AN INVESTIGATION INTO THE IMPORTANCE AND RELEVANCE OF INTANGIBLE ASSETS IN MALAYSIAN DIGITAL SMALL AND MEDIUM-SIZED ENTERPRISES (SMES) PERFORMANCE: THE BALANCED SCORECARD APPROACH

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Abstract

In light of organizations in strategy, the Resource-Based View (RBV) upholds that by appropriate understanding and exploitation of unique resources in organizations, firms may experience outstanding performance. Upon acknowledging the importance of resources, digital firms have begun appreciating intangible resources, instead of physical assets alone. Although recent studies have discovered that technological capital is widely accepted as the core in technology-based SMEs, questions continue to arise regarding the contribution of these assets to the performance of digital SMEs in association with other major intangible assets depicted in the literature, particularly human capital and organization capital.

This mixed-method study presents the contribution of three assets, namely human, technology, and organization capital, towards the performance of Malaysian digital SMEs. As the Balanced Scorecards (BSC) emerged as the most appropriate tool to measure both financial and non-financial performances, the study outcomes may serve as guideline to assist these digital SMEs in making better investment decisions, as well as more appropriate and optimum resource allocation.

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Chapter 1

Introduction and Overview

1.1 Introduction

This chapter explains the objectives and the background of this study. First, it offers a brief overview of intangible assets in and performance by Small and Medium Enterprises (SMEs). Next, this chapter highlights the factors that make the topic of intangible assets significant, along with the basis of this study. Subsequently, the motivation for and the purpose of this study are discussed. Finally, this chapter presents the objective research questions and a brief discussion regarding this work that ensues towards completion.

1.2 Background of the study

As gazetted in the Tenth Malaysia Plan (2011-2015), SMEs have been reckoned as one of the noteworthy industry segments that boost the Malaysian economy (The Prime Minister Department of Malaysia, 2010). As the backbone of the national income, this SME sector has augmented their significance by dominating the market by 99% of enterprises established in Malaysia, translating to 65% of total employment in the country. Similarly, these businesses accounted for almost 36% of national Gross Domestic Product (GDP) in 2014 (SME Corporation, 2015) and was reckoned as the major supporter of Multinational Corporations (MNCs) and a source of Foreign Direct Investment (FDI). Although small in size, this fraction of the market is vital as a dominant market player across the globe.

Whilst acknowledging that SMEs play an integral part in realising Malaysia's vision to be a strong developed country, many studies have emphasised that SMEs often face problems in securing their businesses in the long run; suggesting insecurity or even failure of business. According to Ahmad and Seet (2009), the failure rate of SMEs in Malaysia was approximately 60%; three-fold greater than the failure rate of Australian SMEs. Although the literature has concluded that this phenomenon occurs due to the financial constraints faced by SMEs, such as difficulty in gaining credit and bank facilities (Abor & Quartey, 2010; Ates, Garengo, Cocca, & Bititci, 2013; Basiouny & Elshamly, 2013; Kim, Lee, & Lee, 2011; Ross & Blumenstein, 2015), another major problem that could lead to failure of this segment is related with their limited resources (Eikebrokk & Olsen, 2007; Fauske, 2007; Hudson,

Smart, & Bourne, 2001; Shemi, 2012; Subrahmanya, Mathirajan, & Krishnaswamy, 2010). The theory of Resource-Based View (RBV) suggests that by appropriately leveraging unique and inimitable knowledge-based resources (tangible and intangible), the performance of a firm can be enhanced (Collis & Montgomery, 2008; Crook, Todd, Combs, Woehr, & Ketchen, 2011). As such, this study incorporated the perspective of RBV of the firm (Barney, 2001; Collis & Montgomery, 2008; Rivard, Raymond, & Verreault, 2006) to identify the correlations amongst the intangible assets.

In this study, the intangible assets are comprised of human capital (HC), technology capital (TC), and organization capital (OC), due to the belief that these assets are the main driver of technological industry, such as digital business (Goodridge, Haskel, & Wallis, 2014). The performance of these digital businesses were elaborated from the financial and non-financial perspectives, by adapting Kaplan and Norton's (1992) Balanced Scorecard (BSC) as the model to measure performance. Although several studies have successfully bridged these two theories (see Khalique, Bontis, Abdul, Abu, & Isa, 2015; Khalique & Pablos, 2015), this present study distinguished itself from the rest by assessing if non-financial performance is correlated with intangible assets and financial performance. Apart from examining the relationships of these assets with SMEs performance as a whole, this study studied if the cluster and the age of a firm could influence SMEs performance. This study adopted the mixed-method approach by incorporating qualitative analysis from the interview conducted with industrial practitioners to provide explanation for the quantitative results.

The three intangible components are extremely significant in digital business, wherein performance was measured using a holistic view without neglecting non-financial performance. In precise, this study employed a hybrid of two theories, namely intangible assets and BSC.

1.3 Problem identification

The Seventh Malaysia Plan, which was a national agenda in 1996, intensified the acquisition and commercialisation of new technology in the country. The agenda had promoted Malaysia towards a knowledge-based industry and a country that is regarded as a digital flagship in Asia. In line with Malaysia’s aspiration, several initiatives have been outlined. The establishment of Multimedia Super Corridor (MSC) is one of the main tangible pieces of evidence that reflect the determination of Malaysia in realising this aspiration. Consistent with this ambition, many initiatives have been conjured by the government and private sectors to support and to increase the growth of digital industries across the country. Remarkably, after two decades of hard work, Malaysia has produced thousands of digital firms with 75% of them being Malaysian-owned companies (Malaysia Digital

Economy Corporation [MDeC], 2015; 2016). However, despite the escalating number of new MSC Malaysia companies, a study commissioned by MDeC (previously known as Multimedia Development Corporation) revealed that the number of inactive companies was also increasing exponentially. This phenomenon is not unusual, as this sector is the most fragile (Ohanga, 2011; Papalexandris, Ioannou, & Prastacos, 2004). While several articles suggest that this phenomenon happened due to inadequate use of a strategic management plan provided to the digital SMEs (Korgaonkar & O'Leary, 2006; Razi, Tarn, & Siddiqui, 2004), this study bridges this research gap.

It is vital to offer a platform for the digital SMEs in support of strategic planning that can increase their chances of survival and to succeed. One of the strategies is to provide them guidance on the appropriate and effective deployment of assets; in this case, intangible resources. While studies regarding intangible assets and firm performance are abundant (Khalique & Pablos, 2015; Morariu, 2014; Sharbati, Jawad, & Bontis, 2010), none has assessed Digital SMEs. It is critical to study this particular industry sector because this digital business has been found to engage most of their assets in intangible form (Yancy, 2017). According to Starovic and Marr (2003), the digital industry demands more skills and technology advantage, instead of physical assets, such as expensive machinery and land. This notion has been proven true because when recent findings from NESTA (National Endowment for Science, Technology and the Art) were compared to other industries, the digital industry had the most investments in intangible assets (Goodridge et al., 2014). This is in line with that highlighted by Accenture (2016), which has acknowledged that intangible capabilities, including human skills, technology ability, and the digital culture, are the true decider of successful SMEs. Thus, it is vital to review these assets and their relationships with the performance of digital SMEs.

In view of performance, most studies have concentrated primarily on the financial perspective. Indeed, financial performance is always the integral objective of any firm, especially for SMEs (Hudson et al., 2001; Phadtare, 2010), but many studies have also pointed out that non-financial performance significantly contributes to SMEs performance (Abor & Quartey, 2010; Anuar & Yusuff, 2011; Chavan, 2009). Often, the non-financial perspective is the pillar in driving business towards outstanding financial performance (Abor & Quartey, 2010; Mackay, 2005). This highlights the significance of determining the correlations of intangible assets with firm performance not only from the financial stance, but also from the non-financial perspective drivers of overall performance.

1.3.1 Issues on intangible assets and firm performance

Empirically, intangible assets have been identified as an integral resource to support firms attain outstanding performance (Barney, 1991; Barney, 1986a; Bozbura, Beskese, & Kahraman, 2007; Collis, 1994; Goodridge et al., 2014). Since then, a plethora of studies have been published to establish the relationships between strategic resources and firm performance. As a result, many studies have concluded that intangible assets do play a significant role in driving innovation (Barnett, 2009; Huang, Lai, & Lin, 2011), creativity (Tesluk, Fara, & Klein, 1997), competitive advantage (Barney, 1986a) and further increase business performance (Bontis, 2000; Khalique & Pablos, 2015; Morariu, 2014; Peng, Pike, & Roos, 2007; Sharbati et al., 2010), which are relevant to digital SMEs performance. The role of this particular resource in increasing firm performance amidst organization is not limited to profit, but also beneficial to non-profitable sector, such as the public sector (Kamaruddin & Abeysekera, 2014; Morariu, 2014). Although not all intangible assets are listed in the financial report, the value of these assets is relevant to the success of SMEs (Tseng, Lan, Lu, & Chen, 2013). Scholars have probed into this situation by exploring the relationships of intangible assets and firm performance (see Edvinsson, 1997; Kaplan & Norton, 2000b; Khalique, Abdul, Shaari, Abu, & Isa, 2011; Rompho, 2012; Sveiby, 1997a), while firm performance that can be viewed in financial and non-financial aspects, is often studied separately. Since this topic is highly important for firms to increase their profitability, managing intangible assets is no longer an option for these firms (Starovic & Marr, 2003), while inclusion of intangibles assets in enhancing firm performance should be manifested throughout the strategy development of organizations.

Although many studies have verified the role of intangible assets in firm performance, three major issues were identified in this study; the context, the research method used, and the adopted performance measurement.

1.3.1.1 Context

In light of the topic pertaining to intangible assets and performance focusing on SMEs, most studies have looked into many industry sectors and business settings, but none has focused specifically on digital SMEs. The context of the existing studies have mostly involved the European nation, such as Ireland and the UK. Although a number of studies have been conducted across the Asian region, their contexts differed as they emphasised on large organizations, such as the manufacturing and healthcare domains (see Table 1-1). Hence, this study bridges the gap by focusing on digital SMEs in Malaysia, mainly to determine the correlations between intangible assets and SMEs performance, specifically in

the highly technological industry sector. This study not only enhances understanding on the views of resource within this sector towards firm performance, but also information regarding SMEs.

1.3.1.2 Research methodology

Prior studies concerning intangible assets in SMEs have employed the mono-method; either purely quantitative (questionnaire) or purely qualitative (interviews). Although past studies have yielded fruitful findings, the mixed-method approach, particularly the sequential explanatory mixed-method, seems to be absent in the literature. Therefore, adopting the mixed-method approach is bound to offer more meaningful explanation can be obtained based on the first quantitative study. By conducting the quantitative study using the Partial Least Square-Structural Equation Modelling (PLS-SEM) and to seek explanation from the digital industry practitioners, this study is the first to amalgamate PLS-SEM and qualitative study to further display their contributions.

Table 1-1 lists the past studies that have integrated intangible assets with firm performance. Clearly, the table shows scarcity in studies that have applied the mixed-method approach, thus presenting a viable opportunity for this present study undertaking.

Table 1-1: Summary of past studies

Author (Year)	Method	Sample	Type of analysis
Bontis, (1998)	Quantitative	USA	*PLS-SEM
Carmeli & Tishler, (2004)	Quantitative	Israel – SMEs	*PLS-SEM
Youndt et al., (2004)	Quantitative	Not mention	MANOVA
Bernard Marr & Moustaghfir, (2005)	Qualitative	Not mention	Systematic Review
Regan et al., (2005)	Quantitative	Ireland - ICT SMEs	Not mentioned
Ainuddin et al., (2007)	Quantitative	Malaysia-IJV	ANOVA
Bozbura et al., (2007)	Quantitative	Turkey	***AHP
Bozbura & Beskese (2007)	Quantitative	Not mention	***AHP
Peng et al., (2007)	Mixed Method	Taiwan - Healthcare	Exploratory Sequential Mixed Method
Tovstiga et al., (2007)	Quantitative	St Petersburg - SMEs	SPSS 2.0
Chareonsuk & Chansa-ngavej, (2008)	Qualitative	Thailand	Case Study
Martín-de-Castro & López-Sáez, (2008)	Quantitative	Spain-high Tech Companies	*PLS-SEM
Castro et al., (2008)	Qualitative	Not mentioned	Literature review
Isaac et al., (2010)	Quantitative	Variety Industry	**SEM

Yolanda Ramirez, (2010)	Qualitative	Spain - Public Sector	Case Study
Huang et al., (2011)	Quantitative	Taiwan	**SEM
Khalique et al., (2011)	Qualitative	Not mentioned	Literature review
St-Pierre & Audet, (2011)	Quantitative	Canada & France - SMEs	*PLS-SEM
Ng et al., (2012)	Qualitative	Literature Review	Literature review
Rompho & Siengthai, (2012)	Quantitative	Thailand	**SEM
Mura & Longo, (2013)	Quantitative	Italy – SMEs	**SEM
Kalkan, Bozkurt, & Arman, (2014)	Quantitative	Turkey - Insurance companies	SPSS 2.0
Molodchik, Shakina, & Barajas, (2014)	Quantitative	European companies	**SEM
Reich, Gemino, & Sauer, (2014)	Quantitative	Project Manager	*PLS-SEM
Khan, (2014)	Qualitative	Not mentioned	Literature review
Khalique et al., (2015)	Quantitative	Pakistan - SMEs manufacturing	**SEM
Khalique & Pablos (2015)	Quantitative	Malaysia - SMEs manufacturing	**SEM

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

** SEM (Structural Equation Modelling)

*** AHP (Analytical Hierarchy Process)

1.3.1.3 Measurement issues

One aspect that distinguishes this study from the rest refers to its adopted method of measurement; constructs of intangible assets and firm performance. Components of strategic intangible resources employed by digital SMEs are acknowledged, and the coordination of these elements is essential for organizations to secure better organizational performance. Auh and Menguc (2005) asserted that the intangible assets component differs from one industry to another, hence the importance to identify and to align the most important intangible assets precisely for an industry, as well as to understand their role in driving firm performance. This particular subject matter is elaborated in detail in Section 3.5, whereby the most influential intangible assets essential for digital SMEs, based on the literature, are human, technology, and organization capital. Despite many studies agreeing on the importance of these assets, no study has combined these assets as a key resource.

Second, in view of performance construct, the contribution of intangible resource towards firm performance has been acknowledged by prior studies (Khan, 2014), but is fragmented into two areas; assets contribution towards financial performance, and the relationship of intangible assets with non-financial performance. Empirical studies have evidenced that intangible assets had a significantly

positive correlation with both financial and non-financial performances. Besides, it has been suggested that it is more appropriate if the performance is viewed in a holistic manner by combining both financial and non-financial performance perspectives. Upon considering an overall view of performance, the firm may gain more comprehensive information, which later can be used to improve the decision-making process. As some scholars have emphasised that non-financial performance drives a firm towards improved financial performance, this study combined two performance measures to determine the link of intangible assets with both financial and non-financial performances. The performance can be considered from the perspective of BSC (Kaplan & Norton, 1996; 1992) that integrates three non-monetary components (customer, internal business and learning, & growth perspectives) as non-financial indicators have been found to be related with driving a firm towards improved financial performance (Gumbus & Lussier, 2006; Pangarkar & Kirkwood, 2007; Rigby, 2001). Measuring firm performance using BSC has been adopted widely across many organizations, including SMEs (Gumbus & Lussier, 2006; Parker, 2009; Rickards, 2007; Zhu & Xin, 2010). As such the BSC was employed in this study as a measurement tool.

The idea of utilising BSC to study the topic of intangible assets has been attempted recently in a study that incorporated both intangible assets and BSC by bundling all four BSC elements into a component, labelled as 'organizational performance' (Khalique et al., 2011; Khalique et al., 2015; Khalique & Pablos, 2015). As SMEs appreciate both financial and non-financial performance, wherein non-financial is claimed to be the main driver of financial performance, this study distinguished itself from the rest by separating financial and non-financial performances into two different performance measurements. This segregation of performance into two led to three findings that describe the relationship between intangible assets and performance. The first refers to the relationship between intangible assets and financial performance, where intangible components were tested individually based on financial stance. The second depicts the relationship of intangible assets with non-financial performance, where the three intangible assets were assessed. Lastly, the relationship between non-financial and financial performance was investigated. This study employed the PLS-SEM to inspect the mediating role of non-financial performance for the relationship between intangible assets and financial performance. The results of this part are discussed in Chapter 5.

In essence, although studies have looked into the intangibles using the BSC as a measure, they seem to omit the influence of human, technology, and organization capital on firm performance. As these three intangible assets have been reported to play a vital role in digital business (Biagi, 2012; Faeste, Gumsheimer, & Scherer, 2015; Goodridge, Haskel, & Wallis, 2013; Jarvenpaa & Leidner, 2000;

Kaplan & Norton, 2004; Thacker & Handscombe, 2003), no study has considered the combination of these assets with regard to firm performance. While the literature emphasises on the combination of intangible assets to firm success, none has considered the role of intangible assets, in which non-financial measures served as a mediator for financial performance.

1.4 Purpose Statement

This study addresses the contribution of intangible assets towards the performance of digital SMEs in Malaysia. The explanatory sequential mixed-method design was adopted, thus involving collection of quantitative data first, and followed by explaining the quantitative outcomes in accordance to in-depth qualitative data. In the first quantitative phase of the study, self-administered questionnaire was employed via online to gather data from a list of digital SMEs retrieved from company directory of MSC Malaysia, mainly to determine the correlation between intangible assets and SMEs performance through the lens of RBV. In the second part, the qualitative approach was carried out as a follow up to the quantitative results, in order to explain the quantitative findings. In this explanatory follow-up, the contribution of the most important intangible asset towards performance by Malaysian digital SMEs had been explored.

1.5 Rationale for the study

The following depicts the five reasons for undertaking this particular study.

First, it has been acknowledged that the presence of digital realm has offered vast opportunities to new entrants and existing businesses to further create many success stories. According to Forbes in 2015, 54% of the World Youngest Billionaires generated their wealth by exploiting their digital presence. As a result, many have attempted to venture into this industry. However, due to the 'hyper-competitive environment' (Bradley, Kim, Kim, & Lee, 2012), this industry fraction has been considered as volatile and unstable (Ohanga, 2011; Papalexandris et al., 2004). As for Malaysia, despite the increasing number of MSC Malaysia companies penetrating the sector, the proportion of 'inactive' companies has escalated as well. Hence, in order to survive and experience future profitability, despite often having limited resources (Abor & Quartey, 2010; Fauske, 2007), digital SMEs in Malaysia have been urged to continuously find ways that can enhance their ability to perform effectively (Osman, 2014) by understanding their resources and using them effectively (Clulow, Barry, & Gerstman, 2007). It is essential for SMEs to understand the relationship between their existing intangible assets and firm performance, so that they can make better decision, invest in strategic choices, and effectively allocate resources.

Second, although several studies found that SMEs did appreciate strategic management accounting and agreed on the importance of intangible assets towards their firm performance (Choo, Salleh, & Noruddin, 2010), these SMEs have been found to use more intuitive and rational thinking over strategic planning in their decision making (Chen, 2003; Mahadi, 2011). Some literature has associated this phenomenon with lack of appropriate strategy provided to the SMEs by the management accountants (Korgaonkar & O'Leary, 2006; Razi et al., 2004). As a result, some SMEs are inclined towards adopting the firefighting approach while making decision, thus increasing risk and damaging their businesses in the long run. Jarvis, Meyrick, & Mirkovic (2007) asserted that the academics should assess the relationship between intangible assets and digital SMEs, whereby this study offers digital SMEs a more strategic approach to serve as an appropriate strategic management accounting tool.

Third, there has been increasing interest in the topic of intangible assets to comprehend their impact on firm performance, wherein some authors have generated their own label of intangible assets that they deemed important. Although most intangible frameworks have reckoned the importance of technological advantage, these assets have been neglected and considered as a sub-component in structural capital or in any other component (see Bozbura, 2011; Bozbura & Beskese, 2007; Tovstiga, Birchall, & Tulugurova, 2007). However, for digital firms, technology is viewed as an independent variable due to its essential role as human capital and organization capital, which have been outlined as the most influential intangible assets in the digital industry (Arora, 2002; Slaughter, 2014; Zhang & Tansuhaj, 2007). This study differs from the rest, as technology capital is seen as an independent variable, along with human and organization capital.

Fourth, although several authors have empirically demonstrated the correlation between intangible assets and performance, none has associated these constructs with financial and non-financial performance. If any, they are commonly separated into two different topics. For instance, Juliana (2014) examined the correlation between intangible assets and non-financial performance by weighing in innovation capabilities. Rai, Patnayakuni, and Patnayakuni, (1997), Kamukama, Ahiauzu, and Ntayi (2011), and Tseng et al., (2013) investigated the contribution of assets towards financial performance. Abor and Quartey (2010) discovered that some businesses failed due to non-financial reasons, thus highlighting the importance of this issue. Although Khalique and Pablos (2015) have assessed the contribution of assets towards performance by adopting financial and non-financial measures; they only evaluated the assets in general, and omitted the relationship of the specific assets, as well as their impact on financial performance. This study eliminated these shortcomings by incorporating both financial and non-financial measures to determine the impact of these assets on firm performance.

Additionally, this study offers valuable insight by analysing a particular company cluster and also by determining if company age in this study had an influence on the findings.

Finally, SMEs are always linked with having limited resources that are vital for them to have specific information for decision making (Abor & Quartey, 2010; Fauske, 2007). As high technology industries are a collection of skills, human, and technology; it is important for firms to identify the relationship between intangible assets and business performance. One tool that can be used to holistically measure performance is by employing the BSC. Despite the growing literature on BSC, it is biased towards conglomerates, thus scarcity in studies related to the SME sector (Rickards, 2007; Rompho, 2011). The absence of literature on digital SMEs makes this study an excellent research topic.

1.6 Objective and research questions

The overall aim of this research is to investigate the relationship between intangible assets and performance (financial and non-financial) of digital SMEs in Malaysia. In order to achieve this objective, the BSC was selected as the tool to measure firm performance. Using BSCs, the impact of intangible assets on firm performance was determined in terms of financial and non-financial aspects.

The main research question of this study is '**how do intangible assets contribute to digital SMEs performance?'** This central question is broken down into several specific sub-questions and answered via quantitative and qualitative studies. The quantitative analysis was conducted first to gain better understanding on the research problem. Next, the qualitative analysis was performed to describe the statistical outcomes by exploring views provided from practitioners in a more in-depth manner.

As the first quantitative phase addressed the most important intangible assets that contribute to digital SMEs performance, five research questions were developed to meet the aforementioned objective:

RQ1: What is the relationship between human capital and performance of Malaysian digital SMEs?

RQ2: What is the relationship between technology capital and performance of Malaysian digital SMEs?

RQ3: What is the relationship between organization capital and performance of Malaysian digital SMEs?

RQ4: Does non-financial performance have a significant effect on financial performance?

RQ5: Does non-financial performance mediate the relationship between intangible assets and financial performance?

Upon completing the statistical analysis, the next phase was to understand the phenomena that support the first quantitative study by conducting an interview with the practitioners. In this study, the most statistically significant result was further investigated to better understand the phenomena.

RQ6: Why does one particular intangible asset emerges as the most important factor in contributing to the performance of digital SMEs in Malaysia?

For **Research Questions 1, 2, and 3**, their purposes are to understand the effect of intangible assets on both non-financial and financial performances of Malaysian digital SMEs. The correlations of all the three intangible assets (human, technology, and organization capital) with financial and non-financial performances were tested to gain evidence on the most significant intangible assets that drove the financial and non-financial performance.

Research Question 4 explored if non-financial performance contributed to financial performance of Malaysia digital SMEs. Since Ittner and Larcker (2003) urged that non-financial performance drove financial performance, this particular question assessed if non-financial performance was correlated with financial performance of Malaysia digital SMEs. Next, **Research Question 5** determined if non-financial performance mediated the relationships between intangible assets and financial performance.

Research Question 6 was addressed using the qualitative approach. This approach was conducted only after the quantitative analysis was completed. Based on the quantitative findings, this stage sought explanation regarding the results obtained from the quantitative analysis by interviewing practitioners who had participated in the initial quantitative data collection.

It is important to note that since this study applied the explanatory sequential mixed-method approach, the quantitative analysis was conducted prior to the qualitative study. This study appears to be quantitative-dominant, as the quantitative study was given more emphasis not solely to test the hypotheses, but to seek explanation from the practitioners' point of view regarding the contribution of intangible assets towards company performance.

1.7 Research Map

Table 1-2: Research Map

Research map: An investigation into the importance and relevance of the intangible assets of Malaysian Digital small and medium-sized enterprises (SMEs) performance: The Balanced Scorecard Approach			
Research objective	Research question	Hypothesis	Data analysis
	QUANTITATIVE		
How do intangible assets contribute to performance of digital SMEs?	RQ1: What is the relationship between human capital and performance of Malaysian digital SMEs?	*Hypothesis 1a: Human capital is positively related to non-financial performance of Malaysian digital SMEs.* *Hypothesis 1b: Human capital is positively related to financial performance of Malaysian digital SMEs.*	Path analysis using PLS-SEM
	RQ2: What is the relationship between technology capital and performance of Malaysian digital SMEs?	*Hypothesis 2a: Technology capital is positively related to non-financial performance of Malaysian digital SMEs.* *Hypothesis 2b: Technology capital is positively related to financial performance of Malaysian digital SMEs.*	
	RQ3: What is the relationship between organization capital and performance of Malaysian digital SMEs?	*Hypothesis 3a: Organization capital is positively related to non-financial performance of Malaysian digital SMEs.* *Hypothesis 3a: Organization capital is positively related to financial performance of Malaysian digital SMEs.*	
	RQ4: Does non-financial performance have a significant	*Hypothesis 4: Non-financial performance has a significant effect on financial performance of Malaysian digital SMEs.*	

	effect on financial performance?		
	RQ5: Does non-financial performance mediate the relationship between intangible assets and financial performance?	*Hypothesis 5a: The relationship between human capital and financial performance is mediated by non-financial performance.* *Hypothesis 5b: The relationship between technology capital and financial performance is mediated by non-financial performance.* *Hypothesis 5c: The relationship between organization capital and financial performance is mediated by non-financial performance.*	
	QUALITATIVE		
	RQ6: Why does one particular intangible asset emerges as the most important factor in contributing to the performance of digital SMEs in Malaysia?		

1.8 Research contributions

This study contributes to both theory and practices in five ways. First, despite the fact that many studies have assessed the contribution of intangible assets towards firm performance, most studies seem to lean towards conglomerates, while studies covering smaller firms are rather rare. As such, this study bridges the gap detected in strategic management accounting research and intangible assets literature.

Second, while the industry of digital SMEs is still new and yet to be studied, it is essential to comprehend the contribution of these assets towards firm performance. Gumbus and Lussier (2006) asserted that there is 'no one fits all' scenario in making resource strategy; translating that each industry is urged to have tailored strategy. As such, this present study looked into the importance of intangible assets in this industry, by assessing their contribution towards firm performance. As there is a link between SMEs and limited resources, this study is indeed imperative for SMEs.

Third, although the components of intangible assets are composed of a plethora of items, three intangible assets have been found to be critical in ensuring the success of digital SMEs. Although a number of studies have considered human, technology, and organization capital as the integral assets

in high technology firms, only a handful of studies have considered these three resources together. Therefore, this study had amalgamated these three resources as the crucial intangible assets for digital SMEs performance.

Fourth, while most studies on intangibles assets have determined their relationships with firm performance, the performance construct has always been viewed from either financial or non-financial perspective. In this study, both financial and non-financial performances were studied simultaneously by engaging the BSC as a performance measurement tool. This study, hence, assists in enhancing digital SMEs performance by providing strategic information to make better investment decisions within the resource allocation process.

Lastly, as Malaysia is eager to join the league of highly developed countries, one of the strategies introduced by the government is to promote engagement of SMEs in the digital realm. The government requirement for providing employment and contributing to the national income has been highly acknowledged. This supports the need to assess performance management and strategic management accounting domains within the context of Malaysia. The study outcomes may serve as guideline to both practitioners and policymakers in developing better understanding regarding the role of intangible assets in digital SMEs performance.

1.9 Structure of the thesis

This thesis is composed of seven chapters, as detailed in the following:

Chapter 1 presents the background of this study. It provides the rationale for the study by highlighting the problems faced by digital SMEs, which further motivated this study to be conducted. This is performed by explaining the five aspects of the research rationale and further discussion on the research objective and research questions.

Chapter 2 depicts the overview of Malaysia's economy and defines SMEs. In this chapter, the characteristics and the contribution of this segment are further discussed. Interpretation of digital SMEs and digital products is addressed in this chapter, which further extends into the digital environment within the Malaysian context. Next, the topic of performance measurement is discussed. In this section, a specific performance measurement tool, which is BSCs, is highlighted.

Chapter 3 describes the literature review on the RBV theory of firms. This chapter elaborates the importance of intangible assets, as well as the constructs of intangibles used in this study; human

capital (HC), technology capital (TC), and organization capital (OC). Accordingly, the conceptual framework and the research model are introduced. The research questions and hypotheses are also highlighted in this chapter.

Chapter 4 discusses the methodology applied in this study by incorporating the research onion, design, and constructs. Pilot test, data collection procedure, and ethical approval are addressed here. In this chapter, the research design is introduced and the mixed-method approach, the explanatory sequential mixed-method in particular, is elaborated. In this study, the quantitative phase was conducted first, and was followed by the qualitative phase. In the first, the Bristol Online System (BOS) was used as the online web survey platform to obtain statistical data. This chapter further addresses the benefits and drawbacks of the online questionnaire method. Justification for selecting the PLS-SEM as the most appropriate statistical tool in conducting the quantitative phase of this study is presented here.

Chapter 5 depicts the findings obtained from the quantitative study. The quantitative analysis, which was conducted using PLS-SEM, is elaborated. Prior to the analysis, data screening process is discussed, along with descriptive statistics. After introducing the model specification, both outer and inner model evaluations are explained in detail by adhering to the procedure prescribed by Hair, Hult, Ringle, & Sarstedt (2017). During the outer model evaluation, composite reliability and assessment of Average Variance Extracted (AVE) were established to meet the convergent validity threshold. Next, discriminant validity was determined by conducting Fornell & Larcker criterion, cross loading measurement, and heterotrait-monotrait ratio of correlation (HTMT). Later, the six-step of assessing the inner model was conducted following Hair et al., (2017). This included assessment of collinearity, path coefficient, coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and q^2effect size. Lastly, the mediation analysis was further investigated to understand the correlations between intangible assets and financial performance.

Chapter 6 is built from the qualitative phase. By conducting interview with practitioners from the digital SMEs in Malaysia, the qualitative analysis is discussed. Following Creswell and Clark (2011), the emphasis is given to the results retrieved from the quantitative study, in which the most significant contributor is further elaborated to better understand the findings from the previous quantitative part.

Chapter 7 provides a detailed review on the conclusions, the shortcomings, and the recommendations for future research. In this section, contributions made by this study to the body of literature, the limitations faced during the study, and suggestions for future research in the field of strategic management accounting are outlined.

Chapter 2

Literature Review

2.1 Introduction

This chapter starts with the overview of Malaysia economy. Next, the overview of SMEs and digital SMEs in Malaysia is discussed to explain the importance of SMEs, as well as the issues that lurk around SMEs that must be addressed. After elaborating the essence of digital SMEs, Section 2.8 discusses the performance measurement revolution that underpins this study.

2.2 Malaysian economy at a glance

For four consecutive years, Malaysia was in the top 20 most competitive economies in the world. The result from World Economic Forum, which compared the competitiveness index of 140 countries, reported that in 2015, Malaysia remained as the highest among the developing Asian countries (Schwab, Sala-i-Martin, & Brende, 2015). While Malaysia aims to be a fully developed country by 2020 (SME Corp, 2012), its steady growth has been expected to translate the aspiration towards national achievement. With consistent GDP performance from 1970 to 2010 (Tanggapan, Geetha, Mohidin, & Vincent, 2011), it is evident that Malaysia is not an average developing country. Leaping from the 11th to the 6th place of Most-Business Friendly Countries, Malaysia had portrayed itself as an attractive place to establish business (The Star, 2015). A report by Price Waterhouse Coopers (PwC) ESCAPE Index in 2014 highlighted that Malaysia had positioned itself as one of the emerging market leaders, hence escaping from the middle-income country status. As the national Gross National Income (GNI) per capita income exceeded the world average with USD 10,000 in 2014, Malaysia successfully joined the league of advanced developing countries (Bernama, 2015)[1].

Malaysia's achievement in its current development did not happen overnight. Not too long ago, the industry in Malaysia was dominated by the manufacturing industries that substituted the earlier

[1] Developed and developing countries are divided based on gross national income (GNI) per capita. The World Bank stipulated that a developed country receives GNI per capita of USD12, 476. Although Schwab and Sala-i-Martin (2013), in Global Competitive Report 2013, claimed that the traditional distinction of segregating developed and developing countries is obsolete, but should be viewed either innovation rich or innovation poor. This classification of developed and developing countries is relevant and has been applied in many academic and practitioner reports (Demirguc-Kunt & Detragiache, 1998; Dow Jones Indices, 2011; Pereira, Lunet, Azevedo, & Barros, 2009; Sim & Ali, 1998).

agricultural-based industry (Abdulai, 2014; Khalique, Isa, Shaari, & Ageel, 2011; Khan, 2014; Ramasamy, Chakrabarty, & Cheah, 2004). From tin and rubber, the country has flourished with local businesses and foreign manufacturers. Malaysia has been seen as a strategic location to invest in manufacturing due to its cheap labour cost, strategic location, strong financial condition, and environmental condition (Saleh & Ndubisi, 2006; Tanggapan, Geetha, Mohidin, & Vincent, 2011). Many manufacturing industries have established their business in Malaysia with most of the manufacturing portfolios deriving from food and beverages, wood products, rubber and plastic product, textiles and apparel, as well as electrical and electronics products, which have been seen as the most influential business domains. This industry, being the face of modern business established in the country since the past 25 years, has contributed to boost Malaysia's economic growth. The manufacturing industry has broadly contributed to the country, especially in the spectrum of employment development, supporting productivity, enhancing FDI, and increasing GDP (Ahmad, 2012; Kassim & Sulaiman, 2011; Khalique et al., 2011; Muhammad, Char, Yasoa', & Hassan, 2010).

However, parallel with the technological shift, the Malaysian economic landscape has changed the market demand and opportunity in adherence to technology revolution. Most countries have shifted their business priority and segments from manufacturing to high technology-based business landscape. The G7 country[2] has begun the exploration while confirming that exploiting both the internet and technology capability can provide wealth to a country (European Commission, 2013b); Malaysia not escaping this transformation. Realising the potential offered by the technology, the 7th Malaysian Plan was announced in 1996 to build massive Information and Communication Technology (ICT) infrastructure for both public and private sectors (Economic Planning Unit, 2000). Focused on increasing IT usage, this plan had managed to produce almost 5% of ICT growth from the overall economic sector (Jehangir, Dominic, Naseebullah, & Khan, 2011).

As Malaysia celebrated its 60th Independence Day in 2017, the country had successfully positioned itself as a developing country, along with its neighbouring countries, including Thailand, Indonesia, the Philippines, and Vietnam. Malaysia has a national mission - to be listed as a fully developed country by year 2020 (SME Corp, 2012). Therefore, the government has executed several plans to transform the country into knowledge-based economy (MDeC, 2011). With the commencement of high technology business, Malaysia has stepped forward to establish a cyber-technology-based industry and digital landscape, which has further created an opportunity for both large corporations

[2] G7 countries are collectively known as the Group of Seven and represent the world's largest industrial economies. The member states of the G7 are the United States, United Kingdom, France, Canada, Italy, Japan, and Germany.

and SMEs to join the digital industries. Being aware of the crucial role held by SMEs, several initiatives have been put in place by the government, thus displaying tremendous improvement of digital industry establishment across the country, especially from small and medium size sector (Digital Malaysia [DM], 2012; MDeC, 2015; SME Corp, 2012). The set up of MSC, MDeC, and the recent project of Digital Malaysia (DM) reflect the support given by the government in establishing the digital platform in Malaysia, thus enabling the SMEs to participate in the digital business sector.

2.3 SMEs: Definition, characteristics, and contribution

The SMEs have been largely accepted as a major faction in the economies of most countries. Despite its importance, no specific definition is available to dictate the consensus definition of SMEs. This is because; SMEs have varied definition based on the country of origin (Ayyagari, Beck, & Demirgüç-Kunt, 2007; Bloodgood et al., 2010). In precise, a firm that is considered as a large corporation in one country may be identified as an SME in other countries (Mahembe, 2011). In general, SMEs are known as business entities that are operated to earn profits, which are independently owned and operated. To qualify as an SME, most countries have differentiated this segment by providing a maximum number of workers and turnover or sales volume as the benchmark. These definitions even differ depending on the sector of business. Nonetheless, many countries have simplified the definition of SMEs based on the number of employees and annual turnover. For example, the European Union (EU) has defined SMEs as enterprises that employ not more than 250 employees with an annual turnover not exceeding 50 million Euros or an annual balance sheet total not exceeding 43 million Euros (Bloodgood et al., 2010). The US has defined SMEs as enterprises of all sectors that employ fewer than 500 employees (Lane, Pearson, & Aranoff, 2010). Similarly, Canada has offered the definition of SMEs based on the number of paid employees, whereby an enterprise with not more than 99 paid employees is consider as a small business, while medium size business has from 100 to 499 paid employees (Government of Canada, 2013). An enterprise with 19 or fewer employees is considered as an SME in the New Zealand (Ohanga, 2011).

Although many countries have used the number of employees and annual turnover as the benchmark to define SMEs, Malaysia has a specific definition in defining the SMEs. Effective from 2014, SMEs in Malaysia can be segregated into three categories; micro-enterprise, small enterprise, and medium-sized companies, depending on sales turnover and number of employees (Bank Negara Malaysia, 2013). Companies with sales turnover less than RM 300,000 or with less than five full-time employees are categorised as micro-enterprises. Meanwhile, small and medium companies are divided into two segments based on the industry; manufacturing and service industry sectors. For manufacturing

industries, the company is considered small if the sales turnover is between RM 300,000 and RM 15,000,000 or having full-time employees between five and seventy-five. Meanwhile, the manufacturing company is categorised as medium enterprise if the sales turnover is between RM 15,000,000 and RM 50,000,000 and with 75-200 full-time employees. As for the service industries, small companies are defined by the company sales turnover ranging between RM 300,000 and RM 3,000,000 with full-time employees from five to thirty persons. If the sales turnover is between RM 3,000,000 and RM 20,000,000 and with 30-75 full-time employees, the company is consider as a medium enterprise. Table 2-1 summarises the definition of SMEs applied in Malaysia.

Table 2-1: Malaysia SMEs definition effective from January 2014

<table>
<tr><th>Category</th><th>Micro</th><th>Small</th><th>Medium</th></tr>
<tr><td>Manufacturing</td><td rowspan="2">Sales turnover of less than RM300,000
OR
full-time employees less than 5</td><td>Sales turnover from RM300,000 to less than RM15 million
OR
full-time employees from 5 to less than 75</td><td>Sales turnover from RM15 million to not exceeding RM50 million
OR
full-time employees from 75 to less than 200</td></tr>
<tr><td>Services & Other Sectors</td><td>Sales turnover from RM300,000 to less than RM3 million
OR
full-time employees from 5 to less than 30</td><td>Sales turnover from RM3 million to not exceeding RM20 million
OR
full-time employees from 30 to less than 75</td></tr>
</table>

Source: Bank Negara Malaysia (2013, p. 2)

2.3.1 The importance of SMEs

Although the definition varies among countries, the significant role of SMEs is a consensus among academics, policymakers, and experts in many economies (Ahmad, 2013; Ahmad & Seet, 2009b; Eldridge & Nisar, 2019; Holland & Gutiérrez-leefmans, 2018; Lucas & Prowle, 2013; Mahembe, 2011). Apart from increasing the economy of the country, SMEs is a major contributor in terms of

creating employment opportunities (Abor & Quartey, 2010; Kassim & Sulaiman, 2011; Ng et al., 2012). A report from Accenture (2014) claimed that SMEs have supplied more than two-thirds of total employment in G20 country, thus making them a key driver of the most economies in the world. Despite being small in size, SMEs are also known as a major supporter of MNCs (Ng et al., 2012) and conglomerates (Anuar & Yusuff, 2011). This contribution of SMEs boosts national income and increases Foreign Domestic Investment (Ahmad, 2012). Due to its important role, this business segment is the core element of strategies in some countries to foster economic growth and to eliminate poverty (Ahmad, 2012; Ayyagari et al., 2007).

The importance of this business segment is significant for many countries, not only within developing countries but also in more mature economies (Holland & Gutiérrez-leefmans, 2018). For example, SMEs in the UK have contributed to the country with prosperity, employment, and economic progress, thus making SMEs a vital fraction of the UK economy (Elizabeth & James, 2013; Sainidis & Robson, 2016; Shehata, Salhin, & El-Helaly, 2017). Rhodes (2017) reported that there were 5.7 million private sector businesses in the UK in 2017, and more than 99% of all businesses in the country were SMEs. The formal report described that this business segment contributed 60% of the country's employment and 51% of the country's turnover. Although the data showed slight improvement compared to the report provided by the Department for Business Innovation & Skills (2013) on SMEs' contribution in 2013 (59.3% employment and 48.1% turnover), it is evident that SMEs also play a major part in the economy of more developed country, such as the UK. This segment offered more than 95% from the total employment in high-income countries, such as New Zealand and the US (Bloodgood et al., 2010; Ohanga, 2011), thus increasing the importance of SMEs towards global economy.

In Malaysia, the role of SMEs towards economic growth is vital. The SMEs have been dominating the market share with 98.5% from the total business establishments in Malaysia (SME Corp, 2017). Contributing almost 37% to national GDP, the SME employment share of total employment expanded to 65% in 2016 (SME Corp, 2017). As the trend has been steadily increasing since 2005, this fact has endorsed the importance of small business and thriving SMEs as the backbone of the Malaysia economy (Anuar & Yusuff, 2011; Kassim & Sulaiman, 2011; Muhammad et al., 2010; Ng et al., 2012). In Malaysia, the services sector has been dominated by the SMEs, and followed by the manufacturing sector. With nearly 90% from the total SMEs establishment, this segment has contributed to 22% from overall Malaysia GDP (see Figures 2-1 and 2-2).

Due to the importance of this business fraction, the SME Corp, or formerly known as SMIDEC (Small and Medium Industries Development Corporation), has been set up since 1996 to develop SMEs to be

competitive in the global market. The agency, which serves as a central coordinating body under the Ministry of Trade and Industry, is responsible to formulate the overall policies and strategies for SMEs in Malaysia. As the Malaysia premier organization for the development of progressive SMEs, the SME Corp drives the implementation of SME Master Plan that charts progression of SMEs in realising Malaysia as a developed country in 2020.

Sector	No. of SME Establishments			Total SMEs	Share of SMEs (%)	No. of Large Firms	Overall Establishments
	Micro	Small	Medium				
Services	649,186	148,078	11,862	809,126	89.2	9,185	818,311
Manufacturing	22,083	23,096	2,519	47,698	5.3	1,403	49,101
Construction	17,321	17,008	4,829	39,158	4.3	1,400	40,558
Agriculture	4,863	4,143	1,212	10,218	1.1	1,410	11,628
Mining & Quarrying	217	458	190	865	0.1	161	1,026
Total	693,670	192,783	20,612	907,065	100	13,559	920,624

Figure 2-1: Malaysia SMEs number of establishments by sector and size
Source: SME Corp (2017)

Sector	2010	2011	2012	2013	2014	2015	2016	2017[p]
Agriculture	4.3	4.3	4.1	4	4.5	4.3	4.1	4.1
Mining & Quarrying	0	0	0.1	0.1	0.1	0.2	0.2	0.2
Manufacturing	7.2	7.4	7.4	7.5	7.8	7.9	7.9	8
Construction	0.9	0.9	1	1.1	2	2.1	2.1	2.2
Services	19.6	19.9	20.1	20.5	21.1	21.4	21.8	22.1
Plus: import duties	0.2	19.9	20.1	20.5	21.1	21.4	21.8	0.5
% SME GDP to Overall GDP	32.2	52.4	52.8	53.7	56.6	57.3	57.9	37.1

Figure 2-2: *Contribution of SMEs to overall GDP by economic sector*
Source: SME Corp (2017)

2.3.2 Issues faced by SMEs

Although the importance of SMEs has been acknowledged in the literature, in many ways, SMEs have varying characteristics when compared to large organizations (Bagheri, Mitchelmore, & Bamiatzi, 2019; Eldridge & Nisar, 2019; Grant, Edgar, Sukumar, & Meyer, 2014). Unfortunately, too often these

SMEs are placed at a disadvantage when compared to conglomerates (Abor & Quartey, 2010). The literature has underlined the problems faced by SMEs, whereby financial constrictions, resource limitation, and poor management have been found as the most common issues faced by SMEs (Brouthers, Nakos, & Dimitratos, 2015). In a recent study on export barriers faced by UK SMEs, Sinkovics (2018) found that the internal barriers are the main impediments of SMEs in their exporting activities. The barriers included insufficient resources, international experience, capital, and competent personal. Similarly, Busola, Mitchelmore, and Nikolopoulos (2019) mentioned that SMEs tend to differ from one to another due to limited human and financial resources, as well as managerial expertise. Adding to this, Bagheri et al., (2019) asserted that apart from financial resources, SMEs also differ from large organizations in terms of non-financial resources, capability, speed of decision making, motives, and risk perception.

Amongst the constraints identified in the literature, financial issues have been reported to dominate this topic. Abor and Quartey (2010) pointed out that lack of capital and inadequate finance are some of the problems faced by African SMEs, which impeded their expansion. Similar reasons were identified for Malaysian SMEs with financial issues seen as a threat, thus restricting firm growth (Lee, Yew, & Gomez, 2014). Similarly, Bloodgood et al., (2010) asserted that one of the reasons SMEs in the US cannot grow is due to lack of capital. The problem faced by SMEs in gaining financial support is not restricted to one country, but a global challenge faced by SMEs. The impact of financial problems, such as gaining credit facilities, has been found to restrict SMEs from expansion and growth (Ng et al., 2012; Yaacob, 2010). Many articles reported that this problem is not only experienced by developing countries, but also in developed countries (Calabrese, Andreeva, & Ansell, 2019; Degryse, Matthews, & Zhao, 2018). For example, a study conducted in the UK found that one of the reasons of this problem is because due to difficulties of gaining SMEs credit scoring (Calabrese et al., 2019). While credit scoring is important to validate, assess, and conduct risk analysis, unfortunately, it is difficult to verify and obtain sufficient information from SMEs, thus making it hard for financial institutions to provide such facilities. Another study in London that examined access of SMEs to bank credit facility concluded that SMEs located nearer to bank vicinity had greater chance to access this service than those beyond the bank vicinity (Degryse et al., 2018).

Notwithstanding the fact that financial problem is a common problem faced by SMEs, some studies have reported that the failure of small businesses also stems from non-monetary matters (Ahmad, Wilson, & Kummerow, 2011a; Moorthy et al., 2012; Senik, Isa, Scott-Ladd, & Entrekin, 2010). Despite some issues are a consequence of financial problem (such as affording good technological

infrastructure due to financial problem, as mentioned by Abor and Quartey (2010), and Fauske (2007) , one of the most popular non-financial issues faced by SMEs is resources constraints (Desouza & Awazu, 2006; Malagueño, Lopez-Valeiras, & Gomez-Conde, 2017; Van Burg, Podoynitsyna, Beck, & Lommelen, 2012). Resource does not necessarily reflect physical resource, as intangible resource should be weighed in as well (Durst, 2008; Ng et al., 2012; Steenkamp & Kashyap, 2010; Watson, 2010). Some examples of an important intangible resource for SMEs are human, technology, innovation, and experience (Bagheri et al., 2019; Love, Roper, & Zhou, 2016; Yan & Liu, 2015). Desouza and Awazu (2006) suggested that the SMEs need to use assets more effectively after determining the relationship between internationalisation orientation and international performance of SMEs with the mediating effect of technical innovation. Bagheri et al., (2019) also urged SMEs to engage more on intangible resources, such as innovation, as they have a direct implication on international performance and SMEs competitive advantage. As SMEs have been struggling with more resource constraint than a large firm does (Watson, 2010), small businesses should effectively manage, identify, and understand their resource (Steenkamp & Kashyap, 2010), as well as encouraging SMEs to use their resources as their strategic weapon. Although most studies have urged SMEs to use their resources as their competitive advantage (Kumlu, 2014), some claimed that SMEs were not utilising their employees with appropriate training, mainly because they felt that well-trained employees are more likely to become a competitor, especially in service industries (Chanyatipsakul & Wongsurawat, 2013).

The third problem faced by SMEs, apart from resource constraints and financial limitations, is management issues (Abor & Quartey, 2010; Razi et al., 2004). Beaver (2003) emphasised that managerial competencies play an integral part in determining the success and failure of SMEs, while the literature has identified that some SMEs have been incompetent in various parts of managing their business. Despite appreciating strategic management accounting tools, such as performance tools and job costing tools (Ahmad, 2012; Hudson et al., 2001), SMEs tend to be incompetent in various management skills. Some scholars found that lack of management skills is another reason for SMEs to remain small and unable to grow (Lee et al., 2014). One reason that has led to this issue is due to insufficient reference to strategies provided to the SMEs (Hudson et al., 2001; Moorthy et al., 2012). As a result of not having appropriate strategic management tools and planning, SMEs lead their business by using the ‘firefighting’ approach (Hudson et al., 2001), whereby instead of adhering to an appropriate framework, they solve their problems as ‘one-offs’ that leads them to implement a reactive management style. Sometimes, the decisions made by the SMEs are purely based on intuition and imagination, rather than strategic planning in decision planning (Chen, 2003). While this issue has

been explored, it provides a reason on why SMEs always concentrate on what they have currently, but not what they need in the future (Chanyatipsakul & Wongsurawat, 2013).

Since SMEs hold an important role in the world economy, they require substantial support from academics and practitioners in overcoming their constraints. Aside from overcoming financial problem, this study highlights that SMEs need to appropriately manage and use their resources, as well as adopt strategic management accounting tools, to provide suggestions and information to the SMEs in the relationship between their resources and firm performance, thus indirectly assisting them to make better decision on investment and resource allocation.

2.4 Digital economy

While much effort has been made by past academics to understand the characteristics and industrial trends of SMEs, the availability of the cyber world has revolutionised the way people are running business. It is not just speeding up communication across the border or changing information between persons; it is about changing the nature of consumption, competition, and market operation (European Commission, 2013a). The technology has created new opportunities and challenges for every business entity, thus providing a new chapter in the global marketplace and further revolutionising the way business is organised (Aral, Dellarocas, & Godes, 2013). With the advent of technology, many products that were not available in the past are now available. The revolutionary nature and the emergence of the present technology offer a new range of opportunities in every aspect of human life, whereby the human life has been digitalising in many ways (European Commission, 2013a; Slaughter, 2014). In the current digital world, one can shop while having breakfast, watch television via streaming, as well as upload and share a picture via social media, which allows information to spread within seconds. Due to this reason, digital reality is not about the future, but it is about today, and many people have already engaged with it.

Connecting with the digital world is very easy; with as a basic device as a smartphone, the digital world becomes part of life and an identity amongst the young generation (Hinton, Francis, & Holloway, 2000). A large fraction of the world's population finds it essential to engage in cyber in one way or another. Such thought has created more opportunities for businesses to take advantage of this situation. Although the first digital presence has been spearheaded by the media, the transition of digitalising businesses is now noted by finance, retail, and services domains (White & Briggs, 2012).

2.4.1 Stages of technology incorporation in the business

Although the use of technology is highly incorporated into many businesses in this present world, it was found that in the early stage, the technology is used only as part of their communication and advertisement medium (McBride, 1997; Spremi & Bosilj, 2005; Vickery, Sakai, Lee, & Sim, 2004). As the new digital technology is cheaper than the traditional promotion and advertising tools, it has been suggested that this method is creating many positive impacts on business, and thus promoting the engagement with this technology in a rapid pace (Aral et al., 2013; Lahuerta, Munoz Gallego, & Pratt, 2014). Use of technologies, such as website, email, and social media, adheres to an increasing trend that creates a bonding relationship between businesses and clients. The ability of the internet as a communication tool has boosted the relationship between customers and other stakeholders. There is also evidence that SMEs in the UK using the digital technology as a platform to spur and disseminate information regarding legal, marketing, and financial advice that are useful in assisting SMEs to grow and manage businesses (Gutierrez-Leefmans & Holland, 2019). This information is not only designed to assist SMEs in managing and growing their businesses, but also to function as a networking platform with other SMEs that enables knowledge exchange between SMEs (Holland & Gutiérrez-leefmans, 2018). Barua, Konana, Whinston, and Yin (2004) verified that by engaging technology in the business, response time has improved, which translates into increased customer satisfaction and preferences. This engagement has increased customer interaction that results in better financial performance amongst firms. Bharadwaj, El Sawy, Pavlou, and Venkatraman (2013a) opined that use of technology has increased business processes, firm capabilities, products and services, as well as in becoming a key for inter-firm relationships that can expand business networks. The inclusion of technology is also reported to provide a beneficial impact to the seller-buyer relationship and further drive many businesses to take advantage of the ICT benefit to increase their business activities (Jehangir et al., 2011). Berman (2012) mentioned that businesses can overcome and benefit from the challenge by optimising both physically and digitally implementing this new business model to win customer choices and decision. The new technology is claimed to leverage business capability, such as promotion, networking, and attracting new customers (Kahar, Yamimi, Bunari, & Habil, 2012). All the benefits of incorporating the digital technology further drive this platform towards many businesses. As a result, Roberti (2011) reported that in 2011, digital businesses grew 30% each year when compared to brick and mortar businesses (a company that relies on its physical outlets and is purely offline), which is reported around 3% of growth. The report by the Internet Society revealed that annual spending on e-commerce had increased, especially in the region of Asia Pacific and Western Europe countries (Internet Society, 2014).

The literature depicts that many businesses have used the technology as part of their business strategies and this tactic has been fruitful for many business entities. Ahn (2001) asserted that ignoring digital presence and its importance is no longer an option for the present business entity. As the technology has drastically changed the business environment, many studies have sought to understand how the internet is reshaping the business environment, whereby a plethora of studies have assessed the level of internet adoption in several countries (Abou-Shouk, Megicks, & Lim, 2012; Kapurubandara & Lawson, 2007; Shemi, 2012). Most of these studies seemed to lean towards identifying how technology is transforming traditional business, and also trying to find the best solution to fully utilise technology advancement (Bharadwaj et al., 2013a; Chen, 2003; Drnevich & Croson, 2013; Kahar et al., 2012; Roberti, 2011). Therefore, almost all traditional markets have been forced to engage with the cyber environment.

Due to increased technological interest upon adopting technology into business, the analysis of use of technology in the business realm has been addressed in a range of theoretical and empirical studies. Theoretical works have included a staged business model (Adam, 2001) by reviewing a spectrum of business development, whereby benefits from cyber technologies can be used by all types of business models: from brick and mortar, almost pure brick and mortar, brick and click, almost pure dot com, and pure dot com (see Figure 2-3). This strategy is not specific for large firms, but across all business types, including small enterprises.

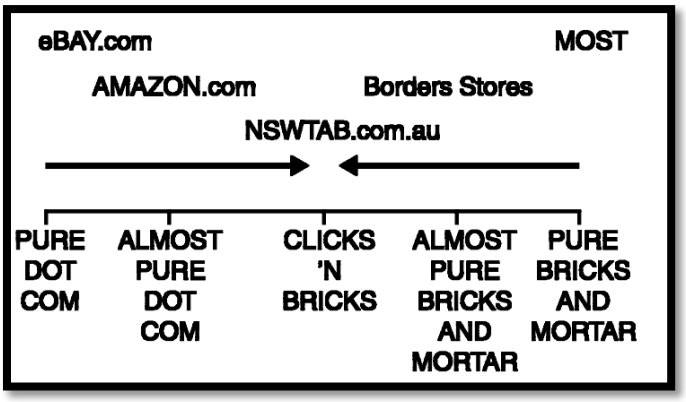


Figure 2-3: Spectrum of business
Source: Adam (2001, p. 263)

2.4.2 Potential of digital economy

Several factors have been identified to drive and motivate businesses to penetrate these business segments. Many businesses from large and small industries have attempted to exploit the benefits

offered by these technologies. Furthermore, as the number of internet users had surpassed 3 billion people in 2015 (Kende, 2015), it has been appealing to many businesses to venture into this industry. Bradley et al., (2012) found that cyber technology has the ability to eliminate time, geographical barriers, as well as processes between sellers and buyers, whereby these features of digital technology has encouraged businesses to embrace technology. Compared to traditional business that needs a strong domestic base prior to entering the global market (Zhang & Tansuhaj, 2007), digital availability has demolished this barrier to expand businesses into the international arena.

The initiative to venture into cyber industries also has evidenced a positive implication for both country and company investment. The increasing number of digital businesses offers real job opportunities. In a recent report by The Promise of Digital Entrepreneur: Creating 10 million youth jobs in G20 country, Accenture (2014) evidenced that this business segment can produce employment to the country. An article by the BBC (2015) stated that the UK creative industries are seen as the key driver of the economic industry and they are the important industries for the country. In Malaysia, besides producing knowledge workers, the digital industries have played an important part in increasing national GDP and export sales, wherein digital business is a keys part of national income, thus positioning them as an important industry in the country (MDeC, 2015).

