 3.8, Abu Bakar (2011) and Ayyagari, Demirguc-Kunt and Maksimovic (2011) classified firm age into three groups: young firm for enterprise operating less than five years; intermediate/mid age firm and matured/established/older firm are those operating from six to ten years, and more than ten years. On the other hand, Ismail, Che Rose, Abdullah and Uli (2010) and LiPuma, Newbert and Doh (2013) divided firm age into two groups, new firm and old firm.

Table 3.8
Classification of Firm Age

Author (Year)	Classification	Years
Ismail, Che Rose, Abdullah and Uli (2010)	New firm Old firm	Less than or equal to 15 More than 16
Abu Bakar (2011)	Young firm Intermediate firm Mature/established firm	Less than 5 6 to 10 More than 10
Ayyagari, Demirguc-Kunt and Maksimovic (2011)	Young firm Mid age firm Mature firm	Less than 5 6 to 10 More than 10
Fort, Haltiwanger, Jarmin and Miranda (2012)	Young firm Mature/older firm	Less than 5 More than or equal to 5
LiPuma, Newbert and Doh (2013)	New firm Established firm	Less than 7 More than or equal to 7

Source: Own illustration

Discussing further, Reiss (2011) and BERNAMA (2006) claimed that higher failure rate of SMEs is within the first five years of operation. Persson (2004) and Fort, Haltiwanger, Jarmin and Miranda (2012) added that 58.0 percent of small business in Sweden did not survive within five years period after establishment. A study completed by Cader and Leatherman (2011) found that majority (42.0%) of small

business in the United States managed to survive after five years. He added that technology-intensive firms were more likely to cease operation the first five years of establishment. Table 2.18 illustrates their findings.

Therefore, the researchers would like to test whether firm operating more than five years performs better than those operating less than five years. Concerning this, firm age in this study is divided into two groups, young firm and matured firm; where young firm refers to firm that is operating less than five years and matured firm is those operating equal to or more than five years; sharing the same view with Fort, Haltiwanger, Jarmin and Miranda (2012).

3.4.4 Indicators for Firm Performance

Performance differences can be understood differently by different people in many aspects and connotations depend on the application. It refers to how well a firm does something. Traditionally, performance are measured based on accounting figures emphasize on selective financial indicators such as EVA (Maditinos, Sevic, & Theriou, 2006). However, the area has evolved and it is measured differently based on the objective of a study.

For example, Neely, Filippini, Forza, Vinelli, and Hii (2001) used four items to measure performance, namely ROI, market share, competitive position versus direct competitors, and value to the customer; whilst Rujirawanich, Addison and Smallman (2011) measured performance using measure of success involving ROI. Akman and Yilmaz (2008) looked at performance differently when he measured performance using innovative capabilty in his study. In order to have a clearer view, the researcher

has summarized the constructs and indicators used for measuring performance of a firm in Table 3.9.

Table 3.9
Indicators for Performance

Author (Year)	Construct	Indicators
Bontis (1998)	Firm Performance	i. Industry leadership. ii. Future outlook. iii. Profit. iv. Profit growth. v. Sales growth. vi. After-tax return on assets. vii. After-tax return on sales. viii. Overall response to competition. ix. Success rate in new product launches. x. Overall business performance and success.
Neely, Filippini, Forza, Vinelli and Hii (2001)	Business performance	i. Return on investment. ii. Market share. iii. Competitive position versus direct competitors iv. Value to customer (the extent to which product and services are seen by customer as value for money).
Jaruzelski and Dehoff (2005)	Business result	Financial performance.
Rauf (2007)	SME performance	i. Profit. ii. Rate of return. iii. Expected growth.
Fruhling and Siau (2007)	Innovation outcomes	E-Commerce Initiatives.
Omerzel and Antoncic (2008)	SME performance	i. Profitability. ii. Growth.
Akman and Yilmaz (2008)	Performance	Innovative capability.
Chaveerug and Ussahawanitchakit (2008)	Organizational performance	i. Market performance. ii. Financial performance. iii. Product/service.
Al-Kazemi (2009)	Financial performance	i. ROA. ii. ROS. iii. ROE.
Chan (2009)	Corporate performance	i. Market Valuation (MB). ii. Profitability (ROA). iii. Productivity (ATO). iv. ROE.
Jaruzelski and Dehoff (2009)	Business result	Financial performance.

Table 3.9 (Continued)

Author (Year)	Construct	Indicators
Sharabati, Jawad and Bontis (2010)	Business performance	i. Productivity. ii. Profitability. iii. Market valuation.
Kamukama, Ahiauzu and Ntayi (2010)	Financial performance	i. Portfolio at risk. ii. Net profit ratio. iii. Loan loss recovery ratio. iv. Repayment rate. v. ROA.
Phusavat, Comepa, Sitko-Lutek and Ooi (2011)	Firm performance	i. ROE. ii. ROA. iii. Growth in revenue. iv. Employee productivity.
Wah Chu, Chan and Wu (2011)	Corporate performance	i. Market Valuation (MB Value). ii. Profitability (ROA). iii. Productivity (ATO). iv. ROE.
Joshi, Cahill and Sidhu (2011)	Performance	i. Assets. ii. VA (input-output). iii. Shareholders' equity.
Rujirawanich, Addison and Smallman (2011)	Measure of success	Return on Investment.
Abd Aziz and Mahmood (2001)	Performance	i. Firm's performance ii. Firm growth iii. Overall performance

Source: Own illustration

Firm performance can be perceived from a number of different kinds of perspectives rather than based solely on financial measures of profits which are criticized as they are very sensitive to interest rate and exchange rate assumptions as discussed in previous chapter. Nothnagel (2008) further added that performance is not stable over time, thus adding other than the financial indicators to measure performance will give a comprehensive result of firms' wellbeing. Therefore, the researcher used multiple indicators to measure performance in the study to obtain a precise result. The researcher will employ a self-report technique to obtain data on firm performance as it is expected that respondents would be less willing to share their financial data. Self-

report technique is based on the respondents' views about their firm performance. Several previous researchers had also employed this technique which yielded full insights (Rauf, 2007; Omerzel & Antoncic, 2008).

Table 3.10
List of Questions for Firm Performance (Pilot Test)

Question
What is your company's performance relative to your key competitors in the industry over the last few years?
1. Industry leadership.
2. Future outlook.
3. Profit.
4. Profit growth.
5. Sales growth.
6. After-tax return on assets.
7. After-tax return on sales.
8. Overall response to competition.
9. Success rate in new product launches.
10. Overall business performance and success.

Source: Bontis (1998)

Concerning the indicators for firm performance, the researcher has initially adopted questions designed by Bontis (1998) to measure firm performance as shown in Table 3.10. Each respondent was asked to rate their firm performance in relative to the key competitors in the industry over the last few years; using seven point Likert scale ranging from 1 (bottom decile) to 7 (top decile). However, due to few responses received from the pilot test, the researcher has decided to utilize questions designed by Abd Aziz and Mahmood (2011) to measure firm performance as depicted in Table 3.11. The discussions pertaining to pilot test are discussed in Section 3.5. Table 3.10 indicates that the respondents were asked to rate their firm performance based on firm's growth, financial performance and overall performance using seven points Likert scales ranging from 1 (much lower) to 7 (much higher). Overall performance

was used to indicate other business performance items, other than firm's growth and financial performance (Lumpkin & Dess, 1996).

Table 3.11
List of Questions for Firm Performance

	Question
What is your company's performance?	
	Firm's growth
1.	Sales growth rate
2.	Employment growth
3.	Market growth
	Financial performance
1.	Gross profit
2.	Rate of Return on Assets
3.	Rate of Return on Investment
	Overall performance
1.	Overall performance

Source: Abd Aziz and Mahmood (2011)

3.5 Pilot Test

The researcher has performed a pilot test using convenience sampling technique and managed to get a number of 25 responses within two weeks. The cover letter and questionnaire for the pilot test are as depicted in Appendix A and Appendix B. This technique was chosen in accordance with the objective of performing the test which is to determine the reliability of the questionnaire and the understanding of the respondents on the questionnaire. The number of questionnaire was sufficient to meet the objective of the pilot test. In this case, Isaac and Michael (1998) in Hill (1998) stated that a sample size of 10 to 30 is sufficient for pilot study whilst Hertzog (2008) proposed a number of 20 to 25 of sample size for efficacy pilot. Aaker, Kumar, Day

and Leone (2011) added a sample size of 15 is sufficient for simple and straight forwards survey and 25 for long and complex questionnaire.

In order to look at internal consistency, the researcher used Reliability Coefficient as a diagnostic measure where higher Coefficient Alpha indicates that the relationship between a construct and the indicators are greater (Hair, Black, Babin, & Anderson, 2010). The result findings showed an overall Cronbach's Alpha value of 0.970. Referring to Zikmund, Babin, Carr, & Griffin (2010), the Alpha values indicated that all items in the questionnaire are considered to have a very good reliability. The researcher also ran a reliability analysis on each construct and the results indicated that they are perceived to have a very good reliability ranged from 0.906 to 0.970 as depicted in Table 3.12.

Table 3.12
Reliability Coefficient Scores for Pilot Test

Construct	**Cronbach's Alpha**	**No. of Item**
All constructs	0.970	128
Intellectual Capital	0.964	90
HC	0.907	30
SC	0.949	30
RC	0.920	30
Innovation Capability	0.906	20
Firm Performance	0.930	10

From the pilot test, the researcher received two feedbacks from the respondents that require further actions. First, the questionnaire was in English. Due to this, few respondents found some of the questions difficult to comprehend as they are not well-versed with the language. They suggested that the questionnaire should set in dual language. Pondering to this, the researcher has decided to prepare a set of dual-

language English-Malay questionnaire. The questionnaire was proofread and endorsed by a certified translator.

Second, some of the respondents had problem to identify their competitors. This is probably true because there are many SMEs operating in the same business as theirs and scattered throughout Malaysia. Due to this, they have problem to answer questions pertaining to firm performance measures; where each respondent was asked to rate their firm performance in relative to the key competitors in the industry over the last few years. In order to overcome the problem, the researcher has installed questions designed by Abd Aziz and Mahmood (2011) to measure firm performance as depicted in Table 3.11; where they were asked to rate their firm performance based on firm's growth, financial performance and overall performance.

3.6 Summary

After conducting the pilot test and reliability analysis, the researcher has decided to utilize the indicators shown in Table 3.13 for the questionnaire design. The output findings from the questionnaires will be used to generate conclusion and recommendations for the study.

Table 3.13
Indicators for Each Variable in the Study

Variable	Construct	Indicators	No. of Item
Independent variable	Intellectual Capital	HC	30
		SC	30
		RC	30
	HC	Learning and education	10
		Experience and expertise	10
		Creativity	10
	SC	Systems and programs	10
		R&D	10
		Intellectual Property Rights	10

Table 3.13 (Continued)

Variable	Construct	Indicators	No. of Item
	RC	Strategic alliances, licensing and agreements	10
		Customer and supplier relations	10
		Customer Knowledge	10
Mediating Variable	Innovation Capability	Product innovativeness	4
		Process innovativeness	4
		Market innovativeness	4
		Strategic innovativeness	4
		Behavioral innovativeness	4
Moderating Variable	Firm Age	Young Old and Matured	1
Dependent variable	Firm Performance	Firm's growth	3
		Financial performance	3
		Overall performance	1

CHAPTER FOUR

FINDINGS

4.1 Introduction

Chapter 4 presents the statistical analysis of this study. This section covers the overview of the data collection, preliminary examination of data, demographic profile of respondents and SMEs, multivariate analysis, bivariate analysis and hypotheses testing and results. There are 20 hypotheses for this study. The researcher has used the Smart-PLS software to generate answers for five hypotheses (H1 to H5) and the SPSS software for three hypotheses (H6 to H8).

4.2 Overview of Data Collection

This section will discuss the primary data collection. Includes are the discussion on the issues pertaining to response rate and nonresponse bias. Both issues are important in determining the reliability of the study.

4.2.1 Response rate

The primary data collection period for both postal mail and online survey for this study are 7.5 months. Initially, the researcher has posted 1,071 sets of questionnaire to selected SMEs together with a cover letter and a pre-paid envelope with returned postage affixed on 17 March 2013. After 2.5 months, the researcher managed to get

30 returned questionnaires. Due to the poor response, the researcher has decided to offer the respondents an alternative way to participate in the survey, which was via online survey using the platform designed by surveymonkey.com. The online survey is as depicted in Appendix G. The researcher has emailed the first survey reminder together with the link to online questionnaire to respondents whose have not returned the mailed questionnaire. After a week of sending the first reminder, the researcher started emailing the second survey reminder to persuade them to participate in the survey. Within the period of five months, the researcher has sent nine survey reminders via postal mail and email are depicted in Table 4.1. The researcher has decided to close the primary data collection on 30 September 2013, taking the time and budget constraint into consideration.

Table 4.1
Invitation to Participate in the Survey

No.	Mode of Invitation	Date of Delivery
1.	Postal Mail Survey	17 March 2013
2.	Email Survey Reminder I	9 –16 May 2013
3.	Email Survey Reminder II	23 May 2013
4.	Postal Mail Survey Reminder III	4 – 27 June 2013
5.	Email Survey Reminder IV	20 July 2013
6.	Email Survey Reminder V	2 August 2013
7.	Email Survey Reminder VI	22 August 2013
8.	Email Survey Reminder VII	26 August 2013
9.	Email Survey Reminder VIII	11 September 2013
10.	Email Survey Reminder VIX	19 September 2013

Of the 1,071 sets of questionnaire sent, 185 sets were received and 172 sets were usable. Only 13 firms were filtered due to insufficient response where they answered less than 50.0 percent of the questions. 25 sets were undelivered due to the intended informants no longer being at the address neither was unreachable via email; and seven firms refused to participate in the survey. The response rate for the study is 17.3

percent and considered to be sufficient as the average response rate for surveys using SMEs in Malaysia as respondents are 15.6 percent (Shafie, 2012).

In addition, comparing to the other previous studies whose respondents were SMEs as highlighted in Table 4.2, the response rate of the study is considered to be good. For instance, Hilmi, Ramayah, Hasnan and Mustapha (2010) conducted a research on SMEs in all sectors of business activities achieved a response rate of 8.2 percent. On the other hand, Koe and Abdul Majid (2013), ThiLip-Sam and Hock-Eam (2011) and Abu Bakar and Ahmad (2010) managed to get a response rate of 15.2 percent, 17.7 percent and 20.1 percent. Nonetheless, the researcher has performed the non response bias test to look at the reliability of the study in the next discusssion.

Table: 4.2
Response Rate of Small and Medium Enterprises in Malaysia

No	Author (Year)	Respondent	Method	Response Rate (%)
1.	Kim Man (2008)	SMEs in Manufacturing Sector	Postal mail	22.7
2.	Ismail and Mat Zin (2009)	Bumiputra SMEs in Non-Manufacturing Sector	Postal mail	11.0
3.	Ebrahim, Ahmed, Abdul Rashid and Taha (2010)	SMEs in Manufacturing Sector	Online questionnaire	20.8
4.	**Abu Bakar and Ahmad (2010)**	**SMEs in All Sectors**	**Postal mail**	**20.1**
5.	**Hilmi, Ramayah, Hasnan and Mustapha (2010)**	**SMEs in All Sectors**	**Online questionnaire**	**8.2**
6.	Zorah Abu Kassim and Sulaiman (2011)	SMEs in Manufacturing Sector	Postal mail	10.1
7.	Abd Aziz and Mahmood (2011)	SMEs in Manufacturing Sector	Postal mail	20.2
8.	June and Mahmood (2011)	SMEs in Service Sector	Postal mail	20.0
9.	**ThiLip-Sam and Hock-Eam (2011)**	**SMEs in All Sectors**	**Postal mail**	**17.7**
10.	Afsharghasemi, Zain, Sambasivan and Siew Imm (2013)	SMEs in Manufacturing Sector	Hand distribution	33.0
11.	**Koe and Abdul Majid (2013)**	**SMEs in All Sectors**	**Postal mail**	**15.2**
12.	Mahmood and Hanafi (2013)	Women owner/ manager of SMEs	Postal mail	15.9
13.	Yacob, Aziz., Mohamad Makmor and Mohd Zin (2013)	SMEs in Manufacturing Sector	Postal mail and email	17.3
14.	Rose. Md. Deros and Ab. Rahman (2013)	SMEs in Automative Industry	Email	10.8

4.2.2 Non Response Bias

Amongst the issue in a research study is the insufficient sample size that may lead to potential for non response bias. Bias in survey estimates could lead to inaccurate conclusion about the population from a sample. The issue occurs some members of the selected sample refuse to participate in the survey or unreachable.