Obviously, the advantage of technology offers many benefits to both large organizations and consumers. Spremi and Bosilj (2005), and Dutta (2010) suggested SMEs to do the same - incorporating digital into their business strategy. Hence, many businesses, including small companies, have begun exploiting both technology and internet availability to increase their business ability, as well as identify the benefits and shortcomings of digital businesses (Alam, 2009; Hashim, 2007; Hoi, Yeung, Shim, Yin, & Lai, 2003; Sentosa, Nejatian, Piaralal, & Faisal, 2011). Simultaneously, the technology has also created an opportunity for creative and high technology-minded SMEs to create unique products by engaging into the digital world; technology is used not only as tools of competitive advantage, but as a medium to generate products and services.

2.5 Digital and creative SMEs

The development of the digital system has fundamentally changed the way the world interacts, socialises, and communicates. The availability of cyber world has revolutionised the way people do business by creating new opportunities and challenges for each business entity (Aral et al., 2013). This change is not only experienced by large organization, but also amidst SMEs. As a result, many studies have assessed the level of internet and technology adoption by SMEs (see Astuti & Nasution, 2014;

Hashim, 2007; Sentosa et al., 2011; Tan, Chong, Lin, & Eze, 2010; Walczuch, Van Braven, & Lundgren, 2000), as well as to identify the factors behind these phenomena (Kurnia, Alzougool, Ali, & Alhashmi, 2009; Ramayah, Lim, & Mohamed, 2005)

The SMEs have been strongly urged to exploit the technology presence (Jehangir et al., 2011; McBride, 1997; Moorthy et al., 2012) in order to foster competition in the market (Berman, 2012; Nachira, Nicolai, Dini, Le Louarn, & Leon, 2006). By taking digital as a base, SMEs can utilise the technology presence to improve their businesses, take advantage of it as part of their strategy, create new business sources, strengthen their relationships, and ultimately, increase profits (Kahar et al., 2012). Although Rana, Barnard, Baabdullah, and Rees (2019) claimed that the adoption of technology for SMEs is not an easy process and the decision of investment in technology is critical especially for SMEs (Grant et al., 2014); the technology has offered many opportunities to SMEs. Digital presence allows SMEs to expand their business and go global with less bureaucracy and cost (Choi, Park, Lee, & Ryu, 2006; Simpson & Docherty, 2004; Spremi & Bosilj, 2005). The capability of the technology offsets the competitive advantages of size, resource, geographic location, and market reach, thus intensifying the use of technology by SMEs (Wymer & Regan, 2005). In essence, cyber technology allows smaller businesses to compete with larger companies and gain better marketability despite struggling with financial and resource constraints.

While the internet offers exciting new opportunities for SMEs to increase their customer base into the global marketplace, the technology has significantly changed the business landscape. The rapid shifts in the technological and competitive business environment have urged many SMEs to engage with the digital technology. The population of digital SMEs had generated approximately 1.1 million enterprises that contributed to nearly 50% of EU productivity growth (European Digital SME Alliance, 2016). Meanwhile, the UK and the US are positioned as highly advance countries in terms of technology infrastructure and internet access with 87.4% and 91.6%, respectively (Gutierrez-Leefmans & Holland, 2019). In order to exploit these advantages in a global strategy, SMEs need to adopt an entirely different approach to strategic planning and management, in order to deploy an extensive infrastructure network based on shared resources with other firms (Tetteh & Burn, 2001).

2.6 Definition of digital SMEs

The modern technology has changed the way businesses are managed, especially in the area of marketing, advertising, customer service, and buying-selling process. Technology exploitation has led

to more sophisticated, creative, and trending business availability. Since the engagement of SMEs and technology has been tightening, a new segment of SMEs has been created; Digital SMEs.

The terminology 'digital SMEs' is new and is dissimilar with the definition of other high technological SMEs. Other terminologies, such as e-commerce business (Drew, 2003; Hui & Chau, 2002), m-Commerce (Rana et al., 2019), Digital Enterprise (Willmott, 2013), SME-business (Tetteh & Burn, 2001), and creative SMEs (Jarvis et al., 2007; NESTA (National Endowment for Science Technology and the Arts), 2014), which are found in the literature, denote the way business is exploited via technology advantage. However, a specific definition of Digital SMEs is absent in the literature. The European Digital SMEs Alliance (2016) had used the term Digital SMEs to substitute Pan European ICT and eBusiness Network for SMEs (PIN-SME). In this definition, digital SMEs sees the collaboration of SMEs in ICT sector from European Countries, of which the alliance is the joint effort from 28 national and regional SMEs association from the EU nation (European Digital SME Alliance, 2016). Prior to this, several attempts have been made by scholars to define digital business to make it more intelligible and clear (Ackroyd, 1995; Adam, 2001; Hui & Chau, 2002; Jarvenpaa & Leidner, 2000). In order to identify if a product or service produced by the SMEs reflects a digital product or vice versa, the following section discusses the classification of such product under this topic. These digital products are unique because they are intangible, untouchable, and unavailable without internet and technology devices. The ACCA reported that the foundation of creative business is creativity and imagination (Jarvis et al., 2007). Klerk (2015) pointed out that creative industry players are creating something from nothing, hence digital SMEs are always synonymous with creative thinking and innovation.

In a broad context, digital business can be defined as business that sells products in digital forms. According to Hui and Chau (2002), digital products refer to goods and services that can be converted into binary format (digitised). Products that fall into this category are software, music, reports, books, and animations. There are distinct variances between a traditional business using the internet and digital SMEs. Although these enterprises have similarities that incorporate the internet and technology into their business; the digital SMEs, on the contrary, make use of the availability and strength of digital in their business to develop, create, produce, and market products. The traditional business uses the internet as a medium of communication, advertising, and value chain (Barua et al., 2004; Jehangir et al., 2011; Kahar et al., 2012). Digital SMEs, which is the context of this study, does not apply the technology as a supporting role, but as the primary medium in creating their products and services.

These characteristics of digital business differ from the traditional companies as the former have different end product (Slaughter, 2014).

Some studies in this area believe that it is worth enhancing understanding of the digital SMEs segment and how it differs from traditional business. For example, Ackroyd (1995) segmented the UK-based information technology (IT) firms into three groups; retailer (the retailing organization that deals with computer product and services), niche marketers (specialist providers of IT software and services), and dynamic companies (firms with unique characteristics that use and sell proprietary products, distinguished by superior technical capabilities). In essence, the third aspect, small IT firms, had been labelled as dynamic companies because they develop their own software and hardware, as well as designing system, which suit the digital SMEs definition. Jarvenpaa and Leidner (2000) claimed that the information industry can be divided into four groups; content providers, information service providers, software providers, as well as computer and telecommunication providers. They placed focus on content providers (firms) as wealth creation and the source of differentiation largely relied on technology usage. Adam (2001) developed a framework that differentiated technology use for business context. Later, he asserted that pure brick and mortar SMEs might utilise internet and technology presence in their business, but this is not the case for digital SMEs. Digital SMEs range from SMEs that are in the form of pure dot com and almost pure dot-com, whereby businesses are operated in the cyber world and never offline. The product of such business is invincible, and in contrast with brick and mortar business using technology availability in their business. The technology itself is an integral aspect to the products and services rendered by digital SMEs. Based on a report published by Chartered Institute of Management Accounting (CIMA), Regan et al., (2005) diversified ICT firms into two categories; MNCs and indigenous firms. Compared to multinational ICT firms, in which the activity is carried out by MNCs; indigenous firms are mainly run by SMEs. While past studies have attempted to provide many groups of digital businesses, the most recent definition was contributed by Slaughter (2014). In his book, he clarified digital companies specifically to software companies and divided them into three segments; application software, system software, and software services. The application software companies produce products and services to end users via several types of applications, including games, graphics, and entertainment system. The system software firms provide systems that are needed to operate computer hardware and networks, including operating system and network software. Lastly, software service companies provide services directly to customers via internet, such as programming, testing, and designing (see Figure 2-4).

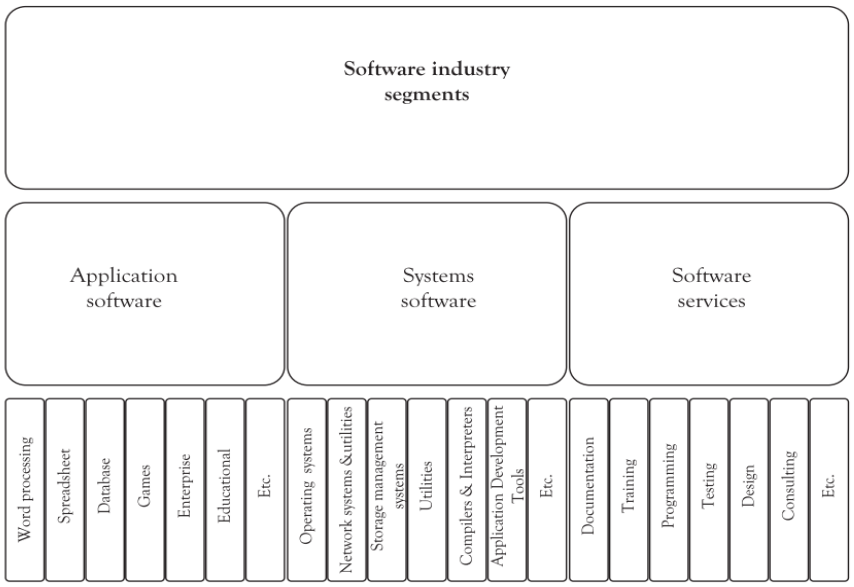


Figure 2-4: Slaughter's (2014) software business segment

Within the context of digital SMEs in Malaysia, this study defined digital SMEs as SMEs engaging in business within the ICT sector selling products in digital format (e.g., animation, digital games developer, content provider, software developer, advertisement, and broadcasting), and have obtained the MSC Malaysia certification.

2.6.1 Digital product

After defining digital SMEs, it is significant to identify the type of digital products produced by this industry. There are many ways to interpret digital and creative products that are vastly available in the market. Hui and Chau (2002) asserted that digital products refer to any product and service that can be converted into binary format. They further provided some examples of digital products, such as music, software, digital books, and digital games. Some other studies referred digital products as digital goods, digital information goods, digital services, digital intangible goods, and digital business ecosystem (Abdul Tawab Khalil, Dominic, Bin Hassan, Mushtaq, & Kazemian, 2011).

Based on a paper sanctioned by the ACCA, the creative industries include diverse activities, such as advertising, crafts, and music, which are united by the common foundation of individual creativity and imagination (Jarvis et al., 2007). Regan et al. (2005) used the term ICT sector to determine 'new economy' activities that refer to software design and development, web design, network security implementation, hardware assembly, and other related functions. Digital products are classified as digital movies, digital music, digital animation, digital games, software, e-books, and digital image

(Beavis, Muspratt, & Thompson, 2014; Bhattacharjee et al., 2003; Chun & Keenan, 2006; Jacobs, Heuvelman, Tan, & Peters, 2012; Marsh, 2006; Pikkarainen, Codenie, Boucart, & Heredia Alvaro, Jose, 2011; Sabine & Katherine, 2011; Slaughter, 2014). These same intangible products have been established as creative products (NESTA (National Endowment for Science Technology and the Arts), 2014). Jarvis et al., (2007) listed examples of creative products, including advertising, animation, architecture, craft, and music. Albeit the numerous instances found in the literature, it is believed that they refer to the same segment of products.

While some products are confusing to classify, scholars have formulated frameworks to distinguish the products. Tetteh and Burn (2001) developed the SMALL framework to categorise online business model adopted by SMEs. Labelled as virtual face, virtual alliance, and virtual community, the emergence of technologies requires reconfiguration of infrastructure in the future. Hui and Chau (2002) differentiated digital products by using two approaches, namely product categories and characteristic delivery, in which the former can be clustered into three groups; tools and utilities, content-based, and online service. The product is differentiated based on product attributes and purpose; whereas the characteristics of cluster, defined based on the feature, are divided into delivery model, granularity, and trialability. Alternatively, Bradley et al., (2012) claimed that digital products can be divided into four major types; streaming intermediaries (digital movies and digital games), download intermediaries (software, digital music, and digital movies), streaming direct (enables transaction of digital goods in real-time, such as digital games), and lastly, download direct (purchase of software and digital documents). Another interesting framework developed by Slaughter (2014) emphasised on software products. In the framework, the software product is divided into three categories; application software, system software, and software services. Hence, in this present study, the definition of digital products refers to business that generates products and services that can be converted into binary format, such as music, software, digital books, and digital games (Bradley et al., 2012; Hui & Chau, 2002; Slaughter, 2014; Tetteh & Burn, 2001).

The number of digital products is continuously on the rise, with much positive feedback linked to these products. Lee, Guttenberg, and McCrary (2002) said the digital products have been found to be efficient, easy to store and easy to access. Similarly, Beavis et al., (2014) claimed that digital products can increase the students' ability, thus promoting literacy and learning activities at school; remarking that digital games work brain subconsciously. As internet technology is a 'magnet' for those looking to earn profits (Accenture, 2014), this new business setting continues to grow.

Although many versions of the definition are strewn across the literature, products produced by the industry are intangible and invincible; relying greatly on technology, apart from requiring human skills, capability, and creativity to be successfully produced. While the products and services offered by the digital SMEs contradict those generated by other businesses, the characteristics and the challenges faced by this sector appear to be inimitable.

Table 2-2: Comparison of digital product frameworks

Author(s) (Year)	Framework of digital products
Tetteh & Burn (2001)	**Virtual face –** offers extra space to present organization and products to a wider market (e-shop) **Virtual alliance –** number of companies sharing resources and competencies to develop some product offerings that sometimes provide cross reference to sites of participating firms (e-supermarket) **Virtual community –** an electronic marketplace involving a large number of firms and grouping of other online model (e-mall)
Hui & Chau (2002)	**Tools and utilities** - software program that either assists users to perform specific function or acts as a supplementary activity to achieve other purposes. **Content based digital products** - product of which information is the value of produces (news, journal). **Online service** - provides services to useful resource that assist users in accomplishing specific task (search engine).
Bradley et al. (2012)	**Intermediary streaming** - intermediaries that provide online service for real-time consumption (digital movies, digital music). **Intermediary download** - intermediaries that execute digital goods download service (software, music, and journal). **Direct streaming** - digital goods that can be streamed in real-time (online games). **Direct download** - digital goods in downloadable format (anti-virus software).
Slaughter (2014)	**Application software** - perform specific end-user function (games, graphic, word processing). **System software** - basic system that is needed to operate hardware and networks (network software, operating system). **Software services** - service that is provided directly to customer via internet (documentation, training).

2.6.2 Characteristics and challenges of digital SMEs

Several characteristics have been linked with digital SMEs. From the set up and business delivery, these businesses are dissimilar to brick and mortar business. when compared to other traditional business, such as manufacturing, digital business is easier to set up (Slaughter, 2014). With the knowledge and ability to exploit technology, this sort of business can be set up using creativity with minimum capability of a personal computer. Starovic and Marr (2003) stated that digital business

almost has no tangible asset. Roberti (2011) reported that such modern business does not store, maintain or display product. Instead of depending on physical assets, their business relies mostly on soft assets, such as technology (Bremser & Chung, 2005; Herdon, Várallyai, & Péntek, 2012; Wu, Yeniyurt, Kim, & Cavusgil, 2006) and employee creativity (Accenture, 2016; Marr, Schiuma, & Neely, 2002). As opposed to traditional business setting, digital SMEs do not necessarily have dedicated premises to be operationalised, in fact the business can be generated everywhere.

As lack of assets is synonymous with these businesses, the small number of staff has been noted as another key characteristic. Ackroyd (1995) verified that most of the successful IT SMEs have an average of 30 employees. This statement is affirmed by Regan et al., (2005), who noted that IT firms in Ireland are mainly from SMEs with small number of employees. Despite having a limited employee base, this sector tends to attract specialist staff to the organization. This firm normally has multi-skill staff with high creativity, innovative thinking, adaptability, mobility, as well as strong affiliation and alliances (Ackroyd, 1995; Pikkarainen et al., 2011; Slaughter, 2014).

Another unexpected finding related to digital SMEs is the different structure of organization. Digital SMEs have been reported to have a unique structure that is flat, flexible, and less orthodox than traditional business with more specific structure (Ackroyd, 1995; Papalexandris et al., 2004; Raberger & Krammer, 2013). Digital SMEs also have been reported to be conducted in a project-based environment, thus making collaboration and teamwork essential in their business. The employees are considered as ‘all-rounder’ with expectation of more movements, and most of the time, the strategy adopted by this business depends on staff competencies (Ackroyd, 1995).

Albeit setting up and selling digital products over the internet offer a major source of revenue for many businesses in the world (Hui & Chau, 2002; Roberti, 2011), but concurrently suffer from the problem of ensuring that these businesses are viable and competitive to increase their chance to survive. Due to the easiness of entry and with minimal cost required to start this business, several studies found that these businesses face high rate failure (Slaughter, 2014). In Malaysia, despite the increasing number of new digital companies being established, a huge fraction has become unviable in the marketplace (MDeC, 2015). This phenomenon is noticeable and has been highlighted in other countries as well. For example, the software companies in Greece have dealt with a significant drop in their revenue, thus forcing them to reduce investment in the area of labour, and research and development (R&D) program (Papalexandris et al., 2004). Similarly, this situation was reported in New Zealand, where this business sector displayed the lowest survival rate (Ohanga, 2011). Since cyber business is linked with intangible resource, appropriate management of resources may be able to mitigate SMEs from failing

(Durst, 2008). Thus, conducting this study into clarifying and understanding the relationship of this resources is integral.

2.7 Digital Industry in Malaysia

The digital and creative businesses are now considered as one of the world leading business sectors in many parts of the world (European Commission, 2013a). As this trend continues, it is predicted that this business sector will make up a quarter of the total world businesses in 2020 (Accenture, 2016). As the potential of being digital is far from fully exploited, it is believed that the digital industry offers many opportunities for SMEs. Requiring small initial outlays of investment to become established (Regan et al., 2005), this segment of business does not limit SMEs from experiencing substantial revenue streams. Besides promising an attractive return to SMEs, this business model contributes to the national income, thus garnering attention of the government. The MDeC (2013) claimed that digital business is placed as a focus in countries vying to achieve Vision 2020, as envisioned in Malaysia to be a knowledge-based and economy-based country. This directly fosters Malaysia's aspiration to be the hub for digital industry sector in Asia.

The trend with regard to the growth of digital SMEs in Malaysia commenced in 1996, when some scholars reckoned that Malaysia has high potential for growth and future prospects in this segment (Ng et al., 2012), despite the slow progress in digital businesses during the early stages (Alam, 2009; Sentosa et al., 2011). As a result, the government has set a benchmark of 17% for this sector to contribute to national GDP in 2020 (Bernama, 2014).

The term 'digital SMEs' used in this study refers to small and medium scale businesses that embrace, engage, and have been proven to be substantial users of ICT or multimedia within their product or services portfolio, employing a substantial number of knowledgeable workers and being established as legal entities for MSC qualifying activities. In support of Malaysia's aspiration towards a knowledge-based economy, many initiatives have been taken by the Malaysian Government to support digital businesses. For instance, the MSC Malaysia award certification is awarded to certified firms that use multimedia and technology extensively in their firms. However, to be awarded with this certification, the companies need to fulfil the eligibility criteria (see Section 2.7.2).

In parallel with the SMEs' contribution to national growth, the digital business segment offers an indifferent role towards national progress. Cyber business SMEs or known as 'technopreneurs' have continued to support national growth (Economic Planning Unit, 2005). This segment generated 11,000

employment opportunities in two-year period; a huge leap from 147,000 jobs in 2014 to 158,000 in 2015. The revenue also saw a steady increment from RM38 billion in 2014 to RM42 billion in 2015; making digital SMEs one of the foci industries in Malaysia (MDeC, 2015; 2016). According to Kelly (2012) on Malaysia's employment outlook, this segment has been expected to contribute to another 43,000 workers by 2020; making it a pre-eminent sector in the country.

Although the cyber industry has plenty to offer, it is also exposed to several threats. Upon being aware of the risks that might be faced by the digital businesses in Malaysia, several government initiatives have been devised to mitigate the risk of fraudulence, identity theft, virus attack, and hacking, which may affect both firms and consumers. As an active player of cyber technology country, Malaysia has become a member of World Intellectual Property Organization (WIPO), Paris Convention, Berne Convention, and signatory to the Agreement on Trade-Related Aspects of Intellectual Property Right (TRIPS). Table 2-3 presents several implemented country statutory frameworks for intellectual property protection and cyber laws.

The Cybersecurity Malaysia, an agency under Ministry of Science, Technology and Innovation, was established to monitor the national e-security aspect. With the availability and the enforcement of digital business established in the country, Malaysia has a view of providing an attractive package of protection and risk mitigation in the Asia Digital Region.

Table 2-3: Malaysia's Cyber Act

Statutory Framework	**Effective Date**
Digital Signature Act 1997	01 November 1997
Communication and Multimedia Commission Act 1998	01 November 1998
Communication and Multimedia Act 1998	01 April 1999
Copyright (Amendment) Act 1997	01 April 1999
Telemedicine Act 1997	Not yet enforced
Computer Crime Act 1997	01 June 2000
Electronic Commerce Act 2006	19 October 2006
Electronic Government Activities Act 2007	01 January 2008
Payment System Act 2003	07 August 2003
Personal Data Protection Act 2010	10 June 2010

2.7.1 Malaysian digital landscape

The Malaysian digital industry started in the mid-1990s after the former Prime Minister, Tun Mahathir Muhammad, expressed a vision of driving the nation towards a developed country by 2020. Parallel with this mission, the MSC Malaysia was established in 1996 as a national initiative to shift the national

economic background from tin and rubber exporter to more modern hi-tech knowledge-intensive economy (Ramasamy et al., 2004). The MSC Malaysia status certification is a benchmark awarded to recognise businesses that extensively employ the digital media and the internet as their main source of business (MDeC, 2013). The main focus of MSC Malaysia is to create an ideal and conducive platform to nurture the digital SMEs to become world-class business. The MSC Malaysia aims to attract participation and investment from the global digital companies, hence establishing cutting-edge and creative solution in Malaysia.

Since then, many initiatives have been introduced to attract Malaysians and external stakeholders to participate aggressively in the digital market in Malaysia. In order to strengthen the focus towards digital industry in Malaysia, the government has set up the Malaysia Digital Economy Corporation (MDeC), which was established in the same year with the MSC Malaysia. The main function of MDeC is to advise the Malaysian government on matters related to legislation, policies, and set the breakthrough for multimedia operation. After exhibiting tremendous contributions to the national economy, the country has begun to appreciate this particular industry segment. In 2011, Malaysia has set a new transition towards a developed digital economy by 2020. In order to achieve this mission, Digital Malaysia (DM) was officially launched in 2012; unveiling the national transformational program. Under the purview of MDeC; MSC Malaysia and DM can run concurrently to spur the national ICT industry development and digital transformation. Although the MDeC has changed its name to Malaysia Digital Economy Corporation on 11 April 2016, its main function has not changed; displaying the importance given by Malaysian government in establishing digital economy.

2.7.2 MSC Malaysia Status Companies

The MSC Malaysia status is recognised by the Malaysian government for ICT and ICT-facilitated businesses that employ and develop multimedia, as well as digital products and services. It is one of the national initiatives to groom the local digital industry. The main aim of this project is to transform the nation towards knowledge-based economy (MDeC, 2013). As in 2015, 3,881 companies were awarded this certification (MDeC, 2016). This prestigious award is given to various business entities, including private limited companies, higher learning institutions, and incubators.

To qualify as an MSC Status company, the company must be among providers, developers or/and a heavy user of multimedia products and services. The company should employ a substantial number of knowledgeable workers (at least 15% from the total employees). Also, the company should provide a strong value proposition by specifying how it can contribute to the development of MSC Malaysia

specifically, and to the country as a whole. These firms should establish a separate legal entity for MSC Malaysia qualifying activities, and located within the designated MSC Malaysia cyber cities or cyber centres. At the initial stage, the cyber cities are located in the area of Cyberjaya, but to date, 42 cyber centres and cities have been stretched across Malaysia, thus providing vast opportunities of being an MSC Malaysia company. To be declared as a cyber city or cyber centre, several criteria and regulation by MDeC must be satisfied as mandated by the government of Malaysia. With the increasing number of cyber locations, a positive environment is created for both collaboration and networking among the companies involved. Beside rationalising and optimising the expensive investment to create this climate, this location serves as a test-bed for many technologies and products. However, in the attempt to increase the number of MSC Status companies, starting from 1 January 2015, MSC status companies are not tied to any location. This new regulation enables establishment of companies beyond the cyber zone to participate as MSC Status Company, hence further increasing the number of local digital business players.

The MSC Malaysia status companies are divided into four technology clusters; creative multimedia (Creative), information technology (InfoTech), global business services (GBS), institution of higher learning and incubators (IHL) (MDeC, 2015). The clusters are segmented based on an organization's core activities. The Creative companies are firms involved in the creation of creative digital content, comprising of digital elements manipulation to culminate in commercial products and services, apart from supplying associated technological tools, services, and platforms to support the activities. This includes text, graphics, sound, animation, photo images, video, and more. Among the companies labelled under this segment are related to animation and movies production. The second cluster of MSC Malaysia companies is labelled as InfoTech, which refers to companies undertaking study, design, implementation, technical services or support marketing, and management of computing-based information system. Companies in this cluster include software, mobile apps, and gaming developers. The GBS cluster is for companies that leverage on the economics of scale, or provision of services that are geographically removed from the client. Most of the companies in this cluster are outsourcing-based companies. The last cluster in MSC Malaysia is IHLs that includes institutes of higher learning or faculties that offer courses related to multimedia, IT, and communication field.

As of 2015, 473 companies were categorised as Creative, 2,796 companies as InfoTech, 480 companies clustered as GBS, and 132 companies labelled as IHLs; amounting to 3,881 MSC Malaysia status companies (MDeC, 2016). Since this study only focused on digital SMEs; GBS and IHL clusters were excluded from the study, thus involving 3,269 companies.

In order to increase the number of MSC Status Companies, the government has offered several benefits to the listed companies, whereby financial and non-financial incentives are given. The financial incentives include full exemption on tax statutory income for the first five years to pioneer status MSC Malaysia companies, and 100% Investment Tax Allowance (ITA) for digital businesses, making them eligible for R&D grants. These R&D grants are only available to Malaysian-owned MSC Malaysia status companies. The MSC status companies are given freedom to source capital and borrow funds globally. The incentives are extended to duty-free importation (DFI) of multimedia equipment; making this incentive an attractive package to budding companies.

Meanwhile, the non-financial incentives given to MSC Malaysia companies are no censorship of the internet (unlimited exploration of external market digitally), as well as global telecommunication tariff and service if the firm is located within MSC Malaysia area. These benefits save cost for the firms. The awarded companies are protected with the comprehensive framework of cyber laws and intellectual property security regardless of company location. High-quality urban development and MDeC act as agencies to support these companies increase the benefits of setting up digital business in Malaysia. While the region-first Multimedia University is located in the MSC zone, more digital companies are expected to receive exceptional R&D facilities.

In essence, being part of MSC Malaysia enables a company to enjoy many incentives from the government, including world-class physical IT infrastructure and green environment protected by strict zoning to ensure an environment-friendly atmosphere surrounding the MSC area.

2.7.3 The development of digital industry in Malaysia

Since the establishment of MSC Malaysia and DM, the development of digital industry has become substantial. Aiming to transform the ICT industries in the country, the initiative has been projected to increase the adoption of technology towards Malaysian SMEs further creating 4,000 digital entrepreneurs in 2020 (DM, 2012). By catalysing producers of digital goods and services, this initiative not only targeted to increase the citizen income by unlocking the potential of SMEs, but also the their contribution to GDP that has been expected to grow from 32% to 41% in 2020. Parallel with this initiative, many established associations have displayed much effort to increase the number of digital SMEs. The National ICT Association of Malaysia (PIKOM) is the pioneer in IT-based association. Acting as a voice of the Malaysian ICT industry, PIKOM has gathered a membership of 80% of Malaysian digital businesses in a whole spectrum (Ramachandran, 2013). Aspired to improve the business climate in the interest of its members, PIKOM has boosted the growth of the industry. The

members of this association include digital and IT-based businesses, such as software developers, network operators, as well as suppliers of computing and telecommunications. With the increasing number of respondents in the Malaysian digital market, several bodies have been established to support the government effort, such as the Creative Content Association of Malaysia (CCAM) that was set up in 2012. This trend has been following by others, such as the International Games Developer Association (IGDA), the largest games developer non-profitable membership organization established in Malaysia. The set up of these bodies has boosted the digital-based industry in Malaysia. As mentioned before, 3,881 companies have been reported to receive the MSC Malaysia status award in 2015 (see Figure 2-5). In 2015 alone, new 249 companies had received this award, representing a 6% increase from 2014 (MDeC, 2016). This number has steadily increased since the inception of MSC Malaysia, reflecting fruitful government effort.

Although the number of MSC Malaysia companies has increased since the establishment of the body, not all companies are still active, as some have been dissolved (see Table 2-4) due to inability to survive in the industry. The Ministry of Economic Development (2011) claimed that the IT-based companies face the most risk of being shut down due to high risks, thus haunting this cyber industry.

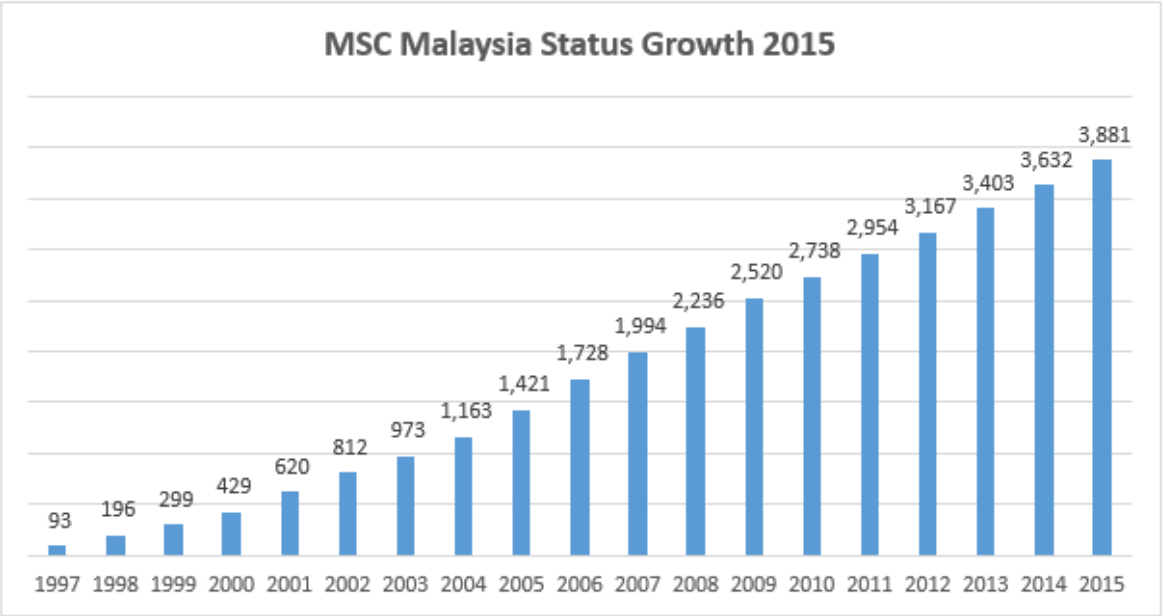


Figure 2-5: Growth of MSC Malaysia awarded companies
Source: MDeC (2016)

The number of digital companies in Malaysia has shown great improvement since the set up of MSC Malaysia, along with increment in inactive companies. Based on Table 2-4, the number of inactive

MSC Malaysia companies has expended. Despite 3,881 companies had received this award, in reality, only 2,878 companies remained active as of 31 December 2015 (MDeC, 2015; 2016).

Table 2-4: Number of active and inactive MSC Malaysia Status companies

Year	MSC Awarded Companies	MSC Malaysia Active Companies	MSC Malaysia Inactive Companies
2012	3,167	2,397	770
2013	3,403	2,572	831
2014	3,632	2,708	924
2015	3,881	2,878	1,003

Based on the collective report gathered from MSC Annual reports, the number of awarded companies had increased, along with the number of inactive companies increasing exponentially.

Table 2-5: MSC Malaysia Status companies by technology cluster

Cluster	MSC Awarded Companies	MSC Malaysia Active Companies	MSC Malaysia Inactive Companies	MSC Malaysia Inactive Companies (%)
Creative	473	358	115	24%
InfoTech	2,796	1,998	798	29%
GBS	480	405	75	16%
IHLs	132	117	15	11%
TOTAL	3,881	2,878	1,003	26%

Based on Table 2-5, both Creative and InfoTech clusters seemed to have been severely affected and found inactive for 24% and 29% of the companies, respectively. This uprising phenomenon has ignited the need for this study. As failure or underperformance of SMEs is linked with inappropriate use of strategic management accounting tools (Lucas & Prowle, 2013; Nandan, 2010), this present study proposes the digital SMEs should mitigate this problem by effectively using the performance management tool. As performance management can assist businesses by improving business process, competitive advantage, and decision making; this strategy has been widely accepted to increase business chances towards success (Boer, Vandecasteele, & Rau, 2001; Harvey, 2008; Hasanhendrika, Tibbits, Hasan, & Tibbits, 2009; McPhail, Herington, & Guilding, 2008; Slaughter, 2014). Thus, digital SMEs should employ performance measurement to overcome the issue at hand.

2.8 Performance measurement revolution

During the industrial age, financial ratios have been used as a yardstick to determine business success. These ratios are often generated by looking solely at financial reports, such as balance sheet and revenue reports. These reports not only display the historical evidence on how the company performs, but also serve as a tool to strategize and for decision-making process. However, several issues may arise if a firm focuses solely on financial performance, as there is tendency to underestimate some integral activities for businesses, such as human resource, process improvement, and product development (Lee, Chen, & Chang, 2008). The report presented in financial accounting monetary terms has been critiqued as historical since the numbers only show firm experiences (Pangarkar & Kirkwood, 2007). By limiting their priorities to financial perspective, the tendency to neglect other long-term development plans is likely. Besides, financial focus will only underpin short-term issues and neglect other long-term strategic development (Mackay, 2005). This situation has sparked the demand for more forward-looking information about the requirements of firms in terms of non-monetary activity to further assist in making better decision. Unfortunately, despite the information being deemed as important, it is absent in financial reports. Therefore, it is crucial for a firm to have the information above in both financial and non-financial contexts to enhance firm's strategic decision-making and assist the firm to experience superior performance.

In order to overcome these issues, Johnson and Kaplan (1987) have urged academics to ensure relevance in their treatment of accounting and reporting activities. As the original purpose of the management accountant is to contribute to aspects of the operations that financial accounting may not provide, which may be of a non-financial nature and also need to be measured accordingly; Ittner and Larcker (2003) support the use of both monetary and non-monetary aspects to provide performance information. This has increased the concern of management accountant scholars by emphasising on three points; companies should establish a performance measurement system that supports their strategies, it should contain many non-financial indicators (e.g., customer perception), and it should be broken down to enable more actionable tasks (Epstein & Manzoni, 1997). Rather than viewing on what they have achieved so far, the management accounting information should assist managers to identify and inform their needs to achieve their goals (Mackay, 2005).

By including the non-financial aspect to strategize firm performance, the role of management accountants is significant to many branches of business; both profit-oriented and non-profitable firms. By focusing on both financial and non-financial perspectives, the rate of success for a firm increases due to provision of better information (Ahmad et al., 2011a). By virtue of these findings, the literature

has tapped into this topic. Looking at non-financial aspect as an objective has further attracted many businesses to put this sort of performance as an organization objective. The ability of non-financial information and multi-dimensional performance to mitigate the deficiencies in traditional (financial) performance, as well as explicitly balancing financial and non-financial measures (Chytas, Glykas, & Valiris, 2011), has further increased the establishment of frameworks in recent years. These frameworks include BSCs, tableau de bord, the Malcolm Bridge National Quality Framework, the European Foundation for Quality Management (EFQM) Excellent Model, Total Quality Management, Performance PRISM, and SMART Pyramid (Bourne, Melnyk, Bititci, Platts, & Andersen, 2014; Harvey, 2008; Kaplan, 2008; Murby et al., 2005; Wongrassamee, Simmons, & Gardiner, 2003), which integrate financial and non-financial information.

Despite much of the literature is devoted to advocating and developing a framework to measure firm performance, three tools have been found to outperform the hybrid of financial and non-financial perspectives in the organization, which are BSC, tableau de bord, and the Malcolm Bridge National Quality framework. The BSC by Kaplan and Norton (1992) has been accepted as the best performance measurement tool when it comes to holistic performance utility in firms (Chytas et al., 2011; Davis & Albright, 2004; Harvey, 2008; Machado, 2013; McPhail et al., 2008; Murby et al., 2005; Andrew Neely, 2008). In fact, the tool has been used in 50% of large US companies (Pangarkar & Kirkwood, 2007). The framework introduced in1992 has led to the phenomena found to assist many firms and has changed the way they look at the organization. Combining the financial perspectives with another three non-financial perspectives (customer, internal business, as well as learning and growth), the tool has been successfully implemented globally, as it offers strategy focus that is applicable for all organizations.

Another performance measurement utility that has been reported to be used is the tableau de bord. Considering both financial and non-financial performances in its system, tableau de bord is a performance measurement system introduced and used in France since the 1930s (Bourguignon, Malleret, & Nørreklit, 2004). This measurement was initiated by engineers seeking ways to enhance their production process, by looking at the cause-effect relationship between action and process performance. The term ‘tableau de bord’ means ‘dashboard’ to represent a set of indicators that can be referred to provide better direction. The main objective is to give parameters to support decision making. Tableau de bord is presumably a well-functioning system with some similarities with BSC because it determines the ‘Key Success Factors’ of a firm (Epstein & Manzoni, 1997). Tableau de bord refers to a France dimension of management accounting that does not solely depend on the financial

measure in decision making. However, Bourguignon et al. (2004) have underlined the similarities and differences between these performance measurements; both measurements include the non-financial stance to avoid monopoly from solely financial accounting; they also link employee action based on management, and both models are hierarchically top-down. The difference, however, is highlighted in five areas. First, BSC is developed based on Michael Porters Model with pre-categorised areas, while tableau de bord does not rely on any strategic model. Second, the BSC assumes cause and effect relationship, whereas tableau de bord does not include any systematic link, which leads to conflict. Third, both have different models to meet objectives. Fourth, they have varied performance measures, rewards, and traditions.

Other sets of performance measurement tools used widely refer to the Malcolm Bridge National Quality and EFQM. These tools were initiated by the US and European Governments to counter Japanese domination of the market (Mackay, 2005). The frameworks are similar for both financial and non-financial elements, except differentiated by the name. The Americans labelled the model as the Malcolm Bridge National Quality, while the Europeans labelled the model as European Foundation for Quality Management Business Excellent (EFQM). The model points out non-financial perspectives, such as leadership, people management, and customer satisfaction, towards firm performance. However, the models emphasise on the achievement of organization and reveal how those results are achieved. It consists of nine elements; the framework is used for the purposes of benchmarking and continuous improvement.

Despite being popular with the Western companies, most authors have placed BSC in favour of other performance measurement tools (Harvey, 2008; Mackay, 2005; Wongrassamee et al., 2003). For example, while comparing between BSC and EFQM, Wongrassamee, Simmons, and Gardiner (2003) concluded that both tools have similarities and differences. However, BSC was found to align corporate strategy with performance measure and appeared to be more flexible than EFQM. Mackay (2005) concluded that the BSC had outperformed EFQM in five areas. The BSC emphasises more on cause and effect linkage relationships, when compared to EFQM and Baldrige Model, which only verify the strategy and the results. Both EFQM and Baldrige focus solely on the continuous improvement against the best practice benchmark. The BSC provides radical performance, thus allowing the organization to be the benchmark for others. Additionally, the BSC considers new processes that firms should excel in, rather than EFQM that strives to improve the existing organizational practice. During the quality enhancement program, the resources in the EFQM model might be expended, which later provide inaccurate result to the organization. Meanwhile, the BSC

prioritises the processes and better resource allocation decisions can be made by picking only appropriate results. Finally, the BSC excels over the EFQM because the BSC integrates budgeting, resource allocation, and feedback as ongoing management processes, when compared to EFQM where the measurement is evaluated independently.

Despite the benefits and drawbacks, all the three frameworks have been established and evidently utilised by many firms across the world. However, the most successful framework that has been widely accepted is the BSC (Chytas et al., 2011; Crabtree & DeBusk, 2008; Davis & Albright, 2004; McPhail et al., 2008; Perkins, Grey, & Remmers, 2014; Rompho, 2011). Due to its ability to provide a holistic view that can be utilised by many firms and organizations irrespective of number of employees, firm size, and experience, this framework has been claimed as the most cited performance measurement tool in this decade (Zuriekat, 2005). Since the tool offers many benefits, this study adopted the BSC to measure firm performance in the context of Malaysia's digital SMEs.

2.8.1 The Balanced Scorecard (BSC)

This modern performance measurement tool was developed by Kaplan and Norton (1992) in the Harvard Business Review after finding the similarities in the way the most successful businesses were run. Identifying four perspectives (financial, customer, internal business process, & learning and growth) as the main pillar, together with clear vision and mission, they were the first academics to formalise the tool as the Balanced Scorecard (BSC) (Kaplan & Norton, 1992). Since then, the ideology has shifted and has opened a new avenue for those looking at business: from business survival to business growth.

The BSC first appeared in the article entitled 'The Balanced Scorecard-Measure That Drive Performance', which was published in Harvard Business Review in 1992. In this article, Kaplan and Norton revealed what the organization should measure to perform in the long run, by looking at similarities amongst how large organizations manage to perform better than others. This tool translates vision, strategy, and communication objective; aligns the strategies; and elaborate them on one particular objective. By implementing the BSC, all units in the organization can understand their role, and therefore, value their contribution towards organization success. The tool acts as a framework for the management to identify and exploit organization key value drivers to suit their best strategic advantage (Murby et al., 2005).

The generic BSC consists of four interrelated quadrants (see Figure 2-6) derived from company vision and strategy (Chavan, 2009). Vision is the desire organization future outcome for employees and it

draws a requirement to which resource available in the organization that needs to be exploited (Santagada, 2013). Each quadrant contains objective and measure from distinct perspectives: one, financial, also known as a lagging indicator or a traditional measure; two, the customer, the important part in any business entity; three, internal process, which emphasises on the process drive in the organization; and four, learning and growth, known as an intangible asset in organizations. Each perspective has four parameters, which are goals, measures, targets, and initiatives. Goals are identified as the things that need to be achieved to become successful. The measures are identified parameters used to determine that it has been a success. Targets are a quantitative value used to determine the success of the measure, and initiatives are a list of activities that has to be done to meet the goals (Scherer, 2002).

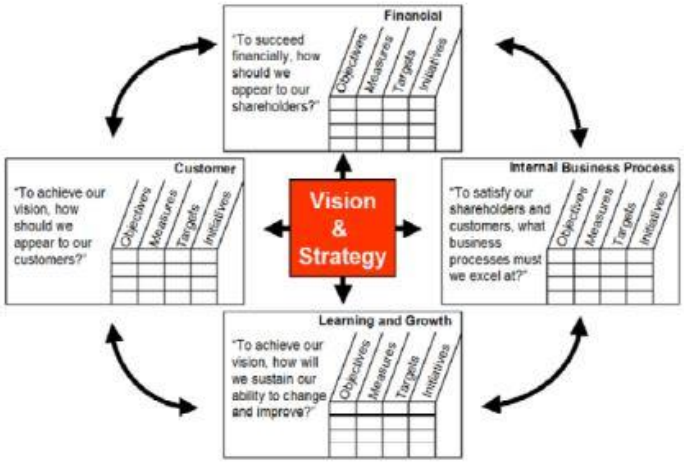


Figure 2-6: The Balanced Scorecard
Source: Kaplan and Norton (1996, p. 9)

2.8.2 The four perspectives of the Balanced Scorecard

Kaplan and Norton's template, as illustrated in Figure 2-6, shows the relationship of the four quadrants. It suggests that the BSC components should include non-financial measures, such as customer perception, internal business process, as well as learning and growth elements, apart from financial performance (Kaplan & Norton, 1996; 1992). Upon considering all four perspectives, it shows equal consideration pointing out to both long- and short-term financial performance, customer issues, internal operation, and organization learning towards growth. Kaplan and Norton (1996) encouraged firms to identify four to seven measures to each perspective. Boer, Vandecasteele, and Rau (2001) suggested to limit the performance indicators between 16 and 20, while Mackay (2005) urged that by having 20 to 25 critical elements can aid executives to evaluate the organization key success factor in

the company. It is important to point that, the four perspectives mention earlier are robust for many organizations, but should be viewed as a template that guides an organization on viewing the company holistically, and it is not necessary and consistent in nature (Kaplan & Norton, 1996b p. 34). Thus, although the three non-financial perspectives are important, it does not limit the business to include another non-financial aspect that may suit the organization.

The first perspective that holds the BSCs is the financial perspectives. This performance perspective is a view to answer the question on how the organizations view shareholder. Although the concept of integrating financial and non-financial perspectives using BSC has been accepted, this tool does not distract the organization from taking financial outcomes as the main focus (Mackay, 2005). In fact, the financial performance is always the key to organization objective, especially for SMEs (Robson & Bennett, 2001). However, the financial perspective is known as a lagging indicator (Kaplan & Norton, 1992; 1996), as financial report merely produces reports that show the financial statement of the organization. It has been experienced and cannot be changed as in the past and has become historical evidence (Chavan, 2009). Santagada (2013) mentioned that financial perspective is lag indicators because they report on outcomes and are a consequence of past action. Similarly, Mackay (2005) stated that by looking at financial statistics, such as Return on Investment (ROI) and Return on Capital Employed (ROCE) alone, is obsolete thus a bad tool for plotting organization for the future. He condemned the behaviour of depending on the financial report for establishing future strategy is as same as driving a car by looking at the rear view mirror.

The first non-financial perspective in the BSC is customer perspective. As the customer is the key emphasis of most business organizations and source of business profit, the customer perspective has been found to be appropriate to be considered in the managerial decision and firm objectives (Lee et al., 2008; Mackay, 2005). In the BSC, as the customer is the source of company profitability, viewing the customer as part of the firm strategy is always beneficial. Chytas et al., (2011) opined that understanding the customer is important for a company to create value for the customer. In this perspective, the objective of the organization is to identify a target market and customer segment (Santagada, 2013). Several papers have reported that within the service industries, customers are perceived as the most concerned aspects that need to be emphasised in the business. The hotel industry in the UK found that customer perspective as the most important part of their business (Brown & McDonnell, 1995). A study conducted by Islam, Yang, and Mia (2012) revealed that in Taiwan financial institution, customer-related performance is the most important aspect.

Customer expectation is sometimes looking at different angles to be satisfied. It depends on the business customer target segment. Items, such as customer retention (Lee et al., 2008; Wu, 2012), and customer satisfaction rates (Anagnostopoulos & Elmasides, 2010; Heydariyeh, Javidnia, & Mehdiabadi, 2012; Rickards, 2007; Wu, 2012) are some of the examples of how customers should be looked at by the organization in order to succeed. However, it is also varied across industries, for example, in construction SMEs, early completion of the project is vital to increase customer satisfaction (Phadtare, 2010) while for the service industry, fast delivery is important for the customer (Abdolshah, Javidnia, Astanbous, & Eslami, 2012). Additionally, customer loyalty (Collis & Montgomery, 2008) and enhancing customer experience (Faeste et al., 2015) is worth to understand to increase firm market share and competitive advantage.

The third component in the BSC is the internal process perspective. Considering what the firm must excel at, the internal process provides important things that a company needs to excel in order to be competitive. However, the source of competitive is varied for different organizations. Studies conducted in manufacturing industries revealed that they need to develop and master their procedures and operation in order to succeed. Lee et al., (2008) in accessing manufacturing company in Taiwan showed that between the four perspectives, the internal process appears to be the most important factor. In internal process perspective, organizations must develop the procedures that might increase business process. Efficiency (Wu, 2012) zero defect (Phadtare, 2010), reduced error rates (Rickards, 2007), and waste exploitation (Anagnostopoulos & Elmasides, 2010) are some of the examples. In high technology-based industry, several internal process perspectives components have been found to play an important role. While conducting a study in high technological firms, Khalique and Pablos (2015) suggested that the internal process should be producing competitive product and service, maintain high success rate, provide on-time delivery, and being responsive to the market demand. However, despite many differences amongst industries, the focal point of this perspective is the customer perspective. In order to keep customers satisfied, an organization will need to identify components that are essential to them. The organization needs to identify the most efficient way to eliminate customer being dissatisfied. This can be accomplished by undertaking a rigorous internal analysis not only by assessing the internal processes of the organization, but reviewing innovation as well.

The final perspective in the traditional BSCs is the learning and growth perspective. This perspective is the leading indicator in the BSC that enables the organization as a whole (Mackay, 2005). Kaplan and Norton emphasised that the objective behind this perspective is '*to provide the infrastructure to enable ambitious objective in the other three perspectives to be achieved'* (Kaplan & Norton, 1996a,

p. 126). The primary objective of this perspective is to provide the infrastructure in order to achieve other perspectives through people, system, and procedures. As an intangible asset, this perspective has a vital role in highly technological and modern industries (Kaplan & Norton, 2004).

As mentioned before, although financial performance has a great impact on SMEs performance (Hudson et al., 2001; Phadtare, 2010), the non-financial perspective cannot be ignored for SMEs to succeed. Chavan (2009) explained that financial is not the only important aspect in dictating business performance, as satisfying the non-financial perspective is also essential to enhance business performance. This notion is supported by Ahmad, Wilson, and Kummerow (2011b) that incorporating both financial and non-financial aspects will provide better information to SMEs and potentially increase success. They revealed that besides the performance being relative to competitors and business growth, business success highly relies on financial and non-financial performances. Therefore, despite the fact that the financial performance continues to become the fundamental focus of the businesses, there is growing acceptance that the non-financial measure should be taken into account to sustain performance (Mackay, 2005).

However, by only looking at non-financial aspect is not always beneficial. Findings from Ittner, Larcker, and Meyer (2003) pointed out that by solely striving on the non-financial measure will diminish return to the organization. This stems from not having financial target and measure; they do not know when an ideal achievement is experienced. It might be possible that by the time they realise they have achieved the performance sought; they have already passed it. Therefore, since both perspectives carry an important role and are interrelated to one another, it is strongly urged for the digital SMEs to keep informed and not neglect both perspectives (Mackay, 2005). In essence, it is concluded that both performances are important; although financial measure is still viewed as the crucial aspect and the ultimate focus of digital SMEs.

There is nothing new in looking performance beyond financial perspective. Many studies have developed frameworks to establish a great relationship between financial and non-financial perspectives. Although it has been reported that the combination of financial and non-financial measures is important for large companies (Pangarkar & Kirkwood, 2007), this phenomenon is also beneficial to SMEs (Gumbus & Lussier, 2006; Manville 2007; Parker, 2009; Wu, Wu, Wu, & Fang, 2006). Anuar and Yusuff (2011) emphasised that although small businesses used to compete in price, the non-financial aspect is pre-requisite for SMEs to achieve superior success. By generating non-financial performance, competitiveness is increased and simultaneously reflect firm financial reports (Choo et al., 2010). In the modern business environment, many companies have shifted their priorities

from looking at financial aspect to understanding non-financial strength. Many studies showed that some items, such as customer satisfaction, employee loyalty, and turnaround, as important to their business, as they drive superior performance and profitability (Ittner & Larcker, 2003). For digital SMEs; both challenge and fast-paced technology require them to be more sensitive in engaging their business. While this business is fragile, understanding their strength in non-financial performance is essential to outperform. Therefore, it is concluded that to be successful, firms should look at their performances in wide view and not necessarily restrict itself alone towards financial performance.

2.8.3 Benefits of implementing the Balanced Scorecards

Many studies have reported the benefits of including both financial and non-financial perspectives in their organization, with BSC outperforming other frameworks. Since the inception of the tools, many studies have been conducted around the world, which evidently have contributed towards many business successes. Several characteristics have been demonstrated as the strength of using BSC in the organization. The main focus for establishing a business is to foster profit and this tool has been acknowledged to help managers increase revenue. The literature offers promising results. Davis and Albright (2004) compared nine financial institution branches, which implemented and did not implement the tool. They concluded that by utilising the tools, the revenue of the adopter improved when compared to non-adopters. Similarly, a software firm in Greece experienced positive financial result after two years of implementing the BSC. Despite the financial performance had worsened in the first year, it was found that the situation occurred due to excessive investment in strategic initiative during that tenure (Papalexandris et al., 2004). Other studies also found that the shareholder return of the BSC adopters outperformed the non-adopters (Crabtree & DeBusk, 2008). Ali, Mseden, and Nassar (2015), who assessed Jordanian companies, found that adopting the BSC had increased company profitability. This suggests that the tools are beneficial and effective to improve profitability of the organization in terms of revenue, profit, and shareholder return.

Apart from that, the use of BSC is not just as a performance measurement utility for management control and performance evaluation, but it can be considered as a strategic management system that finds performance drivers, apart from exploring and describing strategic action precisely (Kaplan & Norton, 1992; 1996). It also initiates continuous improvement, change, accumulation, and learning, thus providing competitive advantage to the companies (Young & Tu, 2003). In addition, Perkins et al., (2014) emphasised that the BSCs can benefit the firm if used appropriately. Although it does not guarantee to assist the struggling organization, this tool can provide guidance to firms on their strength and later used it as a weapon to focus and strategize their business. Phadtare (2010) claimed that the

BSCs can be used as a continuous improvement tool and a driver of change in a company (Brown & McDonnell, 1995). Furthermore, this tool can assist firms to identify critical factors and key value drivers in the organization, which later can foster competitive advantage and increase performance (Murby et al., 2005; Rompho, 2011).

Some studies found that the BSC can be used as a communication tool in the organization (Ahn, 2001; Boer et al., 2001; Chavan, 2009; Gumbus & Lussier, 2006; Mackay, 2005; Mair, 2002; Qu, David, & Ezzamel, 2010). The communication role is available before, during, and after the BSC is employed by the organization. Before the inception of the tool, the communication process has begun. Since the appropriate way to develop BSC is by communicating and brainstorming amongst all the people in the organization, this process stimulates thinking within people in an organization to identify company critical success factors (CSFs) (Gumbus & Lussier, 2006). Ahn (2001) indicated that the BSC can be used for communication and to integrate people in the firm since the very beginning, which is during the development of BSC. The role of BSC as a communication medium does not end there. During the implementation of the performance management tool, the BSC integrates all people in the organization to put their focus on important things. The tool can be used as a medium of communication to share understanding on organization vision and mission, whereby all employees can decide on how they can contribute to organizational success. As the frame of the tools has been widely known, the BSC also can be a tool for communicating with internal and external stakeholders (Murby et al., 2005). Furthermore, as the tool requires understanding and commitment within all parties in the organization towards the same goal and objective (Chavan, 2009), the entire organization will communicate and focus on things that need to be done to breakthrough performance (Boer et al., 2001; Mackay, 2005; Sharma, 2009). With great understanding of firm situation, clearer information can be delivered to increase the chances of success during the tactical and strategic implementation (Boer et al., 2001). After the implementation, the BSC still can be the communication medium and act as a measuring tool while conducting the appraisal process and to assess staff performance. Regrettably, many organizations have yet to realise the potential of BSC. They see BSC as a measuring system, but fail to take BSC as a tool that help enhance communication within the organization (Phil Jones, 2011).

Another strength of the BSC is its adaptability and flexibility (Mackay, 2005; Murby et al., 2005). The tool can be adopted in any organization; commercial, and non-profitable or public institutions. The tool can be used for a company with 5-5000 employees (Gumbus & Lussier, 2006), whereby BSC is flexible enough that it can be enlarged or replaced depending on business strategy and suitability (Lee et al., 2008), apart from serving specific functional area (Martinsons, Davison, & Tse, 1999). As

discussed earlier, despite the original dimension of the BSC offering four perspectives to be the focus, it is not necessary to be four and not to be perceived as constraining 'straightjacket'. In reality, the perspective can be added according to a business plan and strategy (Bourguignon et al., 2004; Kaplan & Norton, 1996). Several studies have revised and altered the perspective from the original label (see Asosheh, Nalchigar, & Jamporazmey, 2010; Chang & Graham, 2010; Parker, 2009; Plant, Willcocks, & Olson, 2003). Zelman, Pink, and Matthias (2003) concluded that several additional perspectives, such as quality of care, outcome, and access, have been embedded into the BSC practices in health industries. Gurd and Gao (2008), while studying 22 case studies from two healthcare organizations had altered the perspective by including client, cost, system integration, and research from their perspective.

The BSC has been claimed to provide potential benefits in terms of facilitating the management with a holistic view of the company. Murby et al., (2005) emphasised that the main reason many organizations adopt BSC is that the tool provides a holistic view of managers. By looking at both financial and non-financial measures, the managers are able to look at both hard and soft assets (Rickards, 2007). The information provided by the BSC can reduce information overload and only focus on the important measure (Brown & McDonnell, 1995). By looking at a holistic view, this tool provides an indicator to look at overall internal and external benefits. On the internal aspect, managers can have an idea to align and relate cause and benefit. On the external, it benefits managers where the tool provides more sense on company overall performance and is not necessarily looking for financial accounting (Ittner et al., 2003). By obtaining adequate information, managers can plan and develop a more precise execution based on the holistic point of view. Concurrently, adoption of this tool has been reported to increase understanding and commitment (Chavan, 2009), thus increasing employee motivation (Santagada, 2013).

Table 2-6: Previous studies on the benefits of implementing BSC

Author(s) (Year)	Sector / organization	Findings
Brown & McDonnell (1995)	UK Hotel industries	BSC reduces information overload and serves as a driver of change in the company.
Martinsons et al., (1999)	IT application project	BSC is useful to be adopted in specific functional area.
Ahn (2001)	PF business unit in Switzerland	BSC serves as a communication tool and integrates people in the firm.

Young & Tu (2003)	Canada Public Utility company	BSC initiates continuous improvement, change, accumulation, and learning, thus providing competitive advantage.
Ittner et al., (2003)	Manufacturing and service companies	BSC provides overall company performance.
Davis & Albright (2004)	Financial institutions	The revenue of BSC adopters increased when compare to non-adopters.
Papalexandris et al., (2004)	Greece Software companies	BSC provides firm positive financial result after two years.
Murby et al., (2005)	Private and public sector	BSC assists firms to identify key value driver and CSFs. BSC is a communication tool for internal and external stakeholders. BSC provides holistic view of the companies.
Gumbus & Lussier (2006)	Manufacturing industries	The process of developing BSC stimulates thinking within people in an organization to identify company CSFs. No one BSC fits all.
Marr et al., (2006)	UK e-Business	BSC allows the company to establish strategic themes in accordance to their company strength.
Crabtree & DeBusk (2008)	IMA - Institute of Management Accountant	BSC increases shareholders return.
Lee et al. (2008)	Taiwan manufacturing firms	BSC is flexible – it can be replaced or enlarged depending on firm strategy.
Chavan (2009)	Australia companies	BSC increases commitment with all parties in the organization towards the same goal.
Santagada (2013)	SMEs	BSC increases employee motivation.
Phadtare (2010)	Indian construction SMEs	BSC acts as a continuous improvement tool and translates strategy to operational level.
Rompho (2011)	Thailand SMEs	BSC fosters competitive advantage and increases firm performance.
Ali et al., (2015)	Public Listed companies in Amman	BSC increases company profitability.

With all the strength of the tools presented, the ability of this tool to identify CSFs for the company and organization has been mainly appraised (Ahn, 2001; Young & Tu, 2003). The CSF is a variable that influences the organization performance in the future (Mackay, 2005). Young and Tu (2003) emphasised that by implementing the BSC, a firm can initiate continuous improvement and help organizations to find their CSFs to attain competitive advantage. For example, Wu (2012) developed a BSC to identify financial institution CSF. The results suggested that the organization should focus on customer satisfaction, customer retention rate, and sales performance in order to remain competitive in the market. Similarly, by adopting the BSC manufacturing industry in Greek led to identification of 7 critical areas that need to be emphasised to succeed (Anagnostopoulos & Elmasides, 2010). By

focusing on important variables in the BSC, the manager can obtain handy information that is crucial to the company. This information later can be used and articulated by the manager (Kasim & Gokhan, 2014) while mapping the company strategy, thus assisting the company to reach its full potential (Sharma, 2009). Similarly, Murby et al., (2005) concluded that one of the benefits of using BSC is that the tool helps the organization to identify and measure specific value driver underpinning performance. After the organization has gathered information regarding the key ingredients embedded in the firm, it further allows the company to establish strategic themes, such as operational excellence, customer satisfaction, and learning knowledge-based, in accordance to their company strength (Marr et al., 2006).

2.8.4 Drawbacks of the Balanced Scorecard

Despite assisting firms towards success and increasing manager's idea on how to view the organization workflow, BSC is not without drawbacks. Several studies have listed criticism towards this model, which can be summarised under two main reasons. The first is the problem while adopting the tool, and second is the critics of the BSC framework.

Linking with the first criticism, it has been found that the business owner, especially in smaller firms, could face several problems during their attempt at utilising the BSC. The severest constraint in utilising the BSCs in SMEs is the cost expenditure required (Fernandes, Raja, & Whalley, 2006; Grembergen & Saull, 2001; Papalexandris et al., 2004; Parker, 2009). In order for an organization to fully adopt the tool, it will require the firm to spend a lot of time in creating the BSC; time is precious to the company, and it is time consuming even at the full implementation stage. In order to generate idea, firms need to gather all heads in the department and sometimes will require all workers to brainstorm on the best or the most important thing to be included as critical information in the BSC. For example, a company in Greece (Papalexandris et al., 2004) executed a project by implementing the BSC from kick-off until full implementation, which took them three months and the man hours budgeted exceeded by 30% from their baseline. Indeed, that will not be all; it is believed that by gathering all workers or some executives in the organization, it might increase their expenditure in the form of time consumption (due to long hour meetings or after office hours), mileage, and overtime claims.

Next, the cost of obtaining the specific BSC software tools, such as MOBSA (Microsoft Office Business Scorecard Accelerators), is high, hence a huge barrier for small business (Parker, 2009). This shortcoming is too expensive for SMEs as financial constraint is common in this sector. Besides, this

modern apparatus to measure performance has been claimed to be complicated and not easy to be conducted. Ahn (2001) asserted that it is problematic to monitor and record 20-25 different measures, which required substantial investment. Overall, in order for the tools to run smoothly, the firm needs to invest their time and energy in identifying critical issues for each component. As SMEs always struggle with financial constraints, most of them always try to avoid unnecessary expenses. Although some SMEs may view these expenses as part of their investment, others may find it unnecessary.

Next, the utilisation of BSC as a performance measurement tool might be beneficial for SMEs; however, there is no guarantee that the expensive and time-consuming tool will provide an outcome of benefits as expected. Neely (2008), on comparing two electric chains based in the UK, found no difference in performance while comparing the adopters and non-adopters of the BSC. This is not the only evidence that shows this result. In fact, it is not the worst. A study conducted by Rompho (2011) showed the most unsatisfactory result. While studying for BSC implementation in Thai SMEs, the results showed that after implementing this tool for three months, the business performance dropped considerably. After conducting an in-depth investigation, it was confirmed that the implementation process of the BSC required a massive change in the business strategy. Linking to these issues, apart from no guarantee to increase firm performance, the employment of BSC may lead one to lose focus, and the worst scenario, suffer from unacceptable loss. This is quite frustrating for the firms that had anticipated positive outcome after investing time and energy to implement this tool, as it resulted in unsatisfactory outcomes.

Another critical issue is the structure of the BSC itself. Many studies have raised the issues of this tool, and the first comment concerning the structure of the tool is the equal weight to be distributed to the four pillars. As the BSCs should be viewed as four pillars, Boer et al., (2001) urged that each perspective should have equal weight. He mentioned that each component in the BSC should be viewed as equally, thus requiring the managers to put identical weight for all perspectives. However, Chytas et al., (2011) asserted that this is unlikely if not impossible in reality. This is because; some measures are more important than others, thus, in reality, putting equally importance to all perspectives is impossible. Evidence showed that no identical weighting can be put in real implementation. Most of the studies suggested that some perspectives have received more attention than the others. Several authors have documented evidence that this situation does not happen. For example, Lee et al., (2008) concluded that the customer and internal process carry more weight of importance than financial and learning in Taiwanese manufacturing companies. Similarly, Cohen, Thiraios, and Kandilorou (2008) discovered similar results. Brown and McDonnell (1995) reported among medium-size hotels in the

southern UK that customer is the most important factor in the BSC. Khan, Corresponding, and Halabi (2009) affirmed that learning and growth perspective is the ultimate key to firm success. The diversity of the most critical perspective by different organizations suggests that this happens due to different business focus and business strength, so the scorecard is contextual. Hence, several studies have strongly urged that no single BSC can fit all companies (Gumbus & Lussier, 2006). Although some studies highlighted that the top-down approach makes the BSC more applicable to the larger organization than enterprises, which demands a more flexible structure (Garengo & Biazzo, 2012; Rompho, 2011).

Another shortcoming, which has been raised, is with the BSC implementation. The tool did not present the strategy as a holistic view and did not show the cause and effect of each strategy. Ittner and Larcker (2003) urged that the failure to establish a causal linkage between financial and non-financial measures might lead to the unsuccessful use of BSC. Although BSC is known to be the most powerful and popular performance measurement tools, scholars have agreed that the cause and effect relationship within each perspective that should be presented is still absent (Jack, 2009; Othman, 2006). Moreover, despite some studies have increased the number of perspectives in the BSCs (Asosheh et al., 2010; Chang & Graham, 2010; Plant et al., 2003), they are still unable to cover all important perspectives. For instance, they did not provide other external stakeholders' perspectives, such as competitor and supplier, thus being an incomplete performance measurement tool (Andy Neely, Gregory, & Platts, 1995).

2.8.5 The Balanced Scorecard: Across the globe and industries

Despite many criticism and drawbacks being linked to BSC, these tools have caught many managers in the organization to adopt and implement the BSCs (Murby et al., 2005). Several studies have proven the benefits of implementing BSC to the public, private, and non-profitable organizations (Anagnostopoulos & Elmasides, 2010; Davis & Albright, 2004; Hinton et al., 2000; Malmi, 2001; Parker, 2009; Santagada, 2013). The initial adopters of this tool are gigantic companies, especially in the US and the European nation. The BSC has labelled as the most important tool amongst the Western companies (Schneiderman, 2004). This is true enough when Gumbus and Lussier (2006) mentioned that 50% of Fortune 1000 companies implemented BSC. Evidently, this tool has also been applied in many European companies, such as in the UK (Mackay, 2005), Ireland (Regan et al., 2005), Netherlands (Wiersma, 2009) and Germany (Rickards, 2007); witnessing that this tool has been generally accepted in the Europe.

This trend has followed in other parts of the world. In a North American survey, Rigby (2001) claimed that 44% of the companies accepted BSC as one of the management tools in making strategic decision. Davis and Albright (2004) mentioned that the adoption of BSC had improved the revenue of financial institutions in the US. The health industry in the US also resulted in the same evidence. Zelman et al., (2003) concluded that the BSC is very relevant to the healthcare industry in the country, including government hospitals, private hospitals, pharmaceuticals, and psychiatric centre. An empirical study also found the high usage of BSC all across the globe. The literature asserts that this tool has been used in other industry and public sector, such as government agencies, higher education, automotive, and agriculture (Abdolshah et al., 2012; Jack, 2009; Perera, Schoch, & Sabaratnam, 2007; Said, 2013; Umayal Karpagam & Suganthi, 2012).

Although the implementation of this tool was first adopted by the Western countries, many studies have shown that the BSC has been appreciated by other continents, especially Asia countries. Ali et al., (2015), on Jordan Public Listed Companies using ROA and ROE, found all the non-financial elements in the BSC did provide a significant effect on financial measure. Farooq and Hussain (2011) concluded that adoption of BSC was related to the increased organization performance in India. There is also evidence that this tool has been used in the Southeast Asia region. For example, Rhodes, Walsh, and Lok (2008) studied issues on strategic management in Indonesia, while Rompho (2011) assessed the problem in adopting BSC in Thailand businesses. Said (2013) studied BSC implementation by Malaysia's Government Linked Companies. While in China, Zeng and Luo (2013) found that since the country was receiving a high volume of Foreign Domestic Investment particularly from the Western countries, the BSC was adopted concurrently. Although the studies highlighted some constraints in developing BSC in these countries, the issues may be addressed by identifying both the culture and needs for appropriate training.

2.8.6 The Balanced Scorecard: Utility for digital SMEs

Although the BSC was initially used by the larger companies, studies on BSC are vast in many areas of business and organization, including SMEs. The first academic literature found to link SMEs with BSCs was documented in the last decade, when Gumbus and Lussier (2006) studied BSC adoption among SMEs in the US. Driven by the aspirations of the tool, it was used by more than half of successful companies in the US. In the study, three selected SMEs in the US were highlighted as these companies had adopted the BSC. Surprisingly, using case study methods, the study concluded the BSC can be utilised in SMEs. Accordingly, the study found that the benefit of BSC differed, but worked

very well for SMEs. As there is no 'one size fits all' BSC, the report urged for more studies to associate SMEs with BSC.

The study of integrating BSC and SMEs did not end there, as in the same year, Fernandes, Raja, and Whalley (2006) studied the implementation of BSC in the UK manufacturing SMEs. The findings from the study provided a roadmap towards designing the tools for small industries. The tool was also utilised in Germany, in which Rickards (2007) studied the adoption of BSC in e-commerce SMEs. Based on the findings, he emphasised that although the study on SMEs is still new, SMEs can utilise the concept of BSC to analyse their business. As BSC has been appraised by mostly gigantic firms, this tool is also feasible for SMEs. He further suggested that by using the BSC, SMEs can have a better view of the organization workflow, besides assisting the SMEs on strategy making. By appreciating this tool, SMEs will no longer depend on financial report, hence the inclusion of non-financial performance to gain beneficial implication. Manville (2007) had tested the tools in non-profitable SMEs by integrating BSC with Business Excellence Model (BEM/BSC). Parker (2009) strongly recommended that the BSC can be used by SMEs. Additionally; many studies have assessed BSC and SMEs, which provide knowledge on the tool benefits towards SMEs managers. Giannopoulos, Holt, Khansalar, and Cleanthous (2013) studied BSC adoption rate in Cyprus and the UK. Later, Machado (2013) conducted a quantitative study in Portugal while analysing BSC use and awareness rates amongst SMEs in Portugal. Santagada (2013) concluded that the BSC has been accepted as a method of choice for SMEs because the purely financial view is no longer sufficient for small organizations. Malagueño et al., (2018) found that SMEs using BSC gained better financial performance.

On the overall, past scholars have affirmed that the BSC can be utilised by SMEs (Fernandes et al., 2006; Gumbus & Lussier, 2006; Malagueño et al., 2017; Manville 2007; Parker, 2009; Rickards, 2007). A survey conducted by CIMA indicated the BSC has been acknowledged as the most widely used performance management tool to measure firm performance, including SMEs (Mackay, 2005).

Table 2-7: Previous studies that integrated Balanced Scorecards with SMEs sector

Author (s) (Year)	Country	Research Method	Findings
Gumbus & Lussier (2006)	United States	Qualitative - Case Study	1. There is no one size fits all BSC - but BSC works very well with SMEs. 2. SMEs can use BSC as a continuous improvement tool.

Fernandes et al. (2006)	United Kingdom	Qualitative - Case Study	1. BSC can be used to monitor SMEs performance. 2. BSC provides SMEs a practical method to determine internal and external forces. 3. BSC enhances SMEs ability to respond to market changes. 4. BSC enhances the stability and operability of SMEs. 5. By providing accurate information, BSC helps SMEs to have a better control on its inventory. 6. BSC increases information flow.
Rickards (2007)	German	Qualitative - Case Study	1. The SMEs find it worthwhile to analyse their business on the basis of BSC perspectives. 2. Regardless of business size, it is useful to integrate all planning and controlling instrument including BSC.
Manville (2007)	United Kingdom	Qualitative - Case Study	1. Although the full benefit will not be realised immediately, the BSC can be utilise by SMEs. 2. The motivation to adopt BSC is both internal and external drive.
Parker (2009)	England		1. BSC is simple and works best by deciding what to take out. 2. BSC helps to link business goal with business ambition, to boost motivation and participation throughout organization. 3. There is potential for SMEs to utilise BSC.
Giannopoulos et al. (2013)	UK and Cyprus	Quantitative	1. Most SMEs focused on financial, instead of non-financial factor. 2. Many companies lack detailed knowledge on BSC. 3. BSC is inapt for small companies as it is unsuitable for small companies and due to resource constraints.
Santagada (2013)			1. The BSC is an effective and powerful initiative that keeps SMEs at its competitive peak. 2. Identifying clear strategy is the basis to successfully implement BSC. 3. Purely financial view is no longer adequate for SMEs. 4. SMEs require more substantial and up-to-date report on company situation at all time.
Machado (2013)	Portugal	Qualitative – Interviews of 58 companies	1. Most SMEs were unaware and did not use BSC as performance measurement. 2. Some companies rejected the use of BSC due to belief that BSC is not useful to them, not worth to implement (based on benefit/cost), and BSC is incompatible with company policy.

The use of this tool has been also evidently present in the highly technological industry, including companies that use multimedia and IT intensively in creating, producing, promoting, and marketing their products and services. The inability of the traditional financial report to capture items deemed important for information age companies, such as human capital and R&D, has further increased the use of BSC as more holistic way to view performance (Yancy, 2017). One of the first studies that

exploited the BSC in the electronic business study was conducted by Ronaghi (1996). Upon believing that the BSC is capable to identify strategic target from different perspectives, the emphasis was suggested to be placed on IT and to change the Learning and growth perspective to Learn and IT perspective. Similarly, Martinsons et al., (1999) mentioned that the BSC can be successfully applied by e-commerce in dealing with strategic issues. By applying the BSC, one can understand the cause and effect within the ICT organization, thus allwoing the managers to identify the relationships and consequences of each performance level in the perspectives (Boer et al., 2001).

When dealing with the small software companies, Mair (2002) utilised the classic BSC to increase the company's capability to deliver customer satisfaction in a timely manner. In the study, he stressed out the key element and the common pitfall encountered while conducting BSC. However, he appraised BSC as a useful communication tool to convey information message regarding goals and methods to peoples in the company with a diversity of background. Similarly, the result of utilising BSC was reported by a Greek software company, which found that the project of implementing BSC gave many positive implications for the firm. Apart from the financial performance showing positive results, this tool displayed many positive effects on firm, such as increased communication amongst staff, reduced employee turnover ratio, and increased relationship of employees from different divisions. By conducting BSC, a common goal is shared in the firms so as to allow better understanding on the role and responsibility amongst staff, thus making them to appreciate people more in their firm, rather than competing which each other (Papalexandris et al., 2004). Rickards (2007) reported that the use of BSC is feasible among e-commerce SMEs. The managers found it worthwhile to analyse their business using this tool, but there is greater chance for the SMEs with less develop control system to have difficulties in creating and using BSC. In line with this issue, he further urged for SMEs to have a good controlling system prior to using BSC in the firm as BSC does not obviate the controlling instrument.

Despite much literature has evidently appraised the incorporation of BSC in the IT-based industry, several scholars had modified the BSCs. For example, Martinsons et al., (1999) argue that BSC can assist business functions, and they developed a BSC for information system (BSC-IS) specifically to evaluate and measure IS activities. With the view of business value, user orientation, internal process, and future readiness perspectives, the framework can be utilised to help department or functional area in the organization to measure and evaluate IT application project. On the other hands, Grembergen and Saull (2001) intorduced the IT BSC, in which all perspectives components were modified. Later, Hoitash, Kogan, Srivastava, and Vasarhelyi (2003) gave a simiar Internet/E-Business BSC (IEB BSC) that included E-Business Financial, User Orientation Future Orientation, and Operational Excellent

Perspectives in the framework. The only difference between the two is that the latter has financial performance measurement through E-Business Financial perspective, while the others use Business Contribution to measure IT investment contribution towards business by controlling expenses on IT. Plant et al., (2003) suggested that understanding the customer dimension can be achieved if the internet-based company includes brand, service, market, and technology under the Customer Perspective. Wang and Forgionne (2007) developed a BSC framework for e-Business, known as the Electronic Business BSC (EBBSC). This framework is expected to overcome the traditional measures that are suspected to be incomplete and may mislead thus requiring radical modification.

It is obvious that the roles, the contributions, the practicallity, and the importance of BSC have been reckoned by the digital SMEs all around the world. As this tool has been utilised by extensive technological and digital companies, the benefit of the tool should be appreciated by the digital SMEs in Malaysia. It is suggested that by looking more than financial metrics, the performance of this firm will further escalate their chances to survive in the competitive market environment. While Malaysia aims to generate more digital SMEs in the future, the employment of the strategic management accounting tools, which is the BSC, is bound to assist digital SMEs in conducting their performance management process.

2.9 Chapter summary

Since the study mainly focused on digital SMEs in Malaysia, the most appropriate definition is a business organization with no more than 75 workers, sales turnover not exceeding RM 20,000,000, high involvement in IT, multimedia, and digital business (animation, broadcasting, software developer, digital game developer, entertainment, publications), as well as have received MSC award certification.

Besides becoming a corporate weapon for business sustainability and competitive advantage (Jehangir et al., 2011), the contribution of the digital world towards the world economy is not only restricted to the business agenda, but has played a vital role in society and community. Equally, the digital world offers new opportunities to SMEs and their future ventures. However, given the fact that the SMEs are facing problems with financial, resources, and strategic management; this study offers information and paints a clearer understanding of the relationship between intangible resources and performance measurement tools, which are important to digital SMEs.

Unfortunately, many studies have been taking a headline on research regarding performance measurement in global companies and large corporations, while overlooking SMEs (Hudson et al., 2001; Moorthy et al., 2012). Despite extensive research being carried out to investigate performance measurement in large organizations, there is still a distinct gap and inadequate publishing research regarding SMEs (Hudson et al., 2001; Manville 2007). Although digital SMEs have been urged to identify appropriate strategic management tools (Hudson et al., 2001; Mahadi, 2011), this industry group seems to lack strategic management advice that subsequently increases the failure rate of the industry (Razi et al., 2004). By having appropriate strategic planning, modern and creative SMEs can increase their chance to survive in business (Korgaonkar & O'Leary, 2006). It is not an easy task to draw a framework for strategic management and the strategy should align with regard to a company's strength and capability. It is impossible to copy another industry strategy due to the varied requirements, different sets of strengths, and various strategic resources to succeed. Since there is a growing belief that digital business are necessarily different from other types of business in strategy making (Mahadi, 2011), it is crucial to identify the appropriate strategic resources of this industry and to understand their relationship with business performance. It is crucial to point out that although there is evidence in the literature on performance measurement, such as that offered by the BSC towards high technology business, only a handful of studies have looked into the high technology manufacturing industry or e-commerce business. To date, only a few studies have exclusively focused on digital SMEs towards the usage of modern performance measurement tools – in this case, the BSC.

Chapter 3

Literature Review

3.1 Introduction

In this study, the theory of RBV was fostered to examine the relationships between intangible assets and digital firm performance. In view of RBV, which emphasises that every industry has unique forte towards performance and competitive advantage, three elements of intangible were identified to be used in this study. While much research has been conducted to view the contribution of the intangible assets to firm performances, this study, on the other hand, adopted the BSC as a tool to measure firm performance. With the adoption of BSC as a method to view performance, the performance will derive a more holistic outcome, rather than financial view or non-financial view only. By taking the financial and non-financial measures as a perspective, it aims to articulate performance in a more comprehensie way. This study explored how the intangibles contributed to non-financial performance and how the non-financial performance drove the financial performance. This study assessed the combination of intangible assets, comprising of human capital (HC), technology capital (TC), and organization capital (OC), along with four perspectives, namely financial, customer, internal process, as well as learning and growth, as operational sets to measure performance.

3.2 Overview of the Resource-Based View

The fundamental principle underpinning the theory of RBV is that the bundle of resource might be beneficial in finding optimal product market activities in the firms (Wernerfelt, 1984). It asserts that by proper identification and utilisation of specific strategic resources, a firm may experience above average performance. The RBV theory has been described by Wernerfelt (1984) in an article entitled ‘The resource view of the firm’ and Barney's (1991) ‘Firms Resources and firms competitive advantage’ published in the academic paper in the mid-980s. Both these articles emphasise on the importance of utilising resources in the organization and looking the resources in the organization as the engine to establish firm performance. In conjecture with the theory that a firm’s success is largely determined by the resources it owns and controlled by the firms (Amit & Schoemaker, 1993; Barney, 1986b; Wernerfelt, 1984), it is believed that by understanding the resource profile, the firm might increase the possibility to find the optimum level (Barney, 1991). A statement made by Amit and Schoemaker (1993) mentioned that by identifying strategic assets in the firm as the prime determinant

of economic rent for industry clearly ignite the spark on the importance of appropriately managing the assets in their firms.

Since then, the RBV has changed the way people view companies. Rather than looking organizations as normal firms, each firm has been viewed as a group with different collections of resources that are unique to that particular organization (Collis & Montgomery, 2008). Although each firm might require the same assets and capabilities to run their businesses, there is no identical company. Each organization has its unique resource 'bundle' or 'mix' in the organization that makes it different from the competitor. For example, it is possible to have two hotels located adjacent to one another. Both hotels are rated as five stars and offer similar service. Although both hotels offer similar service and quality, each hotel has its own unique resources that only belong to the company. It might be the culture in the hotel or the experience of the staff, which make each hotel different and unique, and these resources should be identified and managed accordingly. Hence, appropriate management of resources is the core, which later differentiates the firms with valuable competitive advantage (Meyskens, Robb-Post, Stamp, Carsrud, & Reynolds, 2010).

Resource refers to assets or capabilities that are owned and controlled by a firm (Collis, 1994; Galbreath, 2005; Wernerfelt, 1984). This resource, which is available in the organization, can be divided into two categories; first, the tangible assets; physical (land, property, and machinery), and intangible assets (non-physical and invincible, such as skills, knowledge, and culture). In the industrial age, most companies try to compete on the tangible resource. By having the latest, the most sophisticated machine or possession of the largest piece of land can influence the position of a firm in the market. In short, the chain reaction between resource management is translated into superior performance. This situation has increased both strategic management and strategic management accountant to further investigate this topic. As studies have emphasised on how to manage the strategic resource portfolio that may assist manager with superior performance, most of the studies concluded similar result; resource is important to dictate business performance (Amit & Schoemaker, 1993; Andreeva & Garanina, 2016; Barney, 1991; Barney, 1986b; Bridoux, 2004; Collis, 1994; Galbreath, 2005; Peteraf, 1993).

3.3 RBV and firm performance

The importance of resource as a determinant of business success has long been recognised (Barney, 1991; Wernerfelt, 1984). Due to this statement, many studies have tried to identify in more depth particular resources, in order to understand the most important resources that are available in their

firms and that provide the most benefits to the organization. Numerous approaches have been offered in studying this topic, along with different sets of strategic resources (Collis, 1994). Similarly, these resources have been viewed as a strategic weapon available to firms and have been witnessed by many researchers concerning this strategic management optimisation. Most studies revealed that a relationship exists between resource capability and may have an effect upon the innovation process (Bakar & Ahmad, 2010; Han & Li, 2015; Huang et al., 2011), competitive advantage (Kamukama et al., 2011; Kumlu, 2014; Martín-de-Castro, Navas-López, López-Sáez, & Alama-Salazar, 2006; Rivard et al., 2006), and are ultimately link with firm performance (Andersén, 2011; Barney, 1991; Becker & Huselid, 1998; Bharadwaj, 2000; Clulow et al., 2007; Galbreath, 2005; Sengaloun & Yoshi, 2010; Zhang & Tansuhaj, 2007). Apparently, as this claim increased, a plethora of studies have been also conducted in viewing this resource contribution to firm performance in different sizes, various industries, and different locations (see Ainuddin, Beamish, Hulland, & Rouse, 2007; Bakar & Ahmad, 2010; Chang & Chen, 2012; Han & Li, 2015; Kumlu, 2014; Martín-de-Castro & López-Sáez, 2008; Priem & Butler, 2001).

Overall, the valuable resource embedded in the organization has been highlighted as a prime determinant for firms to achieve outstanding performance (Barney, 1986b), yet identifying appropriate resources is a challenging task. Given the notion that some resources have the potential to prevent firms from conceiving valuable strategies (Bakar & Ahmad, 2010; Barney, 1991; Barney, 1986a), it has been emphasised that failure to acknowledge and appreciate existing resources can result in firms to be more likely to experience poor performance. Wrongly identifying the influential assets that contribute to firm performance will lead to misjudgement and consequently, inaccurate decision will potentially swallow the revenue. In essence, it is vital for firms to clearly understand and gain information on how the resources that exist in their firms might possibly contribute to their firm performance. With this information, a firm will make viable and strategic plan that is more accurate in planning their business tactics, as well as making appropriate judgement when it comes to investment decision.

Acknowledging these issues warrants solutions; hence some scholars have developed a guideline to aid firms identify strategic assets. The first academic to review the idea of assisting firms in identifying a strategic intangible resource was Barney (1991), by developing the VRIN (Valuable Rare Imitable and Non Substitutable) framework. He added that in order to be considered as valuable, the resource should satisfy four criteria. He pointed that the resources should be valuable, rare, imperfectly imitable ,and non-substitutable, which rather than owned by individuals, these resources should be controlled

by the firms (Barney, 1986b). Later, eight criteria have been underpinned by Amit and Schoemaker (1993) in identifying strategic assets in firms, including complimentary, scarity, low tradeablility, inimitability, limited substitutability, appropriability, durability, and overlap with strategic industry focus. Peteraf (1993) outlined four criteria of resources that should be satisfied before the resource can provide sustainable advantage to firms. They are; resources should be superior (heterogeneity within an industry), ex-post limit to competition, imperfect resource mobility, and ex-ante limit to the competition. Bridoux (2004), on the other hand, gave two crucial assumptions before taking the assets as strategically important. In the study, he noted that firms within the industry must have a heterogeneous bundle of resources. However, the firm should have a unique value for its diverse resources and they must be difficult to imitate. If the firm has these two fundamental determinants, it is more likely that the firm will experience competitive advantage. In order to identify the most strategic resources in a firm, Collis and Montgomery (2008) have urged managers to test their resources, thus concluding that strategic resources should be unique and difficult to imitate by competitors. Resources that are strategic should be depreciated slowly. Assets controlled by the company should not be easily substituted by other resources. Although there is probability that the resources may be similar to rival companies, the firm must think of a better way of utilising the asset prior to considering the asset as a strategic resource.

As mentioned beforehand, resource has been typically defined as assets and capabilities available to an organization found in the form of tangibles and intangibles (Amit & Schoemaker, 1993; Barney, 1991; Galbreath, 2005). However, although resources have been claimed to be available in all businesses, regardless of size, this asset does not possess a similar role or contribution to each firm. As a matter of fact, source that provides firm with performance is likely to vary amongst industries (Collis, 1994). Therefore, it is impossible for one industry to copy the strategy of another industry. The resourcing strategy is not ‘one size fits all’, but should be tailored to the industry requirement to succeed. Each industry demands a different set of resources to perform well, whereby investing in non-relevant resources is costly (Barney, 1986b). Making a wrong decision will further minimise the chances of being successful. Thus, many studies have employed the RBV theory to identify resources in firms, which is deemed important. In line with this, many studies have tested several resources to identify the most influential ones to support firm performance. Cohen and Kaimenakis (2007) specifically focused on three assets that were expected to provide corporate performance to Greek companies in the service sector. A study conducted by Bakar and Ahmad (2010) found that product reputation emerged as the main attribute in generating product innovation performance. Huang et al., (2011) concluded that amongst the four strategic assets, human capital was the most fundamental

element in assisting firms with innovative capability in the biopharmaceutical industry. Andreeva and Garanina (2016) asserted that only two out of three components in the study displayed a positive relationship with manufacturing firm performance. Many studies have tapped into this area, and most of the time, the resources under study were dissimilar. Two possibilities support this scenario; the different roles held by the resources, either a different set of resources is deemed important based on the industry of study or due to the resources under study is of interest to the authors. Many resources have been considered to study performance; richer understanding of several assets can be obtained. The literature suggests that resources might possibly play a different role in various firms, thus the opportunity for more studies to be conducted.

As many studies have been undertaken to assess the contribution of resources to firm performance by specifically targeting several industries or organizations, information regarding important resources has been regarded as vital for SMEs (Bretherton & Chaston, 2005; Choo et al., 2010; Cohen & Kaimenakis, 2007; Daou, Karuranga, & Su, 2014). It is suggested for SMEs to utilise their existing resources to compete by increasing their knowledge and understanding the existing resources. Bretherton and Chaston (2005) suggested that SMEs should put resource information as the central consideration while formulating and implementing their strategies, mainly because only by clearly understanding the idiosyncratic resources available in the firm, the SMEs could possibly differentiate themselves from their competitiors (Carraresi, Mamaqi, Albisu, & Banterle, 2012), thus allowing them to provide distinctive and tailored products and services; a source of competitive advantage.

Although resources have been found to be key determinants of firm performance, SMEs need to clearly identify the appropriate way to manage them. Wrong decisions and inaccurate information might impair SMEs' judgment and so it is crucial to identify the most important resource mix required for a digital business to succeed. Resources are divided into two; tangible and intangibles, with the latter garnering more attention by many researchers. Barney (2001, p. 648) stated '*firms that build their strategies on path dependent, causally ambiguous, socially complex, and intangible assets outperform firms that build strategies only on tangible assets'*, and has shifted many firms' attention into looking at resources in depth, particularly into intangible assets; much empirical evidence can be found from studying the contribution of intangible assets to firm performance (see Ark, Hao, Corrado, & Hulten, 2009; Annie Brooking, 2010; Grimaldi & Cricelli, 2010; Lefebvre, Lefebvre, & Harvey, 1996; Organization for Economic Cooperation and Development , 2011; Sveiby, 1997). Similarly, Galbreath (2005) reported that the impact of intangible resource on firm performance had superseded tangible assets. Hence, with appropriate management and understanding of intangible assets, SMEs may create

a difference between a firm with mediocre result and one with outstanding performance (M. W. J. Khan, 2014). As digital SMEs have always dealt in fast-growing and rapid technological changes, intangible assets have a more important role to success of SMEs. Wu (2005) urged that the only way to create competitive advantage in the fast-growing business is by managing intangible resources, which serve as the creator of innovation that is important to digital companies (Huang et al., 2011). Therefore, it is of no surprise that firms in technological extensive and ICT has been regarded as the most intangible prone industry (Goodridge et al., 2014; Regan et al., 2005).

Not all resources are equally important, thus it is important for all businesses to clearly understand, identify, and gain information on valuable assets or asset mix that provides the firm positive results. However, this problem is more critical for SMEs, which are always linked with having resource constraints and financial issues (Bakar & Ahmad, 2010; Fauske, 2007; Lee et al., 2014; Ng et al., 2012). Accurate identification of resource base might support SMEs to better strategize their business and earn competitive advantage. Thus, it is the responsibility of the SMEs to identify, develop, protect, and deploy the resources and the capability available in the organization, and further translate them into strategic assets (Amit & Schoemaker, 1993). After identifying strategically valuable resources, SMEs need to exploit, invest, and maintain these assets as a strategic weapon of their companies (Collis & Montgomery, 2008). As digital SMEs have been claimed to depend much on intangible resources (Bose & Thomas, 2007; Goodridge et al., 2014), it is imperative to understand these invincible assets, and specifically identify how these intangible assets contribute toward business performance, both financial and non-financially. Although invincible resources cannot be accurately measured (Tseng & Goo, 2005), it is important for managers to identify the relationship amongst these assets in light of firm performance.

3.4 Intangible assets

3.4.1 Definition of intangible assets

Among the problems that have plagued the topic of the study of intangible assets is the terminology that has been used, the definitions given, and the various component parts of intangible assets (L.-M. Gogan & Draghici, 2013). This issue is highly debatable and has been confirmed by many scholars in their articles. For instance, Marr and Moustaghfir (2005) noted that the fuzziness of invincible resources is increasing despite increased attention being given to the subject. Many studies have assessed intangible assets and intellectual capital; equally, many definitions have been offered thus adding to the confusion. Although the importance of these assets for firms has been agreed upon, there

is lack of consensus on the definition of these assets, identified as one of the problematic issues in this research area (Meritum, 2002). Similarly, the components of intangible assets share no uniform definition, but rely on the subject of the study or study objective. According to Sveiby (1997), this topic has been considered by many, defined by some, and understood by a select few.

According to CIMA (2005), the official terminology adheres to the IAS 38 definition, whereby intangible assets have been defined as an identifiable non-monetary asset without physical substance that must be controlled by the entity, as the results of past events and from which the entity expects a flow of future economic benefit. The IAS 38 has further elaborated on the three critical attributes of the intangible assets. Diefenbach (2006) defined intangible assets as everything of immaterial existence used or potentially usable for whatever purposes in the firm, which is renewable after use and decrease, remain or increase in quantity and quality, whilst being used. He added that intangible resources can be grouped into five categories, which can be linked to certain individual assets or into groups. These assets and capabilities might be transferred and carried forward by either individuals or groups. Another definition asserts that the intangible assets are the combination of resources, capabilities, and competence that drive organization performance and value creation (Gogan & Draghici, 2013). Crema and Nosella (2014) defined intangible assets as firm resources that do not have physical form, but which substantially contribute to firm value generation process. This asset can be considered in terms of stocks or flows, which is important as the source of firm competitive advantage despite their nature is not monetary. The topic of intellectual capital has also been found to have a similar definition as intangible assets. Roos and Roos (1997) defined intellectual capital as the sum of 'hidden' assets of the company not fully captured on balanced sheet, thus including both what is in the head of organizational members, and what is left in the company when they leave. Stewart (1998) described intellectual capital as the sum of everything everybody in a company knows that gives it a competitive advantage, including intellectual material, knowledge, information, intellectual property, and experience that can be put to use to create wealth. Youndt, Subramaniam, and Snell (2004) defined intellectual capital as the sum of all knowledge an organization is able to leverage in the process of conducting business to gain competitive advantage.

However, despite the terminology of this subject is growing, it is believed that this topic refers to the same subject (Meritum, 2002; Organization for Economic Cooperation and Development, 2011). Leitner (2005) claimed that often, intangible assets are labelled as intellectual capital. This statement is strongly supported by Steenkamp and Kashyap (2010), who mentioned that although the term of intangibles is broader than intellectual, most studies have used the term 'intellectual capital' instead of

‘intangible assets’. Some studies used intellectual as the topic name, but employed the model of intangible assets as the measure (Sharbati et al., 2010). Therefore it is not surprising that due to no common agreement on the definition of intangible assets, this has resulted in the use of the term interchangeably in many studies (see Bueno, Salmador, Rodríguez, & Castro, 2006; Kamukama et al., 2011; Starovic & Marr, 2003; Yolanda Ramirez, 2010). However, it is believed that this terminology debate will not end here; with the sophisticated environment and future study, the term ‘intangible’ is expected to continue evolving in the future. In this study, intangible assets refer to invincible assets that offer gains to digital business performance.

The use of the term ‘intangible assets’ is divergent. Terms, such as intangible assets (Durst, 2008; Huang et al., 2011; Hunter, 2006; Jarvis et al., 2007; Leitner, 2005; Baruch Lev, Radhakrishnan, & Zhang, 2009), intellectual capital (Bontis, Chua, Keow, & Richadrson, 2006; Bozbura et al., 2007; Choo et al., 2010; Edvinsson, 1997; Han & Li, 2015; Harris, 2000; Marr et al., 2006; Regan et al., 2005), and invincible assets (Itami & Roehl, 1991), are some of the sample terms used. Kamaruddin and Abeysekera (2014) ironed out the fuzziness of the terms stemming from different schools of thought that can be diverted into two streams; management and accounting. They added that researchers from the stream of management tend to use the term ‘intellectual capital’ as knowledge that can be converted into value. On the contrary, from the accounting perspectives where the focus is skewed on measurement, the intellectual capital is always regarded as intangible or invincible assets.

Albeit the definition and the terminology used in the topic of intangible assets are abundant, the remarkable findings reported by past scholars indicated that invincible resources are the determinants of firm performance, which further warrants for the identification of important intangible assets that might dictate firm performance and increase their competency. It is believed that by identifying the most influential assets, the firm is expected to experience increased performance level. Itami and Roehl (1991) pointed out that invincible assets are the real source of competitive advantage due to three reasons - they are hard to accumulate, capable of simultaneous use, and are both inputs and outputs of business activities. However, despite its importance, not all available assets can provide beneficial outcome to the firm, as some resources may insulate firms from being effective and efficient (Barney, 1991; Collis, 1994). This statement upholds the idea that not all resources are important, and it is vital to identify the most strategic resources that offer benefits to the organizations. Therefore, despite managing intangible has been considered as difficult, only by ascertaining, defining, and analysing each intangible asset will spark the real contribution and relationship of these assets with firm performance (Greco, Cricelli, & Grimaldi, 2013). After that, it is the role of the manager to identify,

develop, and protect resources and capabilities that can support firm with superior return (Amit & Schoemaker, 1993).

Table 3-1: Selected definition of intangibles

Term	Source (Year)	Paper	Description
Intangible assets	IAS 38	CIMA Official Terminology	An identifiable non-monetary asset without physical substance that must be controlled by the entity as the result of past events and from which the entity expects a flow of future economic benefit.
Intellectual capital	Roos & Roos (1997)	Long Range Planning	Sum of 'hidden' assets of the company not fully captured on balanced sheet, and thus includes both what is in the head of organizational members, and what is left in the company when they leave.
Intangible assets	Sveiby (1997)	Journal of Human Resource Costing and Accounting	Invincible assets classified as employee competence, internal structure, and external structure.
Intellectual capital	Brooking (1997)	Long Range Planning	The difference between the book value of company and the amount of money one is prepared to pay. It represents intangible assets that frequently do not appear in the balance sheet.
Intellectual capital	Stewart (1998)	Performance Improvement	The sum of everything that everybody in a company knows to give competitive advantage, including intellectual material, knowledge, information, intellectual property, and experience to create wealth.
Intellectual capital	Bontis (1998)	Management Decision	The pursuit of effective use of knowledge (finish product) as opposed to information (raw material).
Intangibles	Meritum (2002)	Vodafore Foundation	Non-monetary sources or probable future economic benefits, lacking physical substance, and control (or at least influence) by a firm as a result of previous events and transaction.
Intellectual capital	Youndt, Subramaniam, & Snell (2004)	Journal of Management Studies	Sum of all knowledge an organization is able to leverage in the process of conducting business to gain competitive advantage.
Intangible assets	Diefenbach (2006)	Journal of Intellectual Capital	Everything of immaterial existence used or potentially usable for firm purposes, which is renewable after use and decrease, remain or increase in quantity and quality, whilst being used.
Intellectual capital	Sharbati et al., (2010)	Management Decision	The wealth of ideas and the ability to innovate that will determine the future of the organization.

Intellectual capital	Kamukama et al., (2011)	Journal of Intellectual Capital	Resource and capabilities that are valuable, uncommon, poorly imitable, and non-substitutable, which present a lasting competitive advantage and superior performance to the firm.
Intangible assets	Gogan (2014)	Procedia Technology	A combination of resources, capabilities, and competence that drive organization performance and value creation.
Intangible assets	Crema & Nosella (2014)	Engineering Management Journal	Firm resources that do not have physical form but substantially contribute to firm value generation process. This asset is considered in terms of stocks or flows and it is important as the source of firm competitive advantage despite not in monetary form.

In essence, until today there is no consensus on one set of the term and definition of intangible assets. However, this study defined intangible assets as firm resources, capabilities, and competence that do not have physical form, but which substantially drive organization performance and contribute to the firm value generation process (Crema & Nosella, 2014; Gogan & Draghici, 2013). These resources, which are invincible, intangible, not physical, and embedded in firms, offer benefits. Despite the uniform definition of intangible assets are absent and tend to remain ambiguous, the role and importance of this commodity towards firm performance are always present. In addition, the component of intangible assets in this study are comprises of human capital, technology capital and organization capital and the justification of taking these assets will be elaborated further in Chapter 3.5.

3.4.2 Previous Framework on Intangible Assets

While the importance of intangible assets is highly acknowledged, several authors have presented their framework in captualising the component of intangible assets research. Amongst all, several studies have been regarded as the pioneer and influential in this area. It has been acknowledged that the conceptual and components are not entirely identical, hence all authors emphasis strongly on the importance of intangible assets (see Table 3-2).

The first known framework to study the intangible assets is the BSC, which was introduced by Dr Robert Kaplan and Dr David Norton in 1992. Recognising that the financial measure is important, they also believe that there is also metric and quality control consideration that should be monitored in addition to the financial factors. This strategic management accounting tools, which have determined the four main perspectives in balancing the financial and non-financial performances, have put their mark on the intangibles under the learning and growth perspectives. In this segment, people, technology, and organization are grouped together and considered as a fundamental platform for the

organizations to drive their internal business and customer perspectives. The next well-known methodology that acknowledges intangible resources contribution is The Intangible Asset Monitor by Sveiby (1997). This Swedish framework aims to measure intangible assets by displaying a number of relevant indicators, including three typologies; internal structure, external structure, and individual competence, whereby each component is measured by indicators of growth, efficiency, and stability. The next framework that exhibits the importance of intangible assets was presented by Edvinsson (1997), labelled as Skandia Navigator, which defined intangibles as the sum of human and structural capital to measure intellectual capital. Being aware of the importance of the true hidden value of intangible assets, initially, the company has identified a long list of intangible items. However, the company has concluded that intellectual capital can be divided into two categories; human capital and structural capital. Furthermore, this framework suggests that the indicators of financial, customer, process, as well as renewal and development, should be viewed in numerical format. Besides, the Navigator has been utilised during an individual performance appraisal, whereby the tool has also constructed a reward assessment. Another framework that dominates the study of intangibles is MERITUM (Measuring Intangible to Understand and Improve Innovation Management), led by Canibano, Garcia-Ayuso, Sanchez, and Olea (1999), who defined intangibles as non-monetary sources of probable future economic profit, lacking physical substance, and control (or at least influenced) by a firm as a result of previous events and transactions (self-production, purchase or any type of acquisition), and may or may not be sold separately from other corporate assets. Consisting of human capital, structural capital, and relationship capital; this framework suggests that the intellectual capital report should link with company vision, a summary of intangible resources and activities, as well as a system of indicators for intangible resources. Accordingly, the Value Added Intellectual Coefficient (VAIC) model was established by Pulic (2000) intended to measure the extent to which a company produces added value on intellectual capital efficiency or intellectual resources. In essence, the VAIC comprises of human capital efficiency, structural capital efficiency, and capital employed efficiency. The 'Intellectus Model' is composed of the concept of intellectual capital (Bueno et al., 2011) that was developed based on five components; human capital, technology capital, organizational capital, business capital, and social capital (Centro de Investigacion Sobre La Sociedad del Conocimiento [CIC], 2004). This model was adopted in the literature with regard to intangibles topic (Bueno et al., 2011, 2006; Castro et al., 2008; Martín-de-Castro & López-Sáez, 2008; Ramezan, 2011). Finally, the Integrated Intellectual Capital Model (IICM) which was established by Khalique et al., (2011) included six main components to measure intellectual capital that is deemed important. Labelled as IICM, the framework consists of human capital, customer capital, structural capital, social capital, technology capital, and spiritual as the main component of intellectual capital.

Table 3-2: Previous intangible assets frameworks

Author(s)	Source	Framework	Key issues
Kaplan & Norton (1992)	Harvard Business Review	The Balanced Scorecards	Labelled as 'learning and growth'; people, technology, and organization are grouped together and considered as a fundamental platform for the organization to drive their internal business and customer perspectives.
Sveiby (1997)	Journal of Human Resource Costing and Accounting	The Intangible Assets Monitor	Aims to measure the intangible assets by displaying relevant indicators for measuring intangible assets (internal structure, external structure, and individual competence).
Edvinsson (1997)	Long Range Planning	Skandia Navigator	Human capital and structural capital.
Canibano et al (1999)	Autonomous University of Madrid	MERITUM (Measuring Intangible to Understand and Improve Innovation Management)	Consisting of human capital, structural capital, and relationship capital; this framework suggests that the intellectual capital report should link with company vision.
Pulic (2000)	International Journal of Technology Management	VAIC - Value Added Intellectual Coefficient	Measures the extent to which a company produces added value on intellectual capital efficiency or intellectual resources by combining human capital efficiency, structural capital, and capital efficiency.
Centro de Investigacion Sobre La Sociedad del Conocimiento (CIC) (2004)	Universidad Autonoma de Madrid	Intellectus Model 5CM	Five components of intangible assets – human capital, technology capital, organizational capital, business capital, and social capital.
Khalique et al. (2011)	International Journal of Current Research	IICM - Integrated Intellectual Capital Model	Human capital, customer capital, structural capital, social capital, technology capital, and spiritual as their main component of intellectual capital.

Apart from the different use of the framework, different conceptualisations have been found among authors. Several components of intellectual capital have been used widely in discussing this topic and examples of the different components used in the study are presented in Table 3-3. As mentioned, there is a consensus about the importance of intangible assets in firm performance amongst authors, however, it is not an easy task to list the assets that can be accepted by all industries because each

industry demands different intangible assets (Collis & Montgomery, 2008; Itami & Roehl, 1991). Some assets that are extremely important to certain industries might not play the same role to others. For instance, the sophisticated and advanced technology might be beneficial in heavy engineering and automotive industry, because by obtaining this technology, the firm can reduce turnaround time or give them the ability to design the product with cutting-edge performance. Thus, the technology, in return, can be identified as valuable assets in this industry. In contrast, this asset might not bring any benefit for other industry sectors, such as the tourism industry; instead of demanding sophisticated machinery, this industry might appreciate more soft assets, such as promotion skills and knowledge about culture. Therefore, it is important to identify the appropriate assets in the firm to create value in the same industry.

Table 3-3: Examples of different conceptualisations among authors

Author(s) (Year)	Intangible Assets Components	Definition
Annie Brooking (1997)	Human -centred asset	Skills, abilities and expertise, problem-solving abilities and leadership style.
	Infrastructure asset	All the technologies, process and methodologies that enable firms to function.
	Intellectual Property	Know-how, trademark and pattern.
	Market asset	Brands, customers, customer's loyalty and distribution channel.
Roos & Roos (1997)	Human Capital	Competence, attitude, intellectual agility
	Organizational Capital	All organizational, innovation, process, intellectual property and cultural assets.
	Renewal and development capital	New pattern and training.
	Relational Capital	Relationship with internal and external stakeholder.
Stewart (1998b)	Human Capital	Capabilities of the individual to provide solutions to the customer, to innovate.
	Structural Capital	Knowledge embedded in information technology.
	Customer Capital	The value of an organizations relationship with the people with whom it does business.
Bontis (2000)	Human Capital	Individual knowledge stock of an organization represented by its employees.
	Structural Capital	All non-human storehouse in the organization whose value to the company higher than its material value.
	Customer Capital	Knowledge embedded in marketing channel and customer relationship

Bueno et al. (2006)	Human Capital	Tacit or explicit knowledge which people possess, as well as their ability to generate it, which is useful for the mission of the organization and includes values and attitude, aptitude and know how.
	Technology Capital	Combination of knowledge directly linked to the development of activities and functions of the technical system of the organization, responsible for obtaining products and services.
	Organizational Capital	Combination of explicit and implicit, formal and informal knowledge which in effective and efficient way to structure and develop the organization activity in the firm, that include culture, structure and organizational learning.
	Business Capital	Value to the organization of the relationship which is maintain with the main agents connected with its basic business process.
	Social Capital	The value to the organization of the relationships which it's maintains with other social agents and its surroundings.
Khalique et al. (2011)	Human Capital	Skills, knowledge and expertise, competence, attitude and intellectual abilities of employees.
	Customer Capital	Customer satisfaction, loyalty and network.
	Structural Capital	Infrastructure, system policies and procedure.
	Social Capital	Set of relationship with the remaining social agents.
	Technology Capital	Information technology, R&D, and protection rights.
	Spiritual Capital	Religious and ethical values.

In spite of the importance of intangible resources is highly acknowledge, in reality, managing intangibles is not easy and is, in fact, a very expensive process (Morariu, 2014). The cost of managing resource in firms, for example, human resource, is substantial. According to Yan and Liu (2015), firms need to conduct a continual investment in human capital because it may differentiate employees in a firm from the rest. With continual investment, this resource may offer different knowledge, ability, skill, and commitment compared to untrained employee. This suggest that the firm has to spend on these assets; starting from acquiring talented people, these resources need to manage properly before the firm can extract the true value of these assets. Apparently, after the companies provide the employee proper training, there are possibilities that the employee will find another place to work due to their increased skill base. In precise, the cost of managing people includes both training and retaining them for some companies (Gogan & Draghici, 2013). It is not cheap or easy to maintain well-trained and professional workforce, as it requires plenty of investment in terms of time and monetary

expenditure (Brynjolfsson, Hitt, & Yang, 2002) and more problematic for the SMEs to maintain this activity. Another example is that intangible resources require massive amount of investment in technology. Undoubtedly, these specific resources can offer SMEs many advantages, such as marketing orientation and customer development; however as the constraints for the SMEs is financial, the decision to invest in this resource might be vital (Grant et al., 2014). Therefore, it is important to appropriately identify and understand the invincible resources that contribute to firm performance; once identified, they must be properly managed and correctly assessed regarding their importance as the intangibles in their business organization. It is crucial for SMEs to identify what to invest and how much to invest. Incorrect decision not only potentially hinders the SMEs from increasing firm performance, but also might hurt their financial resource. Although they might not be able to afford the latest technology or the most competent worker in their organization, it all depends on how the organization can utilise these assets and allocate their resource bundles, combining them to create one ultimate corporate weapon.

3.4.3 Streams of study: Intangible Assets and Performance

Although studies that have linked intangible assets with performance are extensive, in general, the focus of the literature on intangible assets is divided into two streams. First, the individual component streams. For this particular group of literature, the studies conducted specifically focused on the individual intangible assets component parts towards the topic of the study, often attempting to investigate the sub-component of intangible assets in depth and linking it with research topics, such as performance and innovation. Instances of these studies on individual components of intangible assets are organization capital (Bozbura & Beskese, 2007; Gort, Grabowski, & McGuckin, 1985; B Lev & Radhakrishnan, 2005; Baruch Lev et al., 2009; Martín-de-Castro et al., 2006; Moreno, 2015), human capital (Ababneh & Shrafat, 2014; Bozbura et al., 2007; Elias & Scarbrough, 2004; Namasivayam & Denizci, 2006; Unger, Rauch, Frese, & Rosenbusch, 2011), and technology capital (Kapicka, 2008; Rai et al., 1997; Wozniak, 2012). The objective of these studies is to identify the specific critical factor that leads to business success by identifying and prioritising the most important intangibles in the topic or to obtained clear understanding on the specific resources . For example, while studying on the topic of organization capital, Bozbura and Beskese (2007) identified that the implementation rate of a new idea is the most important measurement for a firm to succeed; alternatively, CIPD (2015) focused solely on the importance of valuing human talent. Furthermore, a study conducted to understand of the role of human and cultural capital towards the entreprenurial potential has found that the

entrepreneurial potential is shaped by the human capital years before the consideration of setting up a business venture is made (Jayawarna, Jones, & Macpherson, 2014).

The second group of studies focused on the relationship of the overall components of intellectual capital and firm performance. In contrast to the first group, this type of study has been found as a favourite method in studying this topic. In this segment, the relationship of resources studies offers a clearer view of the interrelations. Some studies have provided more precise findings from which the information about the most important resource is derived (see Andreeva & Garanina, 2016). Another point that makes this second type of study interesting is because this method has been claimed to provide information that is more important and can increase managerial impact, thus providing critical information for the decision maker. Since this type of study is believed to give more important impact, many studies on this topic are found to be skewed towards this stream of study. For example, Bontis (1998) developed a framework to understand the total performance of organization by developing intellectual assets components, namely human capital, structural capital, and customer capital. Similarly, Peng et al., (2007) explored the intellectual capital component in Taiwanese healthcare sector.

It is notable that this group offers beneficial findings, but since many frameworks have been used, due to the many variations of intangible components, it makes it difficult to have a general or shared opinion on the component content of intangibles assets. Different industries demand different sets of intangible components, which have increased the number of variables used in measuring intangibles (Collis, 1994). The most common combination of intangible resources used in the study is human capital, structural capital, customer capital (Bontis, William, & Richadrson, 2000; Bontis, 2000; Saint-Onge, 1996). However, there are also studies that have included other components of intangibles, such as learning capital (Kang & Gray, 2011), information capital (Huang et al., 2011), and relationship capital (Choo et al., 2010; Isaac et al., 2010; Kamukama et al., 2011; Sharbati et al., 2010; Yolanda Ramirez, 2010). Furthermore, many studies have developed their own intangible components, which they believe are appropriate to use and are affected by the subject of the study. Sometimes the extension of these resources can be found to be used, for example, Choo et al., (2010) developed internal, external, and human capital in their studies. Meanwhile, Khalique et al., (2015) and Khalique and Pablos (2015) developed a new set of the intangible framework to study the resources contribution towards performance, in which they have broadened the intangible assets component into the Integrated Intellectual Capital Model (IICM). As different industries require different sets of resources

to be a success, it is expected that various models of assets will be used in future research (Amit & Schoemaker, 1993; Collis, 1994).

The prediction of appropriate resource allocation that will drive better performance in the firms, especially in financial performance, was reported by Barney (1986a). He further concluded that the core value of the future business will be embedded in its intangible assets and can be seen in the current economic environment. According to Tseng and Goo (2005), 80% of corporate value in today's businesses has been reported to rest with the intangibles. Investment in intangible assets in the UK had been greater than tangible investment (Goodridge et al., 2014). Additionally, several studies have affirmed that intangible assets did play an important role in creating a source of the firm's competitive advantage (Costa, 2012; Regan et al., 2005) because these assets drive innovation (Huang et al., 2011) and further increase corporate value (Tseng & Goo, 2005). Although intangible assets have an important role in business, current businesses dealing with knowledge-based industries have stated that intangible assets play a more integral role than physical assets (Bose & Thomas, 2007). Goodridge et al., (2014), who studied investment in intangible assets, confirmed that IT industries are the most intangible-intensive industry in the UK, followed by the manufacturing sector.