Non response bias attempts to measure any differences between respondents across time. In this study, non response bias will assess the characteristics of the respondents who responded to the survey and who did not. According to Lineback & Thompson (2010), there are many methods of examining non response bias. The researcher has examined the potential of non response bias by comparing early and late respondents on key estimates; where late respondents are used as a proxy for non respondents. For this analysis, the early respondents (N=30, 17.4% of the sample) are compared with the late respondents (N=142, 82.6% of the sample) using an independent sample test on performance variable. Early respondents are those who participated in the survey before the first survey reminders were sent.

In respect of this, independent sample test using the Levene's Test for Equality of Variances has been employed to see whether the two groups (early and late respondents) show any differences. The researcher found the distribution of scores for innovation capability and performance do not show any significant differences where the significance values are higher than 0.05 at depicted in Table 4.3. The researchers also found the same results for intellectual capital (refer to Appendix H). It is assumed that two groups came from the same population since there are no significance differences between early and late respondents. Thus, non response bias does not appear to be a concern for this study.

Table 4.3

Independent Sample Test for Innovation Capability and Performance between Early and Late Respondents

Variables	Items	Levene's Test for Equality of Variances	
		F	Sig.
Innovation Capability	1-In new product and service introductions, our company is often first-to-market.	.021	.886
	2-Our new products and services are often perceived as very novel by customers.	.467	.495
	3-In comparison with our competitors, our company has introduced more innovative products and services during the past five years.	1.786	.183
	4-In comparison with our competitors, our company has a higher success rate in new products and services launch.	1.336	.250
	5-We are constantly improving our business processes.	.120	.729
	6-During the past five years, our company has developed many new management approaches.	2.830	.095
	7-When we cannot solve a problem using conventional methods, we improvise on new methods.	.088	.767
	8-Our company changes production methods at a great speed in comparison with our competitors.	3.456	.065
	9-In comparison with our competitors, our products' most recent marketing program is revolutionary in the market.	.282	.596
	10-Our recent new products and services are only minor changes from our previous products and services.	.061	.805
	11-In new product and service introductions, our company is often at the cutting edge of technology.	1.065	.304
	12-New products and services in our company often take us up against new competitors.	.015	.903
	13-Our company's research and development or product development resources are not adequate to handle the development need of new products and services.	.423	.516
	14-Key executives of the company are willing to take risks to seize and explore "chancy" growth opportunities.	.869	.353
	15-Senior executives constantly seek unusual, novel solutions to problems via the use of "idea men".	.291	.590
	16-When we see new ways of doing things, we are last at adopting them.	.524	.470
	17-We get a lot of support from managers if we want to try new ways of doing things.	.018	.893
	18-In our company, we tolerate individuals who do things in a different way.	.084	.772
	19-We are willing to try new ways of doing things and seek unusual, novel solutions.	.395	.531
	20-We encourage people to think and behave in original and novel ways.	.963	.328

Table 4.3 (Continued)

Variables	Items	Levene's Test for Equality of Variances	
		F	Sig.
Performance	1-Sales growth rate.	.257	.613
	2-Employment growth.	.313	.577
	3-Market growth.	.153	.696
	4-Gross profit.	.109	.742
	5-Rate of Return on Assets.	.825	.365
	6-Rate of Return on Investment.	1.589	.210
	7-Overall performance.	.023	.881

4.3 Preliminary Examination of Data

This section presents the process of screening and cleaning of raw data before the researcher analyzes them. The processes are important to determine the relevancy of the data for multivariate statistical analysis. Includes are the discussions on the issues related to missing data, outliers and data distribution.

4.3.1 Assessment and Treatment of Missing Data

Assessment of missing data in this study involves two processes. First process involves deletion of questionnaires which were answered less than 50 percent of the total questions; as recommended by Hair *et.al* (2010). In respect of this, 13 questionnaires were filtered due to insufficient response. Second process involves assessment of missing values using SPSS as indicated in Appendix I. Referring to the Appendix, almost all questions contained missing values. Missing value need to be treated before performing multivariate analysis. Treatment of missing data in this study involved replacing the missing value in the instruments using median of nearby point. Appendix J explores the missing value of data after the treatment.

4.3.2 Assessment of Multivariate Outliers

The multivariate outliers must be assessed to identify the number of item measurement that is farthest from the centroid. There are many techniques to access the outliers, such as Euclidean distance, Manhattan distance and Mahalanobis distance. The researcher has deployed the Mahalanobis Distance to detect multivariate outliers. The criterion for identification of multivariate outliers is cases with the Mahalanobis distance score, D^2 greater than the Chi square value, χ^2 at $p>0.001$, they are considered as multivariate outliers and therefore must be deleted from the data set. The researcher has compared D^2 with χ^2 (117, 0.001) = 170.016 and found that there are no multivariate outliers in the data set as depicted in Appendix K.

4.3.3 Assessment of Distribution of Data

After completing the screening and cleaning process, the data was tested with an analysis of normality using SPSS. The researcher has assessed the data distribution by running the Kolmogorov-Smirnov and Shapiro-Wilk test. According to Piaw (2008), normality data distribution is assumed when the significant level for both test are more than 0.05. Concerning this, the researcher found that the data distribution for the study is not normal as depicted in Appendix L; where all both tests has resulted a significant level less than 0.05.

4.3.4 Assessment of Common Method Bias

Common Method Bias or also known as Common Method Variance is an issue of measurement error that potentially misleads the validity of the conclusion between measures. It creates a false internal consistency, that is an apparent correlation amongst variables generated by their common source (Chang, Witteloostuijn, & Eden, 2010). There are several potential sources of Common Method Bias listed by MacKenzie, Lee and Podsakoff (2003). Amongst them are common scale formats, positive and negative item wording and consistency motif.

The researcher has employed Harman One-factor analysis to assess the Common Method Bias. According to Teo (2011), Harman One-factor analysis assumes that the presence of Common Method Bias is indicated by the emergence of a single-factor accounting for the majority of covariance amongst measures. In respect to this, all items in the study were tested using unrotated Exploratory Factor analysis employing Principle Component Analysis technique and the result are depicted in Appendix M. Assessment of the Appendix shows that the unrotated PCA result forms 18 factors with total variance of 80.347 percent at Eigenvalues of 1.107; thus Common Method Bias does not exist in the measurement items.

4.4 Demographic Profile of Respondents and SMEs

Before proceeding to the multivariate analysis, the researcher has explored the demographic profile of SMEs' respondents using SPSS as shown in Table 4.4, Table 4.5, Table 4.6 and Table 4.7.

Table 4.4
Respondent Characteristics- Education Level

Education Level	Frequency	Valid Percent
No formal education	5	2.9
UPSR/SRP/PMR/SPM/O-level	18	10.5
STPM/HSC/Certificate/Diploma	18	10.5
Post Graduate Diploma/ Bachelor's Degree	98	57.0
Master Degree/PhD	33	19.2
Total	172	100.0

Table 4.4 describes the level of education of respondents which covers five categories: No formal education; UPSR/SRP/PMR/SPM/O-level; STPM/HSC/Certificate/Diploma; Post Graduate Diploma/ Bachelor's Degree; and Master Degree/PhD. Amongst the total number of respondents, more than half of the respondents hold at least Post Graduate Diplomas or Bachelor's degree (76.2%), whilst 21.0 percent of respondents obtained STPM/HSC/Certificate/Diploma and UPSR/SRP/PMR/SPM/O-level certificate. It shows that 76.2 percent of respondents are graduates. Only 2.9 percent of respondents received no formal education.

With regard to the annual sales turnover, Table 4.5 shows that more than half of the SMEs (59.4 %) earn an annual sales turnover of more than RM1,000,000. Only 12.2 percent of SMEs earns an annual sales turnover of less than RM200,000; followed by RM200,000 to RM249,999 (7.0%) and RM250,000 to RM999,999 (21.5%).

Table 4.5
Annual Sales Turnover of SMEs

Annual Sales Turnover	Frequency	Valid Percent
Less than RM200,000	21	12.2
RM200,000 to RM249,999	12	7.0
RM250,000 to RM999,999	37	21.5
RM1,000,000 to RM4,999,999	38	22.1
RM5,000,000 to RM9,999,999	24	14.0
RM10,000,000 to RM25,000,000	18	10.5
More than RM25,000,000	22	12.8
Total	172	100.0

In addition to annual sales turnover of SMEs, the study has gathered information about the number of employees for both young and matured SMEs. In this regard, the term young SMEs refers to firm that operates less than 5 years. Referring to Table 4.6, 33.1 percent of SMEs employ more than 50 employees, followed by 5 to 20 employees (29.1%), less than 5 employees (19.8%), 36 to 50 employees (9.3%) and 21 to 35 employees (8.7%). Looking at the status of firm, 38.6 percent of matured SMEs employ more than 50 employees, whilst the 11.0 percent, 30.3 percent, 9.0 percent and 11.0 percent of matured firms employ less than 5, 5 to 20, 21 to 35 and 36 to 50 employees respectively. Most of young SMEs (66.7%) employ less than 5 employees.

Table 4.6
Number of Employees

Status	Number of employees					Total
	Less than 5	5 to 20	21 to 35	36 to 50	More than 50	
Young SMEs	18 (66.7%)	6 (22.2%)	2 (7.4%)	0 (0.0%)	1 (3.7%)	27
Matured SMEs	16 (11.0%)	44 (30.3%)	13 (9.0%)	16 (11.0%)	56 (38.6%)	145
Total	34 (19.8%)	50 (29.1%)	15 (8.7%)	16 (9.3%)	57 (33.1%)	172

The study further looked into the main business activity of SMEs based on their legal status as shown in Table 4.7. Referring to the Table, 90.6 percent of manufacturing SMEs are private limited firms and only 3.1 percent of them are partnership SMEs. Services accounts most of the respondents main business activity, followed by manufacturing, manufacturing related services and agriculture and fishery. Other legal status is referred to association. Table 4.7 also shows that most of the respondents (64) are working in manufacturing SMEs whilst a small number of 13 respondents are working in agriculture and fishery SMEs.

Table 4.7
Main Business Activity of SMEs Based on Legal Status

Main business activity	Legal status				Total
	Sole Proprietorship	Partnership	Private Limited	Others	
Manufacturing	4 (6.3%)	2 (3.1%)	58 (90.6%)	0 (0.0%)	64
Manufacturing Related Services	2 (14.3%)	0 (0.0%)	11 (78.6%)	1 (7.1%)	14
Services	25 (30.9%)	6 (7.4%)	48 (59.3%)	2 (2.5%)	81
Agriculture and Fishery	0 (0.0%)	0 (0.0%)	12 (92.3%)	1 (7.7%)	13
Total	31 (18.0%)	8 (4.7%)	129 (75.0%)	4 (2.3%)	172

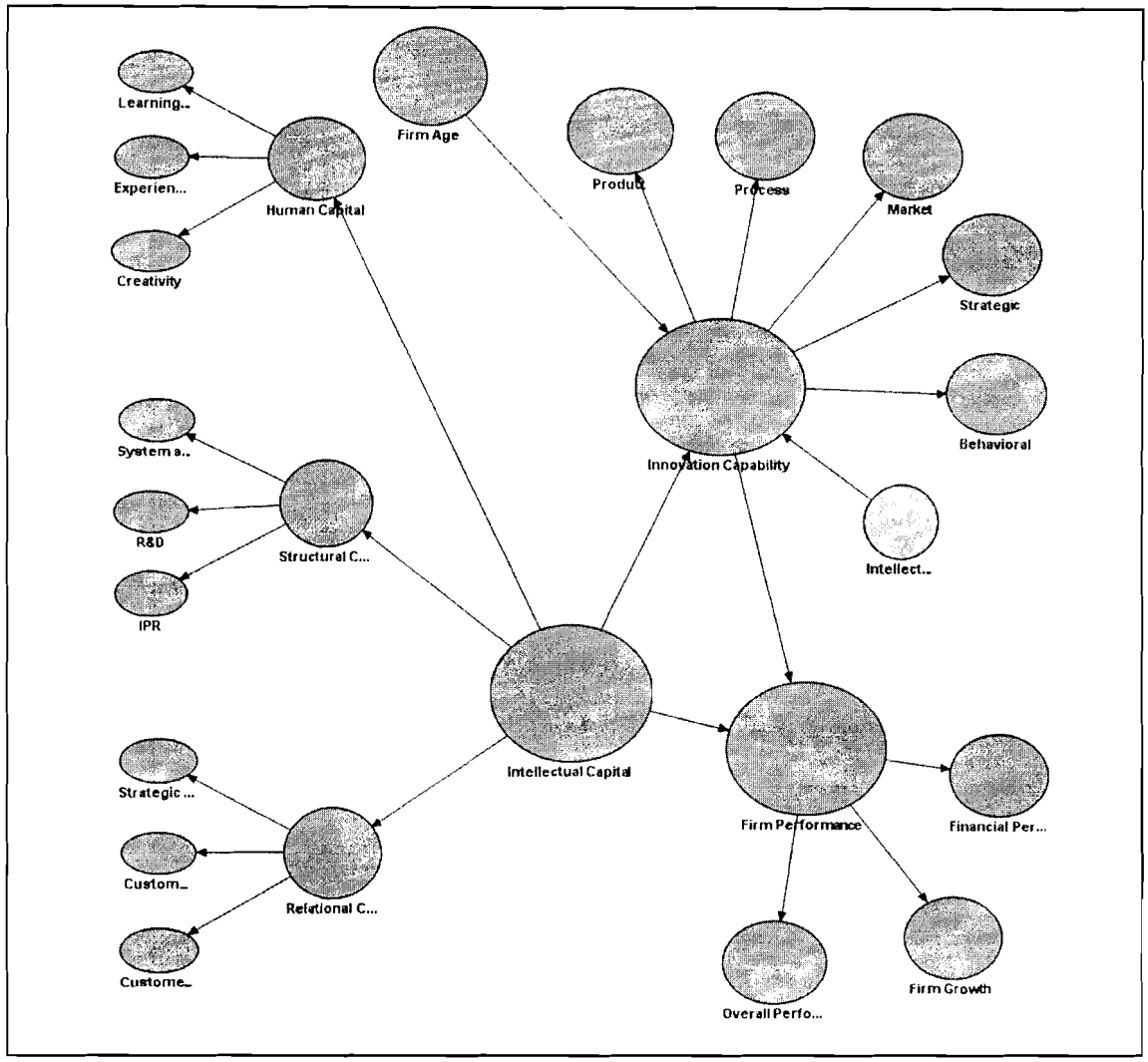
4.5 Multivariate Analysis

There are several softwares in the market that can be used to analyze multivariate analysis. Amongst them are SPSS, AMOS, LISREAL and Smart-PLS. The researcher has decided to use Smart-PLS because this study is an exploratory study and its conceptual model is complex with a sample size of 172. According to Hair, Ringle and Sarstedt (2011), Smart-PLS has the ability to perform multivariate analysis under the conditions of non-independence of data with small sample size and without distributional assumptions. Haenlein and Kaplan (2004) added that PLS becomes an option for covariance-based SEM tools when they reach their limit; namely, when the number of indicators per latent variable becomes excessively large. Nevertheless, Smart-PLS delivers consistence estimation results thus offers a significant contribution to theory development (Gotz, Liehr-Gobbers, & Krafft, 2010). In contrast, covariance-based SEM faces difficulties to handle large models due to the algorithmic nature requiring inverting of matrices (Chin, 1998). The researcher has used Smart-PLS 2.0 software version 2.0 M3 to run the multivariate analysis for this study.