To summarise, it has been accepted that today's economy, wealth, and growth are primarily driven by intangible assets. This topic has emerged dramatically not only in the area of management accounting, but also in the areas of economics, strategy, and organization. Intangible assets have been reckoned as a source of innovation and competitive advantage. Despite their importance, this topic has an inherent issue, as there is no standard definition of intangible assets. Many terms have been an attempt to clarify various references, such as intellectual capital, knowledge assets, intangible capital, and intangibles; evidence suggests that these terms have been used synonymously. Despite having a diversity of definition and framework on the topic, in essence, it can be concluded that intangible assets are an important element of firm performance.

3.4.4 Intangible assets and SMEs

Turbulent economic climate has urged businesses to shift their investment priorities from solely looking at tangible and physical assets to more sustainable and beneficial assets known as intangible assets. Both information and utilisation of intangible assets, along with their components, have a significant role to SMEs not only in developed countries such as the US and the UK (Juneja & Amar, 2018; Park, 2019), but also in developing countries (Mansion & Bausch, 2019). Findings from the UK Innovation Index 2014 conducted by NESTA reported that the investment decision had diverted from

tangible to intangibles investment with £127 billion spent, compared to £88 billion, on tangible investment. Similarly, the Federal Reserve Bank of Philadelphia had estimated that the US firms had made massive investment with USD 1 trillion spent on intangible assets each year (Park, 2019). In the UK, Brinkley (2009) noted that business investment in intangibles was worth 130% of investment, when compared to 40% in 1970. This is not surprising because a recent study on the impact of intangibles on UK FTSE 150 non-financial companies, Tahat et al., (2018) found that intangible assets not only positively affected firm performance, but also potentially offer firms future financial performance. These reports are witness that the priorities in the current global economy are no longer towards physical assets, but towards intangibles resources that are dominating as influential assets of firms (Goodridge et al., 2013; Lentjushenkova & Lapina, 2014).

The importance of intangibles assets towards economy has been the key value driver of innovation and for increasing organization performance (Bontis, 2000; Durst, 2008; Huang, 2014; Hunter, 2006; Kaplan & Norton, 1992; Baruch Lev & Zambon, 2003; Stewart, 1998). Kaufmann and Schneider (2004) asserted that a company with missing information on intangibles can result in misallocation of resources. Thus, almost all organizations, including the public sector (Kamaruddin & Abeysekera, 2014) and large organizations (Martín-de-Castro & López-Sáez, 2008), have placed their focus on these assets. Similarly, despite smaller in size and having a different structure, intangible assets have been found to benefit SMEs (Crema & Nosella, 2014; Durst, 2008; Jarvis et al., 2007; Martin & Hartley, 2006). Given the fact that the number of SMEs is generally dominant in the business sector in most countries; for example, Malaysia 99% (Ahmad, 2013), US 99% (Bloodgood et al., 2010), Canada 98% (Government of Canada, 2013), and New Zealand 97% (Ohanga, 2011), studies within the SME business segment are lacking (Crema & Nosella, 2014; Jarvis et al., 2007; Marzo & Scarpino, 2016), thus demanding further research to bridge intangible assets and SMEs (Marzo & Scarpino, 2016).

The importance of intangible assets has been acknowledged due to their essential role towards SMEs. Roos and Roos (1997) urged that it is paramount for all businesses, regardless of size, age, ownership, and dimension, to understand their intangible resources. By clearly identifying and understanding this vital commodity in their organizations, the resource will potentially provide firms sustained competitive advantage for both large and small firms (Barney, 1991). This statement has been strongly supported by Lefebvre, Lefebvre, and Harvey (1996). Their study in the advanced manufacturing technology industry concluded that intangible resources, such as the combination of human and

technology capitals, are essential for SMEs to performance at a higher level, thus the emphasis that organizational culture is the engine of high technology businesses.

The importance of intangible resources is not restricted to academic papers pre-millennium. In fact, the importance of intangible assets towards SMEs performance has been increasing recently and has been further providing evidence that these resources are still valid in line with technological advancement. Although the role possessed by intangible assets in SMEs differs from large organizations (Cohen & Kaimenakis, 2007), these assets have been found to have an influence on SMEs success (Daou et al., 2014; Khalique, Isa, et al., 2011; Tovstiga et al., 2007). As such, the intangible resources such as knowledge, expertise, relationship and decision making also has been claimed to be more important than tangible resources for start-up businesses (Jones & Li, 2017). This includes providing SMEs competitive advantage (Cohen & Kaimenakis, 2007; Daou et al., 2014; Jarvis et al., 2007), and increasing value creation (Kianto, Ritala, Spender, & Vanhala, 2014), which further translate to increased SMEs performance (Cohen & Kaimenakis, 2007; Khalique et al., 2015; Khalique & Pablos, 2015; Kumlu, 2014), regardless of size and economic status. Accordingly, while conducting a study on SMEs in Australia and New Zealand, Steenkamp and Kashyap (2010) mentioned that the role of intangible assets is valid for both large corporations and small entities. They provided statistical evidence that SMEs have accepted the importance of intangible assets and that their contribution increased performance; in which they later urged the SMEs should identify, understand, and raise awareness in appropriately managing their intangible resources, as these resources are the value drivers and the core sources of competitive advantage in SMEs. Hence, information regarding intangible assets is as important as tangible assets in dictating SMEs' strategies (Choo et al., 2010) and decision-making processes (Durst, 2008).

However, rather than investing in additional intangible resources, it is suggested for SMEs to appropriately understand their existing assets and relationship towards their firm performance. This is because; not all intangible assets are equally important and relevant to SMEs (Barney, 1991; Collis, 1994; Roos & Roos, 1997) and investment in intangible assets may carry more risks than investment in physical assets (Morariu, 2014). Also, some attributes might possibility hinder a firm from conceiving an optimum strategy (Barney, 1986a). Therefore, making a wrong decision, particularly in investment strategy and resource allocation, will increase the chances for a company to be insolvent and increase the firm chances to fail. According to Ng et al., (2012), it is vital for SMEs to identify and appropriately manage their resources. Everything depends on the SMEs' understanding of the relationship of particular assets and how they are going to be translated into strategy. This information,

if used accordingly, will support SMEs decision making, avoid wasteful investment, and enhance strategy.

As SMEs are likely to be exposed to threats, such as resource limitation, stiff competition, market volatility, and financial constraints; increasing the level of understanding of this resource may assist SMEs to create uniqueness and competitive advantage within their business (Jarvis et al., 2007). Durst (2008) noted that intangible resources are a key value driver for the success of SMEs. He added that by carefully utilising the intangible resources, SMEs can secure future business continuity. Watson (2010) concluded that by identifying correct intangible resources that exist in the organization, SMEs might be able to mitigate the risk of being failure, especially when dealing with resource constraints (Jarvis et al., 2007).

Past authors have affirmed the importance of these assets, while this present work examined the relationship of intangible assets with firm performance from the stances of knowledge economy and technological industries. Several authors have presented their work, providing both expected and unusual results. The literature can be divided into two streams based on the method used; either qualitative or quantitative. Jarvis et al., (2007), sanctioned by the Association of Chartered Certified Accountant (ACCA), had noted the importance of intangible assets for SMEs and had prior focus revolving questions about reporting intangible assets within the balance sheet. He suggested that there is a key role for accountants or advisers dealing with SMEs, on a day-to-day basis, to assist SMEs to identify, utilise, and appreciate their valuable assets due to their scarcer resources. Another study conducted by Khalique et al., (2011) clarified that intangible assets are the most critical factor for the success of an organization, appearing as 'the lubricant' for SMEs, as these assets facilitate small businesses to thrive in the competitive environment. Kumlu (2014) concluded that the SMEs, which gather their intangible assets and apply both cost leadership and differentiation at the same time, will most probably reach their best export performance. Furthermore, a case study conducted by Marzo and Scarpino (2016) on SMEs operating in the automobile industry in Italy emphasised that despite the knowledge related to element being conceptually possible to identify, in reality, it is impossible to specifically categorise the elements because it depends on the way they are mobilised and changed through relationships.

Some issues of intangibles and performance were studied by several authors who looked into quantitative issues. This segment of study linked the relationship of the assets with SMEs performance and often, the studies concluded with the identification of the most influential component that had a beneficial impact on the firm. For example, Tovstiga et al., (2007) conducted a quantitative study to

understand the impact of an intangible on enterprise performance. Using the SPSS, the performance indicator was measured through outcome and competitiveness of highly technological SMEs in Russia. In understanding the characteristics of Mexican SMEs, Daou et al., (2014) found that human capital and organizational capital had important roles for SMEs in emerging countries. Khalique and Pablos (2015) assessed Malaysian Manufacturing SMEs with a specific focus on the electrical and electronics manufacturing sector. Using the IICM Framework, the study concluded that not all components of intellectual capital contributed to organizational performance. Echoing this study, a similar framework was utilised by Khalique et al., (2015) in determining the relationship of intangible assets with firm performance in Pakistan. Using SEM as the quantitative analysis tools, surprisingly, human capital did not have a significant role towards firm performance.

Table 3-4: Selected studies on SMEs and intangibles assets

Author (Years)	Sources	Industries	Findings
Lefebvre et al. (1996)	IEEE Transactions on Engineering Management	High technology SMEs	Intangible resources (human, technology, and good organization) are essential for high technology SMEs.
Tovstiga et al. (2007)	Portland International Conference on Management of Engineering and Technology	SMEs in Russia	Firm knowledge and capabilities are represented by its intellectual capital. Knowledge, information, intellectual property, and experience can be used to create wealth.
Durst (2008)	Journal of Intellectual Capital	SMEs in German	Intangible resources are a key for success of SMEs. By carefully utilising intangible resources, SMEs can secure future business continuity.
Steenkamp & Kashyap (2010)	Journal of Intellectual Capital	SMEs in New Zealand	SMEs accept the importance of intangible assets. SMEs should identify, understand, and appropriately manage their intangibles.
Watson (2010)	Journal of Financial Regulation and Compliance	NA	By identifying the correct intangible resources that exist in the firm, SMEs can mitigate risk of failing. SMEs can increase their value by adopting more formal and comprehensive intangible assets management system.
Khalique et al. (2011)	International Journal of Current Research	NA	Intangible assets serve as 'the lubricant' for SMEs that facilitate small businesses to thrive in the competitive environment.
Ng et al. (2012)	International Journal of Academic Research in Business and Social Sciences	NA	It is vital for SMEs to manage their resources. Understanding firm's CSF aid SMEs in their future success and progress.
Kumlu (2014)	Procedia - Social and Behavioural Sciences	SMEs in Turkey	SMEs that successfully gather their intangible assets will reach their best export performance.

Daou et al. (2014)	Journal of Intellectual Capital	SMEs in Mexico	Human capital is the most important intangible asset in SMEs for emerging economies. Leadership has positive implications to firm's intangible assets.
Khalique & Pablos (2015)	Journal of Intellectual Capital	SMEs in Malaysia	Intangible assets are precious, exceptional, irreplaceable, and inflexible to replicate; making them the most valuable assets in a firm. Not all components of intellectual capital are important.
Khalique et al., (2015)	Journal of Intellectual Capital	SMEs in Pakistan	Human capital is insignificant to Pakistan SMEs. Customer, structural, social, technological, and spiritual capital have significantly positive correlations with SMEs performance.
Marzo & Scarpino (2016)	Journal of Intellectual Capital	SMEs in automobile Italy	Although intangible assets are vital, they are near impossible for SMEs to categorise.

The examples provided in Table 3-4 display that intangible assets are relevant and important to SMEs. As managing and strategically understanding the intangible resources have been claimed to be one of the ways to increase SMEs competitive advantage (Bridoux, 2004; Khalique & Pablos, 2015), more studies should probe into this topic. Nonetheless, as past authors have found that not all intangibles provide similar significant implications for SMEs performance, there is potential for further research opportunities in this area.

3.5 Intangible assets and digital SMEs

Intangible assets have been recognised as a potential success factor in all organizations, including SMEs, although they appear to play a more important role in knowledge-based industries, such as highly technological firms and the creative sector (Brooking, 1997b; Jarvis et al., 2007; Marzo & Scarpino, 2016; Orhangazi, 2018; Regan et al., 2005; Watson, 2010). This knowledge-intensive industry is highly dynamic, turbulent, and fast-changing, thus making intangible assets a relevant driver to be used by SMEs in competition (Marzo & Scarpino, 2016). This sector, which has been declared as 'the most intangible-intensive industry' (Goodridge et al., 2014), relies heavily on intangible asset stock as the primary source of firm value and performance. Taking into account that almost two-thirds of the ICT firms value in Ireland were embedded in intangibles resources, such assets had been perceived as one of the principal resources of high technology industry, including digital SMEs in Malaysia (Regan et al., 2005; Watson, 2010). Recently, while studying the role of this asset in explaining the investment-profit puzzle, Orhangazi (2018) found that industries with higher intangible assets had higher mark-ups and profitability. He added that high technology industries are the most intangible industries, followed by healthcare, telecommunication, and nondurables

manufacturing. Interestingly, he found that intangible assets can provide high profit to firms without similar level of investments. This evidenced that proper utilisation of resources may offer greater return.

The recognition of intangible assets' potential to provide beneficial implication for this business segment has been supported due to several reasons. Based on a report by ACCA, the foundation of creative business is creativity and imagination, rather than physical assets; the underpinning factor to create uniqueness for the industry is intangible assets (Jarvis et al., 2007). This is more important to ICT and digital SMEs, which exploit their intangible capabilities in offering their products and services. Since the current business environment requires more 'mind' than 'hands', Wong (2005) had urged modern firms to foster intangible assets. Synonymous with creative thinking and innovation, this industry has been known as 'creating something from nothing' (Klerk, 2015), therefore, it is believed that the 'nothing' refers to physical assets, although the use of imagination, which is clearly unpresented physically, is part of intangible assets. It is severe for digital SMEs to understand and utilise their existing resources in order to compete and create product diversity. This resource enables firms to do things differently that by merging creative thinking and using technology, a clear understanding of their resources can determine their success or failure, whereby this information is essential as it has a central role in creating competitive value and leveraging digital SMEs capabilities (Jarvenpaa & Leidner, 2000).

Despite the importance of intangible assets being highly acknowledged, SMEs should carefully consider investment decisions as often investment in intangible assets is claimed to carry more risks than investment in physical assets (Morariu, 2014); making a wrong decision particularly in investment strategy and resource allocation can increase the probability of corporate insolvency. The SMEs should reduce or eliminate the risk of making inappropriate decision by identifying and understanding their existing assets, especially intangible assets. Ng et al., (2012) stated that it is vital for SMEs to identify and appropriately manage their resources as there is no guarantee that firms with more resources will achieve better performance than those with limited resources. Besides identifying appropriate resources, the SMEs also need to carefully understand their assets. Accurate identification of intangible resources in firms is essential because these assets represent an indicator of future performance, potential, and weakness of the current business model (Campisi & Costa, 2008). It is crucial for managers to understand their resources to develop strategies based on their important resources (Amit & Schoemaker, 1993; Roos & Roos, 1997). Therefore, in order for a digital business organization to

achieve long-term sustainable growth under competitive and dynamic environment, intangible assets need to be properly identified and managed (Chareonsuk & Chansa-ngavej, 2010).

Accordingly, many studies have been conducted in this digital segment to understand the importance of these intangible assets towards this industry (M. W. J. Khan, 2014; Ngah & Ibrahim, 2011; Regan et al., 2005; Tovstiga et al., 2007; Z. Wang, Wang, & Liang, 2014). To date, no study has focused particularly on digital SMEs and the relationship of their intangible resources with the resource-based strategic performance. Most frameworks, as previously discussed, provide too many constructs, thus unsuitable for digital SMEs. For example, the IICM (Khalique & Pablos, 2015) has six components. The literature lists components that are beyond these firms' resources, such as relation capital, business capital, social capital, and external capital (Choo et al., 2010; Daou et al., 2014; Martín-de-Castro & López-Sáez, 2008; Regan et al., 2005). This information is beneficial to SMEs; however, it is suggested for digital SMEs to concentrate on their existing and available intangible assets in their firms rather than looking beyond their capabilities (Bretherton & Chaston, 2005; Watson, 2010). Furthermore, most models are unable to identify the causal link between intangible assets and performance (Campisi & Costa, 2008). It is believed that lack of strategic information will lead to impaired judgment by the SMEs, especially in resource allocation and investment decision. As addressed by Clulow et al., (2007), not all resources have the potential to provide a firm above mediocre performance, hence the importance for businesses to identify and put their focus on their main resources. Therefore, this present study only focused on three intangible resources that have been believed to be important to digital firms. By concentrating on the main three components already embedded in their businesses, the digital SMEs might improve their understanding and develop practical solutions to optimise performance.

According to Edvinsson (1997), the resources can be segregated into two components; human and structure capitals. In brief, everything beyond the human dimension is labelled as structure capital and is described as 'those dimensions beyond human capital left behind when the staff went home' (Edvinsson, 1997, p. 368). This includes the culture of the firms, customer database, and IT systems. At the same time, often, the structural capital is known as organization capital (Bozbura & Beskese, 2007; Daou et al., 2014; Meritum, 2002; Roos & Roos, 1997) and the literature on this topic has structured both organization and technology in the same group, labelling them as organizational capital. Notably, many studies have adhered to this trend and both elements of intangible have been found important with SMEs performance (Andreeva & Garanina, 2016; Daou et al., 2014). However, for SMEs dealing in digital business, it is believed that the role and contribution held by technology

capital are parallel with human capital and organizational capital. Rather than being a supportive element for the company to function, the technology capital should be placed as the main component for digital SMEs to outperform rivals. By understanding the role held by this component, the digital SMEs might use and exploit this resource to create differentiation for their products and services to further increase their competitive forces (Andreu & Ciborra, 1996; Bharadwaj, 2000; Hasanhendrika et al., 2009; Martinsons et al., 1999; Rivard et al., 2006), which might determine the success or failure of businesses. As urged by Martinsons, Davison, and Tse (1999), it is imperative for digital SMEs to understand their technology values to improve process, as well as produce and deliver their product. Therefore, it is arguable that either the terminology of structure capital or organization capital should be used. In fact, the technology capital should be regarded as an independent component rather than relying on the organization capital label. In essence, the most appropriate intangible assets embedded in the digital SMEs in this study are human capital, technology capital, and organization capital.

The importance of the three resources has been evidently accepted by past scholars to be fundamental for digital SMEs. The three intangible resources appear to be the learning and growth perspectives in the BSC (Kaplan & Norton, 1996; 1992). The three elements are the fundamental components in creating continual improvement in firms and serve as the basic ingredients for enhancing firm revenue. As these assets have been claimed as an infrastructure that an organization must build to create long-term growth and improvement (Kaplan & Norton, 1996), similar components of intangible assets have been incorporated in the strategy map (Kaplan & Norton, 2004a; 2000) as the fundamental platform for firms to drive their mission and vision based on the BSC perspectives. Similarly, Jarvenpaa and Leidner (2000) asserted that technology resources can generate competitive value for ICT firms by leveraging existing business and human resource via co-present and complimentary. However, in view of sustainability, they emphasised that competitive advantage resides within the managerial skill related to IT rather than the technology itself.

The three fundamental assets have also been documented in other studies as the source of competitive advantage for SMEs. Thacker and Handscombe (2003) urged the SMEs to successfully mobilise their intangible assets in the form of knowledge, technology, skills, experience, and strategy to gain competitive advantage, rather than using the possession of assets and depending on firm size. Humphreys, McAdam, and Jonathon (2005) claimed that the value of digital SMEs will be enhanced by understanding the people, the culture, and the technology embedded in their firms. Furthermore, Barnes (2006) suggested that digital SMEs should make a significant investment to participate in the digital world, especially through technology, process, and people. Similarly, Klerk (2015) emphasised

that creative industry, including technological creative industries, required several criteria to increase their competitiveness. Besides requiring collaboration and support from the management to increase their ability and creativity to innovate, the environment that nurtures their skill also was found to be vital for this industry. Faeste et al., (2015) declared that human talent, leadership, technology capabilities, and culture in the organization are important to ensure successful digital SMEs. Using evidence from a sample of 77 SMEs in Malaysia, Khalique and Pablos (2015) concluded that the three aforementioned components served as important factors that drove SMEs towards high performance. These three assets have been identified as superior with regard to optimisation of performance, value creation, and competitive advantage in digital SMEs. All human, technology, and organization capitals have been recorded as the top three intangible investment made by the industry, led by the ICT sector (Goodridge et al., 2014).

Although much of the literature has emphasised on the importance of human, technology, and organization capitals to digital business, no precedent study has been found to use this framework to understand firm performance. Even if the combination of organization and technology is bundled as one component, and labelled as structure capital or organizational capital, there is a tendency of ignoring technology as a major resource. However, these constructs have been found to be important and play an important role in digital SMEs. Therefore, rather than taking intangible assets as human capital and structural capital (Edvinsson, 1997), in this study the element of structural capital (organization and technology) has been separated and this study emphasised intangible assets as human capital (HC), technological capital (TC), and organization capital (OC). Thus, it is vital to understand the relationships of these constructs with firm performance by looking at their contribution to financial and non-financial performances. The next section depicts the intangible assets assessed in this study.

3.5.1 Human capital

Human capital describes the value of people at work and their collective knowledge, skill, abilities, and capacity to develop and innovate (CIPD (Chartered Institute of Personnel and Development), 2015). These resources are valuable to the organization considering it is the source of creative skills, competencies, talent, and ability of organization workforce (Elias & Scarbrough, 2004). Barney (1991) recommended that the strategic resources in the firm should be valuable, rare, imperfectly imitable, and non-substitutable, wherein human capital has been found to deliver on all the four criteria. In fact, humans possess unique characteristics and differentiate the company from their rivals (Chareonsuk & Chansa-ngavej, 2010; Collis & Montgomery, 2008); some studies label these sorts of assets as the people assets.

Although there is much debate concerning the most important invincible assets, human capital has served as the only intangible resource accepted in all studies (see Bontis, Chua, Keow, & Richadrson 2006; Bueno et al., 2006; Huang et al., 2011; Isaac et al., 2010; Kang & Gray, 2011; Khalique et al., 2015; M. W. J. Khan, 2014; Morariu, 2014; Peng et al., 2007; Yolanda Ramirez, 2010). More often, findings from the area of RBV have identified human capital as the most important resource in light of firm performance (see Accenture, 2016; Bontis et al., 2000; Bozbura et al., 2007; Regan et al., 2005) and thereby the most important asset in an organization (Chareonsuk & Chansa-ngavej, 2010; Huang et al., 2011). Not surprisingly, Bueno et al., (2006) revealed that amongst the five important intellectual capital elements, human capital played the most vital role in generating creative neuron. Although Khalique et al., (2015) found that human capital as insignificant towards firm performance, a huge fraction of the literature disagrees with the finding. This asset has the ability to create uniqueness in companies and make them different from their rivals. This resource is critical in productivity variation (Chareonsuk & Chansa-ngavej, 2010; Morariu, 2014) is the most important resource for a knowledge-intensive organization, such as ICT firm and digital business (Accenture, 2016; Regan et al., 2005).

Roos and Roos (1997) asserted that the value of human capital is generated via competence, attitude, and intellectual agility. The competencies include know-how, experience, education, and expertise. Attitude covers the behaviour dimension of employee work, such as professionalism, motivation, and dedication. Meanwhile, intellectual agility includes the human ability to solve problems, being innovative, and creative thinking. Khalique and Pablos (2015) defined human capital as a combination of competencies (education, professional skills, know-how, and experimental knowledge), attitudes (motivation, leadership and behavioural patterns), and intellectual agility (innovation, creativity, flexibility and adaptability) that cannot be owned by a firm.

Based on the prior discussion, human capital is an important intangible asset but the level of intensity of this asset varies across sectors (Herrendorf & Schoellman, 2018). Although many studies have highlighted the importance of this asset towards profit-based firms and the public sector (Kamaruddin & Abeysekera, 2014; Yolanda Ramirez, 2010), it has a more vital role in the digital business environment (Accenture, 2016; Bueno et al., 2006; Regan et al., 2005; Sabine & Katherine, 2011). As previously noted, ‘creating something from nothing’ (Klerk, 2015) is the basis of creative and digital industries, where creative and innovative thinking to develop their products is pre-requisite for enabling digital firms to succeed. Digital industries are often project-based and undertake specific product and service provision (Ackroyd, 1995; Klerk, 2015; Papalexandris et al., 2004) and so creative thinking and human capability are always needed. Some of the products and services provided by the

digital SMEs are tailor-made, ‘one-offs’, and dissimilar to other products delivered before, whereby the challenge is to create the unique products that hinges on human ability. While other industries have always been segregated by the operational terminology, the digital industries have always dealt with ideas and creativity to compete, create distinguished products and services, as well as differentiate their products from their competitors, wherein this set of capabilities only can be generated through human capital (Accenture, 2016; Bozbura et al., 2007). The uniqueness of ideas distinguishes one company from the rest, thus being a vital factor for digital SMEs. Therefore, rather than obtaining other physical and expensive resources, people with talent and creative ideas are always regarded as the strategic assets in digital SMEs (Accenture, 2016).

The important role of obtaining good quality and creative talent is more crucial since it is almost impossible for SMEs to possess highly expensive technological tools. As the player in this industry also sometimes need to provide products and services that are beyond imagination, the generation of ideas and imagination, which is extensively required for the industry, are only embedded in human capital (Sabine & Katherine, 2011), formed by individuals or groups (Clulow et al., 2007; Klerk, 2015). Although this research is often individually focused, a recent study had included collective human capability and ability as part of the human capital definition. For example, the definition provided by Tseng and Goo (2005) mentioned that human capital is a collective capability of the firm to extract optimum solution from employee knowledge, expertise, and attitude. Clulow et al., (2007) found that human capital, including individuals and teams, is the key ingredient of films value, while Ramirez (2010) echoed this statement by mentioning that human capital competence can be generated via team capability to learn and create, as well as enhance professional ethics.

According to Accenture (2016), the human is the most important factor of digital business success and should be viewed as a primary resource in firms. These resources can be vital especially if they are able to generate greater economic benefit to the organization (Boon, Eckardt, Lepak, & Boselie, 2018). In the digital business industry, human capital is considered as important because people have been found as the source of creativity and innovation, which differentiate one company from another, thus making this business to depend on people rather than other resources (Accenture, 2016; Bozbura et al., 2007). Furthermore, these resources might decide the output quality for the product. Indirectly, it might provide firms with greater flexibility to price their products. By having the pricing flexibility, firms with greater economic value have the opportunity to experience larger profit from their competitors (Boon et al., 2018). Therefore, it is no surprise that this industry heavily depends on humans, in fact, it has been evident that over half of the intangible values in ICT firms derives from humans (Regan et

al., 2005). Accenture (2016) concluded that success in digital business does not only rely on technology capabilities, but their success hinges on people. The Boston Consulting Group reported that some initial initiatives that must be embraced by digital SMEs include hiring experienced and capable personnel. This person can be deployed either by deploying internal staff or by tapping into external expertise and capabilities (Faeste et al., 2015).

Despite human capital being positioned as the leading element in intangible assets components, especially in digital SMEs (Regan et al., 2005), it is debatable on the actual component parts within the human capital that contribute towards firm success. Ackroyd (1995) underlined several important human capabilities, which are in the successful IT company in the UK. Interestingly, he found formal qualifications were relatively unimportant, but having multi-skill staff is more crucial for technology-based companies. This statement has been echoed by some studies, which mentioned that despite the education is claimed to drive the marginal productivity of labour and drive earning, the relationship of education level and work is context bound. The contexts that potentially differentiate this relationship are country, industry, field of study, and employment site (Marginson, 2017). Although these findings contradict those reported by Biagi (2012), which emphasised that an educated workforce is expected to increase productivity growth, the digital SMEs, which has a dynamic environment, should expect a rapid movement of people and therefore, people in the firm has to exchange their knowledge and information constantly. Hence, firms need to appreciate people with various skills and experience more than education level. Furthermore, as the environment in the digital firms is found to be 'unorthodox', the high flexibility requires people to always engage and communicate with one another. Besides formal qualifications, experience has been claimed to be vital for this type of business. The experienced people in the digital world can provide training to the rest of the people in the firm, therefore experienced people are deemed important for digital SMEs (Teo & Ranganathan, 2004). However, people in the firms, including the existing and experienced staff, should be trained in order to achieve superior performance (Papalexandris et al., 2004) and rather than relying on new talent, the digital SMEs should take proactive action by making training a core competency in their firms (Accenture, 2016). Only through training; capability, skill, and human capacity can be increased or retained. The training is not necessarily to be conducted formally, but it is suggested that in the creative industry, informal training provides similar benefit to the SMEs (Accenture, 2016; Bontis et al., 2000).

Managing human is also not an easy task and expensive (Yan & Liu, 2015), yet firms need to manage this resource appropriately. Many studies have urged that this resource to be managed strategically. For example, Yan and Liu, (2015) mentioned that the behaviour of employees is not only shaped by

their own characteristics, but also by their social relationship with other members within the organization (intra-organization). This is because; the relationship amongst members in the company might influence others' behaviour, therefore, it is vital for the human resource department to manage and shape this resource in the organization. This situation is more crucial for small organizations and knowledge-intensive firms that are characterised as having limited number of staff and limited resources (Macpherson, Herbane, & Jones, 2015; Yan & Liu, 2015). With limited resources and manpower, the SMEs need to carefully manage and utilise their human resources in the firm to mitigate challenges that are constantly confronted by them.

As digital business evolves rapidly, the real enabler of this technology is human capital (Accenture, 2016). While the digital customer has been maturing, the human capital provides innovation, creativity, as well as develops the products for success. In order to remain competitive, business owners should look into education and development of their employee to further increase their ability to compete in the era of digital (Hashim, 2007). Accordingly, Accenture (2016) emphasised that although technological capability is important for digital business, the main factor of business profitability and success is the human capital. The human capability and ability create creativity, which later translates into innovative products, which are vital for the growth of digital industries. Therefore, it is assumed that despite three elements of intangible assets found to be important to drive the performance of the digital business, human capital may still be the deciding factor of success for this industry. Only human capability, capacity, and ability can innovate the invincible and further think of creative products.

Table 3-5: Definition and key issues of human capital in previous studies

Paper	Author(s)	Date	Definition and key issues
Journal of Human Resource Costing and Accounting	Sveiby	1997	Individual contribution of knowledge, ideas, innovation, patents by employee within organization and bring value to the organization.
Long Range Planning	Roos & Roos	1997	Human capital generates values through competence, attitude, and intellectual agility.
journal of intellectual capital	Bontis	2000	The individual knowledge stock of an organization as represented by its employees.
Vodafore Foundation	MERITUM	2002	Knowledge that employees take with them when they leave the firms. It includes skills, experience, and abilities of people which is sometimes unique to individual and sometimes generic.

Human Resource Management Journal	Elias & Scarbrough	2004	Something employee bring to the organization and take with them when they leave and something that is develop through training and experience.
the learning organization	Bozbura et al.	2004	The individual level of knowledge that each employee possesses.
Chartered Institute of Personnel and Development (CIPD)	CIPD	2005	The value of people at work and their collective knowledge, skill, abilities and capacity to develop and innovate.
Management Decision	Sharbati et al.	2010	Accumulated value of investment in the employee training and competence.
International Journal of Information Management	Ramezan	2011	Tacit or explicit knowledge which people possess as well as their ability to generate it which is useful for the mission of the organization.
Procedia technology	Gogan & Draghici	2013	Stock of knowledge of organization employees of all categories and their capacity to make quick decisions cope with problem and create good interpersonal relationship.
Journal of Intellectual Capital	Khalique et al.	2015	The human capability of the employee which available in the firms and reflect the firm performance and comprises of competencies, attitude and intellectual agility.

In essence, several studies revealed that the number of bodies in the organization is not as important as talent and people quality in creative and technology-based industries. Ackroyd (1995), using the contingency theory, had proven that most successful IT businesses had fewer staff; therefore the requirement to be a successful digital firm is not necessarily based on the headcount of the employees, but rather having competent, good attitude, and great intellectual agility that might foster firmly for superior business performance. Therefore, for the purpose of this study, the human capital reflects the human capability of the employees available in firms that portrays firm performance comprising of competencies, attitude, and intellectual agility (Bontis et al., 2006; Khalique & Pablos, 2015; Tovstiga et al., 2007).

3.5.2 Technology capital

Another set of intangible resources that acts as a catalyst in digital businesses is technology capital (Khalique et al., 2015; Khalique & Pablos, 2015; Wang, Lo, & Yang, 2004). The importance of this asset has been highlighted by several authors. While identifying the influential resources in the firm, the leading academics in RBV theory have identified the technological advantage that might offer firms with higher return (Wernerfelt, 1984); echoed by later academics who agreed that technology

capital is essential to digital firm success (Arora, 2002; Hasanhendrika et al., 2009; Humphreys et al., 2005; Kearns & Sabherwal, 2006; Martinsons et al., 1999; Porter, 1985; Zhang & Tansuhaj, 2007).

Table 3-6: Definition and key issues of technology capital in previous studies

Paper	Author(s)	Date	Definition / key issues
Journal of Business Strategy	Porter	1985	Technology is strategically beneficial if it affects competitive advantage, especially if the technology can provide implication to firm's competitive position and industry attractiveness.
The International Journal of Human Resource Management	García-Olaverri, Huerta-Arribas, & Larraza-Kintana	2006	The investment in technological equipment has provided the firm with a competitive advantage.
Multinational Business Review	Zhang & Tansuhaj	2007	Technology system and architecture includes software, hardware and support system such as a database and networks
Industrial Management & Data Systems	Tan, Chong, Lin, & Eze	2010	Technology assisting companies to gain bigger market share and able to compete with large companies. technology capital has been served as a driver of owning better market share especially for those who are in the digital industry.
Journal of Intellectual Capital	Yolanda Ramirez	2010	The set of intangibles of technological nature comprises the activities and functions development with both internal and external scope related to product and service that characterise the different operation in the organization
International Journal of Information Management	Ramezan	2011	Combination of knowledge directly linked to the development of the activities and functions of the technical system of the organization, responsible for obtaining product and services.
MIS Quarterly	Bharadwaj et al.,	2013	The ability of the technology which is important in the digital industry can be divided into two, IT infrastructure and IT human skills.
Academy of Management Journal	Ray, Xue, & Barney	2013	A combination of software, hardware, and network in the organization
MIS Quarterly	Drnevich & Croson	2013	The contribution of technology advancement not only provides physical benefits such as profitability but also as enablers of firm capabilities.
Journal of Intellectual Capital	Khalique	2015	Technology capital enhances knowledge-based performance and the components of technology capital include R&D and protection right

Zhang and Tansuhaj (2007) defined technology capital as IT architecture that includes software, hardware, and support system, such as database and networks. By referring to CIC 'Intellectus Model', Martín-de-Castro and López-Sáez (2008), Ramezan (2011), and Bueno et al., (2006) shared the same definition of technology capital, which is the combination of knowledge directly linked to the development of the activities and functions of the technical system of the organization, responsible for obtaining product and services. Ramirez (2010) gave a more general definition of technology capital; technology capital as the set of intangibles of technological nature. It comprises the activities and functions development with both internal and external scopes related to product and service that characterise the different operations in the organization. Ray, Xue, and Barney (2013) and Khalique et al., (2015) remarked that technology capital is a combination of software, hardware, and network in the organization, while the latter defined this resource as IT knowledge and research on technology. In this study, technology capital is defined as technological skill and capability available in firms and reflects firm performance. This includes IT knowledge, firm budget, and protection right (Khalique et al., 2015; Khalique & Pablos, 2015).

Technology capital has been found as one of the major resources for determining firm success, especially for digital SMEs (Apulu & Latham, 2011; Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013b; Tseng & Goo, 2005). As opposed to other types of business, the availability of this resource is mandatory for digital business and has always been used to create a product that significantly differs from their competitor. Rather than acting as a supportive tool to enhance business to grow (such as advertisement medium), or as a communication tool, the technology capital is essential for business in this segment because the product and service provided are technology. This resource is important to digital SMEs and has been perceived as a 'ticket to profitability' for technology-intensive industry, such as digital SMEs, thus making it crucial to understanding this commodity (Porter, 1985). According to Wang et al., (2004), the technology competencies cannot be neglected by digital firms because these resources represent an important potential source of competitive advantage and superior performance. The capability of the technology to enhance differentiation on products and services has been regarded as the main contribution of this resource to support the digital SMEs, whereby past study had confirmed that firms with higher IT capabilities outperformed firms without technology advancement (Bharadwaj, 2000). Apart from that, linking business with technologies had been found to be beneficial in reducing cost in many ways, such as reducing transaction, operating, and expansion cost (Accenture, 2016; Apulu & Latham, 2011; Ray et al., 2013). Besides reducing expenses, the technology has brodened the SMEs' opportunities to enhance their market. With an ability to go

beyond the border, the technology provides a solution for them to increase their potential by penetrating the international market without complicated policies and regulations.

Technology capital appears to be a controversial component in measuring intangible assets. Many organizations have failed to see the benefits of technology, most accounting topics treated technology an expense rather than asset (Strassmann, 2000). As a result, rather than understanding the contribution of this resource towards firm achievement, several studies have been conducted in order to understand the real cost and benefit of this asset (Rai et al., 1997). The IT infrastructure may be seen as a 'black hole' that makes firms question if it is worth investing in technology infrastructure (Lee et al., 2008). However, as the technology has provided digital firms with competitive advantage, especially for technology-based firms, this asset is the most important commodity. As the technology can significantly influence the performance of highly technological firms (Biagi, 2012; Khalique et al., 2015; Wang et al., 2004), the ability of this commodity to provide firms with competitive advantage has remarked the position of this asset as one of the main pillars in digital SMEs (Porter, 1985; Wang et al., 2004).

Another problem encountered by the technology capital is that this asset does not always serve as an individual component or intangible resource. Although technology capital is paramount towards organization success, most literature regards technology capital as a subordinate of other intangible assets. For example, Gogan and Draghici (2013) regarded the information system as part of the structural capital. Similarly, Wang, Wang, and Liang (2014) mentioned that information system, hardware, software, and database are items embedded in the structural capital. They agreed upon the Skandia Intellectual Capital Model by Edvinsson (1997), which defines structural capital as a valuable item that employees cannot take away when getting off work or leaving the organization. However, the classification made by Edvinsson (1997) is only separated by two components; human and non-human capabilities. For digital and technology-intensive industries, technology serves as a vein for the industry and can be a determinant of the digital SMEs success; thus should be regarded as important as human capital. It has been affirmed by Porter (1985) that although technology is available in every company, it does not mean that it is strategically beneficial. However, as the technology is used as the primary resource to produce distinguished products and services (Apulu & Latham, 2011; Awano, Franklin, Haskel, & Kastrinaki, 2010; Herdon et al., 2012), this resource is absolutely important. Even though some studies did not consider technology capital in the 24 intellectual components (Steenkamp & Kashyap, 2010), technology capital should be worth to be appraised as another component of intangible assets.

Despite the controversies, the importance of this asset towards firm performance has been clear. Kaplan and Norton (1996a) asserted that in order for the firm to achieve long-term financial goal, technology capital is one of the areas that the firm needs to always invest in. As part of the infrastructure in the companies, obtaining technology capabilities will further support firm performance. Although there is a tendency to cut the investment budget in order to increase short-term earnings, neglecting the budget on this investment is not the answer, in fact, disregarding this investment will taunt the firm with long-term consequences of being a failure. This statement has further urged the inclusion of technology as part of company strategy. In accordance with these findings, Ray et al., (2013), based on reports in BEA, showed that investment in IT accounted for 50% of business spending in the US, which was higher than advertising and R&D. By embracing technologies in their firms, the performance of customer-centric organization is more likely to increase. Accenture (2016) revealed that 70% of the executive had made more investment in technologies than they did in 2013, thus highlighting the importance of technological investment and proper development of technology in the organization.

The technology has been proven to accommodate firms with many advantages, as digital and technology-intensive firms are more likely to rely on this resource. Due to the fact that technology advancement and equipment, such as software and latest technology, are crucial in digital industries, obtaining compatible and advanced technology tend to support SMEs and improve firm performance (Awano et al., 2010). This resource increases employee levels of creativity and innovation, which are crucial for the success of digital firms (Accenture, 2016; Herdon et al., 2012; Soon & Zainol, 2011; Wernerfelt, 1984). Besides, technology is linked with physical components, hence technology capital also includes knowledge and specialist on technology (Khalique et al., 2015; Khalique & Pablos, 2015). Zhang and Tansuhaj (2007) divided this asset into four elements; IT architecture, IT Human Resource, IT Infrastructure, and IT relationship resources. IT human resource includes skill and knowledge of workers towards technology in firms.

Awano, Franklin, Haskel, and Kastrinaki (2010) identified that in terms of intangible investment in the UK, most businesses had shifted their expenses to software and R&D. The conclusion from the study showed that investing in software and R&D gave digital business long-term benefits. On average, the investment in software provided 3.4 years of benefit, while R&D offered 4.7 years of lifespan benefit to the company. As the investment in technologies is more prominent and important to businesses dealing with digital using the latest technologies, technology advancement has been identified as the key to maintain and improve competitiveness (Apulu & Latham, 2011; Herdon et al.,

2012; Porter, 1985). Bharadwaj (2000) asserted that the ability of the technology, which is important in the digital industry, can be divided into two; IT infrastructure and IT human skills. The ability of technology infrastructure can be derived from the ability to mobilise and deploy technology resources in combination and integration with other resources and capabilities. He further disclosed that technology capabilities derive from technology infrastructure, skills, and knowledge about technology and these components are vital to exploit technology advancement, thus creating a successful product for digital businesses. Argyropoulou (2013) reported that technology ability, such as the system, service provider, and training, is positively related to firm performance.

The technology has been found to offer greater influence on performance to any organization; however, this resource is primary to highly intensive firms, such as digital SMEs. Pursuant to Porter (1985), not all technology is strategically beneficial; however, the technology will only become important if it affects competitive advantage, especially if the technology can provide implication for firms' competitive position and industry attractiveness. For a high-technology industry, such as digital SMEs that rely heavily on technology, technology is a resource that should not be regarded as ordinary, as technology ability has been highlighted as the most important factor for high-tech industry towards building corporate value (Tseng & Goo, 2005). This statement has been agreed by García-Olaverri, Huerta-Arribas, and Larraza-Kintana (2006), who confirmed that investment in technological equipment has provided the firm with competitive advantage. In parallel, Tan, Chong, Lin, and Eze (2009) acknowledged that investment in technology can help companies to gain bigger market share and compete with large companies. As technology plays an integral part in SMEs, Khalique et al., (2015) asserted that in Pakistan, technological capital is the most important factor to enhance SME performance. The development of technology in the organization increases knowledgeability, thus improving employee creativity (Soon & Zainol, 2011). Investment in technology seems worthy since for current business, this intangible asset has a significant role that is related to performance implication (Drnevich & Croson, 2013). With appropriate investment in technology, it can maximise the organization value by increasing knowledge, as well as creating and sharing it (Sher & Lee, 2004). In essence, for firms that are segmented as digital business, technology can be exploited as a competitive weapon and offers prominent contribution to digital SMEs; making is an important part of digital intangible assets (Ramezan, 2011; Ramirez, 2010).

Technological resources offer a generous amount of benefits for firms, such as increased communication, process flow, and cost saving (Apulu & Latham, 2011). Many studies have considered technology capital as an important aspect of the organization. As emphasised by Tovstiga et al., (2007),

technology is the most important intangible asset because it is the driver of increasing innovation processes, especially for technology-intensive firms. This statement is endorsed by later studies; Zhang and Tansuhaj (2007) stated that information capital plays an essential role in today's business market, especially in the digital industry. This statement was later reinforced by Khalique and Pablos (2015), stating that technological capital is the most important asset in highly technological industries. They mentioned that IT capital can be measured by IT knowledge and R&D activities. In essence, technology capital is important in many business segments and its function in digital business is crucial (Cricelli, Grimaldi, & Hanandi, 2015).

In essence, for digital SMEs, it is believed that only those who are able to acknowledge and adapt with the technology advancement can remain competitive (Bharadwaj et al., 2013b). Thus, every digital SME should be able to understand technology and further create a strategy behind the tool strength and power of the technology. Therefore, it is important for them to really understand and affirm the usage and benefit of technology, which is available in their firms. With more information and understanding, SMEs might be able to decide whether to upgrade their technology capability, such as technological infrastructure, technology investment or technology capabilities, to ensure that their firms remain in the competition.

Although the importance of technology resource as a strategic asset in the firms is doubtful, it is highly essential for digital-based industry in determining firm success. Technology advancement and ability are important in this industry to remain competitive and to create an innovative product, labelled as creative products. Furthermore, it has been a highlight that this resource has been placed as an integral part of the digital-based industry, which the high technology industry cannot neglect (Brooking, 1997a; Hasanhendrika et al., 2009). Unlike other industry sectors, such as tourism or consultant sector, which may neglect technology, the business dealing in the technology industry could not do this. The products and services that are provided to the customers are engaged with technology and without technology, it is impossible for the product to be produced or accessed by customers. Therefore, it is compulsory for digital firms to have this knowledge, in which information of this resource is the deciding factor of their firm survival.

It is always worth to understand the contribution of technology capital towards firm performances. By understanding the true value of how investment in technology affects business performance, SMEs may be able to understand more on how technology drives their business performance, both financial and non-financial performances. Indeed, obtaining the financial might be the best result of investment proceeds. Nevertheless, the non-financial benefit might be beneficial to digital SMEs. For example,

the technology might be able to increase the productivity in the firms that later translates into financial performance. By equipping themselves with better technology, the chances of extracting creative and innovative products are more likely to increase and this ability will provide firms with competitive advantage. Accordingly, it is believed that IT plays a more important role than sales support, rather than technology is one of the product enablers, as well as creative and innovation drivers, which is crucial for the success of digital firms (Herdon et al., 2012; Wernerfelt, 1984). According to Drnevich and Croson (2013), the contribution of technology advancement not only provides physical benefits, such as profitability, but also serves as an enabler of firm capabilities. At the end, technology capital is a driver of owning better market share, especially for those who are in the digital industry (Tan, Chong, Lin, & Eze, 2010).

Conversely, technology sophistication has been reported to be important for the digital industry and by highly incorporating this resource, this asset has been found as one of the sustainable competitive advantage resources to firms (Wu et al., 2006). Therefore, investment in technology is essential for highly technology companies. Rai et al., (1997) found that investment in technology does provide a positive contribution towards firm performance especially in firm output and labour productivity. By deploying the latest technology, a firm is expected to achieve higher efficiency than their competitors (Wu et al., 2006). Positioned as a crucial tool to achieve competitive advantage and organization innovation, this resource has been always considered as a key to maintain and improve IT industry competencies (Herdon et al., 2012). For turbulent and highly volatile industries, such as digital business, obtaining essentials of technology equipment, capabilities, and investment is vital (Bharadwaj, 2000; Ray et al., 2013). However, investing in technology is not cheap; especially to consistently invest for the latest edition of equipment, software, and hardware. Indeed, by acquiring the latest technology, a firm can experience higher performance. However, digital SMEs always face limited resource and financial capabilities, thus the issue of deciding whether to invest or otherwise. Ackroyd (1995) found that small IT companies had affiliation with external and external parties in conducting their business, the use of other alternatives besides acquiring the expensive material and physical gadget is questioned. Technology outsourcing is an option for SMEs as it is more cost-efficient than acquiring it.

Despite the importance of this asset, several studies have raised issues as whether the technology capital deserves to be classified as an intangible asset. As identified by Agbim (2013) in studying knowledge management, he noted that looking at technology advancement alone is not a guarantee for gaining competitive advantage. Without appropriately understanding the tools, technology is just a

tool. Another debatable topic around considering technology as an intangible asset is due to several scholars emphasising that the strategic intangible resources should be rare, valuable, inimitable, and non-substitutable (Barney, 1991). To test the strategic resource, Collis and Montgomery (2008) underlined that these resources should be not easily substituted. Nevertheless, some scholars might view the technology infrastructure as being easily replaced and changed, especially in the current digital era, where tools can be more easily replaced as it is more affordable to buy the technology tools (Zhang & Tansuhaj, 2007). To value technology capital is not solely to look on the easiness of changing and replacing the physical tools, it should be viewed as how the technology ability is ordered to generate a beneficial outcome to one's organization. This advantage is not easily replaced, hence, although it is possible for the infrastructure to be bought in the market, the capability of the rival company to imitate the similar use and function of the infrastructure might be different. The software is one of the components of intangible assets, and has an instrumental role as enabler for innovation, for both software and non-software industries. Indeed, some people might argue that each hardware and software have their limitation and function, however they should be looking at how the tools are to exploit and effectively create advantage. Furthermore, although the technology can look as 'physical', which does not represent the terminology of 'intangible assets', the value of intangible assets is not only their physical presence. As Brynjolfsson et al., (2002) asserted that 'asset that is intangible need not be invisible', the true value of the intangible resource should be valued on the value carried by this asset. The effective use of technology has become a strategic competition tool for digital-based industry (Bharadwaj et al., 2013a).

Other issues that have been raised for the SMEs to take note are claims that obtaining strategic technology resources might provide the company with a competitive advantage, however, this is only temporary (Collis & Montgomery, 2008). This is because; the technology can be blown by 'creative destruction' where innovation will take over the current technology standing. Once the technology is obsolete and common, the competitive advantage will be lost (Weill, 1992). However as digital business depends on technology as the main source of production line or service, it is still important to understand the technology in this industry. Therefore, it is important for the digital SMEs to keep on updating their systems and hardware to ensure that they always have the advantage position. In order to exploit the technological advancement, the firms need to have an investment proposition. Collis and Montgomery (2008) claimed that for the resource to be competitive, upgrading it is vital. The resource theory suggests that the strategic assets should be invested in and reconsidered on a regular basis to become a valuable resource.

Studies have identified the worthiness of investing in technology tools that are more concerned with investment decision (Drnevich & Croson, 2013). The literature recognises technology as part of intangible assets and highlights that technological ability leads towards firms' success (Drnevich & Croson, 2013; Herdon et al., 2012; Tan et al., 2010); these sorts of intangibles are found to be less popular amongst studies of intellectual capital and only important to business related to digital businesses (Barus & Siregar, 2014). It is vital for digital and technology companies to understand the role and the relationship of technology capital (Drnevich & Croson, 2013). Technological capability is a strategic asset that assists firms to succeed (Amit & Schoemaker, 1993), foster competitive advantage, and progress to protect market position (Barney, 1991; Wernerfelt, 1984).

3.5.3 Organization Capital

The third invaluable intangible resource that contributes to firm performance is organization capital (Black & Lynch, 2005; Bozbura & Beskese, 2007; Cummins, Hendersson, Myers, Rajagopal, & Sougiannis, 2003; Baruch Lev et al., 2009; Tidor, Gelmereanu, Baru, & Morar, 2012). Bozbura and Beskese, (2007) defined organization capital as the sum of all assets that make creative ability in the organization possible, which include firm vision, firm values, system, culture, use of knowledge, and database. Castro et al., (2008) suggested that the organization capital is a combination of explicit and implicit, formal and informal knowledge, including structure, culture, and knowledge process. This statement has been jointly agreed by several scholars who mentioned that environment, structure, and culture as part of organization capital (Ababneh & Shrafat, 2014; Clulow et al., 2007; Tong, Wah Tak, & Wong, 2013; Wong, 2005). Li, Qiu, and Shen (2018) addressed organization capital as a body of knowledge, business process, and system that facilitates the labour and production facilities to allow firms effectively use their resources. Indeed, there are many components being addressed in the topic of organization capital, including Black and Lynch (2005) who asserted workforce training, employee voice, and work design, while Kaplan and Norton's (1996a) framework included motivation, empowerment, and alignment; giving to the fact that this resource belongs to the company and is the actual environment, culture, and structure (Ababneh & Shrafat, 2014; Clulow et al., 2007; Tong et al., 2013; Tseng & Goo, 2005; Wong, 2005). In this present study, organization capital is defined as the environment, culture and structure in an organization that reflect its activities and performance, as well as all assets that make creative ability in the organization, including system, policies, and procedure (Khalique et al., 2015; Khalique & Pablos, 2015; Tunc Bozbura, 2004).

The importance of organization towards firm performance is clear. Barney (1986a) strongly emphasised that this resource is unique to one firm as it cannot be imitated by others in any form.

Despite having similar resources, it is impossible for one company to copy the other's. Each firm has its own structure and culture, which is exclusive to the firm. However, Li et al., (2018) had a different perspective where they mentioned that although organizational capital cannot be easily imitated by competitors, this capital is potentially transferable from one organization to another, especially during merger and acquisition.

The importance of this asset is evidenced in many articles. Edvinsson (1997) mentioned that structural competence and knowledge are essential for recycling leveraging and sustaining firm performance. Furthermore, as this resource is important to support employees in their quest for optimum overall performance, Bontis (1998) highlighted that although one firm has obtained a very good employee, without good organization culture, such as environment, structure, and culture, the employee will not reach his/her full potential. Bozbura and Beskese (2007) mentioned that weak system and supportive environment will prevent a firm from having high performance. In view of mergers and acquisition, while studying US public listed firms from 1994 to 2014, Li et al., (2018) concluded that compared to a firm with low organizational capital, the acquirer with more organizational capital achieved significantly abnormal return and obtained post-merger and stock performance. In essence, this resource is valuable for a firm to achieve competitive advantage and sustainable performance (Barney, 1986a; Collis, 1994).

Despite agreement that this asset is important for digital firm performance, organization culture is the most difficult to describe (Barney, 1986a; Black & Lynch, 2005). In fact, it has been reported that some researchers have used different terminologies, such as 'structural capital' to elaborate organization capital (Daou et al., 2014; Youndt et al., 2004). The utilisation of structural capital terminology instead of organization capital started when Edvinsson (1997) mentioned that other than human, everything that is left behind when employees went home is defined as structural capital. Although this statement has been echoed and followed by many scholars (see Bontis, 2000; Tseng & Goo, 2005), a number of studies had concluded that the correct way is by fragmenting this resource into two components; technology and organization capitals (Castro et al., 2008). Youndt, Subramaniam, and Snell (2004) argued that the term 'organization capital' is more appropriate to use because the value of this component is owned and stays with the organization. However, the term used in this study is 'organization capital', in which this resource is irreplaceable, untransferable, unique, and could not be acquired in the market (Castro et al., 2008), therefore the firm itself needs to look for its own strategy because it is impossible to have a similar culture as other companies. In line with this, several studies have offered their operational definition to better understand both resources, whereby

a majority of them had accepted that organization capital should be regarded as one of the important resources embedded in firms.

However, one of the earlier organization capital studies by Prescott and Visscher (1980) viewed organization capital as the information about employees possessed by the firms either individually or in team. Affirmed on the importance of information towards firm performance, they further claimed that once information has been gathered, firms are suggested to take appropriate action, such as promotion to eligible staff. However, despite this study has advocated information as important, on contrary, the later studies suggested the definition of organization capital as differently. The definition and component of organization capital have been broader than information. For example, Barney (1986a) asserted the importance of culture in the organization because a firm with valuable, rare, and imperfectly imitable with being a source of sustainable competitive advantage to the firm will translate into firm performance. A firm with strong culture has been viewed as having an excellent management (Castro et al., 2008). Other studies have emphasised on other components, such as environment and structure, as the most prominent components in organizational capital (Tong et al., 2013; Xerri, Nelson, & Brunetto, 2014).

Although the role and contribution of this resource have been reported in the literature, firms that engage in creative and highly technological environment, such as digital SMEs, have a different approach to manage their organization, thus suggesting a unique organization capital. In order to gain the most from staff, many digital businesses have invested in building a working environment that is conducive. Optimum ambience and ergonomic surrounding working area have been claimed to be extremely important, especially for an IT company (Vos & Van der Voordt, 2002; Xerri et al., 2014). While studying eight of the top ten largest software companies, Juneja and Amar, (2018) found that highly technological company, such as Microsoft and Oracle, obtained substantial financial performance by developing their organizational capital. They concluded that technology company that allocates resource more on organizational capital can enjoy greater benefits.

Another aspect of organizational capital, such as optimum working atmosphere, can promote job satisfaction which benefits both employees and organizations (Tong et al., 2013). Although Brooking (1997) had mentioned that the digital industry required lower cost rather than the conventional way of doing business (due to the digital company sometimes has no working station at all or perhaps doing their work from home), it has been found that the digital firms often invest money to create a unique working environment. Rather than having a cubical workstation, this company tends to have more airy and open spaces to work. By having an ergonomic, fun, and cosy working environment, employees

can better generate creative thinking and increase their job satisfaction. Such environment can significantly influence one's performance and the overall organizational success (Annette & Jeniffer, 2017; Mari & Geir, 2016; Vos & Van der Voordt, 2002). In addition, leaving the answer of 'how' and 'where' to conduct their job to their staff, the employee is given freedom to decide on time and place that best suit them, as long as they can achieve the final results (Vos & Van der Voordt, 2002).

Besides the unique environment workplace, digital SMEs are urged to have a positive and enhanced organizational culture to enhance performance. An organizational culture that is defined as firm operational process and shared values represent the norms that guide the attitude and behaviour of the people within the organization (Applegate, McKenney, & McFarlan, 1999; Baumgartner & Zielowski, 2007; Tong et al., 2013). The attitude and behaviour of people in the organization are not similar, hence each organization has their own unique culture. The difference not only differs by industry, but can be varied among organizations. The work by Raberger and Krammer (2013) illustrated the difference between analogue and digital culture. They pointed out that the digital culture has a flat hierarchy, rapid decision making, result and product-oriented end goal achieved through empowerment. However, despite being clustered in the same industry, each firm has its own culture that is different from each company; making it important to understand the relationship of this component. Several studies, which have been conducted specifically on organization capital, concluded that the organizational culture did provide firms with high performance, especially for a firm which is engaged in the highly technological industry. By maintaining a good organization culture, the organization can achieve better performance by increasing the interaction between people and technology, as well as to sustain competitive advantage, in which a company needs to align a good organization climate and technology advancement (Bhatt, 2001). Additionally, firms with knowledge sharing culture, flexible leadership style, and highly empowerment, experience better performance (Amabile, Schatzel, Moneta, & Kramer, 2004; Brynjolfsson et al., 2002). Barney (1986a) suggested that firms with an appropriate organizational culture tend to experience sustainable performance rather than those that do not. Organizations with a strong culture embedded in their firm are considered as having a stronger management, which further increases the quality of the company. Compared to technological advancement, the organization culture is something that cannot be imitated by other companies. It belongs and stays with the individual organization and cannot be replicated easily either by a competitor. Even if the people inside the organization leave the company and create their own, it is impossible for them to imitate the past organization culture because organization culture stays and never moves. The leadership support in the organization is deemed essential to enhance the creative organization. In the theory, leadership support fosters creative culture. This support might come from

leadership, effective discussion, openness, and exchange ideas throughout the organization (Carmeli & Paulus, 2015). The collaboration of a group of people is always important for firms especially for the generation of the idea. Past study has reveal that collaborates and works in the team has improved organization creativity (Hülsheger, Anderson, & Salgado, 2009). Similarly, Wuchty, Jones, and Uzzi (2007) asserted that working in team is more productive than working individually. This statement is in line with the result reported by García-Olaverri et al., (2006), who mentioned that teamwork and flexibility are important in redefining organizational success. Roos and Roos (1997) concluded that successful company is those who are able to identify, nurture, leverage, and exploit what employees know.

Another component in the organization capital is the structure of the firms. For digital business, there is not a strange situation while the organization has been reported to have a unique structure in their organizations and small IT firm has been described having a different structure compared to other firms; they have been found to lack an orthodox structure, with the movement of staff across organization boundaries present, as the work is project-based (Ackroyd, 1995). Raberger and Krammer (2013), while conducting a comparative study between analogue and digital business culture, mentioned that the organization in the digital business require more flat hierarchy, rapid decision making and empowerment of the employee. They further emphasised that in order to be successful in the digital industry, they should adopt a different attitude to doing things, including a strong collaboration with each member of the organization and mixed teamwork among integrated communities, all seen as essesntial to success in the digital world. As the smaller firm found to be less hierarchal structure compared to large and traditional business (Barney, 1986a; Raberger & Krammer, 2013) the small and medium digital business has an advantage on extracting the benefit of organizational culture. Although Barney (1986a) had mentioned that the competitive advantage only can be happened if smaller number firm in the same industries has the flexibility or unique culture, for digital business it can be found that a majority of the companies have created their own way to differentiate themselves from other companies. Despite, most of the companies having the flexibility structure, however, each of the company still holds the uniqueness, which is not perfectly the same with their competitors. In this situation, the uniqueness of the culture, structure and environment of the digital business can be regarded as a driving source of improved performance. Most organizations in the industry have created their uniqueness which makes them different from their rival; it is still safe to say that this uniqueness is not able to be imitated.

Table 3-7: Definition and key issues of organization capital in previous studies

Paper	Author(s)	Date	Definition / key issues
Journal of Political Economy	Prescott & Visscher	1980	The information about employees possesses by the firms either individually or in teams.
Academy of Management Review	Barney	1986	It is impossible for one company to copy the others because each firm has their own structure and culture, which is exclusive to their firms.
Journal of Management Studies	Ackroyd	1995	Highly technology firms lack orthodox structure, rapid movement of staff across organization, and project-based work.
Management Decision	Bontis	1998	A good employee will not reach its full potential without good organization culture.
Leadership quality	Amabile, Schatzel, Moneta, & Kramer	2004	Firms with a knowledge sharing culture, flexible leadership style, and highly empowerment will experience with better performance.
Journal of Management Studies	Youndt et al.	2004	The term of organization capital is more appropriate than structural capital to use because the value of this component is owned and stays with the organizations.
The Learning Organization	Bozbura & Beskese	2007	Organization capital is the sum of all assets that makes creativity ability of the organization possible. The components of organization capital are firm vision, firm values, system, culture, use of knowledge, and database. Weak supportive environment prevents firm from achieving high performance.
Journal of Intellectual Capital	Martín-de-Castro, Gregorio	2008	Combination of explicit and implicit, formal and informal knowledge that includes structure, culture and knowledge process. Firms with strong culture view as having excellent management.
The Journal of applied psychology	Hülsheger, Anderson, & Salgado r	2009	Collaboration and working in the team have improved organization creativity
Abacus	Lev	2009	Unique structural and organizational design and business process generating sustainable competitive advantage.
International Journal of Human Resource Studies	Tong et al.	2013	Good working atmosphere promotes job satisfaction which benefits both employees and organizations.
Price Waterhouse Coopers PwC)	Raberger & Krammer	2013	Digital firms have a different working culture, a flat hierarchy, rapid decision making, result and product-oriented end goal is achieved through empowerment.
Journal of Intellectual Capital	Daou, Karuranga, & Su	2014	Organization capital is what remains in the firm when employee is leaving the company

Journal of Management in Engineering	Xerri et al.	2014	Ambience and ergonomic surrounding area are important especially for an IT company.

Compared to human capital and technological capital, the organization capital fully belongs to the company. This capital exists due to the firm management and generates knowledge efficiently. It represents how the company is run, including the company environment culture and structure in the organization. Whilst no study has attempted to understand the digital SMEs organization capital, these studies produced evidence of how the organization capital contributes to firm performance.

3.6 Interdependencies among intangible assets

It is generally accepted in the literature that the intangible assets play an important role towards SMEs performance, however, it is important to view the role played by these resources both individually or by bundling them with other resources. Having discussed the role played by intangible assets as individual components, in this section the relationship and interdependencies of resource in providing the firm with better results are further explained.

It is strongly urged by Itami and Roehl (1991) that the resource can be used either in a single resource or in a combination of resources; stating that when the resources and strategy fit well together, it will provide the firm with superior benefits. It is also has been reported that some resources have internal dependence which can only function appropriately with the support of other resources. Although it is believed that independent component of intangible resources plays an important part in SMEs performance, the literature has mentioned that these assets have interdependencies and only worked by the collective effort (Biagi, 2012; Brynjolfsson et al., 2002; Itami & Roehl, 1991). Therefore, it is important to understand the relationship amongst resources in the firms. In addition, many studies have bundled the resources together and suggest that the combination of each of the resources is required in supporting the business performance (Desa & Basu, 2013; Meyskens et al., 2010).

The interdependencies literature of these three assets is not new. Hence, study conducted by Biagi (2012) investigated the relationships between human, technology and organization capital towards Italian manufacturing SMEs. He found that the three items are interrelated. In the study, he has mentioned that organization capital did complement the human capital and the technology capital complemented the human capital, which later increases the performance of the firms. Interestingly, the organization capital and technology capital are concluded to have substitute activities. The first interdependency that is frequently found in the literature is between technological resources and human capital. Itami and Roehl (1991) pointed out that the technology is one of the intangible assets which

cannot stand on its own and requires interdependence. Each element in the technology can only function if it ties with the surrounding elements including humans and individuals who deal with the technology. He has further urged that a firm can function only if the technology and worker skill are on the same level. This statement is also backed by Lopez et al., (2014) who mentioned that the digital business performance relies on both digital skills and technology capabilities. Only through people, the technology can be converted into information and knowledge that give beneficial impact to the organization (Bhatt, 2001). Accenture (2016) asserted that the winners in the digital age only achieve by stimulating the ability of humans and incorporating the benefits of human capability. In fact, the real deciding factor of success of high technological and digital business hinges on humans. Additionally, it mentions that succeeding in the digital world cannot be solved by consuming more technologies, however, humans need to be put first to enable the technology to be successfully utilised. The technological advancement is also has been claimed to be related to the organization capital. Bhatt (2001), has expressed the opinion that the technology has increased the information flow in the organization thus creating a higher performance in the business. As technology utilisation promotes organization values through efficient services and excellent customer service (Zhang & Tansuhaj, 2007), 'the bundle' relationship between these two assets is important to investigate.

The next combination is of human and organization capital. Human capital such as skills, knowledge, creativity and innovation is not owned by the organization; hence the company only can utilise the assets temporarily on rent basis (Edvinsson, 1997; Khalique et al., 2015). The strength of dimension beyond human capital (such as organization capital) will be useless without the presents of a human. More importantly, the combination of what organization owned only can benefit with the human capability to leverage the firm growth (Edvinsson, 1997). According to CIPD (2015), in order to have effective human capital, the organization must have an appropriate culture to enable the creativity, innovation and competence worker. Furthermore, it has been found that the two intangibles should be bonded together. Without effective and supportive management and organization culture, the optimum result from efficient human skills and capability cannot be present (Khalique et al. 2015). Firms structure and development make the organization different and thus create firm differentiation that might influence firm performance (Clulow et al., 2007). Bontis (1998) mentioned that although human capital is the important driver of business performance, the human capital will be useless without the correct organization capital structure that is able to nurture their employee skill. Juneja and Amar (2018) stated that the relationship of human and organization capital is complex interwind. They further addressed that organization capital makes the human capital productive, and give meaning that is valuable to the firms.

The final combination is organization and technology capital. In a modern business that always offers unique environment and workstation to conduct routine job, the technology plays a significant role in firm structure and culture (Vos & Van der Voordt, 2002). The ability of technology, such as the internet and the digital storing system, supports firm in having a unique environment, apart from increasing teamwork and collaboration. It has been confirm that collaboration and teamwork work best for digital firms in generating creative thinking which is vital for digital firms (Ackroyd, 1995; García-Olaverri et al., 2006; Raberger & Krammer, 2013). However, the technology such as digital storing system and software has made the communication and learning process become uncomplicated, further making the flexible working environment plausible (Annette & Jeniffer, 2017; Mari & Geir, 2016; Vos & Van der Voordt, 2002).

It is obvious that beside each component within intangible assets offering several contributions towards business performance, each individual resource has their role and contribution towards digital SMEs performance. However, the bundle and combination of these assets should not be ignored, hence by bundling the resources together and making do by applying combination resources already at hands (Desa & Basu, 2013) digital SMEs will be able to optimise their utilisation of this resources hence providing them with a superior outcome.

3.7 The Balanced Scorecard to measure intangible assets

Many scholars have attempted to understand the implication of efficiency of intellectual capital and intangible assets towards organizational performance, one method has been claimed to outperform others; the BSC. As the research combining intangible assets and the BSC as the performance indicator is not new, hence the hybrid of the intangibles and BSC has been used in many studies.

The integration of BSC and intangible assets has been documented as the past literature has been found to be closely linked together. Initially, the intangible assets have been included in the BSC and have been label as Learning and Growth Perspectives (Kaplan & Norton, 1992; 1996). In this perspective, the importance of the intangible asset should be utilised by firms to achieve sustainable performance. By appropriately aligning the intangible assets, which are the human, technology and organization, these resources are expected to provide a firm with higher levels of performance (Kaplan & Norton, 2004b; Bernard Marr & Adams, 2004). The intangible assets have been portrayed as part of BSC components, and has been found as the underlying platform to assist firm with a non-financial performance which later leads towards the firm financial achievement. This concept has been further brought in the second generation of BSC which is Strategy Map (Kaplan & Norton, 2004a; 2000),

however, the subtitle of his publication 'Strategy Maps: Converting Intangible Assets Into Tangible Outcome' has made a remarkable change, where the intangible assets have been view as the primary subject matter.

The utilisation of the BSC during investigating the intangible resources has been more prominent when Marr and Adams (2004) suggested that it is important for the study of intangibles to provide visual representation in measuring their performance. The principle premise of the BSCs which include financial and non-financial perspectives has been found to provide an accurate tool to measure firm performance, which is always the problem when measuring the intangible assets (Andriessen, 2004). By incorporating the BSC as a measurement appliance, it does not only provide information on financial but also the inclusion of non-financial perspective and makes it logical for the business to effectively strategize and manage their resources (Wu, 2005). Since then, the combination of these two theories has been evident, while Bukh, Johansen, and Mouritsen (2002) pointed out that compared to other performance tools, BSC has been claimed as the most appropriate way to deal with the intangible assets. The tool has found to be able to show a causal relationship between internal staff and external stakeholders and compliment the concept of intellectual capital. Bukh et al., (2002) found that to adopted the BSC in studying the intellectual capital in Denmark software companies, although the BSCs and intangible assets have been found in two different strategic methodologies, these tools serve as the important factor in making businesses tactical. The trend of integrating both theories was fostered by Chareonsuk and Chansa-ngavej (2008) to develop a framework for Stock Exchange Company in Thailand, and by Bose and Thomas (2007) when they conducted an empirical study of Foster Brewing Group. Next, Wu (2009) adopted this scenario using the case study method to develop a framework and explore the integration of intellectual capital and the BSC, who emphasised that BSC is an important tool that can provide an appropriate measurement of intangibles in the organization. Chareonsuk and Chansa-ngavej (2010) explored the relationship between intellectual capital and business performance using the BSC. In the study, he explained that the element of intellectual capital is external structure, internal process, and employee competence.

The combination of both theories has also been documented by a study conducted by Khalique et al., (2011) while studying the intangible assets and firm performance. In the study, the intangible assets consist of six component; human, customer, structural, social, technology and spiritual capital labelled as Integrated Intellectual Capital Model (IICM). By integrating the IICM, he has adopted the BSC as the set of performance indicators (Khalique et al., 2011). The study which has been initially taking part in Pakistan has concluded that from six components of intangibles of human capital it has been

reported to be insignificant with firm performance (Khalique et al., 2015). Later, the same method was used to study intangibles in the electrical and electronics industry (Khalique & Pablos, 2015). Compared to past study, human capital has an important role in the electronics industry, however, the customer capital and social capital has been found to unimportant in assisting organization performance. More studies need to be conducted in order understand the importance of intangible assets and the interaction among components besides considering other factosr such as organization capital and political environment.

In conclusion, it has been proven that the integration of intangibles and BSC offers a more practical solution for both academics and practice, therefore, in this study the combination of both concepts is follows. By combining both theories, more understanding of the relationship of the intangible assets and performance will be obtained, not exclusively towards firm financial performance, however, the non-financial performance will be included.

3.8 Development of conceptual framework and hypotheses

The conceptual framework was developed by linking the theoretical relationship between intangible assets and firm performance. The performance can be outlined using two viewpoints; the financial perspective and non-financial perspective. As most empirical evidence suggests that intangible assets play an important role in determining firm performance, this study specified the contribution of these assets by classifying the assets using the BSC approach. The framework investigated if non-financial perspective mediated the relationship between intangible assets and financial performance. The proposed conceptual framework is illustrated in Figure 3-1.

In line with the RBV Theory and the BSC perspectives, the proposed conceptual framework integrates three components of the multidimensional construct. In the proposed framework, intangible assets are the theoretical predictor of performance in Malaysian digital SMEs. Although most studies looked into performance either in financial perspectives or non-financial perspective, this study try to escape from the traditional way of measuring performance. To do this, the study adopted the BSC as performance measure. By using this tool, the study will be enriched while the performance will be view holistically by taking financial and non-financial perspective simultaneously as two observed variables. Additionally, the study will further investigate whether the non-financial performance mediates the relationship between intangible assets and financial performance. This further extended the claimed made by Mackay (2005) and Abor and Quartey (2010), who claimed that non-financial aspect as the main pillar in supporting financial performance.

Barney (1991), Kaplan and Norton (1996b), Brinkley (2009), Goodridge et al., (2014), Khalique and Pablos (2015), and Biagi (2012) asserted that human, technology and organization capital are crucial intangible resources for a digital technology firm, this study will using the intangible assets construct will be represented by this component. The human capital (HC), technology capital (TC) and organization Capital (OC) are observed variable of the intangible assets construct. Further, by adopting the BSC approach, the performance is divided into two categories; financial performance and non-financial performances (customer, internal business and learning and growth). Segregating the performance measures offers more understanding on the relationship of both theories.

Given to the Figure 3-1 research conceptual framework, a new model (see Figure 3-2) was established to determine the correlations between intangible assets and digital SMEs performance. By separating the performance into financial and non-financial aspects, more in-depth and meaningful insight can be gained on the nature of the relationship among assets to be attained.

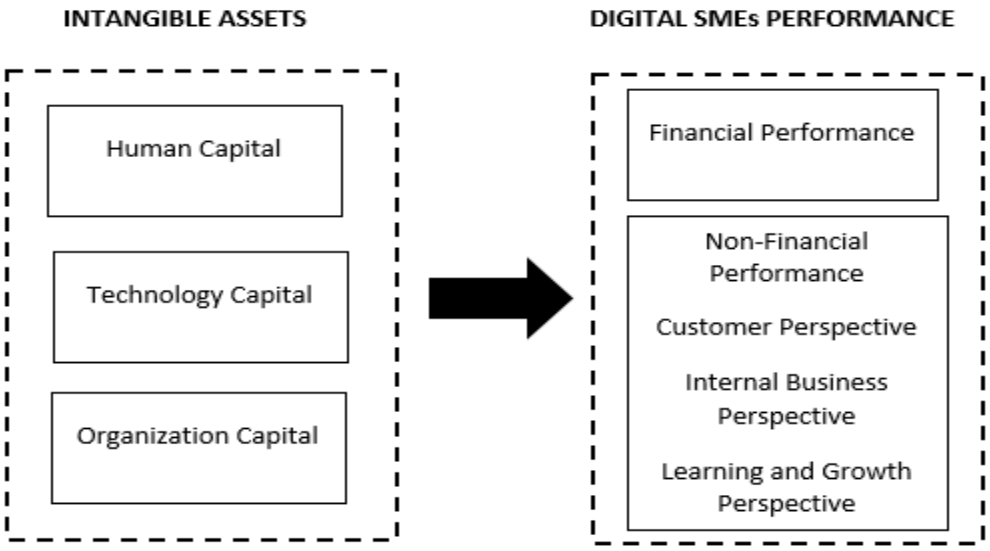


Figure 3-1: Research Conceptual Framework

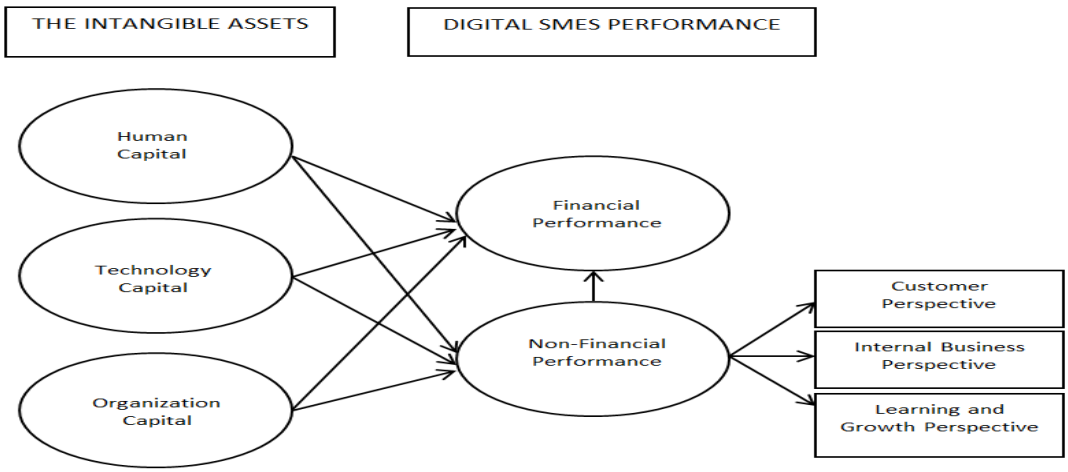


Figure 3-2: Research Model

Previous literature has advocated a tool to view performance in helicopter view, one tool found to be appropriate; the BSC. Consist of financial and non-financial perspective, it further clusters the non-financial perspective into three: customer, internal business and learning and growth perspective. As the main research questions to be examined in this study are on **how do intangible assets contribute to digital SMEs performance?** This central question is then broken down into several specific sub-questions and answered by the quantitative and qualitative studies respectively.

3.8.1 Human capital and digital SMEs performance

Human capital serves as the most important part of many business performances, regardless of business size and of industries. For the highly technological companies, despite required high technology tools, the human element is still believed to be the core of generating business with performance, in fact, the human element plays a more important role for these industries. Although Sveiby (1997) concluded that employee competence is the main driver for organization growth, Accenture (2016) emphasised on the 'people' relationship as being very prominent especially with the digital industries, and that it is important to investigate this statement. As the human element is regarded as the primary valuable commodity, this study will further investigate the relationship of human capital with non-financial performance and financial performance.

RQ1: What is the relationship between human capital and performance of Malaysian digital SMEs?

Hypothesis 1a: Human capital is related to Malaysian digital SMEs non-financial performance

Hypothesis 1b: Human capital is related to Malaysian digital SMEs financial performance

3.8.2 Technology capital and digital SMEs performance

Besides human capital, the technology has also has been claimed to play an important role in SMEs, especially for digital-based SMEs. Due to its nature, the technology is compulsory in digital-based company to engage with the technology. The importance of technology towards firm performance also has been a witness in two forms financial and non-financial. It was witnessed by Rivard et al., (2006) that technology has a positive relationship with firms financial performance. On the other hands, a study conducted by Wu et al., (2006) found that the investment in technology has increased the supply chain performance which the technology has benefits firms in term of integrating offline and online sales channel that promotes to increase customer satisfaction experience, which is view as one non-financial performance. Moreover, in more broad perspective, Khalique et al., (2015) found similar result, in which the technology played a significant role towards firm financial and non-financial performances. However, while studying the impact of technology on the SMEs financial performance, such as ROA and ROE, Rai et al., (1997) interestingly exhibited that the investment in technology will only increase the management expenses rather than increase the firm's performance. While many of the current business especially highly technology has been largely found to invest in technology capital, it is important to know how these assets contribute to digital firm's performance in financial and non-financial aspects. Therefore, for the next hypothesis, the relationship of this asset towards firm's performance is further investigated.

RQ2: What is the relationship between technology capital and performance of Malaysian digital SMEs?

Hypothesis 2a: Technology capital is related to Malaysian digital SMEs non-financial performance

Hypothesis 2b: Technology capital is related to Malaysian digital SMEs financial performance

3.8.3 Organization capital and digital SMEs performance

Another set of intangible assets is organization capital. This capital embedded a value in the organization such as company routine, structure, and culture. As discussed before, many studies have found that organization capital provides a significant contribution towards firm performance. This statement has been an emphasis by Barney (1986a) and Baruch Lev et al., (2009), in which both studies mentioned that firms with strong culture can be considered as excellent management.

As the digital SMEs has been found to have different organization structure and culture such as more flexible, rely on teamwork, have less of orthodox structure (Ackroyd, 1995), this segment of SMEs also has an uncommon characteristic that is not similar with other industries. This segment of the business which has a smaller number of worker, has also found to collaborate and conduct their business using team effort and required leadership support despite the flat hierarchal structure (Ackroyd, 1995; Amabile et al., 2004; Brynjolfsson et al., 2002; Raberger & Krammer, 2013). Furthermore, this business often regards to have a unique working environment to support creative and innovative thinking which is interesting to study (Tong et al., 2013; Xerri et al., 2014). Therefore, it is important to understand on the relationship between Organization Capital and firm performance.

RQ3: What is the relationship between organization capital and performance of Malaysian digital SMEs?

Hypothesis 3a: Organization capital is related to Malaysian digital SMEs non-financial performance

Hypothesis 3b: Organization capital is related to Malaysian digital SMEs financial performance

Clearly, the three intangible assets namely human capital, technology capital and organizational capital has been found to play an important role to technological industry such as digital SMEs. However, given to the fact that the SMEs is always reported to have a limited resources and have financial difficulties, it is important to understand between the three assets, which component of intangible assets plays the most important role to digital SMEs.

3.8.4 Non-financial performance and financial performance

After assessing the role of intangible assets and firm performance, the next hypothesis determines the relationship between non-financial and financial performances. Many studies have reported that non-financial performance is related to financial performance. Hence, SMEs should concentrate on non-financial measure because it has been evident the non-financial performance will enhance the firm financial performance (Anuar & Yusuff, 2011; Choo et al., 2010; Ittner & Larcker, 2003), especially for industries which characterise with rapid technological change (Rickards, 2007). However, as the financial performance is regarded as the focal objective of SMEs, it is worth to understand on the relationship of both performance perspective in view of digital SMEs.

Understanding the intangible contribution towards financial performance is vital it is strongly emphasis that the firm sustainable financial performance can be achieved by achieving the non-

financial performance. As mentioned by Ittner and Larcker (2003), non-financial information gives predictive of performance of the company, therefore, non-financial performance indicators, which include non-monetary items, also have been reported to provide a significant contribution towards firm performance. In fact, the non-financial performance has been found to drive the long-term financial performance of the firms (Lowe, Carmona-Moreno, & Reckers, 2011). Such performance is not only claimed to benefit the large organization hence, it has found that this segment has provided a strong foundation to the SMEs to experience a superior performance. Hence, the next hypothesis seeks to understand the role of non-financial performance towards financial performance.

RQ4: Does non-financial performance have a significant effect on financial performance?

Hypothesis 4: Non-financial performance has a significant effect on Malaysian digital SMEs financial performance

3.8.5 Non-financial performance as a mediator to financial performance

The final hypothesis in this study is to investigate if non-financial performance mediated financial performance of the intangible assets. Due to the fact that each resource has a potential to support the firm with financial performance, it is worth to understand whether the non-financial performance mediates this relationship between the two. In parallel, this study will put each of the resources to the test which later investigates whether the non-financial performance mediates the financial success of the firms. By understanding the relationship between individual resource and financial performance once non-financial performance as a mediator, it can further increase understanding on the actual role held by the non-financial performance.

RQ5: Does non-financial performance mediate the relationship between intangible assets and financial performance?

Hypothesis 5a: Non-financial performance mediates the relationship between human capital and financial performance.

Hypothesis 5b: Non-financial performance mediates the relationship between technology capital and financial performance.

Hypothesis 5c: Non-financial performance mediates the relationship between organization capital and financial performance.

After addressing the hypotheses, this study aims to follow up on the most important resources that provide digital SMEs with performance by conducting an interview with the practitioners in the industry. Having a conversation with the people in the industry will not only provide interpretation from the quantitative findings, further this occasion will provide more understanding on why these resources are consider as the potentially most important assets in their firms.

Although it is acknowledged that the importance of these assets towards the financial and non-financial performances of the firms, no study has been conducted to further investigate these assets relationships. In most cases, the studies only focus on the intangible assets relationship towards either non-financial or financial performance. As it has been claimed that non-financial performance drives the financial performance (Ittner & Larcker, 2003), this study attempted to understand the intangible assets relationship simultaneously between financial performance and the non-financial performance, further the relationship of intangible assets and financial performance if the non-financial performance been put as a mediator. The result from this might give more in depth information on the relationship of this assets and further increase the understanding of this topic.

3.10 Chapter summary

A plethora of studies has highlighted the importance of intangible assets for successful business (Bontis et al., 2006; Khalique et al., 2015; Regan et al., 2005; Roos & Roos, 1997). The topic of intangible assets has emerged across several disciplines, including economics, strategy, finance, accounting, and reporting and disclosure (Bernard Marr & Moustaghfir, 2005). A survey conducted by Chartered Institute of Personnel and Development (CIPD) pointed that investing in intangibles has surpassed the investment in physical assets starting the year of 2000 (CIPD (Chartered Institute of Personnel and Development), 2015), has further confirmed that industries have shifted their awareness towards the importance of intangibles assets.

Despite the industry affirmation on the importance of intangibles, these vital assets play a more important role in the high-tech sector and knowledge-intensive sector (Regan et al., 2005). Industries, such as biotechnology, pharmaceutical, and ICT, tend to appreciate these assets more than other industries (Binney, Guthrie, & Boedker, 2007; Huang et al., 2011; Khan, 2014; Peng et al., 2007; Sharbati et al., 2010). Recent studies have found that despite the intangibles being perceived as important by all industries, the ICT industry seems to be the most prominent sector investing in intangibles (Goodridge et al., 2014) and the dependency of industry successes towards the generation of knowledge, skills, innovation, and creativity, has been reported to be the reason for these phenomena

(Huang et al., 2011). These factors are essential to promote the digital sector business performance. Besides, digital business requires good technology capital and organizational environment. These assets are deemed important in achieving business success. The components of digital intangible assets can be seen as strategic industry factors and valuable assets to the firms. The strategic industrial factors are the set of resources and capabilities that determine the success of an industry and these strategic assets, which are believed to provide several benefits towards competitive advantage, are essential to digital firms (Amit & Schoemaker, 1993). In this study, the essential intangible assets that are addressed are human, technology and organization capital.

Due to the important role of these assets, failure to understand the synchronised element in the intangibles aspect increases the risk of poor business performance. This is more crucial for digital SMEs as empirical studies have reported that this sector is the riskiest sector for the industry (Ohanga, 2011; Papalexandris et al., 2004). It is vital to understand the relationship, the weight, and the linkage between these assets. More information on these elements can increase the SME's success and support the government's aspiration to develop Malaysia as a digital hub in Asia. As SMEs are always linked with resource constraints, this study supports higher quality decision making, allocation in resource investment, and enhanced strategic planning process.

A manger would be concerned over uncertainty, complexity, and conflict while selecting the most strategic assets in the firms (Amit & Schoemaker, 1993). However, not all resources are equally important to each firm (Bakar & Ahmad, 2010). Intangible assets are important for firm performance, especially for technology-related firms, such as digital businesses (Bose & Thomas, 2007; Goodridge et al., 2014; Roos & Roos, 1997; Tseng & Goo, 2005). It is suggested for digital SMEs to focus on the existing resources in their firms. As the three elements of intangibles influence the performance of digital business which is human, technology and organization capital (Barney & Wright, 1997; Brinkley, 2009; Cheng & Humphreys, 2012; Goodridge et al., 2014; Kaplan & Norton, 1996), therefore, it is important to understand and appropriately manage the intangibles in the organizations, which depend on extensively with cyber technology.

While conglomerates have been found to implement intangibles tools and techniques (Starovic & Marr, 2003), SMEs have been reported to lack these elements. In fact, they have been found to use more imagination instead of suitable strategic management account tool to enhance their performance (Chen, 2003; Nandan, 2010). Thus, it is vital to understand what is essential in assisting digital SMEs in devising better strategy by using the existing resources in the organization. As this industry has

contributed a lot in terms of job provider and economic resource, it is vital to understand the contribution of strategic resource in digital firms towards the performance of the companies.

For modern and creative business, the intangible resources have been claimed to play a very important role. Compared to the tangible assets which easily imitate, substitutable and tradable in the market the intangible assets, in contrast, has offered a more valuable role as strategic assets because it is non-substitutable, inflexible to replicate make them more precious compared to physical assets (Khalique & Pablos, 2015). Indeed, the investment on this resource is not cheap, however, it is worth investing in the strategic resources in the firm because it might help the firm achieve market competitiveness and further increase business performance. As managing intangibles is no longer an option it is perhaps this study will assist SMEs accordingly (Starovic & Marr, 2003).

However, for this business which is always linked with the rapid change and unpredictable environment, the information about their intangibles assets is essential to make a better strategy (Bremser & Chung, 2005). Further the SMEs always link with limited resources and having inadequate physical assets therefore by fully understanding their intangible assets might be the best solution for them to be competence in the industry (Khalique & Pablos, 2015). From the literature, many academics have suggested for high technology based industry the focus should be put on intangible assets (Arora, 2002; Herdon et al., 2012; Namasivayam & Denizci, 2006; Ray et al., 2013). Goodridge et al. (2014) claimed that despite most industries have shifted their focus to invest in intangible and non-physical assets, it has been confirmed that digital they are leading this trend.

Many studies have assessed the combination of the three intangible assets, but none has assessed firm performance across digital SMEs in Malaysia. Next, after the most influential intellectual assets component in digital SMEs, we will further discussed on the performance measurement topic.

In current turbulent and challenging market conditions, the SMEs must avoid complacency on relying on their existing resources. Hence, it is strongly urged for the SMEs to appropriately understand their resources to further utilise their assets and translate to strategy development. In line with the RBV theory that the assets including the intangible resources are the determinant of firm performance motivated this study to be conducted. By appropriately identify the relationship of their assets towards business performance that has been linked with modern business model including human capital, technology capital and organizational capital, it is perhaps that the SMEs will be able to make a better strategy and resource allocation further increase their business performance.

As depicted by Jarvis et al., (2007) in the report of ACCA: The Intangible Assets and SMEs, greater awareness of intangible assets benefits SMEs in the long run. With relevant information, these digital SMEs can appreciate their resources to assist them in making better strategic decision.

Chapter 4

Research Methodology

4.1 Introduction

While the previous chapter has discussed the definition and theoretical concept of that guide this study, this chapter presents the methodological position of this research further discuss the research design process. Driven by the 'research onion' by Saunders, Lewis, & Thornhill (2009), the explanations of the layers of research onion are described. First, this study will attempt to explain the philosophical stance of the researcher in this study, further discussed the approaches, strategies and choices of methods for the data collection.

4.2 Research methodology

The reason for one research is conducted is to understand and seek for the answer towards the research questions. The central question of this study is to seek an answer on **how do intangible assets contribute to digital SMEs performance.** Therefore, in order to achieve this objective, the selection of a procedure, approach, and strategy need to be determined by the researcher. By understanding the research methodology and the assumption that underlying the research, the appropriate method to be adopted, a technique that applicable and approach that should be engaged in conducting the research can be determined. According to Guba (1990) the methodological attempt to understand the researcher approach in order to find the knowledge. Further Holden & Lynch (2004), defines methodology as the researcher toolkit used to investigate the phenomena in the study. Concern with the research logic, potential and limitation methodology underpinned by and reflect from the ontological and epistemological assumption of the researcher, the methodology contains to the science and study of method and assumption about the ways in which knowledge is produced (Grix, 2002).

According to Kothari (2004) the research methodology can be defined as a systematic way to solve the research problem. It describes several aspects of the study including the design, procedure for data analysis, methods for data collection, selection of subject and detail of specific treatments (Willis, 2007). This system should be understood before the research been conduct because only by understanding the research methodology the researcher will have a clearer picture of the appropriate technique and method to be adopted further assisting them in obtaining a precise result. The research

methodology is a concern with the philosophies associated with the choice of research method (Smith, 2003) and research method as an outcome of this review.

In order to understand the most suitable technique to be adopted, Guba & Lincoln (1994) have emphasized that the researcher should understand the research paradigm first and the question of a method to be used is considered as secondary. In the book: Handbook of qualitative research page 105, Guba & Lincoln, (1994) has mentioned that:

"From our perspective, both qualitative and quantitative method may be used appropriately with any research paradigm. The questions of the methods are secondary to questions of paradigm, which we define as a basic belief system or worldview that guide the investigator, not only in choices of the method but in ontologically and epistemologically fundamental ways".

This statement has been argued by Saunders et al. (2009). He describes that the research methodology should be viewed as layers of an onion before the appropriate technique and procedure is determined. The layers include the research philosophies, approaches, strategies, choices, time horizons and techniques and procedures of the study need to be considered before the research is taking place. Additionally, he mentions that the selection of research technique and procedure only can be achieved once the researcher understands the layers of each research methodology. Therefore, it is crucial for the researcher to understand their 'layers' before a decision of taking any choice is executed.

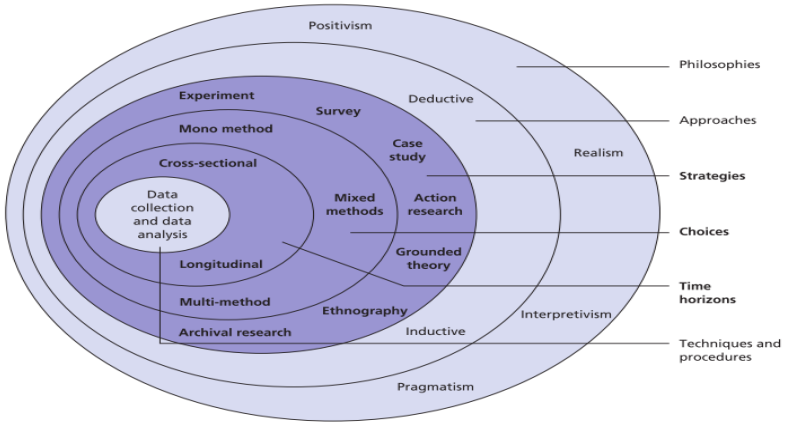


Figure 4-1: The research onion (Saunders et al., 2009)

It is vital for the researcher to understand the paradigm and used it as their stance to further guide them in obtaining the most appropriate research philosophies and further drive them to adopt the suitable approach and methods in their study.

4.3 Research Philosophies

The research philosophy can be defined as the development of knowledge and the nature of that knowledge in relation to research (Saunders et al., 2009). Associated with the researcher view on the development of knowledge (Wilson, 2010), the research philosophy contains important assumptions of the researcher's perspective in viewing the world (Saunders et al., 2009). Saunders et al. (2009) has illustrated that the philosophy is the most outer layer of the research onion, making the philosophical stance of the researcher is critical because of it is fundamental to how the researcher approach the research (Wilson, 2010). There are many versions of research philosophies have been addressed by academics. For example, Willis (2007) has an emphasis that there are three main paradigms which are post-positivism, critical theory and interpretivism. In the other hands, other scholars have categorized the philosophy as postpositivism, constructivism, interpretivism and pragmatism (Creswell, 2009) and further Saunders et al., (2009) has provided four philosophies pillars which are positivism, realism, interpretivism and pragmatism. It is believed that the number of philosophies will not stop here, in fact, it will escalate with the plethora of findings of future research.

While acknowledging that the research philosophy is extending, the most important thing to understand is the philosophies contain with the important assumption of the way the researcher views the world; and the researcher views about knowledge is driven by the research paradigm. As defined by Guba (1990), the research paradigm or also known as a worldview (Creswell, 2014) defines as the set of beliefs that guides researchers' actions. This belief is critical for the researcher because it guides the researcher in the process of gaining the knowledge, further determines the mode of inquiry and how it is to be practised. The importance of understanding the paradigm stance of the researcher further dictates the most suitable method and approach to be used in conducting studies (Creswell, 2014; Krauss, 2005). Since it is vital for the researcher to understand their research paradigm, some scholars have advocated that the paradigm should be identified at the beginning of the study (Grix, 2002).

In order to understand the philosophical assumption of the researchers, many components have been addressed by the past literature. According to Guba (1990), the three most important component which is important to understand researcher philosophical stance is an ontology, epistemology, and methodology. He further provides the three basic question that needs to be answered in order to understand researcher stance.The three components of research paradigm are:

(1) Ontological: What is the nature of the knowable? Or what is the nature of reality?
(2) Epistemological: What is the nature of the relationship between the knower (the inquirer) and the known (or knowable)?
(3) Methodological: How should the inquirer go about finding out knowledge?

He further emphasizes that by answering the three core questions, an appropriate research paradigm can be identified further direct the researcher to adopt the appropriate in answering their research questions and dilemma (Guba, 1990). However, despite the three components found to be important by Guba (1990) and some of the later scholars (Guba & Lincoln, 1994), several pieces of literature have mention that there is another component that is important to the researcher, the philosophical stance which is axiology (Gill & Johnson, 2010; Heron & Reason, 1997; Saunders et al., 2009; Tashakkori & Teddlie, 2010; Wilson, 2010). Concerning the value that the researcher attached to the study, axiology is considered as another important component which relates to the paradigm (Heron & Reason, 1997; Tashakkori & Teddlie, 2010). It is believed that the values held by the researcher have implications for their studies, therefore, it is important to understand the researcher's position in conducting the study.

Although there are different school of taught provided by the past academics in determining the researcher's way of getting and viewing the knowledge, both perspectives acknowledge the importance of ontology and epistemology in gaining the researchers philosophical stance. Labelled as 'metaphysics' (Lawson, 2004; Willis, 2007), the ontology and epistemology hold a position as a core component of philosophy. It has been found that by adopting clear ontological and epistemological assumption in research, this will assist the researcher to understand the relationship of a key component in the research, to avoid confusion when discussing theoretical debates and an approach to social phenomena and to be able to recognize others research and defend their own (Grix, 2002). Indeed, as mention beforehand, the ontology, epistemology, methodology, and axiology are important, however metaphysics is a fundamental in conducting research and always need in the philosophical study (Lawson, 2004; Willis, 2007). Due to this factor, brief explanations of the components of metaphysics will be provided – the ontology and epistemology further provide the philosophical stance of the researcher in the conduction of this study.

4.3.1 Ontology

The word ontology comes from the Greek words of 'onto' means existence or being real while 'logos' means study. Combining the two words, ontology derives the definition of the study of existence or

what are we studying (Gill & Johnson, 2010). Describe as the science or study of being (Lawson, 2004) which concern with the nature of reality (Holden & Lynch, 2004; Willis, 2007) the ontology represent the basic assumption made by the researcher about the nature of reality (Easterby-Smith, Thorpe, & Jackson, 2012). Among the four inquiry paradigm, the ontology has been concluded as the most important component in conducting the research (Holden & Lynch, 2004). This statement is strongly emphasis by Easterby-Smith et al. (2012) who mention that ontology can be described as the densest part of the trunk of the tree. Consider as the 'heartwood', the ontology is the core of research paradigm. The ontology positioned as the cornerstone to all other assumption and later will determine their epistemological and therefore it should be put in the starting point of research (Grix, 2002; Holden & Lynch, 2004). In total, there are two sets of ontology differs how the researcher views the world. The two continuum polar varying philosophical position can be identified as objectivist (realism) and subjectivist (relativism) (Guba, 1990; Holden & Lynch, 2004).

The objectivist or realism is the ontological stance that believes the social phenomena are based on external realities and beyond of the researcher control. The objectivist holds an assumption that the reality is objective and exist out there (Guba, 1990; Holden & Lynch, 2004). Further, they postulate that the social phenomena and their meaning have an existence that is independent of social actors (Grix, 2002) and that the laws and theorists that govern the world is available. It needs to be tested or verified so we can understand the world (Creswell, 2014). Since they believe that reality is a concrete structure, therefore, it holds the ontology of realism. In contrast, subjectivism, also known as a relativism, believes that the social phenomena and their meaning are continually being accomplished by social actors (Grix, 2002). Known to be holding relativism ontology, the relativist does not believe that there is only one reality in understanding or obtaining knowledge. Instead, they argue that the reality can exist in multiple forms and not necessarily one (Krauss, 2005).

4.3.2 Epistemology

Another core branch of the philosophy is epistemology. Epistemology or the theory knowledge (Holden & Lynch, 2004) is defined as the knowledge of the reality (Guba, 1990; Shelley, Yore, & Hand, 2009) and how we come to know what we know (Grix, 2002). Derived from the words of 'episteme' which mean 'knowledge' or science and 'logos' which means 'knowledge' the epistemology seek to understand the relationship of the knower and what is known and how we do know what we know (Krauss, 2005). The different epistemological position will lead the researcher to employ different methodology in their research (Grix, 2002). In general, two dimensions of epistemology assumption exist, which are positivism and interpretivism. Positivism which has been

found to be more leaning towards realism ontology has differed from relativism ontological assumption which always known to adopt the interpretivist epistemology.

Positivism always incorporates the assumption that there is the definite outcome in understanding the knowledge. Developed from the natural science approach, the positivist believes that the conventional science can be adopted to understand reality thus it can be applied to study in social science topic to study science with relates to human (Holden & Lynch, 2004; Willis, 2007). Mirroring the natural science research which conducting the study by experiment, the positivist epistemological researcher believed that the observation and measurement are fundamental in obtaining knowledge (Krauss, 2005) leading them to conduct a methodology of quantitative research approach (Grix, 2002). Since they believe that the knowledge and reality are real, therefore the researcher position is detached from the subject of study and value freedom in order to understand how things really work (Guba & Lincoln, 1994). As practised in the science lab, the researchers act as an observer where the environment is strictly controlled without interference by the researcher. Due to this phenomena, some studies believe that the positivism epistemology is the only 'real' research paradigm (Willis, 2007).

On the contrary, the interpretativist has rejected the positivist assumption that the method used in the field of chemistry and physics can be adopted in studying humans (Willis, 2007). The intrepretivist or sometimes labelled as constructivist (Creswell, 2014) believe that in social sciences and business research, the study will always deal with the perspective of human further rely on the participant judgment of the situation being studied (Creswell, 2014). This argument also has been supported by Holden & Lynch, (2004) and Willis, (2007) which mentions that the objectivist is found to experience significant flaws because the finding cannot be repeated and replicate, as conducted in a natural science experiment. Since the social science study such as business and accounting topic is always perceived by the researcher and the answer given can be interpreted in many ways, the construct developed using various views and further assumes that there are multiple realities that exist, thus multiple methods can be applied to understand this type of research (Smith, 2003). Additionally, interpretetivists believe that since the research is dealing with humans, most of the time the answer might differ over time. The responses received from humans are always influenced by their uncommon understanding which is derived from their level of knowledge, attitude and environment. In addition, humans behave in accordance with their environment and cannot be treated as natural science phenomena which can be controlled by the researcher. Therefore, the researcher with interpretivism epistemology always interpret the meanings others have about the world and develops a pattern of meaning inductively (Creswell, 2014). Accordingly, it is strongly recommended that if the study conducted is dealing with

humans, the qualitative approach is favourable because it provides a better way to know how humans interpreted the world around them (Willis, 2007) in context.

Although previously the common accepted philosophical partner for quantitative is positivism and for qualitative research is constructivism or interpretivism (Creswell, 2014; Holden & Lynch, 2004; Willis, 2007; Wynn & Williams, 2012), at the same time both philosophy has disagreement. As the way of obtaining knowledge is different, both methodologies also has proposed different method to imposed study and many studies has exhibit that both study has strength and weakness (Creswell, 2014). Due to different set of accepted epistemological and ontological assumption this issue has later promotes 'a paradigm wars' amongst scholars (Gorski, 2013; Maxwell, 2011). This situation has further cause researchers in the mixed method (MM) position which is a non- purist philosophical stance being left behind. Although these phenomena have create problems to academic world, fortunately it has led to valuable discovery of new form of obtaining knowledge (Gorski, 2013). Several scholars has found that research method are not directly link to specific philosophical position, in fact, methods can be combine on the basis of the practical utility (Tashakkori & Teddlie, 2010), which later has make pragmatism is accepted as the appropriate philosophical stance for mixed method research (Maxwell, 2011; Tashakkori & Teddlie, 2010)

The pragmatic worldview which sometimes reported as the third research paradigm (Burke & Onwuegbuzie, 2004; Subedi, 2016) is found to be practical among practitioners (Burke & Onwuegbuzie, 2004; Greene, 2008) and it arises out of action, situation, and consequences rather than antecedent conditions (Creswell, 2014). Compared to other philosophies, the pragmatism argues that the most important determinant of research philosophy is the research question (Saunders et al., 2009; Charles Teddlie & Tashakkori, 2010). This paradigm which is claimed to be flexible and has multiple perspectives to answer, urges the researchers to use all approaches available to understand the problem rather than stick to one approach, either purely of a qualitative or quantitative approach to enquiry (Tashakkori & Teddlie, 2010). Believing that it is possible to integrate both positivist and interpretative stance, this worldview always integrating qualitative and quantitative method when conducting their study (Creswell, 2014; Subedi, 2016; Tashakkori & Teddlie, 2010). They do not see the world in absolute unity hence believe that truth is working at that time. However, the idea of taking pragmatism as the way out for mixed method research has been reject by several scholars (Archer, Bashkar, Collier, Lawson, & Norrie, 1998; Maxwell, 2011). They argue that by accepting mixed method research directly to pragmatism philosophical stance is inappropriate because it underestimate the influence of philosophical assumption on research method. As a result, some scholar suggests that the most

appropriate philosophical stance for mixed method study is Critical Realism (CR) (Bisman, 2010; Maxwell, 2011; Zachariadis, Scott, & Barrett, 2013a)

CR has been made known by Bhaskar in 1975. It assumes a stratified ontology divided into three domain, which are the real, the actual and the empirical (Archer et al., 1998; Zachariadis et al., 2013a). In critical realism, the link between assumption about the existence of the world and society (ontology), the idea of how the knowledge is possible and of what (epistemology), and the choice of methodological approach is importance (Zachariadis et al., 2013a). The CR also states that although there is one reality, the researcher might not be able to observe and realize it in every aspect, because reality might be invisible. Furthermore, although they might be observable, the potential also might be exist whether they are exercise or unexercised (Archer et al., 1998; Zachariadis, Scott, & Barrett, 2013). In essence, it is difficult to access them directly due to the limitation of human knowledge (Wynn & Williams, 2012). This statement has shed a light to MM scholars because CR constitute a productive stance and facilitate more effective collaboration between quantitative and qualitative researcher (Maxwell, 2011). Zachariadis et al. (2013) has further agreed while he mentioned that CR is appropriate for MM research because it take a necessity and validity of current social arrangement without following the extent paradigm as the most important aspect. Besides it can accommodate a variety of methodological choices, it also accepts various philosophical approach by different philosophical stance (Zachariadis et al., 2013).

The statement about getting knowledge also has shown that there are many possibilities of gaining knowledge. Both information (qualitative and quantitative) are important therefore, the ability of critical realism paradigm to recognize and allow the validity of both quantitative and qualitative methodologies, acknowledge the value of information obtained from while retaining the information of scientific rigor has been valuable (Bisman, 2010). Without neglecting the importance of answering research question, the CR philosophical stance use existing knowledge and experience in given situation to analyse what the world must be like (Wynn & Williams, 2012). As a result, CR has gaining interest in various Mixed Method discipline including science, social science, accounting, management and Information System (Bisman, 2010; Gorski, 2013; Maxwell, 2011; Wynn & Williams, 2012; Zachariadis et al., 2013).

In this research, there are two main ontologies differentiating the researcher's way of viewing the world, they either believe that one reality exists or there that no specific reality exists. The researcher stands in the middle position between the relativism ontology which believes that knowledge can exist in multiple ways and the realism ontology which believe that there is a single way of gathering a

reality. In understanding the intangible assets contribution towards digital SMEs performance, it is believed that the reality of the performance can exist in various ways. Further, while the topic of intangible assets is considerably increasing, the component and combination of these assets are providing multiple benefits to the SMEs. In addition, although we had employed the balanced scorecard as a performance measurement tool for this study, the way of understanding the balanced scorecard might vary amongst individuals despite operating in the same industry. The researcher also believe that there are multiple ways to answer the research problem. In order to understand, many approach can be utilze and not stick to only one approach because all information are deem important and can provide meaningful answer to the research questions. This ontology is consistent with pragmatism which emphasis that the answering question is the the most important determinant and in order to do this, all approach can be used to understand the problem.

Epistemologically, the researcher believes that in order to understand the knowledge relating to a human being, there is no uniform definition and the answer will be gathered in the study. The positivism epistemological stance which assumes the result can be replicated is believed to be unappropriated in studying human beings. Every human being is unique and their attitude and knowledge about reality are different, which are sometimes drive by the environment and experience. Considering that this study requires understanding of the intangible assets components (human capital, technology capital and organization) interaction with the balanced scorecards perspectives (financial and non-financially), it is believed that the level of understanding of the knowledge is multiple. Therefore, the engagement of the researcher and the respondent is required to better understanding their meaning. Although the definition of the topic is well known, there is no uniformity of understanding of balanced scorecards and the intangible assets. However, they are defined in the literature and definitions extended in the questionnaire.

From the philosophical stance of the researcher, it is important to obtain the answer to the research question, in line with pragmatism stance, the researcher also belief that all information are important and not limited to one method, hence it should involve both quantitative and qualitative data in response to the research question and hypothesis. The data from quantitative study might provide information which later need to be elaborated further by conducting qualitative study. By solely looking at numbers might potentially provide incomplete information, therefore, to ensure the question is answer by seek a further explaining from words. By taking a non-purist or mixed position, the researcher will be able to mix and match the design component that offers the best possibilities of answering the specific research question (Burke & Onwuegbuzie, 2004). As the researcher also

believes that each researcher has a freedom to select their methods, techniques and procedures, it is believed that this stance will provide more rigorous and meaningful outcome to the topic. Motivated by the researchers background as a practitioner in accounting, the researcher believes by having a multiple perspectives available to examine how intangible assets contribute to digital SME's performance, the knowledge can be obtain in with more meaningful information and further providing more in-depth answer in the real world inquiry (Tashakkori & Teddlie, 2010) makes the pragmatism as the most appropriate philosopichal stance for this study.

4.4 Research Approach

In accord with Saunders et al. (2009) regarding the suggestion that the layer of onion will be exposed after the first layer is peeled off, the next layer after the 'philosophical' is the research approach. The research approach comes naturally after the philosophical assumption of the researcher is established. There are two main approaches available in conducting accounting and business research which are a deductive and inductive approach (Saunders et al., 2009).

A deductive approach, which is the approach dominant to scientific research (Saunders et al., 2009), often starts the study with a theory to explain phenomena. In order to understand the specific problem, the researcher develops a hypothesis to understand the idea. In order to conduct this approach, the large data of the sample is required therefore this approach often linked with the quantitative data which gather the data by using surveys, observation and questionnaires.

Another research approach is known as an inductive approach. In this approach, the researcher is more likely to lean towards the interpretative philosophy (Saunders et al., 2009). Using this approach, the result of the data analysis is used to develop a new theory. The common data collection technique used for the inductive approach is interviews and observation.

In our case we no attempt will be made to develop a new theory, hence, we are an attempting to understand the existing theory and try to explain the contribution of intangible assets towards digital SME's performance. This study is adopting the deductive approach with the study being drawn from the resource-based view theory of the firm, which focuses on the intangible assets component contribution towards digital SMEs performance. After the data is analysed, the researcher will then use the interview of the respondents to further understand the phenomena of intangibles assets and their importance towards firm performance. Rather than generating new theory, the finding from this study are expected to provide a deeper understanding of the theory.

4.5 Research Strategy

According to Saunders et al. (2009) research strategy is a general plan of how the researcher will go about answering the research question and there are no strategies that are superior to others, but the strategy chosen should be able to answer the research question in the study. Therefore, the strategy of the research will be guided by the research objective and ultimately answering the research questions. Further, other elements such as time and resource constraints, should be considered in choosing the best strategy to be adopted not to mention the philosophical assumption of the researcher. Saunders et al., (2009) has underlined seven research strategies often used in conducting research; there are experiments, surveys, case study, action research, grounded theory, ethnography and archival research.

The survey is one of the research strategies often used in the business and management studies and it is usually associated with the deductive approach. The survey is popular because of its ability to collect the data from the sizeable population in a more economical way rather than other methods. The most common research tool in the survey is the questionnaire. As the technological advancement has created many modern survey techniques (Dillman, Smyth, & Christian, 2007), the traditional pencil and paper survey has been largely replaced by the electronic based questionnaire further provides an alternative to the strategy of research.

Another strategy which is important in research is the case study. A case study is the design of inquiry where the researcher develops an in-depth analysis of a case to better understand the phenomena of study (Creswell, 2014). Claimed to be applicable to both exploratory and explanatory research, the research includes interviews, observation, documentary analysis and questionnaires (Saunders et al., 2009). This technique provides the researcher the opportunity to answer the ‘why’, ‘what’ and ‘how’ question, the case study provides the researcher with a better understanding of the research context.

As there are no strategies is superior to others all research strategies have their own advantages and limitations. In line with the pragmatism worldview, this study will combine both the survey and case study using in-depth interviews. By incorporating the two methods, it should be able to provide a better result and strengthen the credibility of research findings (Saunders et al., 2009) and provide more insight towards the knowledge of intangibles assets topic (Creswell, 2014).

4.6 Research Choices

In general, the research choices can be distinguished by two choices: first, the mono method refers to the single used of single data collection technique that is used in gathering the information about the study. It can be conducted either by qualitative or quantitative methods. In the other hands, the multiple methods offer more options by possibly combining the two data collection techniques namely qualitative and quantitative (as in the diagram below Figure 4-2).

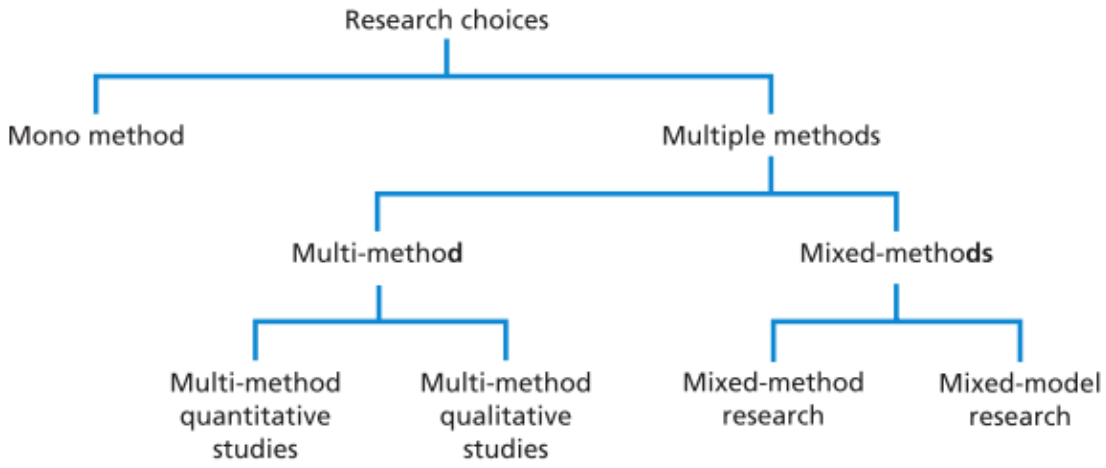


Figure 4-2: Research choices (Saunders et al., 2009)

According to Figure 4-2, Saunders et al., (2009) have differentiated the research choices into two main categories. The first categories are the mono method. This is the most popular method employed by the research studies. Using a single data collection technique, the qualitative or quantitative study is chosen by most researchers with the adoption of accepting only one method in the study to answer their research question.