The study involves analyzing two models. Model 1 will be used to analyze the relationship of intellectual capital, innovation capability, firm age with firm performance; and Model 2 will be used to analyze the relationship of HC, SC, RC, innovation capability, firm age with firm performance. There are two steps in analyzing multivariate model using Smart-PLS. First step involves analyzing the measurement model to determine how well the indicators load on the theoretically defined construct. The second step will look into the structural model to determine the path loadings, directions and significance between constructs. The followings will discuss both steps.

4.5.1 Measurement Model Analysis of the Model 1

Measurement model analysis or outer model analysis involves factor analysis and examination of the measurement model using two statistical elements, inter alia Construct Reliability Analysis and Construct Validity Analysis. Before reviewing these statistical elements, the researcher has illustrated the hypothesized model as shown in Figure 4.1.



Note: The oval shapes in the diagram represent the Manifest Variables, whilst the circle shapes represent the Latent Variable of the hypothesized model.

Figure 4.1

Hypothesized Model 1

4.5.1.1 Internal Consistency Reliability Analysis of the Hypothesized Model 1

The purpose of the Internal Consistency Reliability analysis is to measure the internal consistency of the measurement model; where a measure is assumed reliable when different attempts at measuring a model produce the same result. In order to access the internal consistency of the model, the researcher has used Smart-PLS to generate the Reliability Coefficient or Cronbachs Alpha values and Composite Reliability values for each construct as depicted in Table 4.8.

Table 4.8 shows that the Cronbachs Alpha values are ranged from 0.7409 to 1.000 (single item). According to Zikmund, Babin, Carr and Griffin (2010), they indicate a good Internal Consistency Reliability. The researcher also has assessed the Composite Reliability as shown in Table 4.8 and found that all items have adequate internal consistency with values more than 0.8. The values are consistent with the benchmark set by Gefen, Straub and Boudreau (2000) where they should be higher than 0.7 to be assumed as having adequate consistency.

Table 4.8
Assessing Internal Consistency Using Cronbach Alpha Value and Composite Reliability Value of the Hypothesized Model 1

Construct	Number of Items	Cronbachs Alpha	CR
Intellectual Capital	90	0.9396	0.9498
Innovation Capability	20	0.9554	0.9607
Firm Performance	7	0.9591	0.9666
Human Capital	30	0.9104	0.9438
Structural Capital	30	0.8843	0.9286
Relational Capital	30	0.8648	0.9183
Product	4	0.9196	0.9431
Process	4	0.8982	0.9297
Market	4	0.8641	0.9101
Strategic	4	0.7409	0.8312
Behavioral	4	0.8701	0.9121
Financial Performance	3	0.9507	0.9683
Firm Growth	3	0.8901	0.9320
Overall Performance	1	1.000	1.0000

4.5.1.2 Construct Validity Analysis of Model 1

Construct validity is used 'to test whether or not the measure confirms hypotheses generated from the theory based on the concept' (Aaker, Kumar, Day, & Leone, 2011). It is made up of several components such as discriminant validity, convergent validity, face validity and criterion validity. The researcher has assessed the

Discriminant Validity and Convergent Validity to determine the Construct Validity of the model.

4.5.1.3 Discriminant Validity of Model 1

Discriminant Validity is used to identify whether the individual measured items represent only on one latent construct. It is assessed by comparing the square root of Average Variance Extracted (AVE) with the latent variable correlations. AVE is 'the average percentage of variation explained (variance extracted) amongst the items of a construct' (Hair, Black, Babin, & Anderson, 2010). If the square roots of AVE values are higher than the latent variable correlations, it is assumed that the construct has satisfied the Discriminant Validity requirement. According to Table 4.9, the data violates the discriminant validity requirements where most of the correlation values of the constructs have exceeded the square root of AVE (Fornell & Larcker, 1981). The constructs that do not meet the Discriminant Validity requirement are Behavioral, Financial Performance, Firm Growth, Firm Performance, HC, Innovation Capability, Intellectual Capital, Market and Process.

Table 4.9

Discriminant Validity of Construct of the Hypothesized Model 1

Construct	Behavioral	*Financial Performance*	*Firm Growth*	*Firm Performance*	*HC*	*Innovation Capability*	*Intellectual Capital*	*Market*	Overall Performance	*Process*	Product	RC	Strategic	SC
Behavioral	0.7228	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial Performance	0.5466	0.9105	-	-	-	-	-	-	-	-	-	-	-	-
Firm Growth	0.5485	0.8515	0.8206	-	-	-	-	-	-	-	-	-	-	-
Firm Performance	0.5873	0.9711	0.9466	0.8061	-	-	-	-	-	-	-	-	-	-
HC	0.5935	0.5144	0.4805	0.5249	0.8484	-	-	-	-	-	-	-	-	-
Innovation Capability	0.8594	0.6455	0.6568	0.6922	0.6216	0.5591	-	-	-	-	-	-	-	-
Intellectual Capital	0.6644	0.5946	0.5643	0.6096	0.9126	0.7513	0.6795	-	-	-	-	-	-	-
Market	0.6845	0.5876	0.5857	0.6237	0.5645	0.9183	0.6955	0.7205	-	-	-	-	-	-
Overall Performance	0.6287	0.9091	0.8176	0.9304	0.5143	0.7129	0.5900	0.6407	-	-	-	-	-	-
Process	0.7803	0.6075	0.6056	0.6466	0.5947	0.9384	0.7230	0.8426	0.6719	0.7682	-	-	-	-
Product	0.6081	0.5417	0.5637	0.5852	0.4866	0.8656	0.6409	0.8047	0.5935	0.7699	0.8058	-	-	-
RC	0.6911	0.5942	0.5852	0.6182	0.7000	0.7625	0.8944	0.6885	0.5911	0.7452	0.6308	0.7897	-	-
Strategic	0.7383	0.5661	0.6042	0.6158	0.4948	0.8175	0.5664	0.6867	0.6092	0.7057	0.5746	0.5874	0.5700	-
SC	0.5359	0.5206	0.4810	0.5273	0.7933	0.6748	0.9306	0.653	0.5108	0.6416	0.6393	0.7539	0.4695	0.8124

Note: The diagonals values represent the square root of AVE whilst the other entries represent the squared correlations.

In order to treat this problem, the researcher has deleted the high correlated items as they load strongly in other construct rather than on their own construct (Gefen, Straub, & Boudreau, 2000). After deletion, the researcher managed to achieve Discriminant Validity of each construct as indicated in Table 4.10; where all square root of AVE values are higher than the latent variable correlations.

Comparing between Table 4.9 and Table 4.10, deleting the high correlation items has resulted dropping of four constructs to obtain Discriminant Validity. The construct are SC, Market, Process and Overall Performance.

Table 4.10
Discriminant Validity of Construct of the Modified Model 1

Construct	Behavioral	Financial Performance	Firm Growth	Firm Performance	HC	Innovation Capability	Intellectual Capital	Product	RC	Strategic
Behavioral	1.000	-	-	-	-	-	-	-	-	-
Financial Performance	0.3733	0.9756	-	-	-	-	-	-	-	-
Firm Growth	0.3117	0.6525	1.000	-	-	-	-	-	-	-
Firm Performance	0.3836	0.9617	0.8352	0.9052	-	-	-	-	-	-
HC	0.4501	0.5020	0.3308	0.4840	0.9478	-	-	-	-	-
Innovation Capability	0.7870	0.4648	0.4945	0.5162	0.4825	0.7384	-	-	-	-
Intellectual Capital	0.5222	0.5507	0.3796	0.5370	0.9321	0.5845	0.8282	-	-	-
Product	0.3427	0.3955	0.4440	0.4477	0.3446	0.7252	0.4328	1.000	-	-
RC	0.4397	0.4103	0.3126	0.4109	0.3998	0.5339	0.7046	0.4201	1.000	-
Strategic	0.3520	0.2525	0.3442	0.3077	0.2607	0.7002	0.3260	0.2570	0.3146	1.000

Note: The diagonals values represent the square root of AVE whilst the other entries represent the squared correlations.

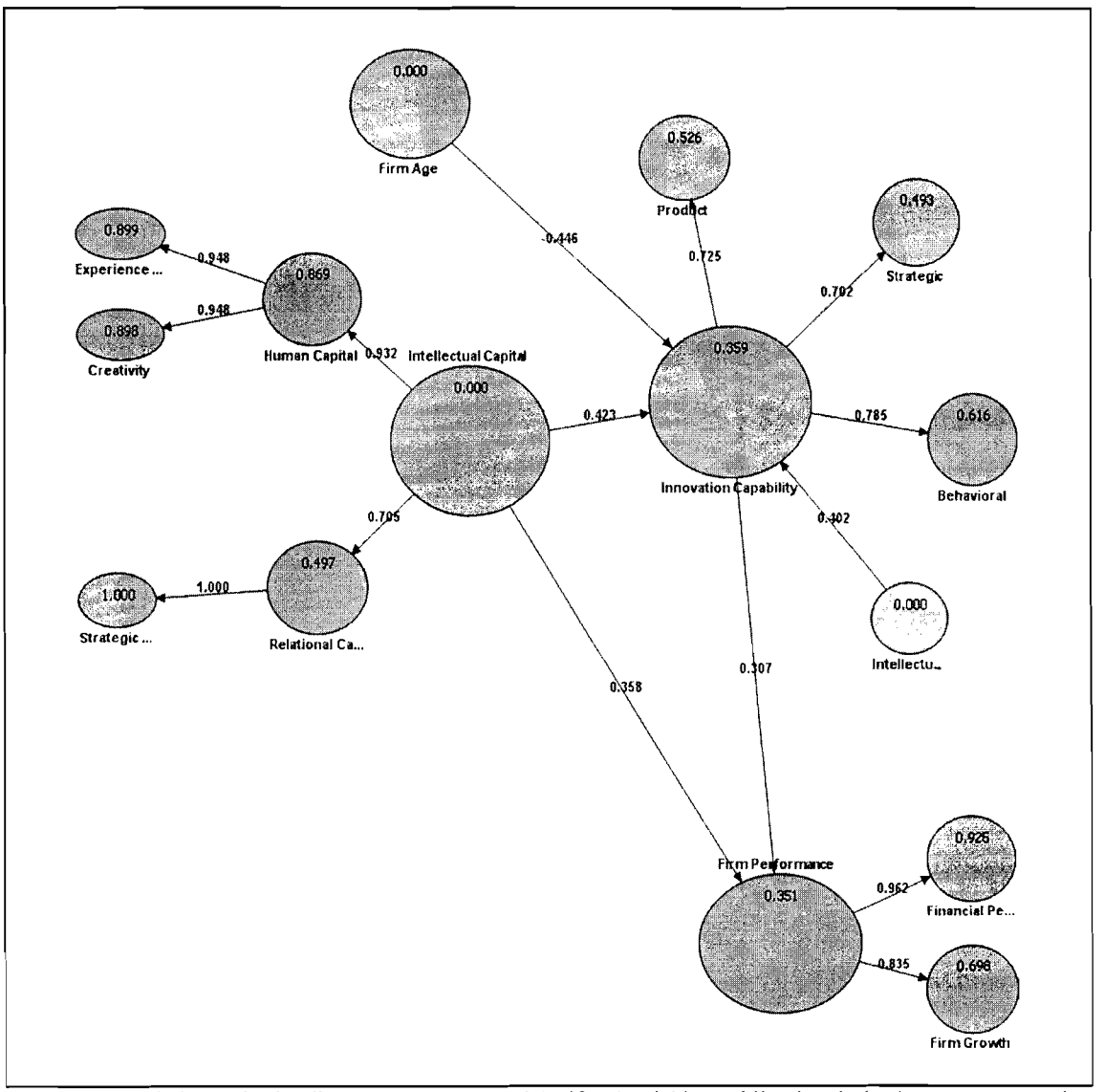
4.5.1.4 Convergent Validity of Modified Model 1

Convergent Validity is used to identify whether the extent of which indicators of a specific construct converge or share a high proportion of variance in common (Hair, Black, Babin, & Anderson, 2010). Convergent Validity was assessed by looking at the value of Composite Reliability (CR), AVE and factor loading as suggested by Hair *et al.* (2010). In order to assess good Convergence Validity, the loadings estimates should be of 0.7 or higher; AVE of 0.5 or higher; and CR of 0.7 or higher (Hair, Black, Babin, & Anderson, 2010).

Table 4.11
The Convergence Validity Assessment Results of the Modified Model 1

Construct	**Measurement Item**	**Loadings**	**AVE**	**CR**
Intellectual Capital	HC	0.9321	0.6859	0.8664
	RC	0.7046		
Human Capital	HCr	0.9478	0.8984	0.9465
	HEE	0.9479		
Relational Capital	RSLA	1.0000	1.0000	1.0000
Innovation Capability	Product	0.7253	0.5452	0.7821
	Strategic	0.7023		
	Behavioral	0.7851		
Firm Performance	Financial performance	0.9617	0.8193	0.9313
	Firm Growth	0.8352		

Referring to Table 4.11, all constructs demonstrate good Convergence Validity. The loadings estimates of the measurement items are ranged between 0.7023 and 1.000 (single item); AVE between 0.5452 and 1.000 (single item); and CR between 0.8664 and 1.000 (single item). After the requirements of Discriminant Validity and Convergent Validity have been met, the new modified model is portrayed in Figure 4.2.



Note: The oval shapes in the diagram represent the Manifest Variables, whilst the circle shapes represent the Latent Variable of the hypothesized model.

Figure 4.2

Modified Model 1

4.5.1.5 Internal Consistency Reliability Analysis of the Modified Model 1

Due to the changes made in the Hypothesized Model 1, the researcher has reassessed the Internal Consistency Reliability by looking at the Cronbachs Alpha value and CR value which are shown in Table 4.12. Referring to the Table, the Cronbachs Alpha values of the modified model are ranged from 0.5823 to 1.000 (single item). According to Zikmund, Babin, Carr and Griffin (2010), they indicate a good Internal Consistency Reliability. Also, the CR values are found having adequate Internal Consistency Reliability with values more than 0.7.

Table 4.12
Assessing Internal Consistency Using Cronbach Alpha Value and Composite Reliability Value of the Modified Model 1

Construct	Number of Items	Cronbachs Alpha	CR
Intellectual Capital	30	0.7635	0.8664
Human Capital	20	0.8869	0.9465
Relational Capital	10	1.0000	1.0000
Innovation Capability	3	0.5823	0.7821
Product	1	1.0000	1.0000
Strategic	1	1.0000	1.0000
Behavioral	1	1.0000	1.0000
Firm Performance	3	0.8880	0.9313
Financial Performance	2	0.9493	0.9753
Firm Growth	1	1.0000	1.0000

4.5.2 Structural Model Analysis of the Model 1

After analyzing the measurement model, the next step is to analyze the structural model by analyzing the inner model. The following will discuss on the structural model analysis containing structural model specification, effect size, f^2, Predictive Relevance and path coefficients and significance.

4.5.2.1 Structural Model Specification of the Modified Model 1

The structural model specification will cover the assessment of Coefficient of Determination of R Square (R^2) and Communality. The endogenous variables' determination coefficient of R^2 is used to judge the quality of structural (or inner) model. It reflects the level or share of the latent construct's explained variance, where the larger the R^2 is, the larger the percentage of variance explained, therefore the better the prediction of the variable (Gotz, Liehr-Gobbers, & Krafft, 2010). However, no generalizable statement can be made about acceptable threshold values of R^2 as the determination coefficient value depends on individual study (Dinter, 2013). In this study, all R^2 values of the endogenous variable are found at substantial level with the lowest value of 0.3506 (Firm Performance) as shown in Table 4.13.

Table 4.13
Structural Model Specification of the Modified Model 1

Construct	R Square (R^2)	Communality	AVE
Human Capital	0.8688***	0.8984	0.8984
Relational Capital	0.4965***	1.0000	1.0000
Innovation Capability	0.3587***	0.5452	0.5452
Product	0.5260***	1.0000	1.0000
Strategic	0.4932***	1.0000	1.0000
Behavioral	0.6164***	1.0000	1.0000
Firm Performance	0.3506***	0.8193	0.8193
Financial Performance	0.9249***	0.9517	0.9517
Firm Growth	0.6975***	1.0000	1.0000

Note: Latent construct's explained variance, R^2 >0.32 (substantial) ***, >0.15 (moderate) **, >0.02 (weak) * (Cohen J. , 1988).

Further analysis involves assessing the communality values. According to Zikmund, Babin, Carr and Griffin (2010), communality measures the percent of variable's variation that is explained by the factors. It is used to indicate any variables that are not adequately accounted for by the factor solution. Hair, Black, Babin and Anderson (2010) added that variable with communality value less than 0.50 are considered of

not having an acceptable level of explanation and researchers may then need to extract more factors to explain the variance. From Table 4.13, the communality values surpass the acceptable level of explanation with a minimum value of 0.5452.

4.5.2.2 Assessment of Effect Size, f^2 of the Modified Model 1

Effect size, f^2 is used to measure the change in the dependent variable's determination coefficient. It shows whether an independent latent variable has a substantial influence on the dependent latent variable (Gotz, Liehr-Gobbers, & Krafft, 2010). Effect size, f^2 can be assessed by the following formula: $f^2 = (R^2_{included} - R^2_{excluded}) / (1 - R^2_{included})$. Cohen (1992) interprets the effect size, f^2 value into three impact level: $(0.15>f^2>0.02)$ as small; $(0.35>f^2>0.15)$ as medium and $(f^2>0.35)$ as large. Referring to Table 4.14, both constructs exhibit large effect size more than 0.5 where Firm Performance shows the largest effect size f^2 of 0.6129.

Table 4.14
Assessment of Effect Size, f^2 of the Modified Model 1

Latent Construct	R^2 Full Model/ Included (a)	R^2 Individual Model (b)	R^2 Excluded (a)-(b)	f^2
Innovation Capability	0.3587	0.3600	-0.0013	0.5614***
Firm Performance	0.3506	0.3980	-0.0474	0.6129***

Note: Effect size of f^2 >0.35 (large) ***, >0.15 (medium) **, >0.02 (small) * (Cohen J., 1992).

4.5.2.3 Assessment of Predictive Relevance, Q^2 and q^2 of the Modified Model 1

Another assessment of the structural model involves the model's capability to predict. The researcher has employed measure of Predictive Relevance Stone-Geisser's, Q^2 value to check whether the structural model used of the study is able to provide a prediction of the endogenous latent variable's indicators (Henseler, Ringle, & Sinkovics, 2009). According to them, the accepted level for Q^2 value is more than zero; which give evidence that the observed value is well constructed and has Predictive Relevance. The researcher has used the Blindfolding technique in Smart-PLS to obtain Q^2 value. The Blindfolding technique is only applied to endogenous latent variables that have a relative measurement model operationalization. Referring to Table 4.15, the Q^2 (a) and (b) values of all the latent construct are well above zero with a minimum value of 0.184 (Innovation Capability), therefore has met the requirement of Predictive Relevance.

Table 4.15
Assessment of Predictive Relevance of the Modified Model 1, Q^2 and q^2

Latent Construct	Q^2 Full Model/ Included (a)	Q^2 Individual Model (b)	Q^2 Excluded (a)-(b)	q^2
Innovation Capability	0.1840	0.1970	-0.0130	0.2410**
Firm Performance	0.3506	0.3550	-0.0044	0.5467***

Note: Predictive relevance of q^2 >0.35 (large) ***, >0.15 (medium) **, >0.02 (small) * (Henseler, Ringle, & Sinkovics, 2009)

Further test involves calculating q^2 value to access the relative impact of the Predictive Relevance, thus explaining the endogenous latent variable under evaluation. Effect size, q^2 can be assessed by the following formula: $q^2 = (Q^2_{included} - Q^2_{excluded}) / (1 - Q^2_{included})$. Henseler, Ringle and Sinkovics (2009) interpret the effect size of Predictive Relevance, q^2 value into three impact level: $(0.15>q^2>0.02)$ as

small; ($0.35>q^2>0.15$) as medium and ($q^2>0.35$) as large. Referring to Table 4.15, firm performance produces large impact followed by innovation capability, with medium impact to the structural model of 0.5467 and 0.241 respectively.

4.5.2.4 Path Coefficient and Significance of the Modified Model 1

Path Coefficient estimates is used to check the significant relationship between constructs. In order to determine the significance of the relationship, t-Statistics were calculated using Bootstrapping technique based on 500 resampling iteration. The outcomes of the path relationship and direction are presented in Table 4.16.

Table 4.16
Path Relation and Direction of the Modified Model 1

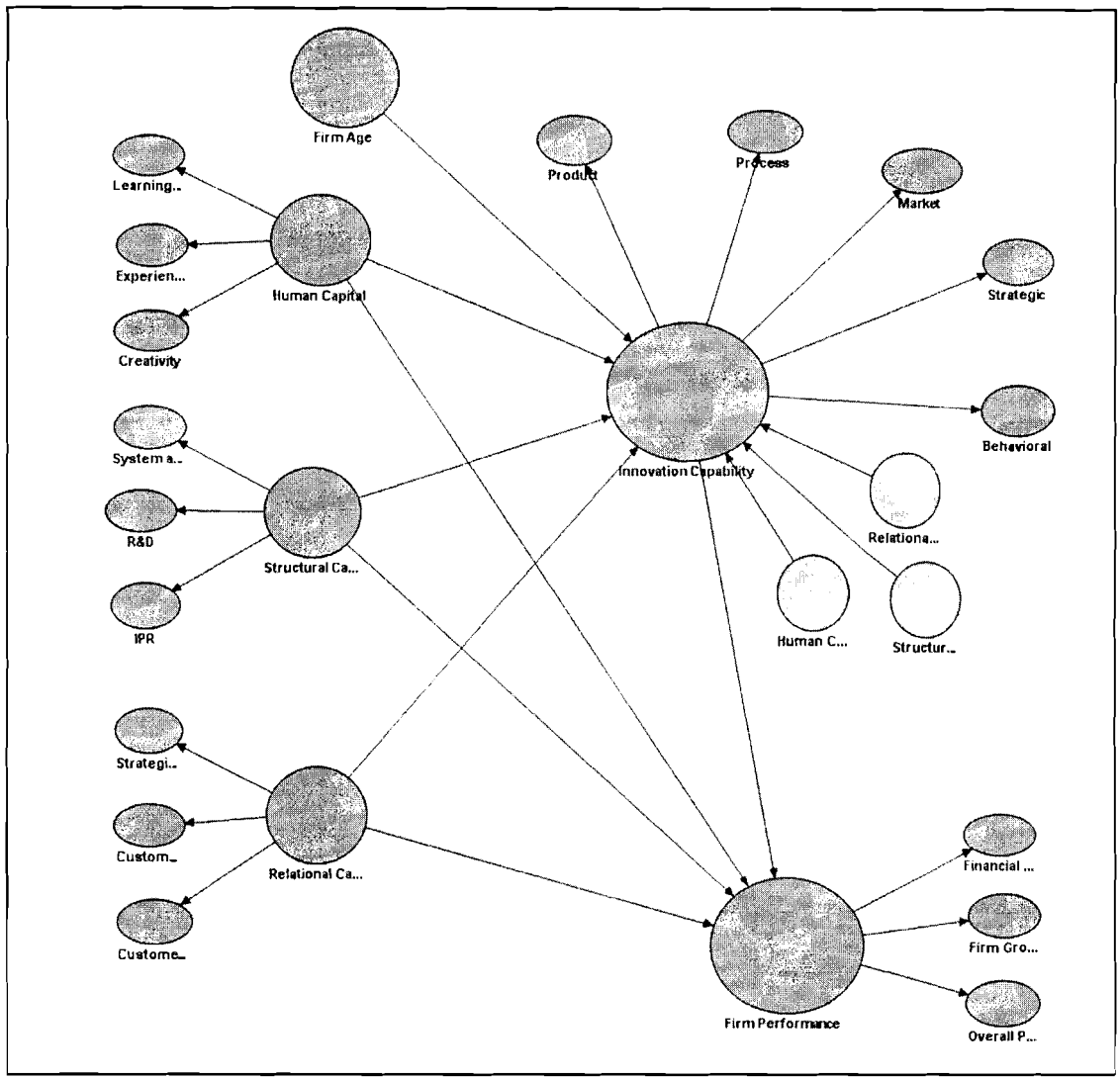
Path Relation and Direction	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)
Firm Age -> Innovation Capability	-0.4462	-0.4059	0.2628	0.2628	1.698
Firm Performance -> Financial Performance	**0.9617**	**0.9618**	**0.006**	**0.006**	**159.5897***
Firm Performance -> Firm Growth	**0.8352**	**0.833**	**0.0352**	**0.0352**	**23.7429***
Human Capital -> Creativity	**0.9478**	**0.9467**	**0.0096**	**0.0096**	**98.3856***
Human Capital -> Experience & Expertise	**0.9479**	**0.9469**	**0.0093**	**0.0093**	**102.2135***
Innovation Capability -> Behavioral	**0.7851**	**0.7882**	**0.0328**	**0.0328**	**23.9353***
Innovation Capability -> Firm Performance	**0.3072**	**0.3016**	**0.0876**	**0.0876**	**3.5086***
Innovation Capability -> Product	**0.7253**	**0.7217**	**0.0626**	**0.0626**	**11.584***
Innovation Capability -> Strategic	**0.7023**	**0.6994**	**0.0607**	**0.0607**	**11.5747***
Intellectual Capital -> Firm Performance	**0.3576**	**0.3635**	**0.0802**	**0.0802**	**4.4589***
Intellectual Capital -> Human Capital	**0.9321**	**0.9329**	**0.0083**	**0.0083**	**112.4994***
Intellectual Capital -> Innovation Capability	**0.4232**	**0.4313**	**0.1327**	**0.1327**	**3.1897***
Intellectual Capital -> Relational Capital	**0.7046**	**0.6995**	**0.0585**	**0.0585**	**12.0554***
Intellectual Capital * Firm Age -> Innovation Capability	0.4016	0.3707	0.3206	0.3206	1.2528

Note: Significant * at $p<0.05$, df= 36, t Statistics > 2.0281.

Of 14 total relationships, only 2 path relations are not significant at $p<0.05$; where their t Statistics are less than 2.0281. The path are 'Firm Age -> Innovation Capability' and 'Intellectual Capital*Firm Age -> Innovation Capability'. One path shows negative direction (Firm Age -> Innovation Capability) but the path relation is not significant. From Table 4.16, t-Statistics of the path coefficients are in the range of 1.2528 (Intellectual Capital*Firm Age -> Innovation Capability) as the smallest value and 159.5987 (Firm Performance -> Financial Performance) as the largest value.

4.5.3 Measurement Model Analysis of the Model 2

This section covers the measurement model analysis or outer model analysis discussing Construct Reliability Analysis and Construct Validity Analysis. Before reviewing these statistical elements, the researcher has illustrated the Hypothesized Model 2 as depicted in Figure 4.3.



Note: The oval shapes in the diagram represent the Manifest Variables, whilst the circle shapes represent the Latent Variable of the hypothesized model.

Figure 4.3

Hypothesized Model 2

4.5.3.1 Internal Consistency Reliability Analysis of the Hypothesized Model 2

Internal Consistency Reliability analysis is used to assess the internal consistency of the measurement model so that the study findings can be assumed reliable. Concerning the internal consistency of the model, the researcher has used Smart-PLS to generate the Reliability Coefficient or Cronbachs Alpha values and Composite Reliability values for each construct as shown in Table 4.17.

Referring to Table 4.17, the Cronbachs Alpha values are ranged from 0.7409 to 0.9591; indicating a good Internal Consistency Reliability (Zikmund, Babin, Carr, & Griffin, 2010). The Composite Reliability values also were been assessed as shown in Table 4.17 and the researcher found that all item values are more than 0.8, which are consistent with the benchmark set by Gefen, Straub and Boudreau (2000).

Table 4.17
Assessing Internal Consistency Using Cronbach Alpha Value and Composite Reliability Value of the Hypothesized Model 2

Construct	Number of Items	Cronbachs Alpha	CR
Innovation Capability	20	0.9554	0.9607
Firm Performance	7	0.9591	0.9666
Human Capital	30	0.9104	0.9438
Structural Capital	30	0.8843	0.9286
Relational Capital	30	0.8648	0.9183
Product	4	0.9196	0.9431
Process	4	0.8982	0.9297
Market	4	0.8641	0.9101
Strategic	4	0.7409	0.8312
Behavioral	4	0.8701	0.9121
Financial Performance	3	0.9507	0.9683
Firm Growth	3	0.8901	0.9320
Overall Performance	1	1.000	1.000

4.5.3.2 Construct Validity Analysis of Model 2

Construct validity is used 'to test whether or not the measure confirms hypotheses generated from the theory based on the concept' (Aaker, Kumar, Day, & Leone, 2011). It is made up of several components such as Discriminant Validity, Convergent Validity, Face Validity and Criterion Validity. The researcher has performed the same analysis used to determine the Construct Validity of Model 1 as deliberated in previous analysis, by assessing the value of Discriminant Validity and Convergent Validity.

4.5.3.3 Discriminant Validity of Model 2

Discriminant Validity is used to identify whether the individual measured items represent only on one latent construct. It is assessed by comparing the square root of Average Variance Extracted (AVE) with the latent variable correlations. As discussed before, the square roots of AVE values should be higher than the latent variable correlations in order to be assumed the construct has satisfied the Discriminant Validity requirement. Referring to Appendix N, the data violates the Discriminant Validity requirements where several of the correlation values of the constructs have exceeded the square root of AVE.

Due to this, the researcher has deleted the high correlated items to achieve Discriminant Validity as indicated in Appendix O (where all square root of AVE values are higher than the latent variable correlations). Comparing between Appendix N and Appendix O, three constructs were dropped from the model; namely Market, Overall Performance and Process.