Quantitative research is an approach for testing the theories by examining the relationship among variables (Creswell, 2014). Realism ontology which holds positivist epistemology has been found to be aligning with the quantitative approach of study (Easterby-Smith et al., 2012; Guba & Lincoln, 1994). Using numbers rather than words as a data, the quantitative approach requires a statistical procedure to be conducted to tested the hypothesis which has been presented in the study (Creswell, 2014). Additionally, by conducting the statistic approach, it is believed that the knowledge and truth of the reality are expected to be found and by obtaining the one solution or answer of the knowledge, the findings from the study should be able to be replicated and generalized (Creswell, 2014). The most popular quantitative methods are surveys and experiments (Creswell, 2014; Guba, 1990). In

conducting this method, the researcher is positioned as an outsider from the subject of study (Guba & Lincoln, 1994; Guba, 1990). Further, this technique requires a large data sample and demand for statistical data analysis such as regression analysis, multivariate statistical analysis and structural equation modelling (Easterby-Smith et al., 2012; Willis, 2007).

In contrast, the methodology for the interpretivism epistemology and realism ontology are more likely to adopt a qualitative approach (Creswell, 2014; Guba & Lincoln, 1994). Since this paradigm believes that the knowledge can be obtained via interaction between researcher and respondent (Guba & Lincoln, 1994), the researcher will engage directly with the subject of study thus trying to interpret their meaning. The most common method in dealing this situation is by conducting a case study, ethnography and phenomenological research (Creswell, 2014).

Further, the second branch of research choice is available for the researcher to choose from is the multiple methods. In line with the name, the multiple-method allows the utilization of more than one data collection technique in seeking the research question solution (Burke & Onwuegbuzie, 2004). Consider as an alternative to purely qualitative or quantitative methods, there are two types of multiple research choice which are multi-method and mixed-methods. The multi-method refers to the combination of more than one data collection technique but is restricted to either quantitative or qualitative world view. This means it does not allow the mixture of both quantitative and qualitative conducted together, and restricts the research to the utilization of two or more techniques in the same family of method.

The second multiple method branches namely mixed-method allow the combination of the qualitative and quantitative method in the same study. Incorporating both elements of qualitative and quantitative, the mixed- method differs from the other approaches. Although the method is only newly found and not as popular as the other traditional approach of study, this method has gained interest in many studies especially among practitioners in social science accounting, financial, and marketing (Greene, 2008; Saunders et al., 2009; Tashakkori & Teddlie, 2010). The mixed method approach or sometimes known as mixed method research (MMR) is the method of conducting research by bundling both quantitative and qualitative and taking the advantage of both methods strength in the same study. One of the strengths of this method is its ability to provide more complete understanding of the research problem (Sarosa, 2012) further establish the triangulation, complementary, initiation, development, and expansion (Onwuegbuzie & Collins, 2007) by the use of two independent sources of data collection method, to corroborate research findings within a study further covering the shortfall of each method as used separately (Saunders et al., 2009). In total, there are six primary models of mixed

methods reported in the social science research. Although Creswell, (2014) has provides four types of mixed method design including convergent parallel mixed methods, explanatory sequential mixed methods, exploratory sequential mixed methods and transformative mixed methods, recently Subedi, (2016) has included another two design which are embedded design and multiphase design.

The mixed method methodology can be conducted in two ways: mixed-method research or mixed model research. The mixed-method is the research which is conducted by quantitative and qualitative data collection technique either in parallel (in the same time) or sequential (after one another) (Creswell, 2014; Saunders et al., 2009). Since this method offers much flexibility, as well as advantages such as providing less bias and weakness than is portrayed by the traditional individual quantitative and qualitative methods, hence the mixed method is found to be providing more benefit and is more practical to be use.

4.6.1 Mixed method study and explanatory sequential mixed method

In order to answer the research question further in accordance with the researcher paradigm and philosophical stance, the most appropriate way to deal with pragmatic worldview is by conducting a mixed method research (Creswell, 2014; Greene, 2008; Subedi, 2016; Tashakkori & Teddlie, 2010). By combining both statistical evidence and information from stories that are told by the respondents, this method will provide more rigorous findings than where one method is conducted by itself, either by purely quantitative or purely qualitative (Ivankova, Creswell, & Stick, 2006). Although this method is claimed to be new rather than a traditional method, the development of the mixed method has provided the dynamic interplay with creative practice in the highly practical field, especially in the area of social science (Greene, 2008; Tashakkori & Teddlie, 2010). It is reported that by conducting purely qualitative or purely quantitative methods there maybe advantages, but by conducting the stand-alone approach it also might hinder the er from obtaining several important answers, due to associated drawbacks (Burke & Onwuegbuzie, 2004). By bridging the schism of qualitative and quantitative methods (Burke & Onwuegbuzie, 2004) the study will be able to take advantage of both methods, eliminating drawbacks which will provide more meaningful and practical results (Subedi, 2016) therefore it is believed that this method is the best suited for conducting this study.

Specifically, this study will adopt the explanatory sequential mixed method (Creswell, 2014; Ivankova et al., 2006; Onwuegbuzie & Collins, 2007). Involving a two-phase project, this popular mixed method of research (Subedi, 2016) is conducted with each phase of the research occuring in a consecutive order with one phase emerging from or following on from the other (Cronholm & Hjalmarsson, 2011).

In this two-phase project, the quantitative research will be conducted first and the data gathered will be analysed in the initial phase by the researcher, followed by the the second phase of qualitative research. The intention of this design is to have the qualitative data to further explain the quantitative result in more detail. Commonly, with this method, the survey procedure is conducted for gaining the original data and later the interviews will follow, to explain the findings of the study in more depth (Ivankova et al., 2006; Subedi, 2016). In this study, the qualitative evidence will supplement the statistical evidence, to provide more understanding and elaborate on the contribution of the intangible assets towards the Malaysian digital SME's performance.

4.7 Research Time Horizon

Another important component of the research methodology is the time horizon. There are two types of research time horizon, which are cross-sectional studies and longitudinal studies. As this layer is a concern on the time in conducting the study, the difference between the two is as follows. The cross-sectional studies are considering the particular phenomena at a particular time. In contrast, the longitudinal studies require a longer time period in an attempt to study change and development. Requiring a longer time for the research to be conducted, this method is able to compare and provide more advantage in understanding the phenomena.

In this study, the cross-sectional type of time horizon is found to be the most suitable type to be adopted. While this study is generated based on the findings of most important intangible assets towards digital SMEs today, it is relevant for this study to adopt the cross-sectional type of time horizon to this study. Although it is believed that the longitudinal studies can provide many advantages such as richer data and powerful information towards the knowledge, the outcomes of this research are not based on trends within the population over time, but an appreciation of particular phenomena by the audience.

4.8 Research Design

Having discussed each layer of the research onion, the researcher now has clarity of direction towards the core of the study which is the data collection process. As suggested by Saunders et al. (2009) that the data collection, process should follow the research onion, in this chapter the process will elaborated upon for the data collection. The purpose of this study is to investigate the contribution of intangible assets towards the performance of digital SMEs in the context of Malaysia. As the intangible assets have been found to be important for digital business performance, this study will try to understand the

importance of these assets towards digital SMEs specifically in Malaysia context. Following the pragmatism paradigm which always conducted the study using both quantitative and qualitative methods (Creswell, 2014; Subedi, 2016; Tashakkori & Teddlie, 2010), in this study, the explanatory sequential mixed method is found to be appropriate to be adopted. Following this method, the quantitative method will be conducted first follows by qualitative technique (QUAN→qual) (Ivankova et al., 2006; Subedi, 2016; C. Teddlie & Yu, 2007). The qualitative data analysis will be informed by and conducted to obtain more detail explanations after the quantitative analysis, which is conducted in the first phase. The below illustration of the research design is presented, providing a more understandable process for this study.

Based on the research design illustrated in figure 4-3 it is shown that the initial step conducted in this study is determining the variables in the study. The variables have been identified to represent the intangible assets which are human capital, technology capital and organization capital. These three assets have been claimed as important assets in digital industries (Barney & Wright, 1997; Brinkley, 2009; M. M. Cheng & Humphreys, 2012; Goodridge et al., 2014; Kaplan & Norton, 1996b). Further, the Balanced Scorecard (BSC) will be utilized to measure the financial and non-financial performance of the digital SMEs. After the discussion of variables is completed, the next step in this study is to conduct a data collection process. Since this study will take a sequential explanatory mixed method approach, two methods will be conducted in this study. As suggested by Creswell (2014) that this method should be start off with the quantitative study to understand the bigger picture of the problem then be followed by the qualitative studies (QUAN→qual), this study will follow these steps.

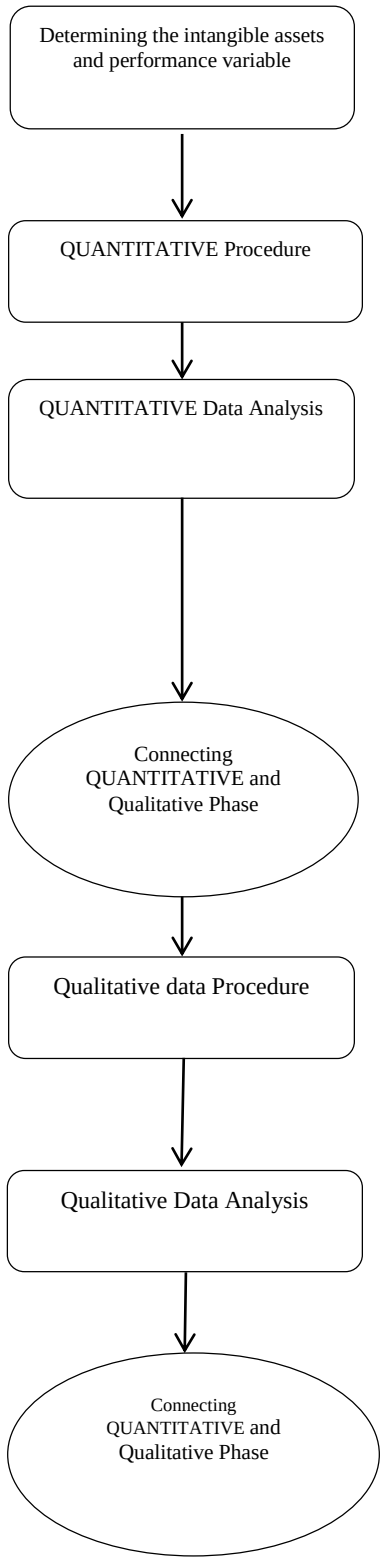
Phase	Procedure
	Intangible assets ▪ Human capital ▪ Technology capital ▪ Organization capital Performance ▪ Financial performance ▪ Non-financial performance ▪ Questionnaire development ▪ Target population ▪ Sample selection ▪ Web based questionnaire (Bristol Online Survey) IBM SPSS Statistic Software and Microsoft Excel ▪ Data screening ▪ Descriptive statistic Partial Least Square-Structural Equation Modelling ▪ Model specification ▪ Measurement model ▪ Structural Model ▪ Mediation analysis ▪ SmartPLS 3 ▪ Convenience sampling ▪ Developing interview question ▪ In-depth interview (using Skype and telephone) ▪ Email respondents to follow up on interviews ▪ Translation ▪ Email translation to obtain confirmation ▪ Coding and analysis ▪ Interpretation and explanation of quantitative and qualitative results

Figure 4-3: Research design

In the second phase, the quantitative procedure is conducted. The discussion of the questionnaire development process, target population, sample selection is discussed, and the utilization of a web-based questionnaire will be elaborated upon. In this study, the Bristol Online Survey (BOS) is used which are provided by the University of Salford.

Once the quantitative data collection is complete, the data is analysed using three software systems which are the Microsoft Excel, the IBM SPSS statistics software (IBM SPSS Statistics 22) and the Partial-Least Square-Structural Equation Modelling software (SmartPLS 3). These statistical tools allow a model specification, measurement model, structural model and the mediation to be analysed and hence make this software the most suitable to be utilized.

The qualitative method is conducted after the analysis of quantitative method is obtain. Consistent with the purpose of the sequential explanatory mixed method which tries to obtain a further understanding of the quantitative result (Creswell, 2014; Subedi, 2016); the interview will be conducted to the selected respondents based on the convenience sampling technique. By conducting this method, it will provide additional expansion from this study and increase the meaning around the research being conducted.

4.8.1 Measures of intangible assets

The first step in this research is to validate and understand the variables used in the studies. As digital SMEs are always dealing with humans, technology in the organization, the three components are found to be most relevant here. Furthermore, while small and medium entrepreneurs are always regarded as having limited resources (Abor & Quartey, 2010; Fauske, 2007), they also have been urged to focus only on several important strategic resources. Whilst too many resources might not guarantee a beneficial outcome to the SMEs, in the other hand, it might impair the entrepreneur's judgment and decision making. Here according to the literature review a specific focus will be on the three intangible resources which are claimed to be most appropriate to study of the digital SMEs and intangible resources. In this study, the intangible assets are operationalized as observe variable which is human capital (HC), technology capital (TC) and organization capital (OC). In total, the resource variables consist of 38 questions and these question are group into three. A seven point Likert Scale ranging from 1=" Strongly Disagree" to 7 ="Strongly Agree" was used to measure the intangibles assets components.

4.8.1.1 Human capital (HC)

The first construct in the intangibles assets is the human capital. As this resource was purported to a very important role towards firm performance, this asset is measure through skill knowledge and expertise, attitude and intellectual agility (Khalique et al., 2015; Khalique & Pablos, 2015), The knowledge and expertise competencies include know-how, experience, education, and expertise. In the same pace, attitude covers the behavioural dimension of the employee at work. This includes professionalism, motivation, and dedication. Meanwhile, the intellectual agility includes human solution provision towards the problem, innovation and creative thinking .

The human capital questionnaire was adapted from Khalique & Pablos, (2015). This measurement has been evidently established and published in academic paper. This measurement has been utilize by Khalique et.al (2015) when conducting a study in Pakistan manufacturing industries. The same measurement has been adopted during studying Malaysia electronics and electronics SMEs (Khalique & Pablos, 2015). This measurement has been found to achieve satisfying Cronbach alpha which make it suitable to be used in studying topic of human capital.

A seven Likert Scale ranging from 1=strongly disagree to 7=strongly agree was used and respondents were asked to indicate to what degree or disagreed with each statement.

4.8.1.2 Technological Capital (TC)

It has been affirmed that the technological capital plays a very important role towards firms performance, especially for technology-based companies (Apulu & Latham, 2011; Bharadwaj, 2000; Zhang & Tansuhaj, 2007). Therefore, in order to conceptualize the technology capital construct, a combination of technology investment, technology capabilities, and technology equipment is being used. The technology construct is adopted from Khalique & Pablos, (2015) which include the knowledge and technology budget and investment.

In this study, a seven Likert Scale ranging from 1=strongly disagree to 7=strongly agree was used and respondents were asked to indicate to what degree or disagreed with each statement.

4.8.1.3 Organization Capital (OC)

Organization capital represents the environment, culture and structure in the organization which reflect the activities and performance of the firms. As several literature has mentioned that ‘structural capital’ is consists of technology capital and organization capital (Daou et al., 2014; Martín-de-Castro et al.,

2006; Youndt et al., 2004), in this study the utilization of element of structure capital by Khalique & Pablos, (2015) has been adopted. This is because in his study the component of technology capital has been differentiate in different construct and the item in the scale is similar in defining organization capital which are system, policies and procedure. Furthermore, as the items has been established and published in several literatures has justify the utilization of his measurement. Moreover, the measurement has evidently obtained a satisfying level of reliability (Khalique et al., 2015; Khalique & Pablos, 2015).

A seven Likert Scale ranging from 1=strongly disagree to 7=strongly agree was used and respondents were asked to indicate to what degree or disagreed with each statement.

4.8.2 Measures of performance

In this study, the performance review is not merely through but more robust; the 'financial and non-financial performance' has been a highlight as a way of defining performance. In order to do this, we have adopted the most widely known Kaplan and Norton (1992) performance measurement tools, the Balanced Scorecard (BSC). The Balanced Scorecard which views performance on overall, has been found to be the most appropriate tool to be adopted because this instrument allows the financial and non-financial to be measured simultaneously. Further, these tools claimed to be the appropriate method to view performance holistically and appreciated by SMEs (Rickards, 2007).

In the BSC, the performance is cluster into two categories which are financial performance and non-financial performance. The performance item is measure by 19 item compromising four perspectives. There are six questions has been established in order to understand the financial performance of the SMEs for the past 5 years. Incorporating an item such as revenue, profit, cost, return on assets (ROA), and return on sales (ROS), these ratios have been found to be appropriate in measuring financial performance. The utilization of these financial ratios as a benchmark of financial performance has been widely used in the literature previously, especially in measuring the financial performance of Malaysia's SMEs. While studying the perspectives of Malaysian SMEs business managers towards business success, Ahmad et al., (2011a) have used financial ratios to measure the SME's financial performance amongst Malaysian SMEs. In addition, Khalique & Pablos, (2015) have also employed this scale to study the organizational performance of electrical and electronic manufacturing SMEs in Malaysia. In addition, to examine the non-financial performance (Non-Fin Per) three perspectives have been identifyed in line with the original balanced scorecards. There are customer perspectives (5 items), internal business process (4 items) and the learning and growth perspective (5 items)

Table 4-1: Summary of measurement adopted in this study

Construct	Sources	Journal	Items used	Previous study
Human Capital (HC)	Khalique & Pablos (2015)	Journal of Intellectual Capital	**Skill knowledge and expertise** - competent, motivation, experts **Attitude** - satisfaction, new ideas, new products, sharing ideas, understand **Intellectual agility** - knowledge, implementation, encourage, unique, knowledge development	Khalique & Pablos (2015) Cronbach α 0.861 Khalique et al.(2015) Cronbach α 0.830
Technology Capital (TC)	Khalique & Pablos (2015)	Journal of Intellectual Capital	**Technology Knowledge** - easy to understand, technology leader, technology innovation, technology coordination, control of technology, use latest equipment, R&D infrastructure **Research budget and protection rights** - technology budget, external source, professional skill, intellectual property, industrial property	Khalique & Pablos (2015) Cronbach α 0.917 Khalique et al.(2015) Cronbach α 0.850
Organization Capital (OC)	Khalique & Pablos (2015)	Journal of Intellectual Capital	**Infrastructure and system** - infrastructure, integrated, structure, system, and procedure, licence, employee close, support innovation **Policies and procedure** - recruitment, skill upgrading, education upgrading, up to date, encourage giving ideas, involvement, vital knowledge	Khalique & Pablos (2015) Cronbach α 0.899 Khalique et al.(2015) Cronbach α 0.783
Performance	Khalique & Pablos (2015)	Journal of Intellectual Capital	**Financial** – revenue, profit, cost, return on assets, return on sales **Non-Financial** **Customer perspectives** - loyalty, satisfied with products, believe, satisfied with service, market share **Internal business perspectives** -	Khalique & Pablos (2015) Cronbach α 0.942 Khalique et al.(2015) Cronbach α 0.889

			competitive, success rate, on time service/products, responsive **Learning and growth perspectives** - employee turnover, superior performance, industry leader, compete globally, overall performance	

In this study, the performance measure has been adopted from Khalique & Pablos, (2015). With consisting of 19 items in total, it has been evident that the measure has been used in studies and achieve an adequate level of reliability. For example, the construct has been used by Khalique & Pablos, (2015) while studying the electronic and electronic SMEs in Malaysia. In summary, the performance measure has achieved 0.942 Cronbach alpha value. This measure also has been adopted by Khalique et al. (2015) while studying the SMEs performance in Pakistan. This measure has also obtained a good Cronbach alpha with 0.889 therefore, this measure is appropriate to be adopted. A seven Likert Scale ranging from 1=strongly disagree to 7=strongly agree was used and respondents were asked to indicate to what degree or disagreed with each statement.

4.8.3 Data collection phase 1: The Quantitative

Having discussed the component variables, the next step is to conduct a quantitative study in this research. In order to deal with the intangible assets topic, it has been found that the quantitative method has been dominated the current literature and this method is considered as the most widely used, compared to other methods. Studies which has been found to adopted a quantitative method in the intangible topic are currently (Argyropoulou, 2013; Bontis et al., 2000; Carlyle, 2013; Daniel, 2011; Kamaruddin & Abeysekera, 2014; Khalique et al., 2015; Khalique & Pablos, 2015; Osman, 2014; Sharbati et al., 2010; Yeganeh, SHarahi, Mohammadi, & Beigi, 2014). Additionally, whilst these studies are concerned about the SME's response rate, the survey method has been reported to be successfully adopted in studying smaller firms such as SMEs especially in Malaysia (Ahmad, 2012; Anuar & Yusuff, 2011; Choo et al., 2010; Jusoh & Parnell, 2008; Tan et al., 2009; Wei, Choy, & Chew, 2011).

4.8.3.1 The development of the questionnaire

The questionnaire has been developed based on the established measure that has also been used frequently in the literature. The variables used within the topic of intellectual capital or intangible assets have been selected from several studies, which are reported to be relevant to this study. Further,

in order to reduce error and to test the content validity of the measures expert evaluation and a pilot test have been conducted. The feedback items which were found to be overlapping, irrelevant and difficult to understand have been eliminated before the pilot test took place.

For this study, the questionnaire has been prepared in two languages, an English and Malay version. The original version of the questionnaire was established using the English version but taking into consideration that some of the respondents might not understand English, the questionnaire later has been translated into Bahasa Melayu, the native language of Malaysia. However, in order to verify the translation and making sure that the translation is dependable, 10 Malaysian PhD students around Manchester have been selected and confirmed that the translation is correct. In addition, both the English and Bahasa Melayu questionnaire had been sent out during the pilot test study, as alternatives for the respondent to choose.

There are two main purposes of preparing the questionnaire in two languages: first, by providing an option to the respondent, it might increase the number of the respondents. As the Bahasa Melayu is a native language of the citizen, it is assumed that the availability of this alternative might attract more respondents to participate in this survey. Secondly, by providing the option in Bahasa Melayu, the respondent might be able to counter check or verified the meaning of the question with their native language, if they have any doubt.

In a broad view, the survey can be divided into four main chapters. The first chapters are regarding the profile of respondent which consist of 8 questions. From this question, the demographic information such as gender, age and education are gathered. Furthermore, this section attempt to filter the company's background by questioning the age of the company, the number of employees and the company experience as an MSC Malaysia status. This is because the company might have be established for a long time but the MSC Malaysia status was not necessarily obtained at the same time of the company's establishment. As mentioned in the previous chapter, the MSC certification does not come with the digital business registration, hence, the company need to satisfy several criteria in order to be position in the league of MSC Malaysia status companies (Refer 2.7.2). In addition, the cluster of the company is a question to enhance the data gathered further and validate the appropriateness of the response to be used in the study.

The second part includes the intangible assets. In this part, three main intangibles are discussed. The three intangible assets, namely human capital (HC), technology capital (TC) and organization capital (OC) (Barney & Wright, 1997; Brinkley, 2009; Cheng & Humphreys, 2012; Goodridge et al., 2014;

Kaplan & Norton, 1996b) are highly important in determining digital business performance, in total these sections have 38 questions to answer. Each item in the survey was rated using the Likert scale where 1=strongly disagree and 7=strongly agree, further 4=neutral. The utilization of 7 Likert scales has provide a more accurate response further attract many main literature on intangible assets topic to widely adopted this technique (Bontis, 1998, 2000; Bozbura, 2011; Kamaruddin & Abeysekera, 2014; Osman, 2014; Regan et al., 2005; Rompho & Siengthai, 2012).

The performance section will be investigated holistically with the engagement of the balanced scorecard as a performance measurement tools. Along with the balanced scorecard principle, the performance is divided into two pillars which are financial performance (Fin Per) and non-financial performance (Non-Fin Per). The first pillars are the non-financial measure (Non-Fin Per). In this section, three components are discussed, including customer perspective, internal business perspective and learning and growth perspective. The entire question provided opportunities for probing the SMEs view on their perspective towards the non-financial measures and consists of important non-financial measures findings from several kinds of literature. Some of them are customer loyalty and satisfaction, on time delivery and staff turnover. The next section is the financial performance (Fin Per). The financial performance is measured by looking at several financial ratio and financial figures, which are popular to measure the financial performance of the organization, especially SMEs. The financial measurement such as revenue, Return on Assets (ROA) and Return on Sales (ROS) are discussed here.

Similar to the intangible assets section, the item in the performance construct (for both financial and non-financial performance) will be using a 7 points Likert scale approach where 1=strongly disagree and 7=strongly agree, further 4=neutral. Next, the additional information is demand where the growth or declining percentage of the financial performance experience by the SMEs for the past five years is inquire into. However, the information here is optional to answer and at the same time, SMEs might provide an assumption, if there do not have an actual figure.

The fourth and last section is about the details of the respondents. This section provides information as to whether they willing to participate in the next phase of the study which is the interview. The contact detail such as respondent name, company, telephone number, email address and Skype account is collected in order to further communicate with the respondents if they have been selected for the interview. Further, the respondent is offered access to the report of the result of the study. By providing their email address, the findings from the study will be sent to them in PDF format, once the study is completed. Finally, respondent comments and suggestion are welcome by providing a specific box before the questionnaire end.

4.8.3.2 Common method variance

One of the main concern of academics in conducting behavioural research is regarding common method variance (CMV) (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff, MacKenzie, & Podsakoff, 2012). Describe as the statistical variance used by the method of measurement rather than the constructs represent by the measure (Podsakoff et al., 2003), this problem is potentially exist when the same participant provides all the variable or items responses in one survey (Huang et al., 2011) which might be the source of measurement error (Podsakoff et al., 2003, 2012).

In order to overcome this issue, Podsakoff et al. (2003) and Podsakoff et al. (2012) has provides several procedural and statistical remedies to control the method bias. The procedural remedies or also known as ex-ante remedies (Chang, Van Witteloostuijn, & Eden, 2010) suggest that several procedure can be took during the preparation stage or before the gaining the feedback in order to reduce the risk of being CMV. On the other hands, the statistical remedies or ex-post remedies is the remedy that is conducted after the research has been completed (Chang et al., 2010; Tehseen, Ramayah, & Sajilan, 2017). Although CMV cannot be totally avoided (Chang et al., 2010), managing this issue is critical since it can threat the validity of the conclusion about the relationship between measure due to measurement error (Podsakoff 2003).

In order to ensure the study is not experiencing with CMV, the current studies have employed both procedural and statistical remedies. Albeit the study is conducted via online-based questionnaire, several procedural remedies has been took, consistent with (Podsakoff et al., 2012) suggestions. In the questionnaire, the respondent has been informed that their anonymity is protected. The respondents also have been assured that there are no right or wrong answer which increase their honesty in answering the questions. Next, the questionnaire used in the study does not using any vague concept, unfamiliar item and further no double-barrelled questions are included. Moreover, the pilot test has been conducted to reduce ambiguity and maintain the accuracy of the questions.

Besides various procedural remedies have been explained to control the method biases, there are also statistical remedies has been introduced in the literatures and has been conducted. One of the most common statistical remedies to test the Common Method Bias is by conducting the Harman Single Factor Test (Chang et al., 2010; Fuller, Simmering, Atinc, Atinc, & Babin, 2016; Podsakoff et al., 2003; Tehseen et al., 2017). While the concern that CMV might be emerge in the model that are overly simple (Chang et al., 2010), this method allow the researcher to identify whether the relationship among the dependent and independent are so simple and likely to be part of individual cognitive maps.

In this test, all item from every construct is gathered and loaded into a factor analysis (Podsakoff et al., 2003). This procedure will show whether one general factor does account for majority of the covariance between the measure or one single factor emerge (Chang et al., 2010) . If there is a single factor emerge and account for majority of the covariance, that shows there is a CMV issues in the studies. However, if the total variance for a single factor is less than 50%, it suggest the data is not affected by the CMV (Fuller et al., 2016). In this study, the Harman Test single factor test has been conducted. The result indicate that the data having 35.85%. Since it is far less than 50%, it can be concluded and confirmed that the data is not experience with the common method issues (Appendix 1).

4.8.3.3 Target population

As the main question in this study concerns the intangible assets contribution towards Malaysian digital SMEs performance, the appropriate target audience regarding this questionnaire is Malaysian SMEs, who have been using the digital and technology ability to produce and provide their services. In order to simplify the definition of Malaysian digital SMEs, the SMEs which has been awarded by the MSC Malaysia status recognizing the business has used the multimedia extensively in their business is used. The study only focuses on the digital SMEs because the digital SMEs have been reported to have their investment portfolio mainly in intangible assets. By identifying the relationship of the resources towards firm's performance, it is perhaps the digital SMEs who will have specific guidelines in making crucial decisions, especially in strategy, investment and resource allocation.

The population of digital business has been categorising by clusters. According to MDeC and MSC Malaysia, there are four clusters has been segregated according to their business activities. The four clusters include the Creative Multimedia (Creative), Information Technology (InfoTech), Global Business Services (GBS) and IHL & Incubators (IHLs). The definition has been discussed in Chapter 2.7.2. However, despite the four clusters being identified, this study, in contrast, will only undertake two clusters from this category namely Creative Multimedia (Creative) and Information Technology (InfoTech) cluster. The Institution and Higher Learning and incubators (IHL & Incubators) and the Global Business Services (GBS) has been exempted from this study because this cluster are found to be unsuitable to be incorporated in this study as it does not satisfy the definition of digital SMEs. At the point of this study being conducted (2015), there were 2,708 active MSC Malaysia companies in the directory. After cleaning the data only 2,254 companies has been identified as a population frame (Sekaran & Roger, 2009).

Detail of the digital business in Malaysia is extracted from the MSC Malaysia companies' directory listing which is available online at www.mscmalaysia.my. It is believed that this database has provided essential information about digital business in Malaysia with incorporating much information about the companies' background. Despite the directory providing much information, some firms in the directory have been found to be obsolete and incomplete. Some companies lack information, such as contact numbers and company websites, and some of them are also found to be out-of-date. In order to overcome this issue, the data has been cross check with the company website and the majority of the company websites are active. By exploring the company website many optional contact points can be gathered, such as company social media page (such as Facebook, Twitter, LinkedIn) and informative content which is available interactively by using media apps such as YouTube.

To enhance the credibility of the company size status, the SME Corp company search engine is utilized to make sure that the company is registered as a SMEs in Malaysia. As the SME Corporation is the Malaysia statutory body for the SMEs, by counter checking with SME Corp database then this will increase the confidence in the population under study.

4.8.3.4 Sample

A sample is defined as a relatively small subset of the population (Hair, Money, Samouel, & Page, 2007; Sekaran & Roger, 2009). Acknowledging that gathering the larger number of respondents has been found to providing more robust and less error prone results, however, it has been found that it is impractical, time-consuming and expensive to conduct research which involves all the population in the study (Saunders et al., 2009; Sekaran & Roger, 2009). Therefore, there is a need to identify the suitable sample in the study. Unfortunately, selecting the appropriate sample that can represent the whole population of the study is not easy, especially if the study is conducted using the mixed method approach (Onwuegbuzie & Collins, 2007).

The sampling technique can be divided in two; probability and non-probability. The random sampling technique or sometimes labelled as probability sampling (Onwuegbuzie & Collins, 2007) offers the equal probability of being selected from the population (Saunders et al., 2009). Associated with survey and experiment strategies (Saunders et al., 2009), the probability technique offers 5 techniques to be choose from, which are simple random, systematic, stratified, cluster and multi-stage random sampling (Onwuegbuzie & Collins, 2007; Saunders et al., 2009). In contrast, the non-probability sampling technique or the non-random sampling, is linked to the study which does not attempt to generalize the population, instead, this method is always adopted for study which attempts to understand phenomena,

individual or events (Onwuegbuzie & Collins, 2007). Saunders et al. (2009) provides ten types of non-probability or non-random sampling techniques, on the other hand Onwuegbuzie & Collins (2007) has provided nineteen non-random sampling techniques to choose from. Some of the non-probability samplings include quota, snowball, convenience, self-selection, purposive, extreme cases, heterogeneous, homogeneous, critical case technique (Onwuegbuzie & Collins, 2007; Saunders et al., 2009). Both random and non-random sampling can be used in mixed method research during quantitative studies.

The target sample of this study consists of two clusters from MSC Malaysia companies: the Creative Multimedia (Creative) and Information Technology (Info Tech) clusters as describes beforehand. However, since it includes two different clusters, it is important to control the relative size of each subsample in order to represent the whole population. Otherwise, the selection of sample is exposed to bias and so not representing the whole population. Since the clusters that differentiate the type of business are established, the most appropriate method to be used is stratified random sampling. As its name implies, stratified random sampling involves a process of stratification or segregation, followed by random selection of subjects from each stratum (Chelliah, Sulaiman, & Yusoff, 2010). It is a modification of random sampling where the population is divided into two or more significant strata, based on one or a number of attributes (Saunders et al., 2009).

There are two ways to establish the valid proportion of stratified sampling: one, the proportionate stratified sampling, where the number of selected stratum is proportionate to the cluster of particular strata; two, disproportionate stratified sampling, where the sample from each stratum is determined, without considering the cluster of the stratum which relative of the overall sample size (Hair et al., 2007). However, in order to verify that the correct procedure is taken in this study, both proportionate and disproportionate has been conducted. The proportionate stratified sampling was conducted by taking a total number of companies established (Table 4-2). On the contrary, the disproportionate stratified sampling was gathered based on the cluster contribution which is derived from the MDeC report which include the total sales performance, total export and clusters employment performance (Table 4-3).

Table 4-2: The proportion of number of active Malaysia digital SMEs

Cluster	Number of active companies	Percentage (%)
Creative	334	15%
Info Tech	1,920	85%
Total	2,254	100%

According to MDeC (2015) as at the date of the study is undertaken there are 3,632 companies has been reported to receive this certification. However, only 2,708 companies remain active and can be classified into four clusters; InfoTech, creative multimedia, global business services IHL & Incubators. As mention before (2.7.2) although there are four different types of companies' clusters, only Creative Multimedia (Creative) and Information Technology (InfoTech) are selected as a sample while IHLs & Incubators and global business services (GBS) are exempted from the study. Since the number of active IHLs & Incubators is currently 111 and the Global Business Solution is 343, therefore, the remaining total sample population is 2,254 companies. Based on the table 4-2 above, the majority of the active companies has been taken from the InfoTech clusters while the other cluster, which is Creative only, represents 15% within the overall sampling frame. In essence, by adopting proportionate stratified sampling, one cluster was found to be dominant, thereby potentially providing imbalanced and invalid information in answering the research question.

Table 4-3: The disproportionate of Malaysia digital SME's clusters according to total sales, total export and total employment contribution.

Cluster	Total Sales	Total Export	Total Employment
Creative	31%	11%	19%
Info Tech	69%	89%	81%
TOTAL	100%	100%	100%

The second option of stratified sampling is disproportionate stratified sampling. For this instance, each cluster total sales performance, total export and employment performance are presented. Based on Table 4-3, the total export and total employment have been skew dramatically towards one cluster

which is Info Tech. In contrast, the total sales figure is found to provide more fairly equal although leaning towards information technology however this measure is found to be more appropriate to be adapt. It is obvious that on every occasion, the Info-Tech received the highest percentage. This is not surprising because the number of InfoTech companies is almost six times greater than a Creative cluster. Therefore, in order to gain more balanced numbers of respondents, the percentage of total sales is found to be more balanced despite the creative cluster showing the least percentage. Essentially, in this study, the disproponate stratified sampling is adopted which the total of 31% from the sampling will be derived from Creative cluster and the remaining 69% will be obtained from InfoTech cluster.

4.8.3.5 Sample size

In conducting research, it is always important to identify the correct number for the sample. However, finding the correct data size to be incorporated can be problematic (Onwuegbuzie & Collins, 2007). Since there were no studies found to engage with the digital SMEs in Malaysia, the study conducted amongst SMEs is used to understand the pattern of response from this fragment of business. Table 4-4 summarized the thirteen selected studies involving SMEs that has been conducted in Malaysia.

Referring to the Table 4-4, it is found that the response rate from the study conducted towards SMEs has been varied. The lowest percentage of response has been received by Tan et al. (2009) with only 5 percent responses while the highest response in conducting research in SMEs is gain from Moorthy et al. (2012) with 69 percent responses. On average, the response rate received from the studies are 25 percent. This phenomenon has been experienced by several past researches while and the low response phenomena have been expected during the study of SMEs in Malaysia (Bakar & Ahmad, 2010).

Table 4-4: Past response on SMEs study

Researcher (Year)	Topic	Response rate	No of sample
Ramayah et al., (2005)	SME e-readiness in Malaysia	27%	300 SMEs
Hashim, (2007)	Information Communication Technology (ICT) Adoption Among SME Owners in Malaysia	38%	1000 SMEs
Hashim, (2009)	E-commerce and SMEs -The Need for Caution	17%	3,535 SMEs

Kurnia et al., (2009)	Adoption of electronic commerce technologies by SMEs in Malaysia	35%	300 SMEs
Tan et al., (2009)	Internet-based ICT adoption: evidence from Malaysian SMEs	5%	-
Bakar & Ahmad, (2010)	Assessing the relationship between firm resources and product innovation performance: A resource-based view	20%	700 SMEs
Choo et al., (2010)	The importance of intellectual capital information to SMEs in Malaysia	7%	520 SMEs
Tan et al., (2010)	Internet-based ICT adoption among SMEs: Demographic versus benefits, barriers, and adoption intention	7.80%	519,000 SMEs
Wei et al., (2011)	The KM processes in Malaysian SMEs: an empirical validation	20%	350 SMEs
Anuar & Yusuff, (2011)	Manufacturing best practices in Malaysian small and medium enterprises (SMEs)	22%	270 SMEs
Moorthy et al., (2012)	A Study on Factors Affecting the Performance of SMEs in Malaysia	69%	300 SMEs
Rosli Mahmood & Hanafi, (2013)	Entrepreneurial orientation and business performance of women-owned small and medium enterprises in Malaysia : Competitive advantage as a mediator	16%	1040 SMEs
Khalique & Pablos, (2015)	Intellectual capital and performance of electrical and electronics SMEs in Malaysia	43%	550 SMEs

According to Hashim (2009) the surveys conducted in Malaysia always had a response rate between 7 and 25 percent. In addition, Shah Alam, Ali, & Mohd. Jani, (2011) also has the same stance while he has stressed that using a questionnaire method in studying SMEs in Malaysia is likely to receive only 10 to 20 percent respondents. Some of the reasons contributing to this phenomena are demographic factors and timing issues. In contrast, Jusoh & Parnell, (2008) mentioned that the lower response rate is due to the Malaysian managers are typically reluctant to participate in surveys studies. Occasionally, this situation has been triggered by to hesitance to provide the sensitive and confidential information to a third party. Also, Hashim (2009) has mentioned that the low response rate might be influenced with the celebration month in Malaysia.

There are debatable issues with regards to the minimum require sample size; in fact, it is very problematic to identify the right sample size (Saunders et al., 2009; Sekaran & Roger, 2009). Saunders

et al. (2009) has urged that four components need to be considered in determining correct sample size. There is the confidence level need required by the data, the margin of error the researcher is able to tolerate, the type of analysis the researchers are going to undertake and the size of the total population. Additionally, Sekaran & Roger (2009) has provided six factors that affect the decision of sample size. This includes the research objective, the extent of precision desired, the acceptable risk, and the amount of variability in the population, the cost and time constraints, and the size of the population. However, some literature has witnessed different ways of dictating the minimum sample data in the research, arguing that the number of data required for the analysis is determined by the tools that the researcher has used in the study. This becomes more obvious where the adoption of statistical methods is a concern. For example, Saunders et al. (2009) have mentioned that statistical analysis usually requires a minimum sample of 30 in order for the analysis to be conducted. Further Sekaran & Roger (2009) emphasis that sample size needs to be larger than 30 and less than 500 to be appropriate. He further includes that the sample size is preferably ten times from the number of variables in the study. The Partial Least Square, a branch of Structural Equation Modelling (PLS-SEM) package in the other hands offers the researcher to conduct their study with a smaller number of data gathered (Hair, Ringle, & Sarstedt, 2011). In fact, the smaller number of required data is found to be one of the main strengths and consider as a' silver bullet' in the statistical world (Hair et al., 2011). They argue that although this method required a small number of data, the method is found to provide a similar result compared with the greater data sample. The minimum number of data required for the utilization of this method has been guided by Barclay, Higgins, & Thompson (1995). By providing the rule of thumb of ten times the number of most complex formative indicators use to measure a construct or ten times the largest number of a structural path directed at particular construct in the structural model, this method has been found useful in many branches of study.

Given to the above explanations, the low response rate associated with the SMEs in Malaysia has been generally accepted. Therefore, in order to obtain a sufficient, usable response to conduct the statistical analysis, adequate numbers in the sample are needed. As the average response rate has been found to be 25 percent therefore, in order to obtain minimum 100 response (not less than 30 and not more than 500), at least 400 questionnaires are required to be distributed. Nevertheless, 450 questionnaires have been sent out, taking into consideration that some of the questionnaires might be exposed to the risk of being rejected, undelivered and unusable. In conclusion, the acceptable number of sample size is not less than 40 and distribution of 450 sample size is found to be the most appropriate and acceptable.

4.8.4 Online survey questionnaire

The rapid development of technology and media communication has created many modern surveying techniques (Dillman et al., 2007). Compared to the traditional mail survey which required the physical distribution of the questionnaire, the e-mail survey technique (EST) in contrast has been found as an alternative technique for the technology literate researcher (Simsek & Veiga, 2000). EST allows the researcher to sends the questionnaire (either in document attachment or web link) to the respondent electronically (Rice, 1990). In total, there are two major types of EST found in the literature.

The first EST technique required the researcher to establish the questionnaire in physical form first. Next, the questionnaire will be scanned and e-mailed to the selected respondent. Later, the respondent needs to print out and complete the questionnaire. Finally, the respondent needs to scan and email back the complete questionnaire to the researcher. The process provides several benefits to the researcher (such as widen respondents reach), however this procedure is time consuming, besides requiring additional technological equipment, such as a scanner.

The second technique is more sophisticated and demands higher technological knowledge. Known as an online survey, this procedure uses the technology as a prime component, with the inclusion of technology starting from the development of the questionnaire. After the survey has been established, the questionnaire is sent and completed in digital format and the result of the survey will be directly accessed by the researcher (Simsek & Veiga, 2000).

Between the two, the online survey or sometimes referred as the web survey, is the most modern, young and evolving technique to conduct research (Wright, 2005). In this technique, the questionnaire is established form a software package that is available online. Besides this platform offers many benefits such as convenience and ease of use, this instrument offers other useful features. Options such as Likert Scale, checklist, textbox, drop down menu and filter questions are available for selections. Further, once the questionnaire design is complete, the unique URL will be provided and the link to the questionnaire can be reached by simply click or copy the link address to the navigation pane. There numerous digital survey software products available in the market. Wright (2005) has listed 20 online survey product available in the market, it is believed that the number of online survey platforms is ever increasing.

In this study, the e-mail survey technique (EST) (Simsek & Veiga, 2000) using the online survey has been performed. Although this technique sometimes has been claimed to be an inconvenient technique to collect survey information (Simsek & Veiga, 2000) both advantages and disadvantages have been

linked with this method, several justification of selecting this technique will be discussed in the next section (Refer 4.8.4.2 and 4.8.4.3). Specifically, the utilization of the Bristol Online Survey (BOS), which is provided by the University of Salford, is found to be appropriate for this study.

This study follows the procedure that has been guidde by Dillman et al. (2007). Initially, after the questionnaire has been develop, he has recommended that the researcher sends the invitation letter together with the questionnaire (Appendix 2). The invitation letter should also include several items such as university logo, the researcher's contact details, as well as providing the objective of the study. According to Dillman et al. (2007), by incorporating the university logo in the online survey, the legitimacy authority of the study is present. Therefore, the logo of the University of Salford is placed at the top of the invitation letter to address the official invitation. The contact detail of the researcher, such as address, email and telephone number has also been include in the invitation letter. This information is important because it will enhance the credibility of the study further creating opportunities for interaction between the respondent and researcher (Wright, 2005). There is no monetary incentive offered in conducting this study. Although Dillman, Smyth, & Christian (2007) have suggested that the researcher could provide financial incentives because it might influence response rate and create trust with the research project, on the other hand, this study offers the complete report as a token of appreciation to the respondents which is the complete the survey. However, this incentive is an option. For those who are interested to obtain the report, they are required to provide their email address in the specific box in the questionnaire and the reports will be send to them in PDF format once the study is completed.

4.8.4.1 Bristol Online Survey (BOS)

Bristol Online Survey (BOS) is an internet survey platform that has been utilize by the researcher in conducting their studies. This internet-based software uses the internet and technology as a prime component, which is a prerequisite during the development of the questionnaire, the data collection, through to the data gathering process. The characteristics of the software, which has been found to be convenient and offers a user-friendly interface makes the questionnaire development process easy to understand. In addition, since BOS is stored the data online, it does not need spaces on the researcher's personal computer. Furthermore, the ability of this software to include the university logo in the survey makes the questionnaire more presentable, the formality of the study is developed to further increase the respondent's awareness. Apart from the attractive characteristics that are available by BOS, this survey platform offers features crucial for the researcher, allowing the researcher to track the respondent's progress. By obtaining this information, the researcher might be able to view the question

that stops the respondent from proceeding and so trigger the researcher to revisit specific questions. Simultaneously, this information will inform the researchers on the questions that might be problematic to answer or maybe too hard to understand. As the survey is available online, the data can be encrypted in digital form. This feature is beneficial for the researcher who incorporates statistical software such as structural equation modelling or SPSS therein. Furthermore, the ability of the tool to transform the collected data into graphical illustration makes it easier to translate the trend of the data. The data can be depicted in a form of graphical display such as table and pie charts and make the results from the survey more informative and interesting.

4.8.4.2 Advantage of the online questionnaire

As one of the modern technique of conducting research, the online questionnaire offers several advantages that might benefit both researcher and respondents to adopt this technique. The benefit offered by Bristol Online Survey (BOS) software influenced the researcher to adopt this method. The internet presence and access have eliminated the geographical barrier and the survey is feasible and can be undertaken globally (Sekaran & Roger, 2009). This advantage is one of the main strength of adoption of this method. Therefore, while the researcher deal with the geographical distance, this method might be the best solution for the study since the respondent is located far from the researcher (Wright, 2005).

Cost efficiency is another factor holds by the internet survey platform. By moving out from a paper and pencil format to the electronic medium of the questionnaire, the online survey is claimed to have the lowest cost and considered a most efficient technique (Hair et al., 2007; Sekaran & Roger, 2009; Simsek & Veiga, 2000; Wright, 2005). According to Wright (2005) the paper survey is costly, even when using a relatively small sample; the conventional survey method requires printing, stamping, travelling and utility bill costs which always expensive (Hair et al., 2007; Sekaran & Roger, 2009; Wright, 2005). In contrast, the online web questionnaire has been found to eliminate these costs (Simsek & Veiga, 2000). Despite some software requiring annual fees, there is also free online questionnaire platform available to be used especially for students which increases the saving advantage (Wright, 2005). In conclusion, although some web surveys might require financial expense, the amount is always inexpensive compared to the paper-and-pencil survey (Wright, 2005).

In addition to the cost issues, conducting a traditional method of the physical questionnaire is also deem to require more time especially if the wide geographical region is covered (Chong & Ramaseshan, 2005; Sekaran & Roger, 2009), yet, the online questionnaire has simplified this issue.

By developing the questionnaire using the online system, the researcher can distribute the questionnaire by simply one click. Further, the researcher is permitted to assign the date to launch the questionnaire. At the same time, this software highlights the closing date of the survey by informing the researcher on days left before the surveys end. Furthermore, the researcher can amend the launching and the closing of the questionnaire if necessary. This provides the researcher with full control towards the research without any limits to their flexibility of launching and closing the survey. Additionally, during the distribution phase, the researcher is provided with the unique public URL of the questionnaire which provides an option to the researcher either to give the link to the target respondent or by creating a list of respondents, which allows the questionnaire to be launched simultaneously.

Besides providing benefit to the researcher, the web-based questionnaire also provides an advantage to the respondents. These method offers flexibility to the participant to answer the questionnaire (Hair et al., 2007) as the online questionnaire can be assess anytime, the respondents can stop and continue the questionnaire at any moment and so provides flexibility to the respondent. With the electronic devices such as a mobile phone, tablets or desktop computer, the progress of survey respondents can be easily accessed. The data can be tracked and traced at any time and makes this feature convenient for both the researcher and the respondents. The software also provides information on the progress level of the completed questionnaire in a form of percentage bar. With this information, the respondent will be able to know the progress of the questionnaire and further predict the length to complete the questionnaire. This feature allows the respondent to manage their time to answer and may help to motivate them to complete the questionnaire.

4.8.4.3 Disadvantage of the online questionnaire

Despite a long list of advantages linked towards the adoption of an online questionnaire, several drawbacks have been found to limit the usage of this method. Due to this technique utilizing technology as a primary component, a problem can arise if the researcher and the respondent are not positive towards technology such as a computer and the internet. This method only can be successful if both researcher and respondent have the knowledge of using a computer (Simsek & Veiga, 2000). Therefore, as this technique might not be suitable for everybody, it is important to identify the respondent portfolio and context of study before consider this technique, digital companies are potentially likely to welcome this option.

The next drawbacks is due to non-physical appearance. Since the online questionnaire does not require a face to face meeting, this means that the researcher is unable to create a personal touch and relationship with the subjects. While this ability is found not to be important, this problem is more acute when they have a problem or are looking for clarification. Compare to the traditional face-to-face interview, the online method did not allow physical interaction with the respondent. This limitation is a miss opportunity to establish a rapport with the respondent which does not permit further clarification on complex issues if required (Sekaran & Roger, 2009).

Another drawback of the online survey is the internet requirement. The internet connection is required during the development and the access to the questionnaire (Tidor et al., 2012). In other words, the internet is prerequisite for both researcher and respondents. The internet is required to be active during the completion process of the questionnaire. Without the facility, the questionnaire cannot be reached to the respondent (Sekaran & Roger, 2009). Additionally the answering process might be disturbed in the event of the respondent being disconnected from the internet. As internet coverage is mandatory for this technique, it might limit the number of the respondents. Furthermore, the compatibility of the computer also might be a barrier to using this technique.

The utilization of internet based questionnaire also can lead to a key informant issues. As the survey is send via email and often to companies general electronic mailing address, there is a chance of the survey being answered by the people who considered as the key person in the organization. Although it is unintentional, the chances is high especially if the company had a small number of staff.. Therefore this shortcoming can be address as one of the disadvavntage and limitation of online questionnaire

The consequence of all the drawbacks of utilizing this technique has led to one major disadvantage; the low response rates. Due to this issue, Tidor et al. (2012) has concluded that conducting an online survey method can be disappointing in comparison with traditional survey method. However, although this method faced several controversies, the virtual questionnaire was found to be appropriate because the respondents are among the digital SMEs. It has been evident that this method has been successfully utilize by other studies. For example, while targeting the respondents from MSC companies, the Multimedia Development Corporation (MDeC) has used a similar technique which they have adapted as the online survey method (MDeC, 2011, 2012, 2013, 2015). Interestingly, the respond rate of using this method is always above eighty per cent (80%). Therefore, it is evidence that these digital SMEs are more likely to engage with the electronic device and connected to the internet. In addition, as the online survey has demolished the time and location barrier (Sekaran & Roger, 2009) this platform has allowed the researcher to send and administered the questionnaire from thousands of miles away.

Despite the fact that this procedure have fewer response rate rather than traditional survey method (Tidor et al., 2012), this method provided the researcher with a beneficial experience. It is acknowledged by the researcher as the consequence of adopting this method, however in order to overcome the low response rate, the researcher would be required to do a follow up for non-responses (Sekaran & Roger, 2009).

4.8.4.4 Pilot Study

A pilot study is a preliminary study which is conducted prior the actual study and often conducted upon a small scale of the target audience of the study. The pilot study is essential to demonstrate the capability of the method to generate required responses from the target audience (Smith, 2003). Several benefits can be obtained by conducting the pilot test. The test could provide a prediction of the respondent interpretation towards the survey (Gill & Johnson, 2010), by conducting the pilot testing the researcher may be able to identify the instrument which is unambiguous, understandable and clear to the member of target populations (Remenyi, Williams, Money, & Swartz, 1998). More importantly, the reliability and validity of the instrument can be verified during this stage (Remenyi et al., 1998).

In this study, the pilot test has been conducted using the self-administered online web survey starting in October 2015 (Appendix 3). From the designing stage until the complete collection of the pilot study, it took about two months to be completed. The adaptation of the online based questionnaire is not new, hence, it has been popular with SMEs especially from the internet and digital industry based studies (Chung, Lee, & Choi, 2014; Daou et al., 2014; Jacobs et al., 2012; Tidor et al., 2012; Tong et al., 2013). Since the study targets digital SMEs, and taking into account that this type of business always engage with electronic devices, the internet makes this method most appropriate. In this study, using the Bristol Online Survey (BOS) as a platform, the survey linked towards the specific Uniform Resource Locator (URL) after the questionnaire has been established. Before the link is sent to the participant, it has been tested for a week to ensure there is no programming error which might obstruct the study. To increase the anonymity of the questionnaire, this software provides passwords that are unique to each respondent. However, in order to avoid confusing and minimize respondent rejection, the password has not been set. During this stage, a total of 20 digital SMEs has been randomly selected based on the weight of the stratified random sampling methods. After one official invitation letter and five follow up letters sent to the respondents, 7 successful feedback surveys have been received which conclude the respond rate of thirty-five (35%) percent from the total pilot study.

Table 4-5: Pilot Study (12 October 2015 to 12 December 2015)

Date	Item	No of respondents
12 October 2015	Number of pilot respondents	20
	Unable to contact (email exceeds limit/wrong email address)	(4)
	Responds after the first email	2
26 October 2015	After first reminder	0
02 November 2015	After second reminder	1
16 November 2015	After the third reminder	1
01 December 2015	After the fourth reminder	0
12 December 2015	After the fifth reminder	3
	Total complete respondents	7

During the initial stage, the feedback rate was quite low. Four emails has failed to reach the target respondents. Three emails have been found to be experiencing a problem of unidentified email addresses due to wrong email address being available. Further, another one email was unsuccessfully sent due to the recipient's email mailbox having exceeded the limit. According to Simsek & Veiga (2000), this problem is common for research conducted via online. From the 20 email that has been sent on 12th October 2015, only 2 SMEs had completed the questionnaire. Next, the researcher sent the first follow up letter on 26 October 2015(Appendix 4). Unfortunately, no additional feedback was received. The next follow up letter was sent out the week after (2 November 2015) and the third follow up letter sent on 16 November 2015. With three follow up letters, the response has increase by 2, with each received after the second and third reminder. Due to the low response, the alternative of answering the questionnaire is further extend to the follow up email to the respondents (Appendix 5). Rather than clicking at the given URL, the respondents is given other alternatives to complete the questionnaire. This includes options to provide their Skype account or contact number for the researcher to contact. The respondents also may provide the time and date that they found would be suitable to be contacted. Alternatively, if they preferred to answer the questionnaire using the traditional pen and paper, the respondent could provide their address and the physical questionnaire would be sent to them. This option was provided on the fourth and fifth follow up letter. Finally, after the fifth reminder was sent out, another three complete surveys were received, which made the total pilot respondents as 7 out of 20.

4.8.4.5 Reliability

Since the questionnaire and scale developed in the research always deals with imperfection and may be prone to error (Sekaran, 2013), certain measures and processes need to be undertaken. This measure is essential in developing a valid and reliable questionnaire. By producing non-valid and unreliable questionnaire, the research might not be able to provide result that satisfies the objective and further make the study inaccurate. As such, to ensure the quality of the research, the data needed to be validated before used in the actual study. Validity is define as evidence that an instrument, technique or process used to measure a concept does indeed measure the intended concept (Sekaran & Roger, 2009). However, measuring the validity is not an easy task and the validity is gathered from any feedback received from the respondents during the pilot studies (Nagarethnam, 2002). The result from the pilot study can then be used as a benchmark to measure whether the questionnaire is adequate to be distributed for the actual study. Otherwise, appropriate amendments need to be taken to ensure that the constructs are good to be used.