4.5.3.4 Convergent Validity of Model 2

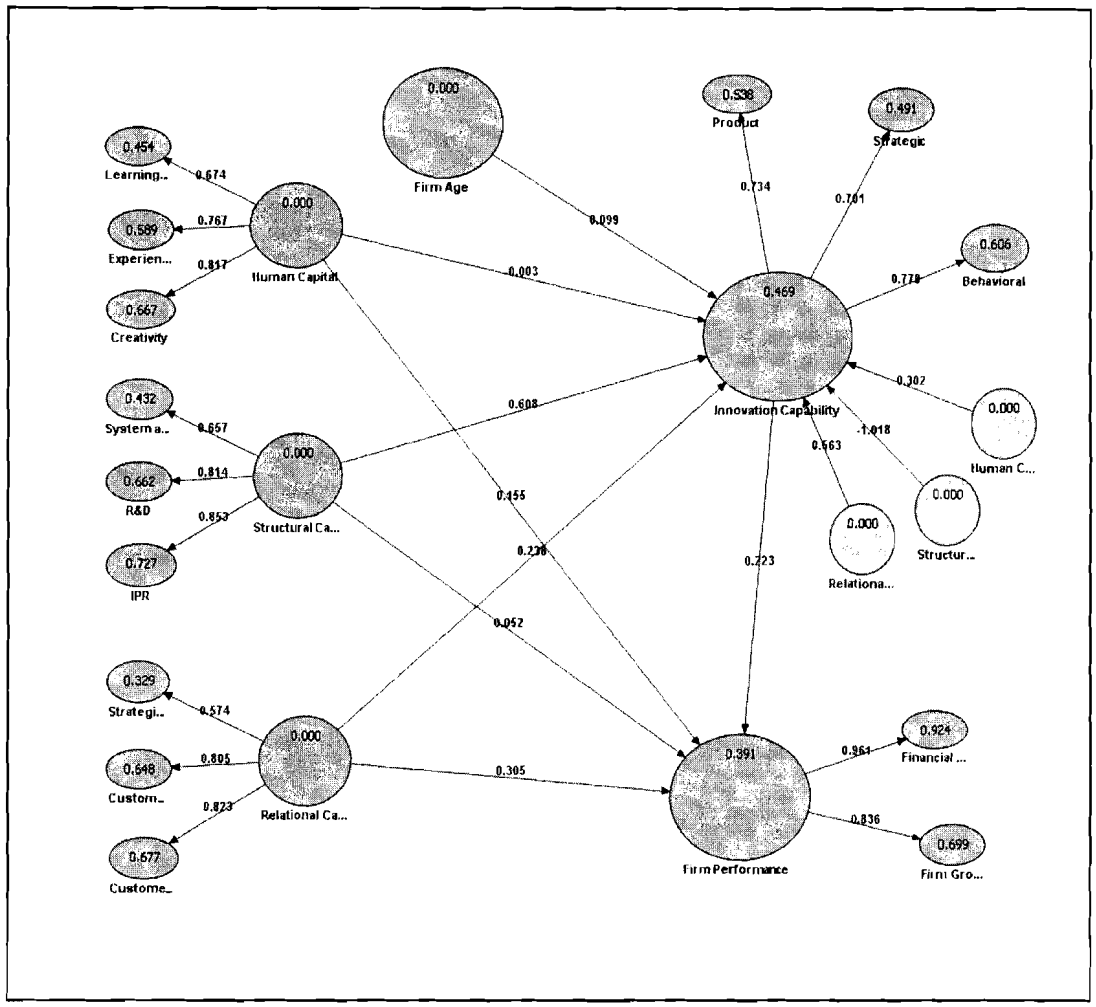
Convergent Validity is used to identify whether the extent of which indicators of a specific construct converge or share a high proportion of variance in common (Hair, Black, Babin, & Anderson, 2010). According to them, a good Convergence Validity is where the factor loadings estimate is more than 0.7; AVE value is more than 0.5; and CR value is more than 0.7. Table 4.18 shows that Learning, System and Program, and Education, Strategic alliance, Licensing and Agreements demonstrate a loading estimate between 0.5 and 0.7. Although their loadings are below than 0.7, the values

are considered necessary for practical significance; especially when the study involves analyzing a large number of variables (Hair, Black, Babin, & Anderson, 2010). Thus, all constructs demonstrate good Convergence Validity.

Table 4.18
The Convergence Validity Assessment Results of the Model 2

Construct	Measurement Item	Loadings	AVE	CR
Human Capital	Learning and Education	0.6740	0.6048	0.8588
	Experience and Expertise	0.7670		
	Creativity	0.8169		
Structural Capital	System and Program	0.6571	0.5499	0.8951
	R&D	0.8138		
	IPR	0.8529		
Relational Capital	Strategic alliance, Licensing and Agreements	0.5736	0.5511	0.7825
	Customer and Supplier Relations	0.8049		
	Customer Knowledge	0.8225		
Innovation Capability	Product	0.7336	0.5451	0.7820
	Strategic	0.7006		
	Behavioral	0.7786		
Firm Performance	Financial Performance	0.9613	0.8193	0.9313
	Firm Growth	0.8361		

Referring to Table 4.18, the loadings estimates of the measurement items are ranged between 0.5736 and 0.8529; AVE between 0.5451 and 0.8193; and CR between 0.7820 and 0.9313. After the requirements of Discriminant Validity and Convergent Validity have been met, the new Modified Model 2 is depicted in Figure 4.4.



Note: The oval shapes in the diagram represent the Manifest Variables, whilst the circle shapes represent the Latent Variable of the hypothesized model.

Figure 4.4

Modified Model 2

4.5.3.5 Internal Consistency Reliability Analysis of the Modified Model 2

Concerning the changes made in the Hypothesized Model 2, the researcher has reassessed the Internal Consistency Reliability where the Cronbachs Alpha values and CR values of the modified model 2 are shown in Table 4.19. Referring to the Table, the Cronbachs Alpha values of the modified model are ranged from 0.5823 to 0.8880 indicating a good Internal Consistency Reliability (Zikmund, Babin, Carr, & Griffin,

2010). Also, the CR values are found having adequate Internal Consistency Reliability with values more than 0.7.

Table 4.19
Assessing Internal Consistency Using Cronbach Alpha Value and Composite Reliability Value of the Modified Model 2

Construct	Number of Items	Cronbachs Alpha	CR
Human Capital	4	0.7787	0.8588
Structural Capital	7	0.8630	0.8951
Relational Capital	3	0.5785	0.7825
Innovation Capability	3	0.5823	0.7820
Firm Performance	3	0.8880	0.9313

4.5.4 Structural Model Analysis of the Model 2

The next step is to perform the structural model analysis involving the structural model specification, effect size, f^2, Predictive Relevance, path coefficients and significance, and hypotheses testing and result.

4.5.4.1 Structural Model Specification of the Modified Model 2

The structural model specification will cover the assessment of Coefficient of Determination of R Square (R^2) and Communality. The endogenous variables' determination coefficient of R^2 is used to reflect the level or share of the latent construct's explained variance. According to Gotz, Liehr-Gobbers and Krafft (2010), the larger the R^2 is, the larger the percentage of variance explained, therefore the better the prediction of the variable. In this study, all R^2 values of the endogenous variable are found at substantial level with the highest value of 0.9240 (Financial Performance) as indicated in Table 4.20.

Table 4.20

Structural Model Specification of the Modified Model 2

Construct	R Square (R^2)	Communality	AVE
Innovation Capability	0.4692***	0.5451	0.5451
Product	0.5382***	1.0000	1.0000
Strategic	0.4909***	1.0000	1.0000
Behavioral	0.6062***	1.0000	1.0000
Firm Performance	0.3906***	0.8193	0.8193
Financial Performance	0.9240***	0.9517	0.9517
Firm Growth	0.6991***	1.0000	1.0000

Note: Latent construct's explained variance, R^2 >0.32 (substantial) ***, >0.15 (moderate) **, >0.02 (weak) * (Cohen J. , 1988).

Further analysis involves assessing the communality values. Hair, Black, Babin and Anderson (2010) cited that variable with communality value less than 0.50 are considered of not having an acceptable level of explanation. Referring to Table 4.20, the communality values surpass the acceptable level of explanation with a minimum value of 0.5451.

4.5.4.2 Assessment of Effect Size, f^2 of the Modified Model 2

Effect size, f^2 is used to shows whether an independent latent variable has a substantial influence on the dependent latent variable (Gotz, Liehr-Gobbers, & Krafft, 2010). Effect size, f^2 can be assessed by the following formula: $f^2 = (R^2_{included} - R^2_{excluded}) / (1 - R^2_{included})$. Cohen (1992) interprets the effect size, f^2 value into three impact level: ($0.15>f^2>0.02$) as small; ($0.35>f^2>0.15$) as medium and ($f^2>0.35$) as large. Referring to Table 4.21, all constructs exhibit large effect size more than 0.6.

Table 4.21
Assessment of Effect Size, f^2 of the Modified Model 2

Latent Construct	R^2 Full Model/ Included (a)	R^2 Individual Model (b)	R^2 Excluded (a)-(b)	f^2
Innovation Capability	0.4692	0.4530	0.0162	0.8534***
Firm Performance	0.3906	0.3980	-0.0074	0.6531***

Note: Effect size of f^2 >0.35 (large) ***, >0.15 (medium) **, >0.02 (small) * (Cohen J. , 1992).

4.5.4.3 Assessment of Predictive Relevance, Q^2 and q^2 of the Modified Model 2

The next assessment of the structural model involves the model's capability to predict by looking at the Predictive Relevance Stone-Geisser's, Q^2 value. It is used to check whether the structural model used of the study is able to provide a prediction of the endogenous latent variable's indicators (Henseler, Ringle, & Sinkovics, 2009); where the accepted level for Q^2 value is more than zero. It shows evidence that the observed value is well constructed and has Predictive Relevance. The researcher has used the Blindfolding technique in Smart-PLS to obtain Q^2 value. Referring to Table 4.22, the Q^2 (a) and (b) values of all the latent construct are well above zero with a minimum value of 0.224 (Innovation Capability), therefore has achieved the requirement of Predictive Relevance.

Table 4.22
Assessment of Predictive Relevance, Q^2 and q^2 of the Modified Model 2

Latent Construct	Q^2 Full Model/ Included (a)	Q^2 Individual Model (b)	Q^2 Excluded (a)-(b)	q^2
Innovation Capability	0.224	0.320	-0.096	0.412***
Firm Performance	0.308	0.313	-0.005	0.452***

Note: Predictive relevance of q^2 >0.35 (large) ***, >0.15 (medium) **, >0.02 (small) * (Henseler, Ringle, & Sinkovics, 2009).

Further test involves calculating q^2 value to access the relative impact of the Predictive Relevance. Effect size, q^2 can be assessed by the following formula: $q^2 = (Q^2_{included} - Q^2_{excluded}) / (1 - Q^2_{included})$. Henseler, Ringle and Sinkovics (2009) interpret the effect size of Predictive Relevance, q^2 value into three impact level: $(0.15>q^2>0.02)$ as small; $(0.35>q^2>0.15)$ as medium and $(q^2>0.35)$ as large. Referring to Table 4.22, both constructs indicate large impact.

4.5.4.4 Path Coefficient and Significance of the Modified Model 2

Finally, path Coefficient estimates is used to determine the significance of the relationship where t-Statistics were calculated using Bootstrapping technique based on 500 resampling iteration. The outcomes of the path relationship and direction are obtainable in Table 4.23.

Table 4.23
Path Relation and Direction of the Modified Model 2

Path Relation and Direction	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)
Firm Age -> Innovation Capability	0.0994	0.0203	0.3163	0.3163	0.3143
Firm Performance -> Financial Performance	**0.9613**	**0.9613**	**0.0064**	**0.0064**	**150.6316***
Firm Performance -> Firm Growth	**0.8361**	**0.833**	**0.0378**	**0.0378**	**22.0968***
Human Capital -> Creativity	**0.8169**	**0.8153**	**0.0283**	**0.0283**	**28.8253***
Human Capital -> Experience and Expertise	**0.7673**	**0.7665**	**0.0663**	**0.0663**	**11.5796***
Human Capital -> Firm Performance	0.1554	0.1559	0.0783	0.0783	1.9841
Human Capital -> Innovation Capability	-0.0028	0.0446	0.1599	0.1599	0.0173
Human Capital -> Learning and Education	**0.6741**	**0.6688**	**0.0657**	**0.0657**	**10.2659***
Human Capital * Firm Age -> Innovation Capability	0.3018	0.1934	0.3437	0.3437	0.8779

Table 4.23 (Continued)

Path Relation and Direction	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)
Innovation Capability -> Behavioral	**0.7786**	**0.7772**	**0.0373**	**0.0373**	**20.8648***
Innovation Capability -> Firm Performance	**0.2234**	**0.22**	**0.086**	**0.086**	**2.5968***
Innovation Capability -> Product	**0.7336**	**0.7302**	**0.0619**	**0.0619**	**11.8432***
Innovation Capability -> Strategic	**0.7006**	**0.6969**	**0.0575**	**0.0575**	**12.1843***
Relational Capital -> Customer Knowledge	**0.8225**	**0.8232**	**0.0344**	**0.0344**	**23.9013***
Relational Capital -> Customer and Supplier Relations	**0.8049**	**0.8032**	**0.0354**	**0.0354**	**22.7166***
Relational Capital -> Firm Performance	**0.3049**	**0.2926**	**0.1023**	**0.1023**	**2.9797***
Relational Capital -> Innovation Capability	0.2384	0.2838	0.1522	0.1522	1.5672
Relational Capital -> Strategic alliance, Licensing and Agreements	**0.5736**	**0.5672**	**0.0808**	**0.0808**	**7.0996***
Relational Capital * Firm Age -> Innovation Capability	0.5626	0.4502	0.3	0.3	1.8754
Structural Capital -> Firm Performance	0.0524	0.0647	0.1155	0.1155	0.4536
Structural Capital -> IPR	**0.8529**	**0.8535**	**0.02**	**0.02**	**42.678***
Structural Capital -> Innovation Capability	**0.6075**	**0.4544**	**0.2709**	**0.2709**	**2.2423***
Structural Capital -> R&D	**0.8138**	**0.811**	**0.0337**	**0.0337**	**24.1296***
Structural Capital -> System and Program	**0.6571**	**0.6521**	**0.0523**	**0.0523**	**12.5615***
Structural Capital * Firm Age -> Innovation Capability	-1.0183	-0.7202	0.5235	0.5235	1.9452

Note: Significant * at $p<0.05$, df= 20, t Statistics > 2.086.

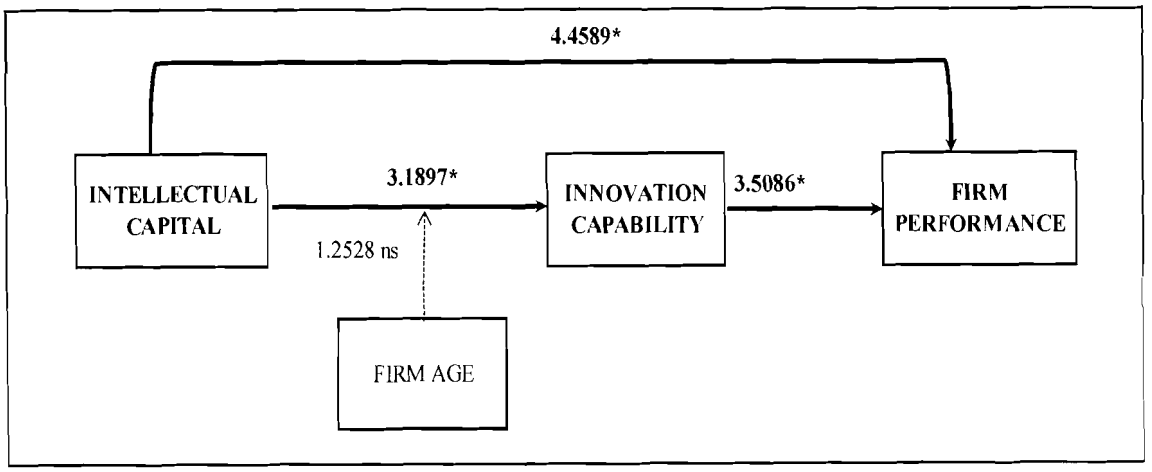
Of 25 total relationships, only 8 path relations are not significant at $p<0.05$; where their t Statistics are less than 2.086. The path are 'Firm Age -> Innovation Capability', 'Human Capital -> Firm Performance', 'Human Capital -> Innovation Capability', 'Human Capital * Firm Age -> Innovation Capability', 'Relational Capital -> Innovation Capability', 'Relational Capital * Firm Age -> Innovation Capability',

'Structural Capital -> Firm Performance', and 'Structural Capital * Firm Age -> Innovation Capability'.

Two paths show negative direction ('Human Capital -> Innovation Capability' and 'Structural Capital * Firm Age -> Innovation Capability') but their path relation are not significant. From Table 4.23, t-Statistics of the path coefficients are in the range of 0.0173 (Human Capital -> Innovation Capability) as the smallest value and 150.6316 (Firm Performance -> Financial Performance) as the largest value.

4.5.5 Hypotheses Testing and Result Findings for H1 to H5, based on Multivariate Analysis

The researcher has constructed 20 hypotheses for this study. Not all hypotheses testing were using Smart-PLS software to generate results. Only, 17 result findings from H1 to H5 were based on Smart-PLS outputs as depicted in Table 4.24. The remaining hypotheses, H6 to H8 were based on SPSS outputs; because testing these hypotheses using Smart-PLS software will require few additional steps. The researcher has portrayed the final Structural Model 1 and Structural Model 2 of the study in Figure 4.5 and Figure 4.6.

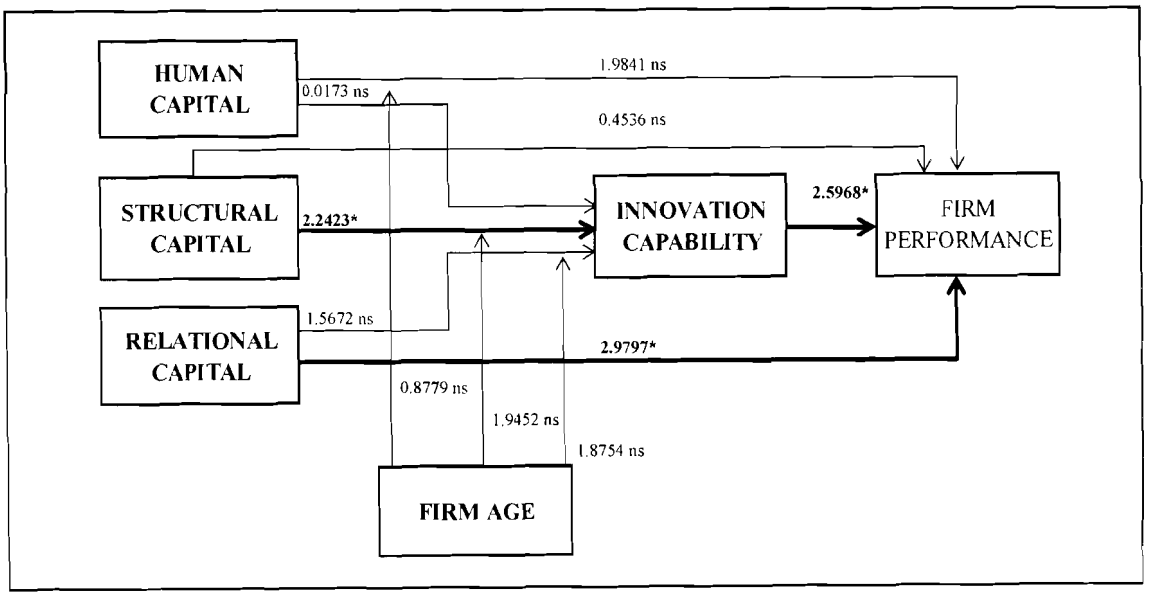


Note: * significant; ns: not significant at p<0.05, t Statistics > 2.0281.

Figure 4.5

Path Relation of the Model 1

Figure 4.5 and Figure 4.6 are drawn to give a clearer picture on the path relations that are used to answer the 17 hypotheses. Both figures show the t-statistics and path significance at p<0.05 that are used in the hypotheses testing.



Note: * significant; ns: not significant at p<0.05, t Statistics > 2.0286.

Figure 4.6

Path Relation of the Model 2

Referring to Figure 4.5 and Figure 4.6 and Table 4.24, only seven hypotheses were supported by the result findings. They are H1, H1b, H2, H2b, H3, H4 and H4b. The remaining hypotheses were rejected at $p<0.05$.

Table 4.24
Hypotheses Result Findings, H1 to H5

	Hypotheses	Result
H1	Intellectual Capital influences Innovation Capability.	Supported
H1a	Human Capital influences Innovation Capability.	Not Supported
H1b	Structural Capital influences Innovation Capability.	Supported
H1c	Relational Capital influences Innovation Capability.	Not Supported
H2	Intellectual Capital influences Firm Performance.	Supported
H2a	Human Capital influences Firm Performance.	Not Supported
H2b	Relational Capital influences Firm Performance.	Supported
H2c	Structural Capital influences Firm Performance.	Not Supported
H3	Innovation Capability influences Firm Performance.	Supported
H4	Innovation Capability mediates the effect of Intellectual Capital on Firm Performance.	Supported
H4a	Innovation Capability mediates the effect of Human Capital on Firm Performance.	Not Supported
H4b	Innovation Capability mediates the effect of Structural Capital on Firm Performance.	Supported
H4c	Innovation Capability mediates the effect of Relational Capital on Firm Performance.	Not Supported
H5	Firm age moderates the effect of Intellectual Capital and Innovation Capability.	Not Supported
H5a	Firm age moderates the effect of Human Capital and Innovation Capability.	Not Supported
H5b	Firm age moderates the effect of Structural Capital and Innovation Capability.	Not Supported
H5c	Firm age moderates the effect of Relational Capital and Innovation Capability.	Not Supported

4.6 Bivariate Analysis

The followings are the bivariate analysis using SPSS version 19.0 to generate answers for H6 to H8. As the data distribution for this study is found not normal, the researcher has employed Mann-Whitney U Non Parametric test for bivariate analysis to generate result findings for the hypotheses. Includes in this section are the hypothesis testing and results for the three hypotheses.

4.6.1 Mann-Whitney Non Parametric Test

The researcher has employed three Mann-Whitney tests for hypotheses H6 to H8. According to Coakes and Ong (2011), Mann-Whitney test is used to test two independent samples from population having the same distribution.

NPar Test
Mann-Whitney Test

Ranks

	A4StatusAge	N	Mean Rank	Sum of Ranks
IntelCap	Young	27	93.35	2520.50
	Matured	145	85.22	12357.50
	Total	172		

Test Statistics[a]

	IntelCap
Mann-Whitney U	1772.500
Wilcoxon W	12357.500
Z	-.779
Asymp. Sig. (2-tailed)	.436

a. Grouping Variable: Five

Figure 4.7
Mann-Whitney Non Parametric Test for H6

Figure 4.7 shows the bivariate analysis for hypothesis testing, H6: There is a significance difference between the quality of intellectual capital of matured firms and young firms. The SPSS output as depicted in the Figure indicates that using Mann-Whitney test, H6 is found not significant at $p>0.05$ ($z=-0.779$, $p=0.436$); thus the hypothesis is rejected.

Also, the SPSS output as shown in Figure 4.8 indicates that H7: There is a significance difference between the capability to innovate of matured firms and young firms is found not significant, where $Z=-0.402$ and $p>0.05$. Thus, there is no proof that there is a significance difference between the capability to innovate of matured firms and young firms.

NPar Test
Mann-Whitney Test

Ranks

	A4StatusAge	N	Mean Rank	Sum of Ranks
InnoCap	Young	27	90.04	2431.00
	Matured	145	85.84	12447.00
	Total	172		

Test Statistics[a]

	InnoCap
Mann-Whitney U	1862.000
Wilcoxon W	12447.000
Z	-.402
Asymp. Sig. (2-tailed)	.688

a. Grouping Variable: Five

Figure 4.8
Mann-Whitney Non Parametric Test for H7

Finally, the SPSS output as presented in Figure 4.9 specifies that the significant value of H8: There is a significance difference between the performance of matured firms and young firms is 0.206, which is found not significant at $p>0.05$, $z=-1.264$. Therefore, it is concluded from the study that there is no prove that there is a significance difference between the performance of matured firms and young firms.

NPar Test
Mann-Whitney Test

Ranks

	A4StatusAge	N	Mean Rank	Sum of Ranks
Performance	Young	27	97.61	2635.50
	Matured	145	84.43	12242.50
	Total	172		

Test Statistics[a]

	Performance
Mann-Whitney U	1657.500
Wilcoxon W	12242.500
Z	-1.264
Asymp. Sig. (2-tailed)	.206

a. Grouping Variable: Five

Figure 4.9
Mann-Whitney Non Parametric Test for H8

4.6.2 Hypotheses Testing and Result for H6 to H8, based on Bivariate Analysis

The researcher has performed bivariate analysis using SPSS version 19.0 to test three hypotheses, H6 to H8. The result findings are summarized in Table 4.25. Referring to the Table, all three hypotheses were not supported by the result findings as discussed in the previous part.

Table 4.25
Hypotheses Result Findings, H6 to H8

	Hypotheses	Result
H6	There is a significance difference between the quality of intellectual capital of matured firms and young firms.	Not Supported
H7	There is a significance difference between the capability to innovate of matured firms and young firms.	Not Supported
H8	There is a significance difference between the performance of matured firms and young firms.	Not Supported

4.7 Summary

This chapter has presented the research findings of the study. It started with the profiling of the respondents and SMEs; followed by preliminary examination of data, multivariate analysis and bivariate analysis. Multivariate analysis includes the measurement and structural model validation; involving the application of the PLS algorithm, Bootstrapping technique as well as Blindfolding technique using the Smart-PLS software. Meanwhile, bivariate analysis involves Mann-Whitney U Non Parametric test using the SPSS software. All of the hypotheses result findings are summarized in Table 4.26.

Table 4.26

Summary of Hypotheses Testing, H1 to H8

	Hypotheses	Result
H1	Intellectual Capital influences Innovation Capability.	Supported
H1a	Human Capital influences Innovation Capability.	Not Supported
H1b	Structural Capital influences Innovation Capability.	Supported
H1c	Relational Capital influences Innovation Capability.	Not Supported
H2	Intellectual Capital influences Firm Performance.	Supported
H2a	Human Capital influences Firm Performance.	Not Supported
H2b	Relational Capital influences Firm Performance.	Supported
H2c	Structural Capital influences Firm Performance.	Not Supported
H3	Innovation Capability influences Firm Performance.	Supported
H4	Innovation Capability mediates the effect of Intellectual Capital on Firm Performance.	Supported
H4a	Innovation Capability mediates the effect of Human Capital on Firm Performance.	Not Supported
H4b	Innovation Capability mediates the effect of Structural Capital on Firm Performance.	Supported
H4c	Innovation Capability mediates the effect of Relational Capital on Firm Performance.	Not Supported
H5	Firm age moderates the effect of Intellectual Capital and Innovation Capability.	Not Supported
H5a	Firm age moderates the effect of Human Capital and Innovation Capability.	Not Supported
H5b	Firm age moderates the effect of Structural Capital and Innovation Capability.	Not Supported
H5c	Firm age moderates the effect of Relational Capital and Innovation Capability.	Not Supported
H6	There is a significance difference between the quality of intellectual capital of matured firms and young firms.	Not Supported
H7	There is a significance difference between the capability to innovate of matured firms and young firms.	Not Supported
H8	There is a significance difference between the performance of matured firms and young firms.	Not Supported

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter 5 presents the conclusion and recommendation of this study. It is divided into five sections. The first section highlights the research findings which include hypotheses testing and results to achieve six research objectives of the study. Second section discusses on recommendations based on the research findings, followed by limitation of the study and direction for future studies. The final section confers the contribution of study.

5.2 Result Findings

There are 8 main hypotheses and 12 additional hypotheses of the study as listed in Table 4.26. This section will discuss hypotheses testing and results of the study as well as research findings pertaining to the research objectives of the study.

5.2.1 Findings Related to Intellectual Capital, HC, SC and RC.

There are 9 hypotheses which have contributed to the findings related to intellectual capital and its component, HC, SC and RC. The following part will discuss each hypothesis testing and result findings.

i. H1: Intellectual Capital influences Innovation Capability.

   H1a: Human Capital influences Innovation Capability.

   H1b: Structural Capital influences Innovation Capability.

   H1c: Relational Capital influences Innovation Capability.

Intellectual capital refers to a combination of human, structural and relational capital that creates value and consequently determines performance of a firm. It can be classified into three components, HC, SC and RC. HC refers to the knowledge, abilities, experiences and attitudes possess by the organizational members; SC refers to a collection of knowledge in an organization embedded in systems, databases and program; and RC represents all the knowledge embedded in the relationships with external parties which include alliances, customers, investors, distribution networks, partners and suppliers.

Concerning the relationship between intellectual capital and innovation capability, a study completed by Subramaniam and Youndt (2005); and Menor, Kristal, and Rosenzweig (2007) concluded that intellectual capital has a positive relationship with innovation. It is in line with the result findings of the study where there is evidence to support H1: Intellectual Capital influences Innovation Capability. This is true because the blend of quality of employees, organized work procedure and support system as well as close relationship with external parties have potential to establish firm's unique capability and competency which consequently will improve performance.

Further analyses on the three components of intellectual capital show that only SC has influence on innovation capability compared to HC and RC. With reference to this new finding, the researcher found that SC (in the form of documented procedures, computer system, database and others) is used as a guide for the employees on the

work flow, work culture, rules and procedures. Unlike HC and RC, SC will remain in a firm for a long period of time. It is reviewed and developed from time to time in the process of renewing knowledge and creating new idea that possesses commercial values. This new idea is known as innovation.

ii. H2: Intellectual Capital influences Firm Performance.

H2a: Human Capital influences Firm Performance.

H2b: Relational Capital influences Firm Performance.

H2c: Structural Capital influences Firm Performance.

Previous studies conducted by Sharabati, Jawad and Bontis (2010), and Phusavat, Comepa, Sitko-Lutek and Ooi (2011) concluded that intellectual capital contributes to performance, thus in line with the result finding of the study. The finding is justified because firms with more knowledge in the form HC, SC and RC will have better ability to learn and manage changes on the market faster. Further analysis of the study on the components of intellectual capital recorded that only RC has influence on performance; which in line with study findings recorded by Kamukama, Ahiauzu and Ntayi (2010); Sharabati, Jawad and Bontis (2010); Phusavat, Comepa, Sitko-Lutek and Ooi (2011); and Clarke, Seng and Whiting (2011). The reason is that SMEs heavily depend on RC to run their businesses, create new values and make profits as their key resources such in the form of expertise, manpower and financial capability are limited.

On the other hand, the result findings of the relationship between HC, RC and firm performance are in contrast with the studies completed by Kamukama, Ahiauzu and Ntayi (2010); Sharabati, Jawad and Bontis (2010); Phusavat, Comepa, Sitko-Lutek and Ooi (2011); and Clarke, Seng and Whiting (2011) where they recorded a positive

association between HC and firm performance, and RC and firm performance. Hence, researchers should perform more studies that look into this conflicting results to generate more insight.

iii. H6: There is a significance difference between the quality of intellectual capital of matured firms and young firms.

Young firm refers to firm that is operating less than five years and matured firm is those operating more or equal than five years. According to Ismail, Che Rose, Abdullah and Uli (2010) and Gaur & Gupta (2011), older firms perform better than newer firms. It is because their quality of intellectual capital are developed through long term continuous learning; where older firms are more be able to exploit the benefits of knowledge age than younger ones (Zahra, 1993). Thus, the researchers has tested H6 to determine whether there is a significance difference between the quality of intellectual capital of matured firms and young firms and found that there is not enough evidence to support the hypothesis. The possible reason is that both types of SMEs (young and matured firms) possess limited resources in the form of expertise and financial capability that can be used for training purposes to improve their quality of intellectual capital.