The reliability is used to address the consistency of the measurement and defined as follows, if the test is done repeatedly, it should establish the same consistency result (Smith, 2003). In order to test the reliability of the instrument, a reliability test should be conducted. There are three popular methods has been found to be used in measuring the reliability of the study which are Test-retest reliability, split half reliability, and Cronbach Alpha. Amongst the three methods, the Cronbach Alpha has been found to be the most popular method used in the studies. Therefore, in this study, the Cronbach's Alpha Coefficient, or known as Coefficient Alpha (α) has been used to measure the reliability of the instrument. This method is the widest method used to measure the reliability of the instrument (Ghauri, Grønhaug, & Kristianslund, 1995; Gill & Johnson, 2010; Sekaran & Roger, 2009). Generally, this method is used to measure the internal consistency of the questionnaire and several benefits have been found that lead towards the applicability of this method. This method is able to overcome the splitting problem although the value is still dependent on the number of the item (n) in the instrument. This is because the reliability is evaluated based on sensitivity to the number of items in the questionnaire. Despite this the method does not address the validity of the instrument, much research view α to measure instrument quality. Therefore, some studies have benchmarked the quality of the study by testing the Cronbach's α.

The Cronbach's Alpha can be range from 0 (no consistency) to 1 (complete consistency). There are three ranging of Cronbach's α. The more consistent the instrument shows more reliability. If the range is between 0.7 and 0.95, the instruments used are considered to have a satisfactory reliability. In

addition, if the Cronbach's α value between 0.6 and 0.7, if indicates that it has a fair reliability. In contrast, if the Cronbach's α alpha is having a value less than 0.6, the scale has a poor reliability. Additionally, Nunnally & Bernstein (1978) has offered the rule of thumb in accepting the reliability of construct should have reliability values of 0.70 or greater.

The coefficient α have been calculated independently for each dimension. In total there are seven coefficient α has been computed using the IBM SPSS Statistic 22. Three variables in the intangible assets and four variables in the performance measurement (including financial and non-financial performance perspective) have been analyzed. Since each of the dimensions have the reliability scores significantly above the 0.7 thresholds, it does showing that the instrument is sufficiently reliable. As presented in Table 4-6, the entire three intangibles dimension have scored more than 0.80 and further the performance dimension has a coefficient α more than 0.78. This result further demonstrates that the questionnaire is reliable to be used in this study.

Table 4-6: Reliability test

Dimension / Observe Variable	Coefficient α
Human Capital	0.93
Technology Capital	0.92
Organization Capital	0.92
Customer Perspective	0.82
Internal Business Perspective	0.78
Learning and Growth Perspective	0.88
Financial Perspective	0.89

After the pilot study has been conduct, the next phase of the study took part for four months from January 2016 until the end of April 2016. During the first stage, 450 companies which satisfy the definition of Malaysia digital SMEs, have been selected. The link to the questionnaire was sent out during this phase. However, from the total companies, 49 companies have been found not to be receiving the invitation email. Some of the reasons are that emails exceeded the limit, wrong email addresses or other user mailbox issues. Another trait of sending an email via online is 'spam' suspicions (Tidor et al., 2012) . In total 401 successful emails were sent. Further to this, an addition of 49 emails has been including to make the total of sample size 450.

The sampling frame (Sekaran & Roger, 2009) used for the study has been derived from the list available in the MSC Malaysia Status directory at www.mscmalaysia.my. The directory provided on the website is listed based on company name, year of company obtain the MSC Malaysia status award and the company main cluster. In addition, the company details which includes the company address,

their core activities, company contact details and link to company websites are also available. The directory further can be sorted either by company name or by clusters.

Following the pilot study, the companies which satisfied the definition of digital SMEs were selected based on a disproportion stratified random sampling from the MSC directory listing. Although not all companies are in the area of the cyber centre, the cyber cities which have been available all across the Malaysia have increased the number of the digital companies and locations in Malaysia. It is accepted that despite during the initial stage the MSC status company is only located around the cyber centre zones, however as the location of cyber cities has been spread all over the countries the number of MSC status companies has been increased accordingly (refer 2.7.2).

4.8.4.6 Data screening and analysis procedure

In this study, the sequential explanatory mixed method has been selected to be utilize, which the quantitative analysis will be conducted before the qualitative process took part. The first steps that need to be conducted during the quantitative analysis is concerned with conducting the data screening process. The data screening is the preliminary action including the visual inspection of the data for identifying error as well as identification of missing data (Hair et al., 2007). This procedure is important to ensure the data is useable, reliable and valid. In order to achieve this, several steps need to be carried out such as conducting tests on the missing data and the unengaged responses. This procedure can be conducted by utilizing software such as Microsoft Excel or IBM SPSS.

After the data is clean and usable, the quantitative analysis can be start. In this study, the second software employed in this study is SmartPLS 3. This software has been adopted since it has been found to be the most appropriate tool and has been widely used in the topic area of intangibles and intellectual capital and performance (for example Baxter & Matear, 2004; Isaac, Herremans, & Kline, 2010; Khalique & Pablos, 2015; Lee, 2006; Rompho & Siengthai, 2012). The capability of the tools to measure the relationship among latent variables (Schreiber, Nora, Stage, Barlow, & King, 2006), further provides a multivariate analysis and increased the reason for adoption of this software. Furthermore, the justification of adopting this analysis is due to it suiting the research goal, measurement model specification, structural model and data characteristics, which are further explained in next section (Refer 4.8.5.6)

4.8.5 Types of methodologies to study intangibles

The topic of intangible assets and intellectual capital has greatly influenced many studies to be conducted in this area and evidence shows that this asset has a positive relationship with business performance, strategy, the creation of innovation, business success, and competitive advantage (James, 2005; Joia, 2000; Khalique & Pablos, 2015; Marr et al., 2006; Rompho & Siengthai, 2012) . However, due to the complexity and difficulties in studying this topic, a plethora of methods have been adopted in the literature. Despite a great volume of information gathering on the topic, there are two methods that are found to be popular – Analytical Hierarchy Process (AHP) and Structural Equation Modelling (SEM). These models have been widely documented when dealing with intangibles. The determination of the method used is always focused on answering the research question and subsequently achieving the research objectives. As a value added to the literature on this topic and perhaps lead to the contribution of the knowledge, following the pragmatism philosophical stance this study will adopt the mixed method approach. To be specific, the explanatory sequential mixed method will be incorporated into this study. Combining both quantitative and qualitative methods, this study will first conducted the quantitative method using a survey questionnaire. The analysis phase for the quantitative study will be conducted using the Partial Least Square-Structured Equation Modelling (PLS-SEM). By adopting the PLS-SEM, the hypotheses can be generated at the same time provide a more in-depth understanding of the phenomena and findings. Also, this instrument has also found to be the most suitable method to answer the causal relationship between components of intellectual capital which are Human Capital, Technology Capital and Organization Capital which will further elaborate in the next section.

4.8.5.1 Analytical Hierarchy Process (AHP)

One of the most popular tools to be used in the study intangible assets is the Analytical Hierarchy Process or known as AHP. AHP is one of the components of Multi-Criteria Decision Making (MADM) which is a sub-discipline of operational research. This method explicitly considers multiple criteria in the decision-making environment. Besides AHP, The Technique for Order of Preference by Similarity of Ideal Solution (TOPSIS) and Outranking are the most MADM techniques to be used. However, amongst the three, AHP is found to be the most frequently used in the literature (for example A.Maidamisa, Ahmad, & A. M. Ismail, 2012; Bozbura & Beskese, 2007; Lee, Chen, & Chang, 2008).

AHP has been developed by Saaty (1980) and the instrument has been primarily used as a solution in the multi-criteria environment (Forman & Gass, 2001). This mathematical approach is found to be an

effective tool for addressing complexity and complicated problems (Bentes, Carneiro, da Silva, & Kimura, 2012). This decision-making method helps the decision maker to set priorities which lead to the decision-making process. Generally, this method transforms a complicated system into a hierarchical system of elements, which includes the criteria, sub-criteria, and alternatives. In each hierarchy, a pairwise comparison is made of the element by using a nominal scale.

AHP is not only popular in academic's literature but also has evidently used on many occasions when faced a complex problem in the real world. For example Ford motor and British Airways has been found to utilize this technique when dealing with complex decision making (Saaty, 2008). Similarly, world-class organizations such as NASA, Xerox and IBM has also taken a benefit of this tools during decision-making process which regards with choice, evaluation and resource allocation (Deb, 2010; Forman. & Gass, 2001).

In spite of this method being found to be adopted in many areas, several drawbacks have been found to be aligned with this method. As this method is always used in decision making, most of the literature using this set of analysis is focusing on one objective or in or prioritization. Additionally, it can be found that this method is highly appropriate in a study with the single stream of intangible assets. For example, while seeking the most influential attributes that are important towards human capital Bozbura et al., (2007) have adopted this technique. Further, Bozbura & Beskese (2007) has adopted the same technique in studying the most important organizational values. It has been affirmed that this method can be utilized for this study, which is focusing on the potential to identify weight, prioritize, and provide preferences, leading to a decision. However, this method does not provide any causal link effect, which is vital to the research objective. Therefore, although this method provides an insight of identification and structure the ranking of importance element, the absence of causal links makes it inappropriate to be adopted. Since the research objective is to seek a relationship of the intangible assets towards firm performance rather than identifying one important component in intangible assets, this method is not suitable, and an alternative method is required.

4.8.5.2 Structural Equation Modelling (SEM)

Another set of tools that is extensively used to study is intangibles topic is Structural Equation Modelling (SEM). SEM is a family of a statistical model which is available to seek the explanation of the relationship among variables (Ramayah, 2014). By combining measurement model (confirmatory analysis) and structural model (regression analysis) into simultaneous statistical test (Byrne, 2000; Schreiber et al., 2006), this tool has become a popular tool in studying intangible assets (Hair et al.,

2011). The SEM is usually backed by two characteristics: first, it can be represented by a series of the structural equations. Secondly, this method can be illustrated in the form of a diagram. By having the pictorial model, a clearer conceptualization of the hypothesis can be made. Further, this method allows the hypothesis model to be tested statistically in a simultaneous analysis to determine the extent to which it is consistent with the data. If the goodness of fit is adequate, the model argues for the plausibility of postulated relations among variables. In contrast, if the goodness of fits shows inadequate value the tenability of such relationships is rejected (Byrne, 2010).

The feature of these analytical tools has greatly influenced many studies in the various discipline that adopt this technique (Chareonsuk & Chansa-ngavej, 2010; Patel, Chaussalet, & Millard, 2008; Saghaei & Ghasemi, 2009). However, this technique has been found to dominate in the area of social and behavioural science. Recent years have witness that a large number of studies in the area of management accounting research, especially on the topic of intangible assets and intellectual capital, have been found to be utilizing these tools (Hair et al., 2011; Hair, Sarstedt, Ringle, & Mena, 2012; Hulland, 1999; Jarvis, Mackenzie, & Podsakoff, 2003). This phenomenon has been adopted for several reasons. First, the studies in this discipline are always dealing with a construct which is abstract, very difficult to measure and sometimes cannot be observed directly. Items such as skills, capability, culture, and experience are largely found in the intangible assets and intellectual capital are some of the examples that are synonymous with studying intangible assets. One of the strength of adopting SEM in studying intangible topics is because of its ability to accommodate the problematic components and variables which are relevant to intangible asset studies. By adopting the SEM, the abstract and unobserved variable is label as the latent variables (Schreiber et al., 2006). Since the latent variable is a theoretical interest that cannot be directly observed, the SEM in the other hands allows the measurement to be done (Diamantopoulos, Riefler, & Roth, 2008). Since this technique is able to accommodate this phenomenon it promotes the adoption of this technique towards this study.

Another important reason for utilizing this technique is because, in reality, human and behavioural issues do not have an easy relationship. Dealing with a human is always complicated - one dependent variable might be the independent variable in other dependence relationship (Cheng, 2001). Since the SEM is allowing for the complex construct to be analysed while each construct is measured by multiple variables (Barclay et al., 1995), therefore, this technique has been found as the most appropriate tool to overcome these issues. By incorporating both independence and dependent relationship, this method has been found to be better than other multivariate techniques, such as multiple regression, path analysis and factor analysis (Cheng, 2001).

Additionally, Byrne, (2010) in his book has emphasis several advantages of the SEM compare to the precedent multivariate procedure. First, this method takes a confirmatory rather than exploratory approach while other multivariate procedures are descriptive by nature. Therefore, compared to other procedures, the SEM is good for the hypothesis testing. Secondly, the ability of SEM to estimate error while measuring the observed variable has further increased the strength of this tool. Thirdly, the SEM procedure can incorporate both observe and unobserved variables in the structure component. Finally, the application of SEM which is found to be easy compare to other alternative methods, has sealed the important features of SEM.

Due to the strength of this method, the increase attention has been given to employing this method in the study. In the topic of intangible assets, the utilization of the SEM is not uncommon, yet it has been found that this method has become one of the most influential tools to study the topic. For example, while investigating the impact of corporate value and intellectual capital in emerging economy, Tseng & Goo (2005) have adopted this method in the study. Similarly, Bontis et al., (2006) have utilized this model while comparing the intellectual capital between service industries and non-service industries. They found that human capital plays the most important aspect in the intangible component regardless of business industry. Furthermore, studies have been found to incorporate this method in their research further concluding that this tool has been widely accepted as appropriate to deal with the intangibles asset topic (Ahmed Mohamed Elsayed Ahmed Elsetouhi, 2014; Huang et al., 2011; Khalique et al., 2015; Khalique & Pablos, 2015; Mura & Longo, 2013) .

There is a two-path model of the latent construct. In SEM, the latent construct that does not have any structural path pointed at them is call exogenous, which is consistent with the independent variable (antecedent). On the other hand, the latent target construct that is explained by another construct is label as endogenous, which has the same as dependent variables (consequents). It shows the latent target construct in the structural model that explained by another construct via structural model relationship (Bontis, 1998; Hair et al., 2011). In order to study SEM-based study with a complex model and interaction effect of a latent variable, there are two types of techniques that can be adopted by the researcher (Chin, 1998; Hair et al., 2011; Henseler & Chin, 2010). First, the Covariance Based (CB-SEM) and Partial Least Square Based (PLS-SEM). Despite the substantial used of SEM technique in the topic of intangible assets, most studies have been found to adopt the CB-SEM. (J C Hayton, 2005; Isaac et al., 2010; Kamaruddin & Abeysekera, 2014; Ngah & Ibrahim, 2011; Rompho & Siengthai, 2012; Sharbati et al., 2010). As a result, the CB-SEM is often label as the SEM (Chin, 1998).

4.8.5.3 The Covariance Based- Structural Equation Modelling (CB-SEM)

The covariance-based structural equation modelling (CB-SEM) is a method is drawn by developing a covariance matrix theoretical based on specific set of structural equations (Hair et al., 2011). Compare to the other type of SEM, CB-SEM has been found as popular in the study (Chin, 1998; Hair et al., 2011). In fact, in most cases, CB-SEM is acknowledged as SEM due to its popularity (Chin, 1998). In general, CB-SEM aims to reproduce the theoretical covariance matrix without focusing on explaining variance (Hair et al., 2011). In order to conduct the CB-SEM based analysis, several software, such as AMOS, LISREL, MPLUS, have been found to be the most popular to be employed by the researcher (Chin, 1998; Hair et al., 2011). Further, the usefulness of CB-SEM has been found to be popular in social science research such as marketing (Hair et al., 2012), management (Cheng, 2001) and strategic management (Shook, Ketchen, Hult, & Kacmar, 2004), the CB-SEM also has been found to have drawbacks in several areas. Some of the reasons have been found to limit the utilization of this method. First, this technique is only allowing the reflective model to be conducted. In other words, this method can only accept non-recursive construct model. It is found that in the event that the structural model is complex and includes many construct or many indicators, the CB-SEM is not suitable to be adopted (Hair et al., 2011). The next constraints which are synonym with this method are this technique has been found to required large number of data items before the analysis can be conducted (Hair et al., 2007). The CB-SEM is known to be the analysis tools for large sample data. In order to employ this technique, the minimum of 100-200 sample is required before one analysis can be conducted (Anderson & Gerbing, 1988; Kline, 2011). Further, the CB-SEM has also inappropriate to be adopted for the study which have a non-normal data. This statistical tool only can be conducted if the data distribution is normal. If this assumption is violated, it provides imprecise results (Hair et al., 2011).

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

The second type of structural equation modelling is Partial Least Square (PLS-SEM). This unique and very useful approach, on the other hand, is not as well-known as CB-SEM (Chin, 1998; Hair et al., 2011). However, it has been found that the adoption of this tools has been expanding, and it has been reported that more than 100 published studies has adopt the PLS-SEM in the top 20 marketing studies (Hair et al., 2011). However, due to several unique feature offers by this technique has witnessed the emerging trend of utilization of this method (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). While CB-SEM requires many assumptions before the analysis, on the other hand, PLS-SEM is a preferred method if the study objective is prediction rather than confirmation further can be adopted and in the event one of the CB-SEM assumption cannot be met (Hair et al., 2011).

As mention beforehands, the utilization of this technique is not popular as the CB-SEM, however it has been found that studies on the topic of marketing, strategic management, management information system, production and operation management as well as accounting topics, have been attracted to use this technique (Hair et al., 2014, 2012). Hair et al. (2014) have concluded there are three most prominent reasons for adopting partial least squares. The ability to consider non-normal data, small sample size, and measuring formative construct, has been found to be the most influential reasons for adopting this method. Amongst all, the capability of the PLS-SEM to analyze a very complex model under a consideration a small sample size has been found as the most prominent factor of adopting this technique (Bontis, 1998; Hair et al., 2011).

It is very important for the researcher to choose the correct technique for their analysis (Diamantopoulos et al., 2008; Hair et al., 2011) . By adopting a wrong technique, the information gathered might be misleading and produce the wrong conclusion. In order to identify a suitable technique to be used, the researcher objective, the model complexity, and data size are some of the criteria should be considered by researcher so the objective of the study to be achieved (Chin, 1998; Hair et al., 2011). While many studies have given their attention to using SEM, regrettably some studies have used the wrong method to examine their study. While researchers have attempted to conduct SEM-based analysis, most studies skew towards one type of SEM which is CB-SEM (Chin, 1998; Hair et al., 2011).

4.8.5.5 Classification of SEM: CB-SEM and PLS-SEM

It is affirmed that the Covariance Based- Structured Equation Modelling (CB-SEM) has been found as a more popular method in the SEM topic, in fact these techniques has been label as SEM rather than CB-SEM (Chin, 1998). However, not all-quantitative approach can be estimated using this technique in fact, this dilemma is more crucial if the data does not fulfil the CB-SEM requirements (Hair et al., 2011). As both methods have come from the same root, it is important to identify which measure is the most appropriate to be used (Hair et al., 2012). More importantly, both technique should not be view as rival, instead the Partial Least Squares-Structured Equation Modelling (PLS-SEM) offers a compliment to the shortfall of CB-SEM (Hair et al., 2011). Therefore, the utilization of each technique should be justified accordingly. Without proper judgment, the results would be misleading, achievement of the research objectives not met and would thus lead to misleading information. Unfortunately Jarvis et al. (2003) has detected that some studies has been found to use the wrong measurement without a proper justification.

To identify the most suitable method to be used is not an easy task. Fortunately, Jarvis et al., (2003) and Hair et al. (2011) previously have provided the guidelines for researchers to choose from; either to adopt CB-SEM or PLS-SEM. First, Jarvis et al. (2003) has set the distinction between the two by looking at the model of the study. According to him, the latent variables can be a modelled as either reflective (principle factor model) or formative (composite latent variable). He further mentioned in most studies, the reflective model has been found as the most latent measurement model used. In this model, the direction of the causality is from the construct to the measure. Although the measure is expected to be correlated, dropping the indicator from the measurement will not alter the meaning of the construct. In the other hands, for the composite latent variable (formative) model, the direction of causality is from the measure to construct. By dropping one indicator from the measurement model, the meaning of the construct is simultaneously changed (Refer Figure 4-4).

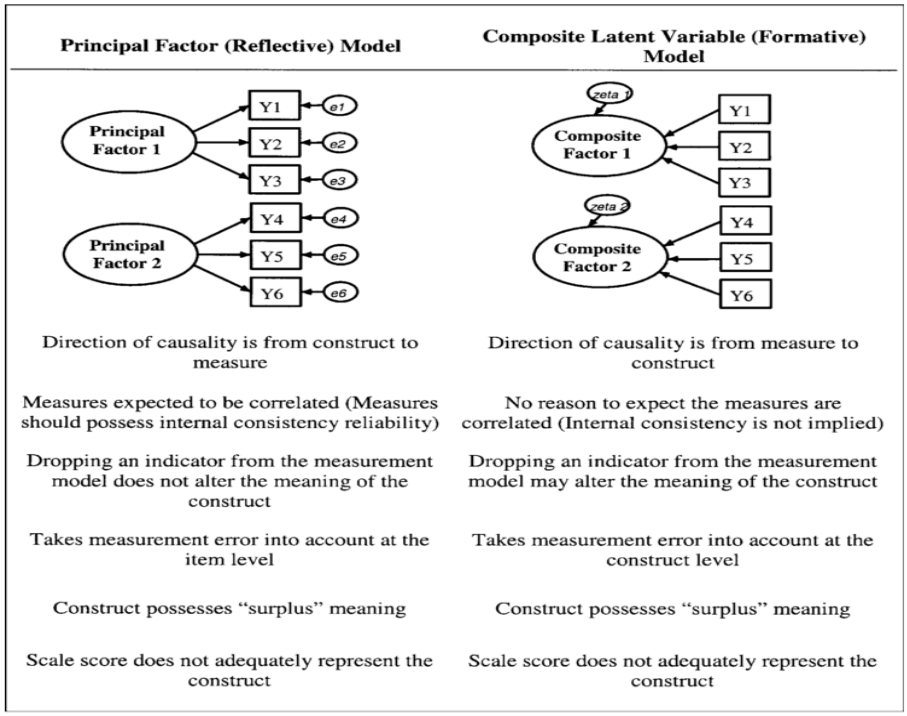


Figure 4-4: Reflective formative diagram Jarvis et al., (2003) page 201

The second protocol to differentiate between the two techniques has been provide by Hair et al. (2011). By providing the rule of thumb of the selection either CB-SEM or PLS-SEM technique, he has highlight five factors that should be considered before selecting the most appropriate technique. The factors include the research goals, measurement of model specification, structural model, data characteristics and algorithm and model evaluation. According to the Figure 4-5, the guideline provided by Hair et al. (2011) simplifies the selection decision whether CB-SEM or PLS-SEM is

appropriate for the study. In conclusion he highlighted that although the CB-SEM is more popular and used mainly in the studies, this method only can be conducted if all the assumptions to adopt the tool are accommodated. Otherwise, the PLS-SEM is the best tools to be used.

Rules of Thumb for Selecting CB-SEM or PLS-SEM

Research Goals
- If the goal is predicting key target constructs or identifying key "driver" constructs, select PLS-SEM.
- If the goal is theory testing, theory confirmation, or comparison of alternative theories, select CB-SEM.
- If the research is exploratory or an extension of an existing structural theory, select PLS-SEM.

Measurement Model Specification
- If formative constructs are part of the structural model, select PLS-SEM.
  Note that formative measures can also be used with CB-SEM but to do so requires accounting for relatively complex and limiting specification rules.
- If error terms require additional specification, such as covariation, select CB-SEM.

Structural Model
- If the structural model is complex (many constructs and many indicators), select PLS-SEM.
- If the model is nonrecursive, select CB-SEM.

Data Characteristics and Algorithm
- If your data meet the CB-SEM assumptions exactly, for example, with respect to the minimum sample size and the distributional assumptions, select CB-SEM; otherwise, PLS-SEM is a good approximation of CB-SEM results.
- *Sample size considerations:*
  - If the sample size is relatively low, select PLS-SEM. With large data sets, CB-SEM and PLS-SEM results are similar, provided that a large number of indicator variables are used to measure the latent constructs (consistency at large).
  - PLS-SEM minimum sample size should be equal to the larger of the following: (1) ten times the largest number of formative indicators used to measure one construct or (2) ten times the largest number of structural paths directed at a particular latent construct in the structural model.
- If the data are to some extent nonnormal, use PLS-SEM; otherwise, under normal data conditions, CB-SEM and PLS-SEM results are highly similar, with CB-SEM providing slightly more precise model estimates.
- If CB-SEM requirements cannot be met (e.g., model specification, identification, nonconvergence, data distributional assumptions), use PLS-SEM as a good approximation of CB-SEM results.
- CB-SEM and PLS-SEM results should be similar. If not, check the model specification to ensure that CB-SEM was appropriately applied. If not, PLS-SEM results are a good approximation of CB-SEM results.

Model Evaluation
- If you need to use latent variable scores in subsequent analyses, PLS-SEM is the best approach.
- If your research requires a global goodness-of-fit criterion, then CB-SEM is the preferred approach.
- If you need to test for measurement model invariance, use CB-SEM.

Figure 4-5*: Rules of thumb for selecting CB-SEM or PLS-SEM*
Source: Hair et al., (2011), *page 144*

Despite the given guideline, it has been found that the utilization of the PLS-SEM in the research has been skew mostly due to one reason; the ability of this method to accept a small sample size requirement (Hair et al., 2011, 2014). The minimum of ten times largest number of formative indicators used to measure one construct or ten times largest number of a structural path directed at particular latent construct in the structural model has deem sufficient to test the data using the PLS-SEM (Barclay et al., 1995; Hair et al., 2011). However, it has been claimed that despite having a smaller sample size, the PLS-SEM is capable in estimate the result if it having a larger sample size (Hair et al., 2011; Lowry & Gaskin, 2014). This advantage has been highly acknowledge by past academics, in fact it has dominate the adoption of this methods. For example, Bontis (1998) has adopt PLS while the sample size of 64 in his study, Tovstiga et al., (2007) also has been found to use this technique while having only 35 respondents in studying the impact of intellectual capital on small innovative enterprise performance. Although it is claimed as the main strength of the tools, on the other hands Marcoulides

& Saunders (2006) has argue that the reason of adopting the PLS-SEM due to small sample size is misleading; hence they claimed that it can only work well in some instances.

Although there is much controversy on the better method to be used and much research has the focus upon comparing the different models, on the other hand, Hair et al. (2011) has urged that both methodologies should be seen as complementary rather than competitive. He further emphasis that since the technique provides different results, in essence, the researcher should justify and know the most appropriate tools to use. Otherwise, by adopting a wrong technique it might lead to improper findings, interpretation and conclusion (Hair et al., 2012). Whilst avoiding the misapplication of the measure, the justification of using PLS-SEM is highlighted.

In conclusion, PLS-SEM does provide many advantages rather than CB-SEM (or known as SEM) due to its ability to accept smaller data sample to analyze, providing a good estimation of the CB-SEM outcome, and its capability to measure both formative and reflective constructs does increase the capability of PLS-SEM rather than CB-SEM. However, both methods have similarity and differences, as well as strength and weaknesses. Therefore, the researcher has agreed with the statement made by Hair et al. (2011) that the CB-SEM and PLS-SEM should not be a pictured as a rival, but it should be portrayed as complimentary. The decision of utilizing the appropriate tools is not solely due to its advantage hence, it depends on the research goal and objectives. Echoing the Hair et al. (2011) recommendation, therefore, the study has been found to be well equipped to adopt the PLS-SEM.

4.8.5.6 Justification of using PLS-SEM in the study

Although there is controversy on the better method to be used and much research has focused on comparing the different models, on the other hand Hair et al. (2011) has urged that both methodologies should be seen as complementary rather than competitive, here the justification of using PLS-SEM is highlighted.

Although the PLS-SEM has found to be least popular than the CB-SEM (Hair et al., 2011), several justifications has led the study to imposed this method. First, the study is not a theory testing, confirmation or comparison of other theories. Besides, the study is predicting the key driver construct and thus it makes the PLS-SEM the most suitable to be used (Hair et al., 2011; Ramayah, 2014). Additionally, from Hair et al. (2012) point of view, there is three type of model available in the study; focus, unfocused and balance model. The focus model is identified if the number of exogenous latent variables is more than endogenous. The ratio is at least 2:1. In contrast, if the endogenous latent variable supersedes the number of exogenous by double it is categorized as an unfocused mode.

Finally, if the number of exogenous and endogenous is quite the same, it is categorized as balanced. This study has been identifyied as a balanced model thus PLS-SEM has been found as an appropriate method to use (Hair et al., 2012). Secondly, the structural model in this study is complex, considering that the integration between the two theories (RBV and BSC), the BSC component has later been divided in two sections, which is financial and financial. As Hair et al. (2011) has suggest the complex structural model should utilize PLS-SEM, therefore this has adding into the justification of adopting the PLS-SEM technique. Since one of the research objectives is to find about the mediation relationship held by non-financial performance, the structural model is more complex and thus PLS-SEM is more suitable to be used in this study. Finally, it has been acknowledge the biggest concern of choosing either CB-SEM or PLS-SEM in the study has been largely backed by the issue of the minimum sample size requirement. In the view of a number of the sample size, it is acknowledged by the researcher that the minimum sample size required by CB-SEM is greater than the PLS-SEM (Hair et al., 2011; Lowry & Gaskin, 2014) and this statement has been acknowledged by several pieces of literature found in the academics papers. In fact, using the smaller sample size requirement to utilize the PLS as an analysis tool has been greatly supported as the main reason for adopting this method (Lowry & Gaskin, 2014). However, in this study the issue of sample size is not the driver of adopting this technique. As suggested by Barclay et al. (1995) that the rule of thumb is ten times the number of most complex formative indicators use to measure a construct or ten times the largest number of a structural path directed at particular construct in the structural model, this study has satisfy that criteria. However, it has been strongly emphasized that the utilization of PLS-SEM is mainly due to that the tool is more appropriate to be used according to the research goal and structural model rather than due to small number of sample size.

4.8.6 Data collection phase 2: The Qualitative

After the data obtain from the quantitative survey has been fully analysed, the next step of the sequential explanatory mixed method is conducting the qualitative phase (Ivankova et al., 2006; Subedi, 2016). As urged by Creswell (2014) that the explanatory sequential mixed method is often conducted to seek for an explanation of the quantitative result which needs to be further explored through qualitative data collection. Furthermore, he has emphasized that some results that are considered beneficial to follow up have the statistically significant result, statistically non-significant result, key significant predictor, variables that distinguished between group, outlier or extreme case, or distinguishing demographic characteristics. In this study, the qualitative method is conducted to find an explanation on the most statistically significant results.

The qualitative method represents the description of things that are made without assigning numbers only (Hair et al., 2007). Commonly, the qualitative method incorporates several types of research strategy such as case study, observations and interviews. As a case study interview has been found as one of the most appropriate methods to follow up the survey questionnaire, in this study one type of nonprobability sampling known as the convenience sample has been used to identify the respondent for the interview. The convenience sampling technique is a qualitative technique that is used to obtain the quick information to get the feel for the phenomenon of interest (Sekaran & Roger, 2009). Consider as a nonprobability sampling technique (Saunders et al., 2009; Sekaran, 2013), this method is the quickest convenience and less expensive way to conduct a study (Sekaran, 2013). Commonly, this method is selected because it selects the element that is most readily available to participate in the study and able to provide the required information (Etikan, Musa, & Alkassim, 2016; Hair et al., 2007; Onwuegbuzie & Collins, 2007). As the volunteer has agreed to be selected in the study, the advantage of this technique is the volunteer might not feel forced in the study, in fact, they are willing to take part because they are interested in the topic of study.

Another non-random sampling technique that can be utilize to obtain in-depth information in this study, is by conducting purposive sampling. Unlike convenience sampling, the purposive sampling , also called judgement sampling, is intentionally selected by the researcher in order to obtain information (Etikan et al., 2016). One of the methods that equipped this procedure is undertaking key informant interviews. The key informant interviews are a qualitative method which is conducted to obtained information from selected individuals, who are likely to provide more information, ideas and additional insight into the study. The informants, which are selected by a purposive sampling (Kim, Elliott, & Hyde, 2004; Kumar, 1989; Pauwels, 2009; Weijden et al., 2013), are believed to be the appropriate person to provide greater insight and information in these particular studies. The selected respondents are the key experts in their field and chosen on the basis of their knowledge (Pauwels, 2009) and experience (Kim et al., 2004). As the selected key people hold beneficial information with regard to the study, the selection of the respondents is the most crucial part of this method, where only quality participants should be selected (Etikan et al., 2016; Kumar, 1989; Pauwels, 2009). Although this method has been claimed as one of the least expensive ways to conduct studies (Kumar, 1989), one of the issues with this technique is the quality of the process of identification of the proficient and suitable respondents. According to Marshall, (1996) the identification of key informants which are expected to have ‘above average’ knowledge on the issue, sometimes can be erroneous due to the respondent not actually having the necessarily skill to be a true key informant. Although Marshall (1996) has highlight the characteristics of an ideal key informant, it is still a challenging task to reach

the respondents and ensure the respondents are available and willing to participate in the study (Etikan et al., 2016), thereby more time and effort is require to conduct this type of method. Another issue which is linked with the key informant interview is that this technique has a potential bias. As the selected sample of people is identified by the researcher, a problem arises when the relationship between the researcher and the key informant is too close (Kumar, 1989). Marshall (1996) has highlight that this problem might be worse if the informant is very close to the interviewer and whereby he or she might become part of the research team.

In this study, the utilization of convenience sampling has been chosen by the researcher. As the study is conducted to obtained explanation on the quantitative results and not aiming to generate results that will be used to create generalization (Etikan et al., 2016) the utilization of convenience sampling is believe to be sufficient. Furthermore, given to the limited resources, time and workforce this method is appropriate in conducting the study. However, despite this the method offers a beneficial solution to the researcher but conducting the convenience sampling also has several common problems. The convenience sampling technique has been found to prone to bias, due to the sample selection being conducted because it is cheap and an easy way to conduct a study (Saunders et al., 2009). Furthermore, there is a tendency that the respondents, which are willing to be study, might have a personal interest, which might not truly represent the whole population. Further, as a consequence, the findings from this method cannot be generalized and do not represent the whole population of the study (Sekaran, 2013). Although the disadvantage of this sampling technique has been addressed by several pieces of literature, it has been found that if the variation in the population is small, this technique can be useful. In this case, the sample is divided into two clusters which are considered very low in terms of differentiation. Therefore, adoption of this technique is found to be appropriate. However, the number of sample use in this technique will follow the fragment of stratified sampling which is 69% of the sample will represent the InfoTech cluster while the remaining 31% will be chosen from the Creative cluster. By conducting this method, it is perhaps that richer information will obtain further the explanation of relationship intangible assets towards firm performance.

4.9 Chapter summary

In essence, this study will be conducted in two phases incorporating both qualitative and quantitative methods which are done in the sequence where the quantitative will be conducted first. The quantitative part will be analyse using the PLS-SEM and the result from the analysis will be further investigated by conducting the interviews. As urge by Creswell (2014) and Onwuegbuzie & Collins (2007) that mixed method study is the best method to overcome the limitation of purely quantitative and qualitative

studies, by conducting the explanatory sequential mixed method is found as the best way to conduct expansion information further targeted to obtain more in-depth understanding of the problem.

Chapter 5

Results and Analysis (Quantitative)

5.1 Introduction

In this chapter, the results obtained from the questionnaire will be discussed. In the first section, the data screening procedure will be described, followed by descriptive and demographic statistics. Next, detail on the survey questionnaire collected will be explained. Moreover, after the surface outcomes of the questionnaire are established, this chapter will discuss the model specification, measurement model and structural model analysis. During the measurement model discussion, there will be an emphasis on the process of verifying the construct reliability, construct validity and discriminant validity. After this procedure has been completed, the overall measurement model will be generated.

Throughout the procedure, several statistical analysis tools such as SmartPLS 3, IBM SPSS statistic software and the Microsoft Excel are used. However, given the previous justification which suggests that the Partial Least Square-Structural Equation Model (PLS-SEM) is the most appropriate tool to be used, this study will be dominated by the SmartPLS 3 software which was developed by Ringle, Wende, & Becker (2015).

5.2 Response rate

The previous chapter has elaborated on the targeted sample and survey method which has been selected in conducting this study. In total, 450 questionnaire has been distributed through an email which has been administered by Bristol Online Survey (BOS). This procedure has been undertaken for four months from January 2016 until the end of April 2016. The anonymous response and the confidentiality of the data is express to encourage the completion of the questionnaire. However, although there is no intention to select specific person to answer the questionnaire, due to the nature of the SMEs having limited number of staf especially in digital industry, there are possibilities that the study dealt with the key informant problem. As mentioned in previous literature, despite key informant provide some beneficial to the study, nevertheless, the key infomant are potentially have their own agenda therefore the response given are more likely to be bias (Etikan et al., 2016; Kumar, 1989; Pauwels, 2009).

During the first stage, 450 companies which satisfy the definition of Malaysia digital SMEs have been selected. However, only 16 responses were respond to immediately after receiving the email; 49 companies have been found to not have received the invitation due to email issues (exceeding the limit, wrong email address or user mailbox full). A series of follow-up emails has been undertaken in order to increase the number of responses. The first follow up email was sent four weeks after the first email, obtaining an additional 30 responses. Follow-up emails have been sent every two weeks and a final reminder email was employed, together with the telephone call. In total, five reminder emails were sent, and one telephone call made, further providing 147 responses, equivalent to 32.7 percent of response rate. Unfortunately, from the total responses received, 8 of the responses were found unusable. The majority of the unusable responses were due to them being incomplete responses and another 2 responses were rejected due to the company no longer being in business. Overall, the total usable responses represented in this sample is 139 equivalents or 31 percent. Table 5-1 summarizes the responses from the study.

Table 5-1: Response rate of the study

Item		No of respondents	Percentage
Total number of target respondents		450	100%
Total responses received		147	32.7%
(minus)	**Non -usable responses:**		
	Incomplete questionnaire	6	
	Companies is no longer in business	2	
Total usable responses		139	30.9%

5.3 Data screening

Data screening is a process that needed to be conduct before the statistical analysis can start. In order to ensure that the data is usable, valid and reliable, certain procedures need to be take. Initially the actual answered questionnaires received in this study totalled 147; however, the number of usable questionnaires might be reduce depending on the data screening process. The procedure, which includes investigating the missing data, the normality of the data, and unengaged responses was conducted, thus finalizing the number of items of data that are good enough to be used in this study.

However, since the PLS can deal with non-normal data (Hair et al., 2014) the normality of the data is not tested.

5.3.1 Missing data

Missing data is one essential element of the process that needs to be managed by the researcher whilst conducting a study. As the missing data might impair the research findings, therefore it is important to overcome this issue at the earliest stage (Hair et al., 2007). Although the missing data issue is common, it more frequently occurs during the data collection or data entry process. Conducting the survey by using an electronically based method seems to offer a solution towards this problem. By programming the questions to be 'compulsory' and having to be answered before engagement with the next question, the missing data issue is overcome. Since this study is conducted using an electronic questionnaire, the questions have been programmed accordingly; ensuring each question is compulsory and has to be answered and thereby the missing data issue is avoided. However, to be certain that this problem is ratified then IBM SPSS statistics software was used. As depicted in the Table 5-2 it can be concluded that the entire questionnaire has 139 valid responses and no missing data.

Table 5-2: Missing data screening

HUMAN CAPITAL (HC)

		HC01	HC02	HC03	HC04	HC05	HC06	HC07	HC08	HC09	HC10	HC11	HC12	HC13
N	Valid	139	139	139	139	139	139	139	139	139	139	139	139	139
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0
Std. Deviation		.72850	.80057	1.21729	.80499	1.14208	1.03197	.80693	1.02903	.70854	.71265	.99320	.91067	.89863
Minimum		3.00	3.00	2.00	3.00	2.00	3.00	2.00	3.00	4.00	4.00	3.00	4.00	3.00
Maximum		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

TECHNOLOGY CAPITAL (TC)

		TC01	TC02	TC03	TC04	TC05	TC06	TC07	TC08	TC09	TC10	TC11	TC12
N	Valid	139	139	139	139	139	139	139	139	139	139	139	139
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
Std. Deviation		.70854	.71265	.99320	.91067	.89863	.97839	.95591	.79305	.89321	.89502	.88935	.98042
Minimum		4.00	4.00	3.00	4.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	2.00
Maximum		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

ORGANIZATION CAPITAL (OC)

		OC01	OC02	OC03	OC04	OC05	OC06	OC07	OC08	OC09	OC10	OC11	OC12	OC13
N	Valid	139	139	139	139	139	139	139	139	139	139	139	139	139
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0
Std. Deviation		.64765	.72548	.80886	.74652	.69412	.90458	.79357	.80667	.74246	.76678	.83017	.77449	.82539
Minimum		4.00	4.00	4.00	4.00	4.00	4.00	3.00	3.00	4.00	4.00	3.00	3.00	4.00
Maximum		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

		NON-FINANCIAL PERFORMANCE (NON-FIN PER)														FINANCIAL PERFORMANCE (FIN PER)				
		CP01	CP02	CP03	CP04	CP05	IP01	IP02	IP03	IP04	LP01	LP02	LP03	LP04	LP05	FP01	FP02	FP03	FP04	FP05
N	Valid	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139	139
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Std. Deviation		.90181	.62920	1.03947	1.08367	.89450	.77449	.78026	.79147	.85559	.96460	.69051	.78850	.96649	.80615	.90498	.89932	.88530	.91882	.84659
Minimum		2.00	4.00	2.00	2.00	3.00	3.00	3.00	4.00	4.00	3.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00
Maximum		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

5.3.2 Responses with a lack of engagement

After the missing data procedure has been conducted, the next process is to identify in the responses, where there are instances of none engagement with the questions. The none engaged responses occur when someone responds to the answer with the exact same value to every single question. Although it

is hard to check using a visual inspection, one simple way to detect this problem is by conducting the test of standard deviation to the response. The cases that have zero standard deviation shows that they provided the exact same responses for every single item and thus cannot be used. In this study, the researcher has conducted this test by using a Microsoft Excel to check the standard deviation of each response. After visually inspecting all the data, the result found that there is one (1) case that has zero variance, clearly indicating that there is no engagement from this respondent. Therefore, this response has been omitted from this study, making the final usable data sample equal to 138 responses.

5.4 Descriptive statistics – demographic background

After the data has been screened and cleaned, the next step is to understand the demographic background of the usable data. In this section, the demographic background of the respondents will be discussed, including:

a) The job position held by the respondents
b) Age of the respondents
c) Gender of the respondents
d) Education level of the respondents
e) Length of the business being operated by the respondents
f) Length of years since the business obtain the MSC Malaysia Status
g) Respondent's number of employees
h) The MSC Malaysia cluster classification of the respondents

In this study, the researcher has provided a selection of two questionnaires to choose from; either in English or in Bahasa Melayu. In total, after receiving 138 completed and usable questionnaires, 73 percent (101) from the total respondents has answered the questionnaire in English and the remaining 27 percent (37) have opted to answer the questionnaire in Bahasa Melayu.

5.4.1 The job title held by the respondents

As this study objective is directed to the digital SMEs in Malaysia, this section was developed to ensure the question is answer by a person at the executive level or above. Based on Figure 5-1 from the total 138 response, 44 percent (61 responses) of the survey were completed by senior management and 33 percent (46 responses) were filled by the owner of the SMEs. The remaining 23 per cent respondents or 31 responses were received from middle management, executive level employee and others.

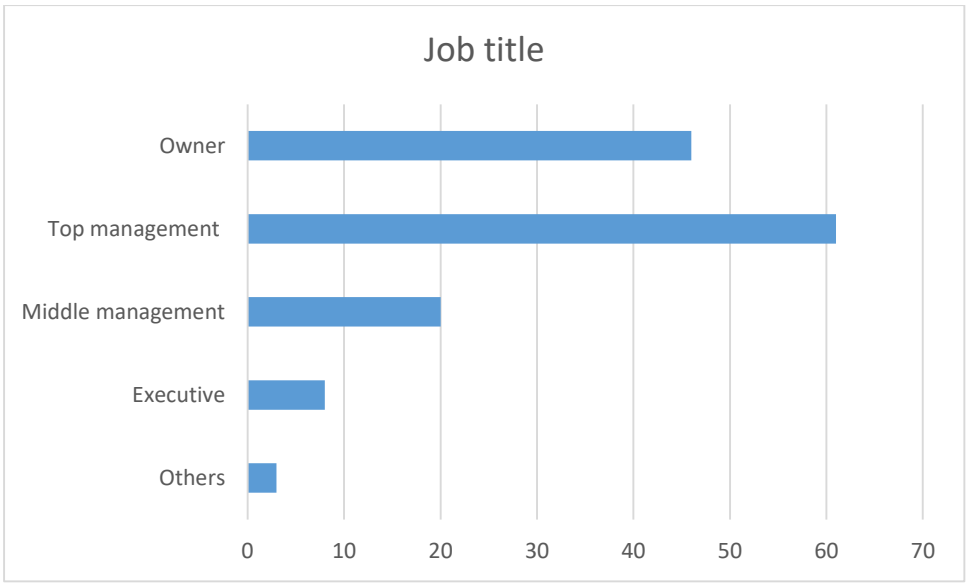


Figure 5-1: Respondents job position in the company

5.4.2 Age of the respondents

As illustrated in Figure 5-2 below, 103 from the total respondents are aged below 40 years old. This outcome is expected since the digital industries often portray this age profile. Most of the responses are from the group aged 31 to 40 years old, which has accounted for 44 percent of total respondents. The second and third largest groups were respondents from 41 to 50 group which has 34 respondents equivalent to 31 per cent, whilst the group 25 to 30 years old consisted of 32 respondents (23%). There is only one respondent in the age range of 51 to 60 and no respondents from respondents aged more than 60.

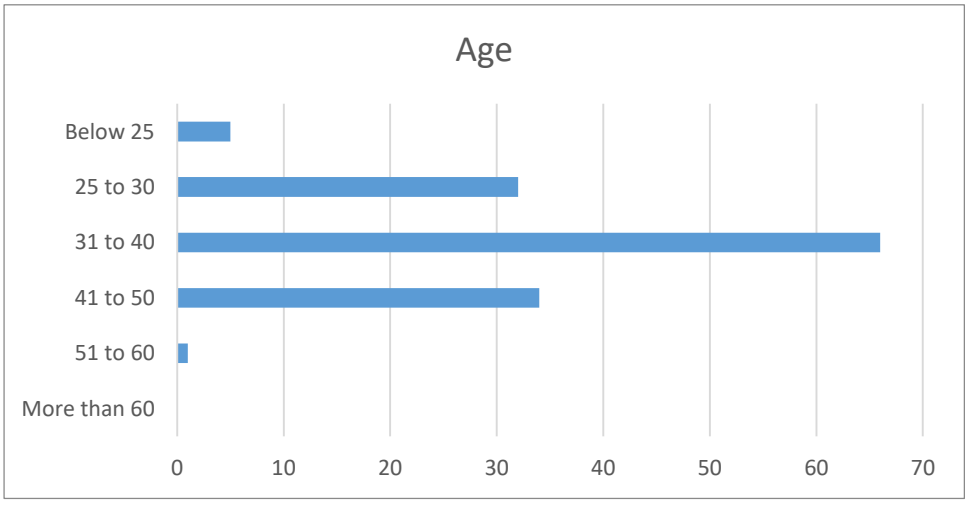


Figure 5-2: Respondents age

5.4.3 Gender of the respondents

Figure 5-3 represents the frequencies of respondents according to their gender. There are a total of 103 (75%) male respondents and the remaining 35 out of the 138 sample are female (25%). In conclusion, three quarters of the total respondents are male, and the balance are female respondents.

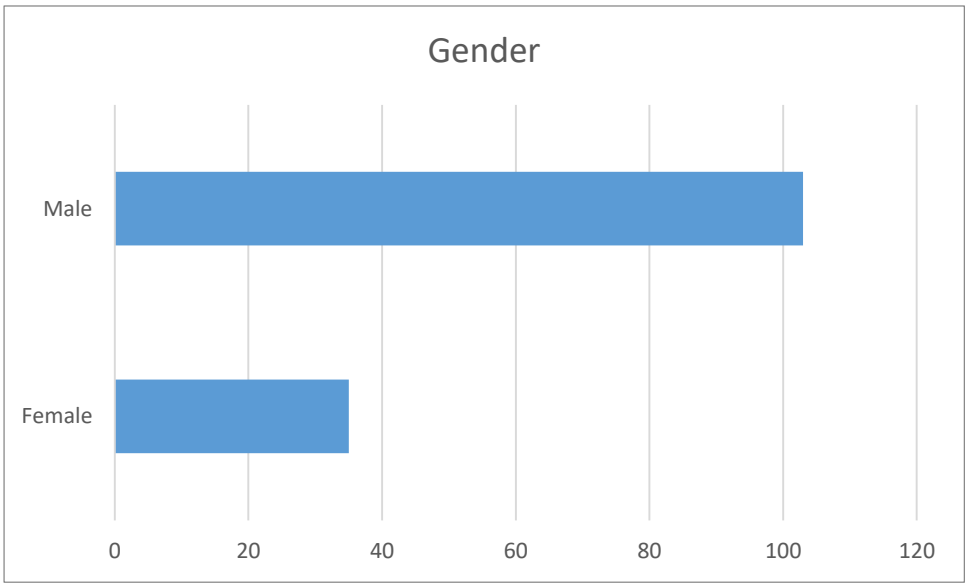


Figure 5-3: Respondents gender

5.4.4 Education background

The majority of the respondents have obtained as a minimum of a bachelor's degree with 117 respondents or (84.8%) from the total 138 respondents. There is only one respondent (0.7%) possessing a PhD and 29 (21%) respondents have a Master's degree. Additionally, 18 respondents (13.04%) has a diploma degree. Moreover, 3 respondents (2.1%), the fourth largest group are educated to secondary level, whilst no respondents were obtain educated to the professional and primary education level. Figure 5-4 illustrates the result in graphical format.

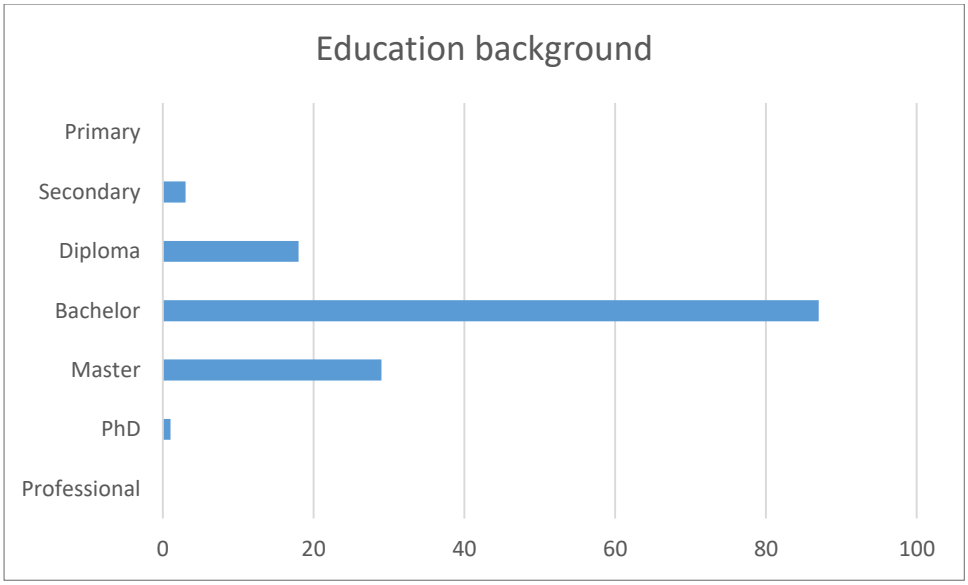


Figure 5-4: Education background

5.4.5 Length of the time that the business has been operational by the respondents

As illustrated in Figure 5-5, 63 respondents or 45.6 percent from the total survey have been operating within their business between 6 to 10 years. The second highest group have conduct their business between 1 to 5 years old, with 36 companies, 26 percent from the total 138 respondents. Companies with 11 to 15 years of experience in the business operation total 28 (20%) and the companies with over 15 year's operations have 8 responses. The companies with less than 1 year contain the least respondents, with 3 respondents in total. In conclusion 102 (73.9%) from the total respondents have been in operation for less than 10 years.

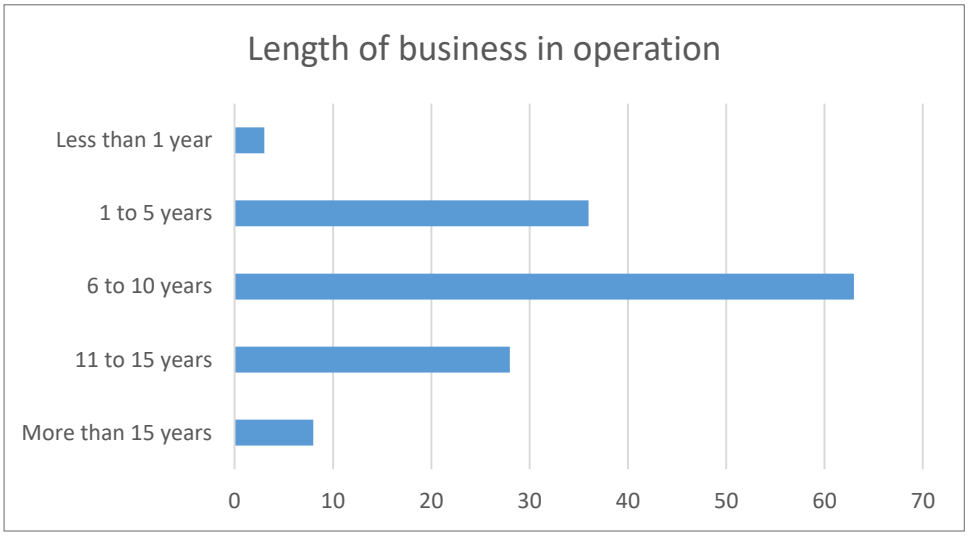


Figure 5-5: Length of business in operation

5.4.6 Length of years since the business obtain the MSC Malaysia Status

For this study, it has been found that the majority of the businesses had obtain their MSC Malaysia status only recently, to be precise for no more than 10 years. 68 from the respondents received the MSC status within the past 1 to 5 years (49%) and the remaining 55 companies obtain their MSC status within 6 to 10 years (39%); 10 companies (7%) have been recorded to have received their MSC status for more than 11 years (9 received it within 11 to 15 years and 1 company received the status for more than 15 years). The graph below illustrates that the respondents are largely dominated by companies that received their MSC Status for 10 years. Figure 5-6 provides the result of the respondent's length of years for which the companies obtain the MSC status.

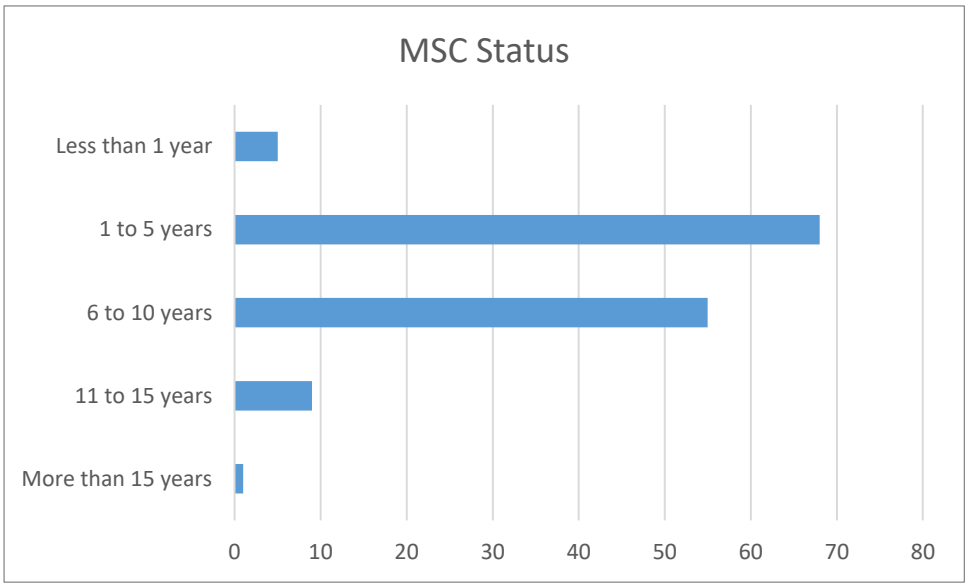


Figure 5-6: Respondents length of obtaining the MSC Status

5.4.7 Respondent companies' number of employees

The dominant respondent group here have between 6 to 20 employees with 78 in total (56%). The second highest group are from the companies that have 21 to 50 employees with 38 (27.5%) respondents. The 0 to 5 and 51-75 has the third and fourth which have 14 (10%) and 8 (6%) respondents respectively. As depicted in Figure 5-7, it is obvious that the majority of the respondents belong to companies, which have 6 to 50 employees.