5.2.2 Findings Related to Innovation Capability

Findings related to innovation capability are based on 6 hypotheses, H3, H4, H4a, H4b, H4c and H8. The following part will discuss each hypothesis testing and result findings.

i. H3: Innovation Capability influences Firm Performance.

Innovation capability refers to the ability of a firm to transform an idea into a something new which carries an economic value. Many scholars stated that innovation has a relationship with firm performance (Chaveerug & Ussahawanitchakit, 2008; Fruhling & Siau, 2007; Rujirawanich, Addison, & Smallman, 2011; Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). Robust findings indicate a positive and significant relationship between innovation and performance (Chaveerug & Ussahawanitchakit, 2008; Fruhling & Siau, 2007). Parallel with previous studies, the study concluded that innovation capability has influence on firm performance. As mentioned before, innovation capability refers to capability to create new ideas with commercial values that consequently will improve firm performance. Those new ideas without commercial values are called mistakes.

ii. H4: Innovation Capability mediates the effect of Intellectual Capital on Firm Performance.

H4a: Innovation Capability mediates the effect of Human Capital on Firm Performance.

H4b: Innovation Capability mediates the effect of Structural Capital on Firm Performance.

H4c: Innovation Capability mediates the effect of Relational Capital on Firm Performance.

Prior to archival evidence, inconsistencies do exist in the effect of intellectual capital on firm performance, indicating a gap between the relationship of intellectual capital and performance. The study assumes that innovation capability is the gap that existed between intellectual capital and firm performance. Concerning the assumption, the

researcher has tested H4 and found that the result finding supported the hypothesis. It means that intellectual capital must have the capability to innovate in order to perform especially in a competitive market. The better the capability of a firm to innovate, the greater the firm distinguishes its product and the greater the firm potential to create value and position itself amongst its competitors. Those firms with quality intellectual capital but do no possess the capability to innovate are linked to uncertain performance. That is why several previous researches showed conflicting results.

The researcher has performed additional analyses by substituting intellectual capital with HC, SC and RC, and recorded that innovation capability only plays a mediating role between the relationship of SC and performance. As discussed before, SC is a crucial tools for SMEs to innovate, where innovation activities involve the process of utilizing, reviewing and developing SC. Successful innovation activities will produce a new outcome with commercial value which will lead to better performance. Concerning the findings for H4a and H4c, there are gaps between HC and firm performance, and RC and firm performance (prior to discussion on H2a and H2b findings); thus it creates a need for future researches.

Discussing further, the significant result of H4 and H4b concluded that innovation capability is the gap that has existed between the relationship of intellectual capital and performance, and SC and performance. As no study is found looking at the mediating role of innovation capability between intellectual capital and firm performance, and SC and firm performance, the result findings have proposed two new conceptual models to the literature on intellectual capital, innovation capability and performance; thus contributing to the knowledge.

iii. H7: There is a significance difference between the capability to innovate of matured firms and young firms.

According to Savino and Petruzzelli (2012), old and experience firms generate more innovations but are generally incremental and of lower quality. Similarly, Withers, Drnevich and Marino (2011) claimed that older firms have higher levels of innovation activity than younger firms. This is due to the reason that older firms is associated with higher stock of resources, both the tangible and intangible assets. However, the result findings of the study show different result and confirm that there is not enough prove to support H7: There is a significance difference between the capability to innovate of matured firms and young firms. This finding is true because both types of SMEs (young and matured firms) possess limited key resources in the form of plant and machineries, expertise and financial capability which affect their ability to perform innovation activities.

5.2.3 Findings Related to Firm Age

Firm age represents the experience and knowledge accumulated since its establishment and is related to the innovation capability. Findings related to firm age are based on 5 hypotheses, H5, H5a, H5b, H5c and H8. The following part will discuss each hypothesis testing and result findings.

i. H5: Firm age moderates the effect of Intellectual Capital and Innovation Capability.

   H5a: Firm age moderates the effect of Human Capital and Innovation Capability.

   H5b: Firm age moderates the effect of Structural Capital and Innovation Capability.

H5c: Firm age moderates the effect of Relational Capital and Innovation Capability.

Previous researchers have looked into the relationship between intellectual capital and innovation capability (Subramaniam & Youndt, 2005; Nonaka & Takeuchi, 1995; Menor, Kristal, & Rosenzweig, 2007; Kleinknecht & Mohnen, 2002; Cheng, Lin, Hsiao, & Lin, 2008); but none was found examining the moderating effect of firm age on intellectual capital and its components that will enhance innovation capability. Concerning this, the researcher has tested four related hypotheses and found that there is not enough evidence that support them. It is possibly because both types of SMEs share the same capacity to improve the quality of their intellectual capital, HC, SC and RC due to key resources constraint regardless of their firm age.

ii. H8: There is a significance difference between the performance of matured firms and young firms.

According to Anderson and Eshima (2011), younger firms are better performing than older firms. This is because they have better ability to capture the value from entrepreneurial strategies; and younger firms possess flexible structures, routines and processes allowing them to react faster to pursue entrepreneurial opportunities with greater congruence to current market expectation. However, the result findings of the study show different result where it did not provide support for H8. This is possibly because SMEs possess limited tangible and intangible resources which affect their ability to produce better value and better result performance regardless of their firm age.

5.2.4 Other Findings

Further assessment of the data has resulted additional four result findings. First, most of the respondents received formal education where 57.0 percent of them hold a degree or post graduate diploma qualification followed by master degree or PhD qualification (19.2%), STPM/ HSC/ Certificate/ Diploma (10.5) and UPSR/ SRP/ PMR/ SPM/ O-level (10.5%). It implies that they have the ability to answer the questionnaire freely without undue influence from any parties.

Second, it is found that most young SMEs are micro enterprises which have less than 5 employees (66.7%) and most matured SMEs have more than 50 employees (38.6%). The result findings conforms the statement forwarded by Barret and Mayson (2007) where they claimed that new firms have limited managerial resources.

Third, the multivariate analysis indicates that several items that were used to indicate the components of intellectual capital and the types of innovation capability have correlated to each other respectively. Literally, the indication suggests that the components of intellectual capital are interrelated; so do the types of innovation capability.

Forth, the research found that financial performance is the most important component of firm performance. Concerning performance, it can be understood differently by different people in many aspects and connotations depend on the application. Performance refers to how well a firm does something. Traditionally, firms used accounting figures to measure performance (Maditinos, Sevic, & Theriou, 2006). It is widely used to measure performance until today, thus becoming an important component to measure firm performance.

5.2.5 Findings Pertaining to Research Objectives

Referring to Chapter 1, there are six research objectives. The researcher has constructed 20 hypotheses based on these objectives. The following will discuss the findings pertaining to each research objective.

i. First objective: to explore the relationship of intellectual capital and its components, with firm performance.

There are 4 hypotheses that explored the relationship of intellectual capital, HC, SC, RC, with firm performance, H2, H2a, H2band H2c. From the hypotheses, the study discovered that intellectual capital is found having a significant relationship with performance. Further analysis on the components of intellectual capital has revealed that only RC is associated with performance.

ii. Second objective: to determine the relationship of innovation capability with firm performance.

H3 was constructed to determine the relationship of innovation capability with firm performance. From the result findings, it is found that innovation capability has a positive significant relationship with performance.

iii. Third objective: to figure out the relationship of firm age with intellectual capital, innovation capability and firm performance.

H6, H7 and H8 were developed based on the third objective namely to figure out the relationship of firm age with intellectual capital, innovation capability and firm performance. Referring to the result findings discussed before, firm age is not associated with intellectual capital, innovation capability and firm performance.

iv. Forth objective: to discover the relationship of intellectual capital and its components, with innovation capability.

The researchers has achieved the forth objectives by testing 4 hypotheses, namely H1, H1a, H1b and H1c. From the result findings, only intellectual capital and SC has influence on innovation capability. The remaining hypotheses, HC and RC show no influence on innovation capability.

v. Fifth objective: to explore the mediating effect of innovation capability between the relationship of intellectual capital and its components, and firm performance.

Referring to H4, H4a, H4b, and H4c which are constructed to meet the fifth objective, the researcher concludes that innovation capability mediates the effect between intellectual capital and firm performance, and SC and firm performance.

vi. Sixth objective: to investigate the effect of firm age in moderating the relationship between intellectual capital and its components, and innovation capability.

H5, H5a, H5b and H5c are constructed to investigate the effect of firm age in moderating the relationship between intellectual capital and its components, and innovation capability. The study reported that firm age does not have any moderating effect between the relationship of intellectual capital and its components, and innovation capability.

The study has achieved all 6 objectives of the study and generated three conclusions. First, intellectual capital, SC and innovation capability have influences on performance; second, intellectual capital and SC have influence on innovation capability; and third, innovation capability mediates the effect of intellectual capital and SC, on firm performance.

5.3 Recommendations

Based on the three main conclusions of the study, it shows that both intellectual capital and innovation capability have influence on performance. Thus, there is a need to manage both intellectual capital and innovation capability effectively to improve performance. With this regard, the researcher has listed several recommendations in the form of management science that can be used by the Government and business owners to improve SME performance; which are discussed in the following sub section.

5.3.1 Managing Intellectual Capital

Apart from the study finding that indicates intellectual capital has influence on performance, SC and RC are found have no relationship with performance. Only SC is found associated with performance. Nonetheless, all the components of intellectual capital, namely HC, SC and RC are important in determining performance as the finding also shows that the components are interrelated. In respect of the findings, the Government and business owners are recommended to manage intellectual capital and all its components for better performance result.

Concerning this, the researcher's curiosity was aroused thinking on how to manage intellectual capital which is synonymous with intangible asset and cannot be seen. After reading several articles, the researchers concluded that managing intellectual capital requires greater agility and flexibility especially in a constantly changing economic environment. Due to its nature of intangible, managing each component of intellectual capital requires different technique compared to managing the tangibles so

that the potential of it can be realized and functioning. Taken this factor into consideration, the researcher recommends business owners and policy makers to manage intellectual capital which is beneficial to firm performance. This section will cover the art of managing intellectual capital, specifically HC, SC and RC, which requires different unique kinds of treatment.

5.3.1.1 Managing Human Capital

The knowledge-based economy places a high premium value on HC. This is due to the fact that HC is the largest component of intellectual capital. Based on the literatures, managing HC is associated with managing employees. It is the employees that contribute to the development of SC and RC. Way (2002) stated that there is a general consensus on the positive impact of managing employees with firm performance. It is through the critical part of employees in term of application of knowledge that the other components are able to function and contribute to firm performance. Therefore, finding the right employees with the right knowledge for the right post is important, not only to improve the knowledge stock but also to create potential value beneficial to firm performance. Selecting the best HC starts with recruitment process where firms should carefully select candidates based on the qualities of their knowledge.

Regarding knowledge, it is wide and evolves through time. It comes from experience, learning, talents and collaborative effort through times (Alsaaty, 2011). Knowledge cannot be diminished even when new knowledge emerges. It only depreciates in value as new knowledge replaces the old. Knowing this, firms should constantly renew knowledge. In order to do so, firm need to develop HC with proper learning and

training (Joshi, Cahill, & Sidhu, 2011; Chang & Lee, 2007). Learning and training is important to upgrade the qualities of knowledge where each person has different and limited qualities of knowledge. Only certain people are assumed to have relevant expertise. Expertise can be measured by level of education, knowledge and skills. The better the expertise, the greater the capacity to innovate and the better the opportunities of a firm to add value and earn profit. Thang and Buyens (2009) shared the same view when they found evidence in their study that training has an effect on financial performance.

Elaborating further, knowing who needs training and which training is relevant shows important. Firms may perform Training Need Analysis (TNA) to identify training requirements to fill a gap between what is required of employees to perform their job proficiently and what they actually possess. TNA is performed to ensure that the employees' knowledge is up to date and they are capable of adapting and managing changes, consequently direct the firm to perform better in a competitive market

Furthermore, managing HC requires an art of managing the sense of belonging amongst employees. Sense of belonging refers to the feeling of attachment where the employees will feel secure, well taken care of and consequently having the pleasure and satisfaction of what they are doing. One way to grow the sense of belongings is to install bonuses and incentives based on the level of education, skills and experience in the remuneration package. Having high sense of belongings will influence employees to think more like owners than employees; hence becoming a push factor driving a firm towards achieving objectives and creating values.

Moreover, the capability of employees depends on the education level and life experience of employees. They acquired knowledge during their lifetime either

formally or informally from their workplace or elsewhere. The longer the employees spend time on education, training and working, the greater the volume of knowledge they possess. The greater the volume of knowledge and skills the employees possess, the higher they expect the remuneration package will be. Thus, employees need satisfaction and motivation to work and function effectively and efficiently. In order to manage these employees, establishing attractive rewards and proper remuneration package as a means to encourage them to work harder to achieve certain goals is the best solution; in line with Landsberg (2009) view that there is a solid link between executive total compensation and company performance. Barrett and Mayson (2007) added that competitive salaries and appropriate rewards are given to attract, motivate and retain employees. They are linked to firm performance and growth.

Regarding rewards, employees believe in financial reimbursement, incentives and job promotion. Giving the right reward will motivate them not only to enjoy working but also to perform in their work. In contrast, if employees do not receive sufficient rewards they deserve to, they might feel dissatisfied and refuse to perform in their work. Worst case scenario, good employees will move to other firms and firms might not be able to retain critical and valuable knowledge. Again, installing the right rewards and remuneration package based on the qualities of knowledge will give the employees pleasure and satisfaction, thus establish loyalty to the firm as well as encourage them to stay and perform, consequently improve performance of the firm.

Discussing further, a firm does not own HC and it could not afford to lose any knowledge or working ideas in the innovation process when employees leave the firm. Bear in mind that ideas cannot be formally protected and vulnerable to infringement in terms of plagiarism; thus creating a need for firm to secure them from

moving to others firms. In order to do so, firms need to secure non-disclosure agreements or secrecy agreements with the employees. This solution is found very important and useful in the event of future dispute when the person leaves the company or breaching the trust or brings the valuable information for the benefits of the outsiders.

5.3.1.2 Managing Structural Capital

Managing SC is the most important mechanism for SMEs to produce better performance as the study finding shows that SC has positive relationship with performance. Managing SC involves securing knowledge used in the business operation as organization does not have ownership of knowledge and employees take tacit knowledge with them when they leave the workplace either by moving to another firm, resign or retire. Tacit knowledge is referred to the knowledge that people possess but do not articulate and associated with skill, know-how and working knowledge (McAdam, Mason, & McCrory, 2007). In order to secure SC, firms need to document it.

There are many ways to document SC. First, SC can be documented in the form of manuals or work procedures as it can be used by other employees to run business and to make sure that business can continue operating as usual even when there is movement of employees within the firm or when employees leave the firm. Second is through the registration of patent, trademark or copyrights. This way allows the firm the right to exclude others to use, copy or selling the knowledge, thus allowing the firm to enjoy long term profit. It is to ensure that competence stays even when employees change jobs, retire or resign.

Another way of managing SC is to get the work process documented according to the ISO 9001:2008 Quality Management certification. ISO 9001:2008 is a quality management system that provides a set of standardized requirements, laying down the work process quality system with the objectives of meeting the customer's quality and regulatory requirements, enhancing customer satisfaction as well as achieving continual improvement of its performance (International Organization for Standardization, 2011). Using the ISO 9001:2008 standard to document SC, firms earn benefit not only in term of complete documented work process but also continous improvement in the work process quality systems.

Fourth, SC can be documented in the form of database through the establishment of storage devices. It facilitates firms to store huge information virtually. For example, The Immigration Department of Malaysia has documented the process workflow of renewing a passport using a computer program. The program allows the department to store data of the passport holder during the process of passport renewal via the internet, consequently reduce time to renew passport, lighthen the staffs' workloads and increase data storage capacity.

In relation, knowledge that is documented in the form of database requires proper handling and protection from outsiders. A loss of data may interrupt the business operation and is a cost to a firm. A few ways of handling and protecting the firm's database are through installing firewall or antivirus, employing computer experts and creating a backup system.

Finally, organizational knowledge has been in existence since a firm establishment. It should be reviewed from time to time to check whether it is still valid and relevant with the changing of business environment, and to verify its ability to

provide the same value that is originally contributed. This is important to maintain and enhance the firms's position amongst competitors in the market place. Documentation of SC facilitates firms to review and replace those obsolete knowledge with a new one in tandem with the changing of business environment.

5.3.1.3 Managing Relational Capital

Knowledge of a person has its limits. It is impossible for employees of a firm to know everything related to their business matters and they need outside knowledge to be creative and innovative. Also, the vast changing of technology creates a barrier for them to understand and cope with the changes. In most cases, the nature of work project is getting more complex to solve alone. Therefore, firms must support and nurture an environment that allow employees to share knowledge and abilities with others through organizational learning (Delgado-Verde, Castro, & Navas-Lopez, 2011).

Organizational learning involves gaining knowledge via relationship with external parties such as customers and suppliers. It does not to be considered as a source of knowledge unless good relations are built with external parties. It spreads through interaction and meetings with others (Steward, 1997). For example, customers and suppliers learn about business as they mix with others. Good rapports with these customers and suppliers promote a sharing of knowledge environment that act as a medium of discussion about other products, technology, interest, need and preference which will benefit both parties.

Often, existing customers may become brand loyalty and referees to other potential customers. Managing customers by offering after sales service or giving warrantee is a way to establish a good relationship with customers. According to Steward (1997); Kumar and Antony (2008); and Dessi and Floris (2010), having good relationship with customer will consequently establish brand loyalty to a product. Also, by establishing good relationship with customers, the tendency of existing customers to influence others to make purchases of the product is high; thus, allowing the firm to increase sales.

In addition, building relationship requires interactions between two parties, the sender and recipient. The interactions will occurs when both parties have the same level of understanding or some knowledge of the matters of discussion and a good communication skill. Thus, in order to promote interaction firms may engage the employees with appropriate communication skills courses and proper education program to improve their knowledge and skills.

Furthermore, networking with external parties in the same industry, government department and business support organizations provide opportunities and access to outside knowledge which is sometimes hard to access. Establishing a good relationship with them opens the door for discussions, negotiations and cooperation and consequently will assist firms not only to grow knowledge of employees but also to facilitate in getting other things done. Therefore, firms should build strong networking with external parties to earn such benefits.

To sum up, managing RC requires the establishment of norms that facilitate interaction, relationship and collaboration with external parties. Sometimes, firms need to spend more today to build good rapports and wide network with outsiders and

enjoy the benefits after a few years. For instance, Hung and Effendi (2011) made a preliminary study on 11 Malaysian Top SMEs winners of Malaysia Enterprise Award 2004-2008 and found that good networking, good customer and client relationship, and supportive and strong management team are the top key suceess factors that determine the performance of SMEs.

5.3.2 Managing Innovation

Issues related to the firms' innovation capabilities has gained attention from researchers due to the fact that it provides firms with sustainable competitive advantage (Coombs & Bierly, 2006). They perceived that in order for firms to remain competitive, continuous innovation is paramount to create new advantages and value. Realizing this, firms need to know how to manage innovation so that they will be able to innovate. Hence, the researcher will unpack each aspect of managing innovation in more details in the following discussion.

The capacity of a firm to innovate depends on the quality of intellectual capital its possess. Laforet (2011) shared the same view and mentioned that innovation prevails only when there is a capacity of a firm to innovate. Subramaniam and Youndt, (2005); Nonaka and Takeuchi (1995); Menor, Kristal, and Rosenzweig (2007); and Ngah and Ibrahim (2009) added that innovation capability of a firm is closely depends on its intellectual capital or ability to utilize its knowledge resource. Thus, the ways of managing intellectual capital which were mentioned in the previous section are also the ways of managing innovation capability. Amongst them are learning and training, securing non-disclosure agreements or secrecy agreements with the employees, registration of patent, documentation of the work process, and establishment of norms

that facilitate interaction, relationship and collaboration with external parties. Managers need to manage their intellectual capital in order to enhance innovation capability of their firms.

Proceeding further, rates of innovation will continue to increase due to social change, competitive challenges and technological development. As competition became increasingly intense, firms need to create an environment that allows innovation to flourish. In other word, firms need to establish innovation culture. Alsaaty (2011) suggested that firm need to have relevant knowledge and rewards system so that employee can be motivated to participate in the innovation activity. Thus, since there is a link between motivation, rewards and culture, firms are advised to offer a comprehensive compensation structure that promotes innovation culture amongst their employees.

Regarding compensation structure, a well-known theory of human motivation, Theory X and Theory Y developed by Douglas McGregor could be used to motivate employees to innovate, consequently promotes innovation culture. According to Theory X, if employees dislike work they must be forced to do their job (Ferrell, Hirt, & Ferrell, 2006). It suggests that employer have to punish them to make them perform in their work. Punishment may be in the form of salary reductions, giving no annual bonus or taking away fringe benefits.

Unlike Theory X, Theory Y assumes that employees will seek out responsibility in an attempt to satisfy their social, esteem, and self-actualization if they like to work (Ferrell, Hirt, & Ferrell, 2006). It suggests employers to give equitable rewards to the them based on their performance. Equitable rewards will create job satisfaction and then encourages them to work towards achieving the firms' goals because they

become more interested in their work and felt proud to be a part of the firm. Mohamed (2002) shared the same view as he concluded in his study that job satisfaction has a relationship with innovation.

In addition, firms should avoid a work culture that consists of formalized rules and procedures which may hinder the performance of innovation. It is because innovation tends to flourish if employees are given free communication to ask questions, seek feedbacks or propose new ideas. Innovation also will occur when the employees have the freedom to communicate with each other at any time where the tendency to obtain and integrate tacit knowledge amongst them is high. Penalties for rule violations or being judged negatively for proposing an opinion will make employees become more averse to risk, thereby giving up searching for new ideas, being creative or trying new approaches. In this case, research evidence by Mosey, Clare and Woodcock (2002) proved that an employee suggestion scheme and a new product development team facilitate new product development project which consequently determine the innovativeness of a firm.

Furthermore, Schiling and Phelps (2007) found that the greater the number of organizations with different backgrounds involved in an innovative project, the more variance in ideas and more amount of knowledge those organizations generate. Firms must therefore build a work culture that promotes sharing of ideas not only with employees in the firm but also with the outsiders. This is because any effort that enhances connectedness in the work culture is perceived to have impacts on innovation.

Connectedness implies strong ties, where high level of connectedness promotes openness (Jansen, Den Bosch, & Volberda, 2006) and results in better ideas and

feedbacks. In order to increase the level of connectedness, firms may organize workshops as they allow individuals and teams to experience new ways for innovative team works promoting new collaborations in cross functional area. It is also an effective way to identify areas of innovation opportunities, facilitate the sharing of knowledge and turn it into visible outcomes.

Moreover, establishing good networking with external sources is paramount. The rationale is that networking provides sharing of useful information concerning existing and potential opportunities that push firms to innovate (Alsaaty, 2011). Firms which are part of a network is likely to have access to resources than firms operating outside the network. Wincent, Anohkin and Biter (2009); and Subramaniam and Youndt (2005) shared the same view when they reported that networking with outsiders such as customers and suppliers is found to have a positive impact on firm's innovation activities through the exchanging resources and ideas.

For example, Intel, a high-tech firm gained ideas to create innovative product from its loyal customers through complaints and sharing of thoughts (Brooking, 1996). Another study conducted by Adler (1995) found that manufacturing related suppliers developed creativity of the R&D parties by giving them direction to match the new ideas with the existing manufacturing technology requirements. Thus, knowing and interacting with customers facilitate firms in getting feedbacks and information that are useful and beneficial.

Proceeding further, R&D facilitates innovation activities in a firm because it is difficult for a firm to innovate without an R&D facility or laboratory. This is notable true when Al-Kazemi (2009) found that R&D and patent demonstrate an input/output relationship. Hall, Thoma and Torrisi (2007); and Al-Kazemi (2009) added that patent

is the successful outcome of R&D that determines firm performance. Firms will spend more on R&D when they expect it will result high earnings (Osma & Young, 2009).

Finally, the findings show that SMEs possess insufficient resources especially financial ability to be used in innovation activities. Thus, the researcher agreed with Oke, Burke and Myers (2007) that the government initiatives are important to encourage SMEs to innovate which consequently improve growth. This is proven when Sebora, Lee and Sukasame (2009) found that the government support programs such as low interest loans, counseling on government regulations, legal expertise, and other support services have enriched business activities in Thailand. Abdullah (1999) shared the same view and further added that there are five areas of support programs offered to SMEs in Malaysia. Amongst them are financial and credit assistance, technical and training assistance, extension and advisory services, marketing and market research, and infrastructure supports.

5.4 Limitation of the Study

It is important to highlight in any research, the limitations of the study so that the validity and reliability of findings are properly assessed. Limitations will further give insights on different perspectives that may become a direction for future studies.

The study attempted to explore the extent to which intellectual capital together with its components and firm age are being the input to generate innovation capability to produce performance. Although other factors may contribute to firm performance such as firm size, tax and incentive system, and regulatory practices, this study

focuses on the role of intellectual capital, HC, SC, RC, innovation capability and firm age in determining SME performance.

This study was conducted using a sample of SMEs operating in Malaysia. Hence, the result should not be used to generalize other types of firms such as multinational companies nor large firms in Malaysia. Furthermore, the study took place in Malaysia, which is classified as a developing country. Care should be taken in generalizing the findings to SMEs in other countries especially those SMEs in the third world countries and developed countries.

Regarding SMEs, not all of them are registered with Registrar of Companies are active. Only a number of these firms were listed in the SMI/SME Business Directory of Malaysia year 2012, which the researcher assumed were active and operational. Answers gathered from these active firms are used to generate the findings which are assumed meaningful and reliable.

The researcher has sent out questionnaires to selected SMEs using systematic sampling. The questions were adapted from previous studies and were found reliable from the source. The questionnaire was set in dual language, English and Malay language endorsed by a certified translator. Hence, it is assumed that all respondents comprehend and answered the questionnaires freely without undue influence from any parties.

Due to time and budget constraint, the researcher managed to get 172 respondents to generalize findings for the study. Of 1,071 samples that were drawn, 7 firms were reluctant to respond and 25 firms were not contactable. The remaining balance of 867 firms did not response to the survey. Concerning the issue pertaining to insufficient sample size that may lead to non response bias, the researcher has examined the

potential of non response bias and concluded that it does not appear to be a concern in this study. Therefore, the sample size used in the study is assumed sufficient to represent the population; which is small in proportion to the target population.

5.5 Direction for Future Studies

Based on the findings and limitation, this study has not employed several possibilities, thus directs to several research opportunities in various aspects. First, the study findings demonstrate conflicting results with previous findings regarding the relationship of HC and SC with firm performance. Future researches are suggested to look into the relationships and search for other influential factors that may have existed between the constructs.

Second, the research framework is based on the conceptual model that explores the relationship of intellectual capital, HC, SC, RC, innovation capability and firm age, with firm performance. Further studies are recommended to reconsider modifying the conceptual model by adding new variables that contribute to firm performance such as firm size and tax and incentive system.

Third, past studies mostly focused on innovation capability, product innovation, process innovation, marketing innovation and their influence of performance. None was found exploring the relationship of strategic innovation and behavioral innovation on performance. Further studies should consider this research opportunity, adding significant contribution to the literature on innovation and performance.

Respondents of the study were working for SMEs operating in Malaysia. Future studies should involve respondents from multinational companies or large firms in

Malaysia. Alternatively, future studies may consider respondents working for SMEs in third world countries and developed countries; adding new contribution to the literature on intellectual capital, innovation, firm age and performance.

Concerning studies involving SMEs, the findings of the study are based on quantitative methodology. Very few studies are found using mixed method methodology. Future research is recommended to conduct studies using mixed method methodology to gain deeper insights on the area of study.

5.5 Contribution of Study

Based on the underpinning theory of RBV, the researcher has constructed a new conceptual framework that investigates the relationship of intellectual capital and its component, innovation capability and firm age with firm performance. In the model, firm age and innovation capability are assumed having the moderating and mediating effect on intellectual capital and its components respectively. The study attempts to fill a gap that had caused conflicting results between intellectual capital and firm performance, firm age and firm performance, and innovation capability and firm performance in previous studies. It further looked into the relationship of HC, SC and RC with innovation capability, firm age and firm performance. Thus, it has provided several significant contributions to the theory and practice in the social science. The following part will further describe these contributions.

5.5.1 Theoretical Contribution

This study contributes to the existing RBV literature. As RBV concerns, performance of a firm is dependent of the resources of the firm. It highlights firm as a unique collection of resources that possess unique capability and that the effective use of these resources will end up with sustainable competitive advantage and superior performance (Barney, 1991; Penrose, 2009; Wernerfelt, 1984). Taken this into consideration, the researcher found that intellectual capital and innovation capability (both are resources of firm) have effect on firm performance. Further readings reveals that firm age has also affect performance. This assumption is in line with the RBV hypothizing that older firms possess more resources than younger firms where firms obtain them over time (Williams, 2011). However, the study found no prove that firm age is associated with performance.

Discussing further, previous studies showed that there were inconsistent empirical evidence between the relationship of intellectual capital and firm performance; indicating that there was a gap within their relationship. Also, no study is found looking into the relationship amongst intellectual capital and its components, innovation capability and firm age, and empirically link them with firm performance simultaneously. Due to this, the researcher has explored their intrinsic connections by examining the moderating role of firm age and mediating role of innovation capability on intellectual capital, HC, SC and RC that will benefit performance. Thus, the study provides empirical evidence to the literature on intellectual capital, innovation capability, firm age and performance.

Concerning contribution to knowledge, the previous model assuming intellectual capital and its components are associated with firm performance has led to conflicting

results. The study has revised the model by introducing the mediating role of innovation capability between the two constructs. The researcher found that the new variable, innovation capability plays a mediating role between the relationship of two constructs; intellectual capital and firm performance, and SC and firm performance.

In addition, the researcher found no study that look into the influence of SC and innovation. This study has explored their relationship and proposes that both have relationship with each other, thus has produced a new model linking the two constructs. It has provided a new conceptual framework and comprehensive empirical evidence that fill the gap between intellectual capital and firm performance, and SC and firm performance; thus contributing to the literature on RBV.

5.5.2 Practical Contribution

This study has shown the important role of intellectual capital and innovation capability towards performance. It further highlights recommendations based on the result findings and literatures particularly on how to manage HC, SC, RC and innovation capability effectively hoping that they will assist the government and business owners in formulating strategies to obtain better performance. Thus, these recommendations provide important practical contributions for the Government and business owners in developing SMEs.

5.6 Summary

The study has met the six objectives and the result findings validate the important of intellectual capital and innovation capability on firm performance. Managing intellectual capital is as important as managing innovation. Intellectual capital and innovation capability are tied up in the firm's process built over a period of time and strong management skills are required to reveal the competency gap and to take necessary actions to filling the gaps. Nevertheless, the most crucial part is getting the commitment and management supports from both upper and lower management level. Without them, achieving great results is impossible.

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