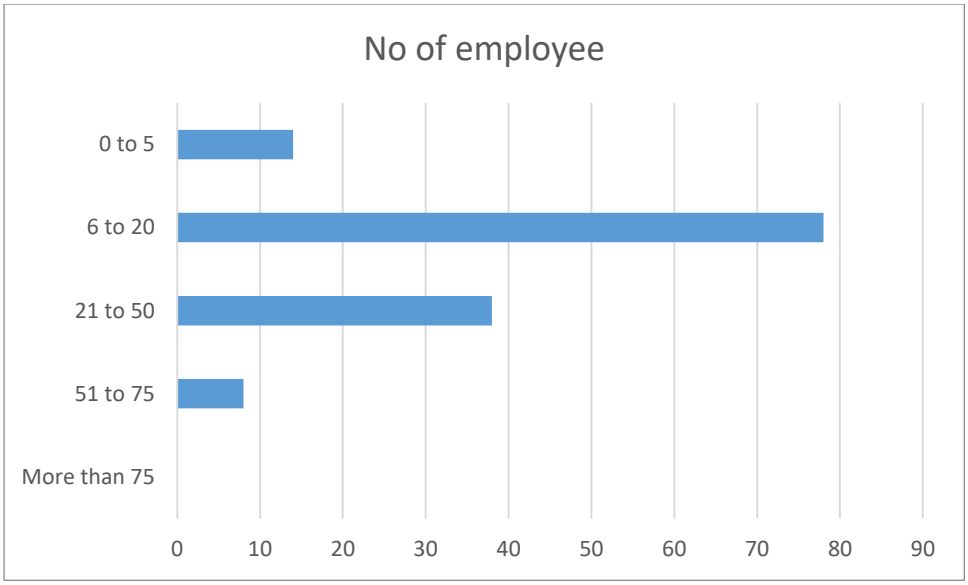


Figure 5-7: Respondents number of employees

5.4.8 The MSC Malaysia cluster category of the respondents

As depicted in figure 5-8, it has been found that majority of the respondents are come from the InfoTech cluster with 96 respondents, representing 70% from total respondents. The remaining 30% are from the Creative cluster with 42 respondents. The study has used stratified random sampling (refer 4.8.3.4), the outcome is of no surprise as the majority of the MSC companies are segmented under this classification.

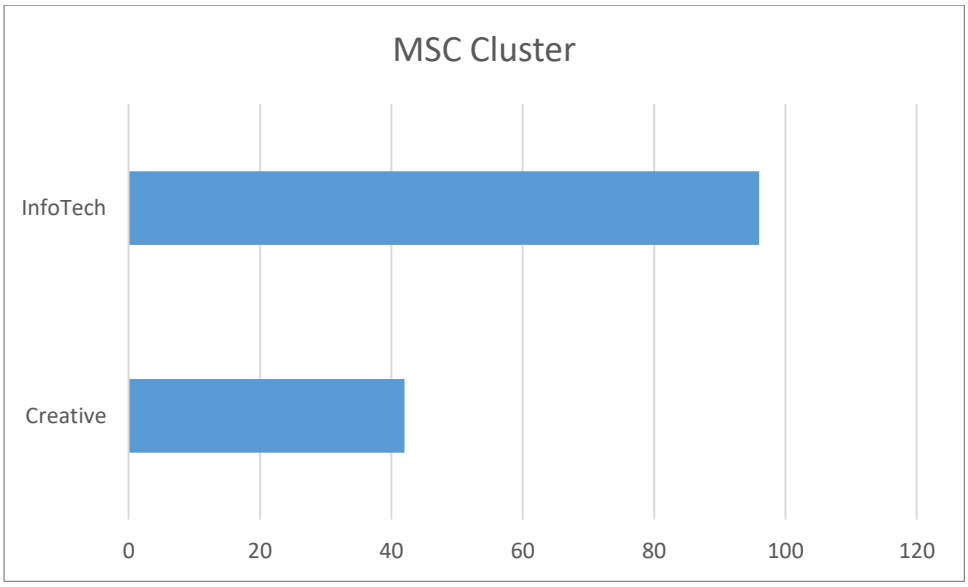


Figure 5-8: MSC cluster

5.5 Descriptive analysis of responses

While the previous section has discussed the demographic profile of the respondents, this section will discuss respondent's answers with regard to the constructs in the research. As the constructs are made up of intangible assets (human capital, technology capital and organization capital) and performance (non-financial and financial performance), all the findings will be elaborated further. All items are measured using a 7 category Likert scale, the range starts from '1 = strongly disagree' to '7=strongly agree'.

In term of respondent's variation in answering the question, the standard deviation shows that there is much variation in the respondents' answers and this is in relation to all the items. Referring to Table 5-3, it shows that for the human capital (HC) constructs, the minimum responses received are from item HC03, HC05 and item HC07 which are 2.00 and the others are relatively high at 4.00. Additionally, the maximum score achieved is 7.00 for all the items.

Table 5-3: Descriptive statistics for human capital

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
HC01	138	3.00	7.00	5.6159	.71809
HC02	138	3.00	7.00	5.5580	.79247
HC03	138	2.00	7.00	4.7174	1.22020
HC04	138	3.00	7.00	5.3551	.79964
HC05	138	2.00	7.00	5.0072	1.14303
HC06	138	3.00	7.00	5.0942	1.03153
HC07	138	2.00	7.00	5.1812	.80360
HC08	138	3.00	7.00	4.9275	1.02976
HC09	138	4.00	7.00	5.9420	.69164
HC10	138	4.00	7.00	5.7899	.69883
HC11	138	3.00	7.00	5.9348	.98312
HC12	138	4.00	7.00	5.4638	.90545
HC13	138	3.00	7.00	5.6087	.89144
Valid N (listwise)	138				

Accordingly, Table 5-4 depicts the descriptive statistics for the technology capital (TC) construct. The research has found that in technology capital (TC), item TC12 has received the minimum answer of 2.00. Moreover, all items obtain a maximum score of 7.00.

Table 5-4: Descriptive statistics for technology capital

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
TC01	138	4.00	7.00	5.9420	.69164
TC02	138	4.00	7.00	5.7899	.69883
TC03	138	3.00	7.00	5.9348	.98312
TC04	138	4.00	7.00	5.4638	.90545
TC05	138	3.00	7.00	5.6087	.89144
TC06	138	3.00	7.00	5.4420	.97425
TC07	138	3.00	7.00	5.5797	.94993
TC08	138	4.00	7.00	5.6304	.78374
TC09	138	3.00	7.00	5.4420	.88802
TC10	138	3.00	7.00	5.6377	.88740
TC11	138	3.00	7.00	5.2754	.88597
TC12	138	2.00	7.00	4.9565	.98061
Valid N (listwise)	138				

Table 5-5 represents the result from the descriptive statistics for the organization capital construct (OC). While all the items achieve a maximum score of 7.00, four items has been found to obtain minimum scores of 3.00 which are items OC07, OC08, OC11 and OC12. Moreover, the rest of items has received minimum answer of 4.00 and all the items has received 7.00 as the maximum answer.

Table 5-5: Descriptive statistics for organization capital

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
OC01	138	4.00	7.00	5.9855	.62765
OC02	138	4.00	7.00	5.7826	.71214
OC03	138	4.00	7.00	5.6449	.79964
OC04	138	4.00	7.00	5.7174	.73484
OC05	138	4.00	7.00	5.7246	.68101
OC06	138	4.00	7.00	5.8913	.89349
OC07	138	3.00	7.00	5.3043	.78869
OC08	138	3.00	7.00	5.4275	.80043
OC09	138	4.00	7.00	5.6957	.73105
OC10	138	4.00	7.00	5.8261	.75371
OC11	138	3.00	7.00	5.3478	.82526
OC12	138	3.00	7.00	5.6812	.76402
OC13	138	4.00	7.00	5.6522	.81637
Valid N (listwise)	138				

The procedure of measuring the descriptive statistic is further conducted to measure the dependent variable. In this process, two items in the non-financial performance has been found to achieve high variation of answer, items CP03 with 1.037 and CP04 with 1.082. Other than these items, all the items received considerable variation from 0.6 to 0.9. Whilst three out of four items in CP obtain a minimum score of 2.00 (CP01, CP03 and CP04), all the other items received 3.00 to 4.00 for the minimum score; all the items obtain a maximum score of 7.00. Table 5-6 provides the result in a table.

Table 5-6: Descriptive statistics for non-financial performance

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CP01	138	2.00	7.00	5.5725	.89514
CP02	138	4.00	7.00	5.7826	.61299
CP03	138	2.00	7.00	5.3478	1.03693
CP04	138	2.00	7.00	5.2899	1.08206
CP05	138	3.00	7.00	5.0725	.89310
IP01	138	3.00	7.00	5.6812	.76402
IP02	138	3.00	7.00	5.3696	.77437
IP03	138	4.00	7.00	5.5580	.78320
IP04	138	4.00	7.00	5.6232	.84752
LP01	138	3.00	7.00	5.1449	.96320
LP02	138	3.00	7.00	5.4275	.68229
LP03	138	3.00	7.00	5.4275	.78198
LP04	138	3.00	7.00	5.7174	.95893
LP05	138	4.00	7.00	5.7681	.79496
Valid N (listwise)	138				

Based on Table 5-7, the Financial Performance construct shows that all the items have obtained a minimum score of 3.00 and maximum result of 7.00. Additionally, amongst the five items, FP04 has received the most variation in answers, with a standard deviation of 0.916.

After identifying the descriptive analysis of each item, the next step is to identify the model specification, the measurement model as well as the structural model. As PLS-SEM requires a multi-stages process to be conducted, including the specification of the inner and outer model, the following steps will be conducted within the PLS-SEM method (Hair et al., 2014) . This includes (i) model specification, (ii) outer model evaluation and (iii) inner model evaluation.

Table 5-7: Descriptive statistics for financial performance

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
FP01	138	3.00	7.00	5.3986	.90044
FP02	138	3.00	7.00	5.2826	.89597
FP03	138	3.00	7.00	5.1232	.88337
FP04	138	3.00	7.00	5.1884	.91660
FP05	138	3.00	7.00	5.3043	.84239
Valid N (listwise)	138				

5.6 Model specification

The first steps are to create a path model that connects the relationship based on theory and logic. Depicted in Figure 5-9, in this study, there are two types of model which are the measurement (also known as an outer model) and the structural model (also known as inner model) (Ramayah, 2014). The inner model is made up of the constructs which are grouped in the grey shaded area, which illustrates the five constructs in the study. The intangible asset components which are incorporated into the three constructs, which are human capital (HC), technology capital (TC) and organization capital (OC) are identified as exogenous (independent variables). Additionally, the performance acts as the endogenous (dependent variable) including non-financial performance (Non-Fin Per) and financial performance (Fin Per). However, although Non-Fin Per is considered as endogenous, Hair et al., (2014) has affirmed that the endogenous construct can also act as independent variable when placed between two constructs. In this case, the non-financial performance acts as an independent variable while looking at the relationship between non-financial performance (Non-Fin Per) and financial performance (Fin Per).

After the inner model has been identified, the second step is to specify the outer model. It is illustrated in the Figure 5-9 that the outer model is the relationship between the constructs and items. There are two outer models which are the outer model of the exogenous construct and the outer model of the endogenous construct. The relationship amongst the constructs can be either reflective or formative. As explained in the previous chapter (4.8.5.5), in this study, as the all constructs are interchangeable, highly correlated and the meaning of the construct is not changed if omitted thereby all the items here are labelled as reflective and there are no formative constructs (Hair et al., 2014).

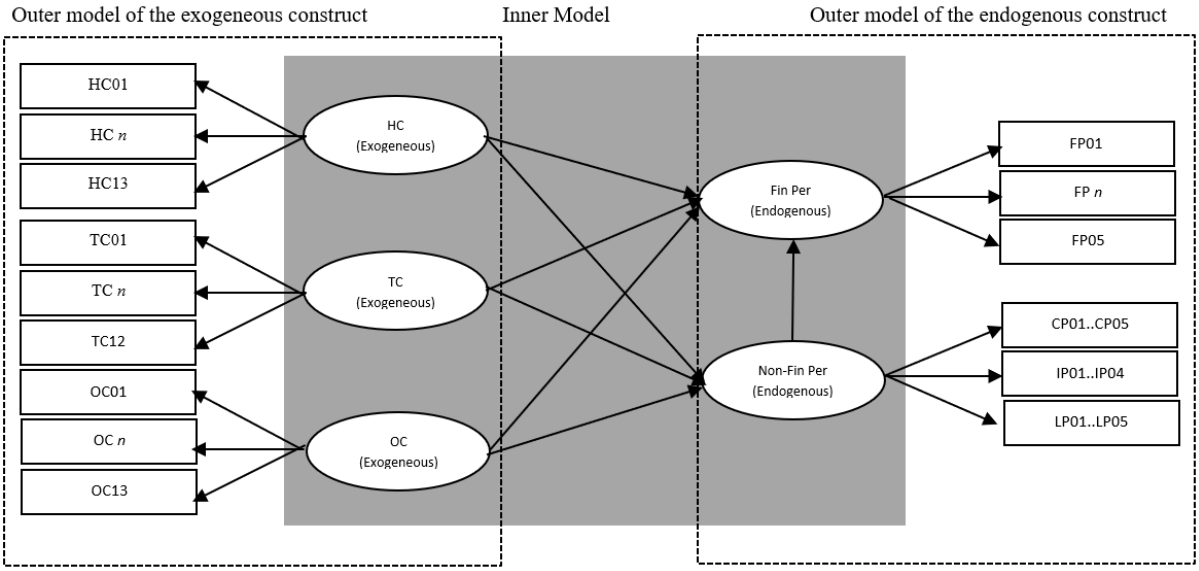


Figure 5-9: Model specification

5.6.1 Measurement (outer) model evaluation

According to Hair et al. (2014), it is essential to measure the outer model construct before it can be used as a foundation of an accurate inner model relationship. Therefore, two types of validity will be used, namely, convergent validity and discriminant validity. The convergent validity is assessed by measuring three components; the composite reliability, factor loading and average variance extracted (AVE). Furthermore, the Fornell & Larcker (1981) criterion, the cross loading and the HTMT are used to measure the discriminant validity of the model. In this study, both the outer model of the exogenous construct and the outer model of the endogenous construct will be examined simultaneously.

5.6.1.1 Convergent validity

Convergent validity is defined as the degree to which multiple items that measure the same concept are in agreement (Ramayah, 2014). In order to ensure that the items have a convergent validity, the reliability and validity of the items and construct will be further examine.

Traditionally, the reliability and the internal consistency of the model is assessed by measuring its Cronbach Alpha. Current acceptable practice is that the constructs which have Cronbach Alphas values of 0.70 or greater are accepted as reliable (Nunnally & Bernstein, 1978). However, Hair et al. (2012) and Hair et al. (2014) have emphasised that in order to measure construct reliability in the PLS, composite reliability is more appropriate to be utilize than Cronbach alphas. There are two main reason for this. The composite reliability does not assume that all indicator loadings are equal which is similar to the premises in PLS-SEM, the Cronbach alpha is found to be sensitive to the number of items in the

scale and tends to underestimate internal consistency reliability. Therefore, composite reliability is more accurate in use as it avoids the underestimation, which is associated with Cronbach Alpha. However, in order to establish reliability, the composite reliability should be greater than 0.70 (Lowry & Gaskin, 2014). Table 5-8 provides evidence that the composite reliability in this study has been achieved with all the constructs which are found to have high levels of internal consistency. The composite reliabilities values of 0.917 (HC), 0.917 (TC), 0.928 (OC), 0.965 (Fin Per) and 0.926 (Non-Fin Per) which shows that the constructs are reliable and acceptable.

Table 5-8: Composite reliability

	Composite Reliability
HC	0.917
TC	0.917
OC	0.928
Fin Per	0.965
Non-Fin Per	0.926

After the composite reliability has been established, the next step is to assess the Average Variance Extracted (AVE) and outer loadings. The AVE is the grand mean value of the squared loading of a set of indicators (Hair et al., 2014) and the outer loading is the correlation between constructs and items (Ramayah, 2014). It has been noted that one construct is consider to be having a convergent validity if each item in the construct obtains the outer loading above 0.70 and each construct receives an AVE score of 0.50 or higher. However, as Hulland (1999) and Hair et al. (2012) have stressed that items with a loading above 0.4 are acceptable if the AVE score is above 0.50, therefore the deletion process is only conducted according to AVE value and needs to be done carefully. However, items that exhibit very low loadings (0.40 and below) must be removed from the construct (Hair et al., 2011).

In this study, in the earlier testing it has shown that three out of the five AVE are not achieved the minimum threshold of 0.50. Besides Fin Per (0.848) and OC (0.502), the HC, TC and Non-Fin Per has been found to experience an AVE issue with 0.460, 0.485 and 0.478 respectively (Table 5-9). Further investigation has found that several items had an outer loadings issue with a loading value of less than 0.70. As Hair et al., (2011) has emphasised items which have a loading between 0.40 and 0.70 should be considered to be deleted only if the process is able to increase the composite reliability and AVE above the threshold value, therefore, in order to achieve the convergent validity of the construct, all

items are rigorously scrutinize. Items which have an outer loading below 0.40 are the first to be omitted in order to meet the convergent validity threshold.

Table 5-9: Average Variance Extracted initial run

	Average Variance Extracted (AVE)
HC	**0.460**
TC	**0.485**
OC	0.502
Fin Per	0.848
Non-Fin Per	**0.478**

AVE accepted >0.5. Construct in bold show AVE did not achieve the requirement

Table 5-10: Outer Loading Measurement initial-run

Items		Fin Per	HC	Non-Fin Per	OC	TC
FP01	Revenue	0.953				
FP02	Profit	0.947				
FP03	Reducing cost	0.881				
FP04	Return on assets (ROA)	0.884				
FP05	Return on sales (ROS)	0.936				
HC01	Competent		0.667			
HC02	Motivation		0.703			
HC03	Experts		0.722			
HC04	Satisfaction		0.682			
HC05	New Ideas		0.635			
HC06	New Products		0.729			
HC07	Sharing ideas		0.657			
HC08	Understand		0.777			
HC09	Knowledge		0.552			
HC10	Implementation		0.638			
HC11	Encourage		0.658			
HC12	Unique		0.679			
HC13	Knowledge development		0.695			
CP01	Loyalty			0.538		
CP02	Satisfied with products			0.704		
CP03	Believe			0.708		
CP04	Satisfied with service			0.653		
CP05	Market share			0.523		
IP01	Competitive			0.617		
IP02	Success rate			0.72		
IP03	On time services / products			0.726		
IP04	Responsive			0.822		

LP01	Employee turnover			0.544		
LP02	Superior performance			0.754		
LP03	Industry leader			0.733		
LP04	Compete globally			0.802		
LP05	Overall performance			0.75		
OC01	Infrastructure				0.529	
OC02	Integration				0.787	
OC03	Structure, system and procedure				0.622	
OC04	Licence				0.723	
OC05	Employee close				0.798	
OC06	System support innovation				0.67	
OC07	Recruitment				0.646	
OC08	Skill upgrading				0.793	
OC09	Education upgrading				0.741	
OC10	Up to date				0.759	
OC11	Encourage giving ideas				0.708	
OC12	Involvement				0.665	
OC13	Vital knowledge				0.72	
TC01	Easy to understand					0.763
TC02	Technology leader					0.735
TC03	Technology innovation					0.65
TC04	Technology coordination					0.748
TC05	Control of technology					0.852
TC06	Use latest equipment					0.755
TC07	R&D infrastructure					0.633
TC08	Technology budget					0.758
TC09	External sources					0.768
TC10	Professional skill					0.538
TC11	Intellectual property					0.532
TC12	Industrial property					0.534

During this stage, it has been evidenced that no item has suffer with outer loading less than 0.40 therefore, a further deletion procedure is conducted, with the lowest items in each construct being deleted first in order to ensure each construct achieve AVE more than 0.50 benchmark. This process is continued until the entire construct AVE achieve the benchmark of 0.50. In this procedure twelve items has been deleted which are HC05, HC07, HC09, HC10, HC12, HC13, TC03, TC11, TC12, CP01, CP05 and LP01. Finally, all the constructs have obtained AVE above 0.50 (HC 0.542, TC 0.578, OC 0.503, Fin Per 0.847 and Non-Fin Per 0.545). By achieving the composite reliability, the threshold of AVE 0.50 or more, all items have an outer loading of more than 0.40, the final items accepted into this study as illustrated in Table 5-11, which shows that the measures have obtained sufficient convergent validity.

Table 5-11: Measurement model

Final Construct Loading CR and AVE (N=138)

Construct	Description	Item	Loadings	CR	AVE	Convergent Validity (AVE >0.50)
HC	Competent	**HC01**	0.687	0.891	0.542	Yes
	Motivated	**HC02**	0.726			
	Experts	**HC03**	0.815			
	Satisfied	**HC04**	0.698			
	New products	**HC06**	0.778			
	Understand	**HC08**	0.805			
	Encourage	**HC11**	0.623			
TC	Easy to understand	**TC01**	0.785	0.924	0.578	Yes
	Technology leader	**TC02**	0.779			
	Technology coordination	**TC04**	0.726			
	Control of technology	**TC05**	0.824			
	Use latest equipment	**TC06**	0.803			
	R&D infrastructure	**TC07**	0.701			
	Technology budget	**TC08**	0.806			
	External sources	**TC09**	0.814			
	Professional skill	**TC10**	0.568			
OC	Infrastructure	**OC01**	0.516	0.929	0.503	Yes
	Integration	**OC02**	0.787			
	Structure, system and procedure	**OC03**	0.617			
	Licence	**OC04**	0.716			
	Employee close	**OC05**	0.801			
	System support innovation	**OC06**	0.676			
	Recruitment	**OC07**	0.637			
	Skill upgrading	**OC08**	0.788			
	Education upgrading	**OC09**	0.754			
	Up to date	**OC10**	0.757			
	Encourage giving ideas	**OC11**	0.711			
	Involvement	**OC12**	0.676			
	Vital knowledge	**OC13**	0.732			
Fin Per	Revenue	**FP01**	0.954	0.965	0.847	Yes
	Profit	**FP02**	0.949			
	Reducing cost	**FP03**	0.878			
	Return on assets (ROA)	**FP04**	0.881			
	Return on sales (ROS)	**FP05**	0.937			
Non-Fin Per	Satisfied with products	**CP02**	0.72	0.929	0.545	Yes
	Believe	**CP03**	0.695			
	Satisfied with service	**CP04**	0.637			
	Competitive	**IP01**	0.636			
	Success rate	**IP02**	0.7			
	On time services / products	**IP03**	0.746			
	Responsive	**IP04**	0.845			

Superior performance	**LP02**	0.765
Industry leader	**LP03**	0.749
Compete globally	**LP04**	0.822
Overall performance	**LP05**	0.772

5.6.5.2 Discriminant Validity

After the convergent validity procedure has been conduct, the discriminant validity of each construct will be further determine. Discriminant validity is the extent to which a construct is truly distinct from another construct (Hair et al., 2017) and further serves as an indicator to show that the construct is measuring what it is intending to measure (Hair et al., 2014; Jörg Henseler, Ringle, & Sarstedt, 2014; Hulland, 1999). This can be done by conducting the Fornell and Larcker (1981) criterion, by examining using a cross loading approach, and conducting the heterotrait-monotrait ration (HTMT) of the indicator.

The Fornell-Larcker criterion and cross loading measurement is the most traditional way for the researcher to analyse the discriminant validity of the model. In the Fornell-Larcker criterion, it is emphasised that the model's discriminant validity is established when the latent variable has more variance in its associate indicators than it shares with other constructs. In order to achieve this, each construct's AVE is compared with its squared correlation, with other constructs in the model (Jörg Henseler et al., 2014). If the square root AVE of the construct achieves the highest value compared to other constructs in rows and column, it can be conclude that the construct has achieved its discriminant validity. On the other hand, the second method in measuring the discriminant validity is by assessing the cross-loading value. The cross loading indicates that an indicator loading with its associates latent construct should be higher than its loadings with all the remaining constructs (Hair 2011). If this happens, the discriminant validity of the model is acceptable.

However, despite the acceptance that Fornell-Larcker and cross loading has always been use to determine the discriminant validity of the construct, recently Henseler et al. (2014) has introduce a new approach in assessing discriminant validity, which is the heterotrait-monotrait ratio of correlation (HTMT). Indicating that the two former discriminant validity measures may also have drawbacks, such as no systematic examination of efficiacy, and having low sensitivity and being unable to detect a lack of discriminant validity, and so suggests that the more appropriate way to assess discriminant validity is through HTMT. Compared to the previous convergent validity methods, HTMT provides two main advantages, it does not require a factor analysis to obtain factor loading, or construct score.

In order to examine the HTMT, the bootstrap confidence interval procedure needs to be carried out. As emphasised by Henseler et al., (2014) and Hair et al., (2017) the HTMT value below 0.85 is the standard to assess discriminant validity of the construct.

Given the above statement, the research has undertaken all three assessment to verify the construct discriminant validity. First, by conducting the traditional Fornell-Larcker and outer loadings. Next, employing the HTMT to analyse the discriminant validity of the construct.

a) Fornell-Larcker criterion

Table 5-12 describe the Fornell-Larcker criterion where the diagonals depicted within the grey boxes represent the square root of the AVE, whilst the off-diagonals represent the correlation of the constructs. It has been found that the square root of the entire construct square root of AVE has received a higher value compared to other constructs. This shows that the construct is truly distinct from others and further concludes that the discriminant validity is established.

Table 5-12: Fornell-Larcker to determine Discriminant Validity

	Fin Per	HC	Non-Fin Per	OC	TC
Fin Per	**0.921**				
HC	0.565	**0.736**			
Non-Fin Per	0.608	0.709	**0.738**		
OC	0.285	0.65	0.663	**0.709**	
TC	0.261	0.563	0.545	0.642	**0.76**

b) Cross Loading

Table 5-13 describes the assessment of discriminant validity by comparing the cross loading between constructs. As it has been empahsize that the loading of the items should be greater for the latent variable to which they theoretically belong than for any other latent variable (Lowry & Gaskin, 2014). For example, the FP01 loads with a value of 0.954 onto the Financial Performance latent variable, but the loading has a lower value on other variables. It is obvious that all the items are having a higher loading on their own construct, rather than upon other constructs. This means that the constructs are different from each other and further indicates that the discriminant validity is achieved.

Table 5-13: Loading and cross loading to determine discriminant validity

	Fin Per	HC	Non-Fin Per	OC	TC
FP01	**0.954**	0.535	0.602	0.228	0.286
FP02	**0.949**	0.594	0.646	0.304	0.255
FP03	**0.878**	0.468	0.491	0.215	0.187
FP04	**0.881**	0.444	0.438	0.266	0.179
FP05	**0.937**	0.535	0.58	0.297	0.274
HC01	0.287	**0.687**	0.43	0.397	0.442
HC02	0.362	**0.726**	0.479	0.505	0.441
HC03	0.505	**0.815**	0.54	0.428	0.329
HC04	0.307	**0.698**	0.419	0.401	0.438
HC06	0.53	**0.778**	0.66	0.401	0.361
HC08	0.446	**0.805**	0.598	0.633	0.439
HC11	0.392	**0.623**	0.451	0.596	0.518
CP02	0.31	0.516	**0.72**	0.699	0.4
CP03	0.481	0.467	**0.695**	0.307	0.389
CP04	0.535	0.449	**0.637**	0.172	0.285
IP01	0.359	0.458	**0.636**	0.44	0.391
IP02	0.603	0.511	**0.7**	0.412	0.277
IP03	0.457	0.478	**0.746**	0.395	0.436
IP04	0.491	0.609	**0.845**	0.529	0.382
LP02	0.398	0.552	**0.765**	0.558	0.383
LP03	0.405	0.544	**0.749**	0.662	0.546
LP04	0.447	0.67	**0.822**	0.62	0.448
LP05	0.444	0.456	**0.772**	0.507	0.484
OC01	0.191	0.308	0.326	**0.516**	0.29
OC02	0.208	0.488	0.498	**0.787**	0.582
OC03	0.448	0.604	0.6	**0.617**	0.344
OC04	0.192	0.555	0.419	**0.716**	0.457
OC05	-0.002	0.403	0.369	**0.801**	0.509
OC06	-0.009	0.351	0.275	**0.676**	0.498
OC07	0.124	0.42	0.356	**0.637**	0.21
OC08	0.244	0.497	0.516	**0.788**	0.405
OC09	0.132	0.385	0.445	**0.754**	0.536
OC10	0.306	0.482	0.534	**0.757**	0.541
OC11	0.18	0.503	0.521	**0.711**	0.433
OC12	0.189	0.407	0.524	**0.676**	0.581
OC13	0.043	0.35	0.399	**0.732**	0.485
TC01	0.131	0.379	0.461	0.555	**0.785**
TC02	0.197	0.485	0.416	0.437	**0.779**
TC04	0.317	0.534	0.476	0.524	**0.726**
TC05	0.284	0.524	0.495	0.553	**0.824**
TC06	0.088	0.314	0.339	0.456	**0.803**
TC07	0.096	0.241	0.241	0.446	**0.701**
TC08	0.209	0.395	0.451	0.546	**0.806**

TC09	0.167	0.395	0.381	0.498	**0.814**
TC10	0.176	0.438	0.334	0.304	**0.568**

c) Heterotrait-Monotrait Criterion (HTMT)

The third and the latest methods to verify the discriminant validity is by assessing the HTMT of the constructs. Hair et al., (2017) page 119 has mentioned that only HTMT below 0.85 can be accepted because it shows a true distinction amongst the constructs. Further to this, the confidence interval of the HTMT needs to be tested and the result should not include the value of 1 for all combinations of constructs. In this study, all the constructs have obtained the HTMT score below 0.85 value, which indicates that the constructs are within the acceptable figure range Table 5-14).

Table 5-14: Heterotrait-Monotrait Criterion (HTMT) to determine discriminant validity

	Fin Per	**HC**	**Non-Fin Per**	**OC**	**TC**
Fin Per					
HC	**0.600**				
Non-Fin Per	0.642	**0.780**			
OC	0.276	0.710	**0.683**		
TC	0.257	0.630	0.578	**0.691**	

Note: HTMT should be not more than 0.85 (Hair et al., 2017)

Next, the confidence interval of the HTMT is calculated. This ratio will further test whether the HTMT interval includes the value of 1. This can be affirmed by examining the lower boundary (2.5%) and upper boundary (95%). Following Hair et al. (2017) recommendation, this procedure is conducted using a bootstrapping procedure. The bootstrapping is a resampling technique that draws a large number of subsamples from the original data. This method allows the statistical significance to be generate from the standard error of the coefficient, without depending on the distributional assumptions (Hair et al., 2017). Although Ramayah (2014) has suggested that the subsample should be between 500 to 5000, is in this test, Hair et al. (2017) advice will be followed which recommends that a 5,000 sample should be used. The result shows that neither of the confidence intervals includes the value of 1 (Refer Table 5-15). For example, the lower and upper boundaries of the confidence interval of HTMT for the relationship between HC and Fin Per are 0.24 and 0.569 respectively. Therefore, the bootstrap confidence interval result of the HTMT criterion further strengthens the discriminant validity of the constructs.

Table 5-15: Confidence Interval Bias Corrected

	Original Sample (O)	Sample Mean (M)	Bias	2.50%	97.50%
HC → Non-Fin Per	0.459	0.457	-0.002	0.323	0.61
HC → Fin Per	0.407	0.414	0.006	0.24	0.569
TC → Non-Fin Per	0.09	0.082	-0.008	-0.04	0.238
TC → Fin Per	-0.083	-0.079	0.004	-0.257	0.089
OC → Non-Fin Per	0.306	0.321	0.015	0.126	0.466
OC → Fin Per	-0.299	-0.302	-0.003	-0.493	-0.093
Non-Fin Per → Fin Per	0.562	0.561	-0.001	0.401	0.71

Note: HTMT confidence interval should be not include the value of 1 for all combination of constructs (Hair et al., 2017)

Overall, after several assessments have been conducted, it is concluded that this model has obtained its composite reliability, construct validity and discriminant validity. As the model has achieve its composite reliability (CR) more than 0.7, additionally the model has achieved its construct reliability after deleting several items thus achieving the minimum AVE threshold which is 0.50. As mentioned beforehand, if there is any items below 0.40 it will deleted immediately before the process of deletion of the other items is conducted. Further, the deletion process is conducted until the minimum AVE is satisfied. At the same time, several items which have a loading below 0.70 but higher than 0.40 has been retained and the argument for retaining these items has been discussed.

The discriminant validity has been conducted using all the three methods; Fornell-Larcker, cross loadings and HTMT; and it has been found that the constructs are distinct from one another and have fulfilled the requirement to thereby achieving the discriminant validity. As all the necessarily procedures have been conducted, the final model is further depicted in Figure 5-10.

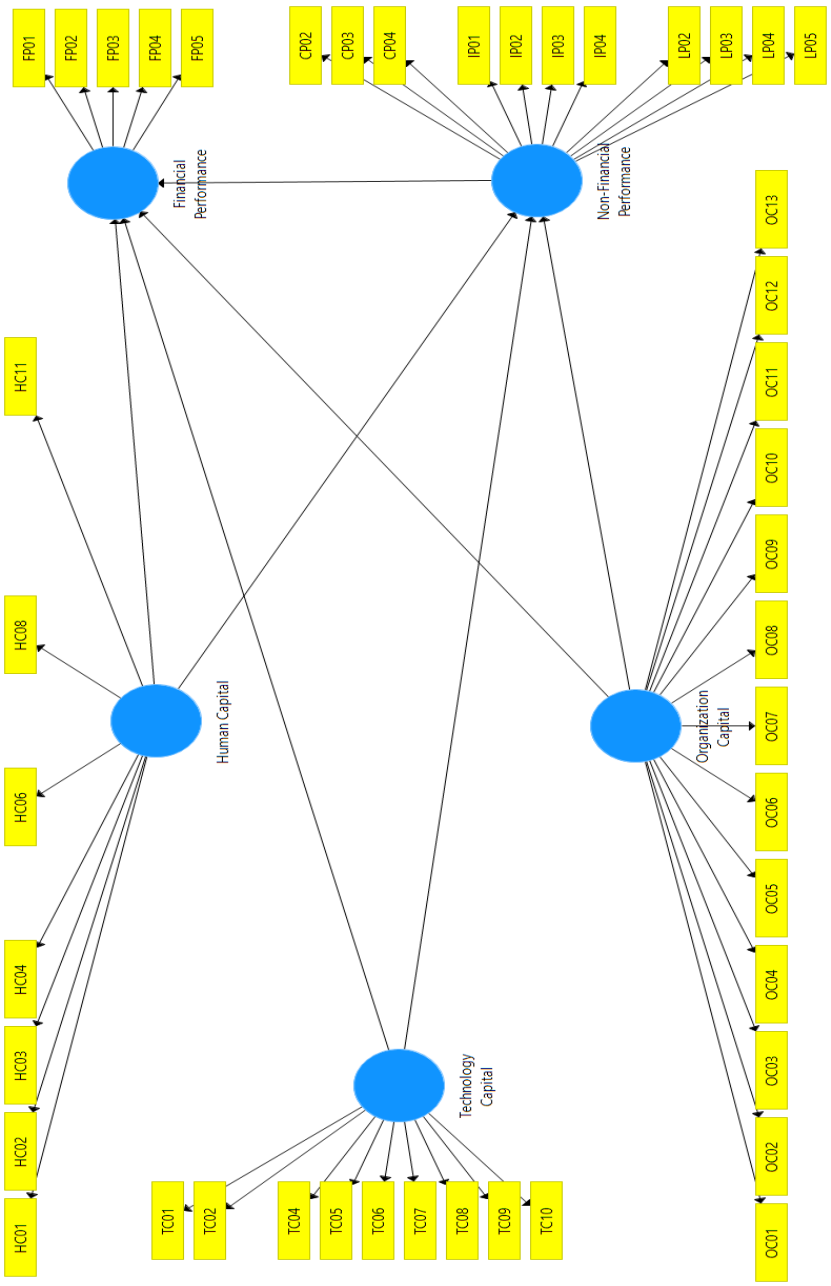


Figure 5-10: Final Model

5.6.2 Structural (inner) model evaluation

Having conducted the outer model composite reliability, construct validity and discriminant validity during the outer model evaluation, the next step is to conduct the inner model evaluation. This is important to assess the model quality based on its ability to predict the endogenous construct. While CB-SEM establish its model by model-to-fit statistics, in PLS the model is assess by measuring its inner model. Six criteria need to be satisfied by the inner model evaluation, which are (a) Assess the collinearity issues, (b) Assess the significance and relevance of the structural model relationship (c)

Assess the Coefficient of Determination (R^2), (d) the effect size (f^2) (e) Assess the predictive relevance (Q^2), and (f) Assess the q^2 effect size (Hair et al., 2017). Figure 5-11 illustrate the six-step structural model assessment procedure.

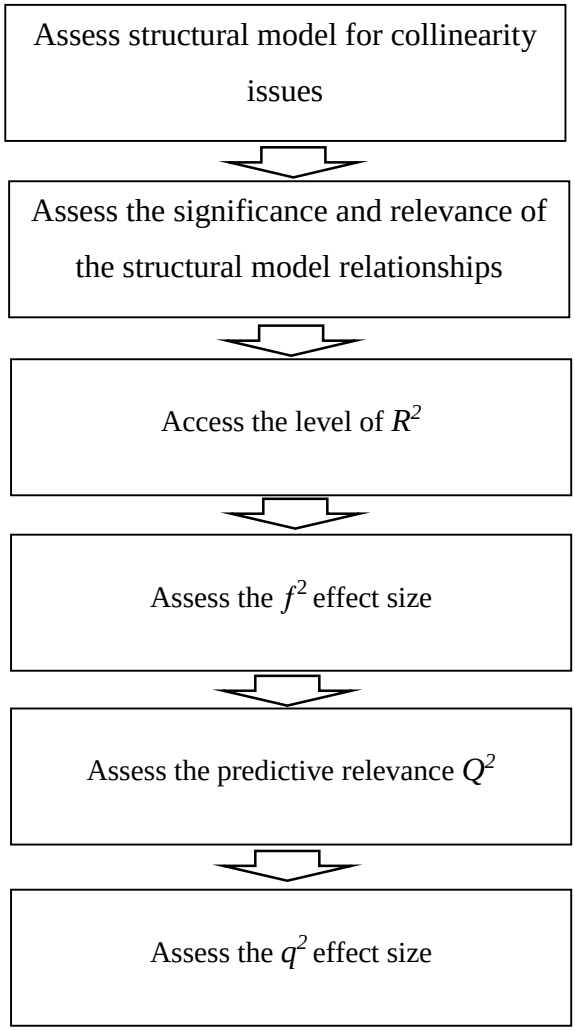


Figure 5-11: The six-step procedure for structural model assessment
Source : Hair et al., (2017) (page 191)

5.6.2.1 Access the collinearity

To make sure that there are no collinearity issues in the PLS-SEM is paramount. In PLS multi collinearity is problematic, leading the model to be insignificant. Therefore, the collinearity issues are crucial and so needs to be tested. In PLS-SEM, the collinearity issues can be tested through the variance inflation factor (VIF). High VIF indicates that the model has the potential to experience a multicollinearity problem. Although Hair et al., (2011) have explained that VIF of more than 5 tends to be problematic, Lowry & Gaskin, (2014) have suggested that the VIF should not exceed 3.3. If this occurs, they have suggested the indicator should be eliminated to relax the multicollinearity problem

(Hair et al., 2011). In this study, the VIF obtained as depicted in Table 5-16 shows that all the constructs have a value less than 3.3, which is below the threshold. This indicates that the construct does not suffer collinearity issues.

Table 5-16: Variance inflation factor (VIF)

	Fin Per	HC	Non-Fin Per	OC	TC
Fin Per					
HC	2.344		1.845		
Non-Fin Per	2.368				
OC	2.370		2.148		
TC	1.835		1.816		

Note: VIF >3.3 indicates a multicollinearity problem Lowry & Gaskin (2014)

5.6.2.2 Path Coefficient

The path of the coefficient represents the hypothesis relationship among the constructs. Ranging from +1 (strong positive relationship) and -1 (strong negative relationship), the path coefficient is obtained by using a bootstrapping procedure to test the relevance of significant relationships. Paths with non-significant relationships do not support the hypothesis and therefore they will be not accepted (Hair et al., 2011). Results in exhibit in Table 5-17 provide the path coefficients for the hypothesis relationship amongst the constructs. Seven hypotheses have been generate in general and four out of seven hypotheses have been supported.

Table 5-17: Path coefficient

Hypothesis	Relationship	Std Beta	T Statistics (|O/STDEV|)	P Values	Decision
H1a	**HC → Non-Fin Per**	0.457	0.073*	0.000	**Supported**
H1b	**HC → Fin Per**	0.669	0.077*	0.000	**Supported**
H2a	**TC → Non-Fin Per**	0.082	0.071	0.201	Not supported
H2b	**TC → Fin Per**	-0.032	0.096	0.741	Not supported
H3a	**OC → Non-Fin Per**	0.321	0.087*	0.000	**Supported**
H3b	**OC → Fin Per**	-0.122	0.114	0.267	Not supported
H4	**Non-Fin Per → Fin Per**	0.561	0.078*	0.000	**Supported**

***p < 0.01**

Hypothesis 1a investigates the relationship between HC and Non-Fin Per. It was hypothesised that this relationship would be a positive relationship. The result of the analysis reveal that it has a positive

relationship and is statistically significant (β = 0.457, p < 0.000). Therefore, it is concluded that the hypothesis 1a is supported.

Hypothesis 1b has tested the relationship between HC and Fin Per. It was hypothesised that the human capital would have a positive relationship with financial performance. The result has indicate that the positive and significant path from HC to Fin Per (β = 0.669, p < 0.000). Therefore, the hypothesis 1b is significant and therefore supported.

Hypothesis 2a tested the relationship between TC and Non-Fin Per. As the hypothesis has suggested there will be a positive relationship between the TC and Non-Fin Per, the study reveal that although it has a positive relationship however it is not statistically significant (β = 0.082, p < 0.201). Therefore, it is concluded that the hypothesis 2a is not supported.

Hypothesis 2b investigates the relationship between TC and Fin Per. It was hypothesised that there will be a positive relationship between the technology capital and financial performance. The analysis however indicates that it has a negative relationship and therefore is not significant (β = -0.032, p < 0.741). Thus, the hypothesis 2b is not supported.

Hypothesis 3a seeks to find a link between OC and Non-Fin Per. The hypothesis suggests that there will be a positive relationship between the two, and the statistical results show that it has a positive relationship and statistically significant (β = 0.321, p < 0.000) therefore the hypothesis 3a was supported.

Hypothesis 3b further attempts to study the relationship between OC and Fin Per. It was hypothesised that there will be a positive relationship between the constructs. Interestingly, the result indicates that the relationship between OC and Fin Per having a negative relationship and statistically not significant (β = -0.122, p < 0.267). Accordingly, the hypothesis 3b is not supported.

Hypothesis 4 explores the link between Non-Fin Per and Fin Per. It was hypothesized that it will be a positive relationship between Non-Fin Per and Fin Per. The result has reveal that the relationship is positive and statistically significant (β = 0.561, p< 0.000). Therefore, the hypothesis has been supported.

5.6.5.3 Coefficient of determination (R^2)

In PLS, the accuracy of the model is measured by analysing the coefficient of determination. This method indicates how much of the variance in the endogenous latent construct is explained by the

exogenous latent construct (Ramayah, 2014). The effect ranges from 0 to 1 where 1 is described as having complete predictive accuracy. Furthermore, the rules of thumb with respect to the acceptable of R^2 has been explained by Hair et al., (2011). He suggested that the R^2 of 0.75 is considered substantial, 0.50 are moderate and 0.25 consider as weak.

Table 5-19 illustrates the R^2 value for the construct of human capital (HC), technology capital (TC), organization Capital (OC) towards the financial (Fin Per) and non-financial performance (Non-Fin Per). The R^2 for Non-Fin Per, which is 0.578, indicates that 58% of the variance in Non-Fin Per is explained by the constructs of HC, TC and OC. Additionally, it finds that the R^2 for Financial Performance of 0.465 suggests that Intangible Assets (HC, TC, OC) and the Non-Fin Per explain 47% of Fin Per.

By looking at the results of the analysis, it can be concluded that the intangible assets recorded a moderate to strong relationship towards non-financial performance. Whilst the relationship among intangible assets and non-financial performance has a moderate relationship with financial performance.

5.6.5.4 Effect size (f^2)

Next step in measuring the inner model is to analyse the effect size (f^2). The f^2 attempt to gauge whether the R^2 value will be changed when the exogenous variable is removed from the structured model. It can be indicate that the omitted exogenous construct might lead to a small, medium or large effect size, which is when 0.02 is consider a small effect, 0.15 consider as a medium effect and 0.35 is consider as a large effect (Hair et al., 2017). Accordingly, a higher f^2 value shows that the exogenous construct is strongly contributing to explaining the endegenous construct. Table 5-18 presents the effect size assessment in this study.

Table 5-18: Effect size (f^2)

	Fin Per	HC	Non-Fin Per	OC	TC
Fin Per					
HC	0.131		0.261		
Non-Fin Per	0.242				
OC	0.072		0.117		
TC	0.017		0.002		

Note: 0.02 -small effect, 0.15 – medium effect, 0.35 – large effet (Hair et al., 2017)

Table 5-18 shows that the all the intangible assets components, namely, HC, TC and OC has a small effect towards Fin Per by having 0.131, 0.072 and 0.017 respectively. Interestingly, the Non-Fin Per is having a medium to large effect with Fin Per by obtaining 0.242 effect size. On the other hand, the TC has the smallest effect towards Non-Fin Per, with an effect size of 0.002. The OC indicates a small effect towards Non-Fin Per with 0.117. Nevertheless, the HC shows a contrasting result. By having f^2 of 0.261, it can be concluded that the HC has a medium effect towards Non-Fin Per compared to the other intangible assets.

5.6.5.5 Predictive Relevance (Q^2)

The next step is to validate the inner model's predictive relevance. In this assessment, the capability of the model to predict is assessed and commonly the measure of predictive relevance is conducted using the Stone-Geissers Q^2 (Hair 2011). In this method, the Q^2 is obtain by measuring the cross validate redundancy by using the blindfolding technique and is only applicable to the endogenous latent constructs that have a reflective measurement model (Hair et al., 2017). As proposed by Hair et al. (2014) noted a Q^2 value that is larger than zero for a particular endogenous construct, indicates that the path model has predictive relevance for this particular construct. In this model, the Non-Fin Per and Fin Per served as the endogenous constructs for the reflective measurement model, which is represented by the intangible assets components (Table 5-19). Therefore, the blindfolding procedure will be conducted towards these constructs. It has been found that for both the Fin Per and Non-Fin Per constructs that they have exhibited clear predictive relevance with both constructs obtaining 0.354 and 0.287 respectively.

Table 5-19: Coefficient of determination (R^2) and Cross validation redundancy (Q^2)

	SSO	SSE	Coefficient of determination (R^2)	Cross Validate Redundancy ($Q^{2)}$
Financial Performance	690.000	445.439	0.465	0.354
Human Capital	966.000	966.000		
Non-Financial Performance	1,518.000	1,082.818	0.578	0.287
Organization Capital	1,794.000	1,794.000		
Technology Capital	1,242.000	1,242.000		

Note: (i) R^2 score interpretation: 0.75 = substantial, 0.50 = moderate, 0.25 = weak ii) Q^2 score interpretation (more than 0 shows the exogenous construct has a predictive relevance over endogenous construct) (Hair et al., 2014).

5.6.5.6 Effect size q^2

The q^2 effect size attempts to assess the contribution of the exogenous construct towards an endogenous latent variable Q^2 value. This needs to be calculated manually by identifying the Q^2 included and Q^2 excluded. The Q^2 excluded is obtain from a model re-estimation after a specific predecessor of the endogenous variable is omitted and then re-running the blindfolding process (Hair et al., 2017). It has been acknowledge that the q^2 values of 0.02, 0.15 and 0.35 indicate that the exogenous construct has a small, medium or large predictive relevance for certain endogenous construct. Given to the manual formula to calculate the q^2 the analysis further omitted one construct to estimate the q^2 effect size. The formula to calculate q^2 is:

$$q^2 = \frac{Q^2 \text{ included} - Q^2 \text{ excluded}}{1 - Q^2 \text{ included}}$$

Therefore, the manual calculation has been conducted as presented in Table 5-20

Table 5-20: q^2 effect size calculation

	Q^2 included		Q^2 excluded		Q^2included- Q^2 excluded		1- Q^2 included		$\frac{Q^2\text{included- } Q^2\text{excluded}}{1- Q^2 \text{ included}}$	
	Non-Fin Per	Fin Per	Non-Fin Per	Fin Per	Non-Fin Per	Fin Per	Non-Fin Per	Fin Per	Non-Fin Per	Fin Per
HC	0.287	0.354	0.23	0.295	0.057	0.059	0.713	0.646	0.080	0.091
TC	0.287	0.354	0.284	0.352	0.003	0.002	0.713	0.646	0.004	0.003
OC	0.287	0.354	0.266	0.33	0.021	0.024	0.713	0.646	0.029	0.037
Non-Fin Per		0.354		0.253		0.101		0.646		0.156

Note : q^2 score interpretation: 0.02 =small predictive relevance, 0.15 = medium predictive relevance, 0.35 = large predictive relevance (Hair et al., 2017).

After the manual calculation has been conducted, the summary of the q^2 effect size is presented in Table 5-20. The overall result from the blindfolding shows mixed predictive relevance. HC has a small predictive relevance to both Non-Fin Per and Fin Per with 0.08 and 0.091. Additionally the TC shows the smallest predictive relevance to Non-Fin Per with 0.004 and Fin Per 0.003. The OC obtains a small predictive relevance which 0.029 on Non-Fin Per and 0.037 to Fin Per. Additionally, the Non-Fin Per has medium predictive relevance towards Fin Per with q^2 of 0.156.

5.6.3 Mediation Analysis

After the assessment of the structural model has been complete, the next procedure is to conduct a mediation analysis. Mediation is a situation occurring when a third mediator variable intervenes between two other related constructs (Hair et al., 2017). In this section the research will try to answer the hypothesis which highlights whether or not the non-financial performance mediates the relationship between intangible assets components and financial performance. Therefore, three hypotheses can be constructed with a further need for testing:

Hypothesis 5a: The relationship between Human Capital and Financial Performance will be mediated by Non-Financial Performance.

Hypothesis 5b: The relationship between Technology Capital and Financial Performance will be mediated by Non-Financial Performance.

Hypothesis 5c: The relationship between Organization Capital and Financial Performance will be mediated by Non-Financial Performance.

In order to identify whether the mediating effect exists between the constructs, there are two methods which are the Sobel test or using bootstrapping. The Sobel test is conducted to compare the direct relationship between the independent variable and dependent variable with the indirect relationship between the independent variable and dependent variable that includes in the mediation construct (Hair et al., 2017). However, Hair et al. (2017) have urged researchers to utilize bootstrapping as this procedure can be conducted without limits on the minimum sample size number. Additionally, this method provides a higher level of statistical power compared to the Sobel test. Therefore, in this study, the mediating effect will be tested using a bootstrapping procedure. However, it is essential to confirm that the discriminant validity and reliability has been fulfilled before the bootstrapping can be conducted. In this study, it has been confirmed that the discriminant validity of all the constructs has been achieved (CR > 0.7, AVE >0.50) therefore the bootstrapping procedure can be undertaken. After the bootstrapping is conducted, the direct effect of each component will be obtained. Furthermore, this result can be used to measure the indirect effect. The indirect effect is measured by multiplying the direct effect of each intangible assets component with the direct effect on Non-Financial Performance (HC→Non-Fin Per, TC→Non-Fin Per and OC→Non-Fin Per) with the direct relationship between Non-Financial Performance towards Financial Performance (Non-Fin per→Fin Per).

Calculating the bootstrapped indirect effect:

(i) Human Capital indirect effect (HC → Non-Fin Per x Non-Fin Per → Fin Per)
0.457 x 0.561 = 0.2564

(ii) Technology Capital indirect effect (TC → Non-Fin Per x Non-Fin Per → Fin Per)
0.082 x 0.561 = 0.0460

(iii) Organization Capital indirect effect (OC → Non-Fin Per x Non-Fin Pere → Fin Per)
0.321 x 0.561 = 0.1801

After gaining the indirect effect figure, the next step is to identify the standard error (SE) for each indirect effect. The standard error is gain by calculating the standard deviation on the all bootstrapping items, based on their relationship. It has been found that the standard error for the first bootstrapped indirect effect (HC → Non-Fin Per → Fin Per) is 0.0500. The second bootstrapped indirect effect (TC → Non-Fin Per → Fin Per) obtain is 0.0412, whilst the third bootstrapped indirect effect (OC → Non-Fin Per → Fin Per) received Standard Error of 0.0552. After obtaining the indirect effect and standard error, the t-value for each relationship can be identified. The t-value is obtain by dividing the indirect effect with the standard error. In this study the t-values identified for HC, TC and OC towards Non-Fin Per and Fin Per is 5.128, 1.116 and 3.263 respectively. Next the 95% bootstrapping confidence level interval is calculated. This can be done by checking the lower and upper limit of the bootstrapped confidence interval.

Table 5-21: Hypothesis testing

Hypothesis	Indirect Effect (β)	Std Error	t-values	LL	UL	Decision
HC → Non-Fin Per → Fin Per	0.2564	0.0500	5.128	0.1584	0.3544	Supported
TC → Non-Fin Per → Fin Per	0.0460	0.0412	1.116	-0.0348	0.1267	Not supported
OC → Non-Fin Per → Fin Per	0.1801	0.0552	3.263	0.0719	0.2882	Supported

Hypothesis 5a: The relationship between Human Capital and Financial Performance will be mediated by Non-Financial Performance.

The bootstrapping analysis illustrated in Table 5-21 indicates that the HC is significant with β =0.2564 and t-values of 0.0500. Further, the 95% Bootstrapping Confidence Interval result (Preacher & Hayes, 2008) [LL= 0.1584, UL= 0.3544] did not straddle at 0, and indicates that the mediation effect of Non-Fin Per is supported.

Hypothesis 5b: The relationship between Technology Capital and Financial Performance will be mediated by Non-Financial Performance.

As illustrated in Table 5-21, the TC is found to be insignificant with β =0.0460 and t-values of 1.116. Additionally, as indicated by Preacher & Hayes (2008) that the indirect effect 95% Confidence Interval; the TC [LL= -0.0348, UL=0.1267] straddle a 0 between the two, indicates that there is no mediation effect involved thus concluding that the mediation effects are not supported .

Hypothesis 5c: The relationship between Organization Capital and Financial Performance will be mediated by Non-Financial Performance.

The next section presents the result of assessing the mediation effect of OC. According to Table 5-21 the OC found to be significant with β =0.1801 and t-values of 3.263. Accordingly, [LL= 0.0719, UL=0.2882] is not straddle a 0 in between and concludes that the mediation effect is supported.

5.6.4 Further analysis

After the analysis has been undertaken on the data, a more in-depth analysis has been conducted to investigates whether the nature if the company cluster and company age have an influence on the findings. Taking advantage of the statistical analysis tools that are able to analyse small data sets, the procedure has been conducted in parallel with Hair et al., (2017) which requires the measurement and structural evaluation to be conducted to ensure the data satisfies the precondition criteria.

5.6.4.1 Company cluster

d) In the analysis, the companies have been separated by their cluster; which is Creative (N=42) and InfoTech (N=96). After both clusters has achieve the CR, AVE, a structural model evaluation has been conducted. Several items have been deleted before a satisfactory model is obtained (Table 5-22). Next, after both clusters have achieved a satisfactory measurement (outer) model by achieving both convergent and discriminant validity. This include ensuring the Composite Reability (CR) is more than 0.70, Average Variance Extracted more than 0.50, and satisfiy the Fornell Larcker Criterion, cross loading and Heterotrait-Monotrait Criterion (HTMT). After all criterion has been satisfy, then the final model has been established (Appendix 8).

Table 5-22: Final Construct CR and AVE based on cluster

Construct	Creative (N=42)			InfoTech (N=96)		
	CR	AVE	Convergent Validity (AVE >0.50)	CR	AVE	Convergent Validity (AVE >0.50)
HC	0.910	0.559	Yes	0.904	0.541	Yes
TC	0.916	0.522	Yes	0.924	0.529	Yes
OC	0.943	0.582	Yes	0.928	0.54	Yes
Fin Per	0.979	0.901	Yes	0.961	0.831	Yes
Non-Fin Per	0.947	0.578	Yes	0.921	0.542	Yes

After the model has obtained satisfactory measurement (outer) model, the next procedure has been undertaken to evaluate the structural (inner) model. During this procedure, it has been found that mixed results have been obtained between the two clusters. However, both clusters have similar results, where the HC has a significant relationship with the Non-Fin Per. This indicate that the human capital did support the non-financial performance. Furthermore, both clusters have a $p<0.05$ which shows a significant relationship between the Non-Fin Per and the Fin Per, which evidence that the non-financial performance did support SMEs with financial performance. However, the remaining five (5) relationships show a different result. The Creative cluster has been found to support the relationship between OC and Non-Fin Per but not towards the other four relationships. Meanwhile, the InfoTech cluster shows that the relationship between HC and Fin Per, TC and Non-Fin Per, and the OC and Fin Per has shown the positive relationship with $p < 0.05$ (Table 5-23).

Table 5-23: Path Coefficient for Creative and InfoTech cluster

Relationship	Creative		InfoTech	
	P Values	Decision	P Values	Decision
HC → Non-Fin Per	0.001	**Supported**	0.000	**Supported**
HC → Fin Per	0.489	**Not supported**	0.001	**Supported**
TC → Non-Fin Per	0.459	**Not supported**	0.001	**Supported**
TC → Fin Per	0.614	**Not supported**	0.492	**Not supported**
OC → Non-Fin Per	0.000	**Supported**	0.256	**Not supported**
OC → Fin Per	0.875	**Not supported**	0.001	**Supported**
Non-Fin Per → Fin Per	0.019	**Supported**	0.000	**Supported**

Next, the mediation analysis has been conducted to both clusters and it has been found that beside the Non-Fin Per mediating the HC relationship with Fin Per for both Creative and InfoTech cluster, a mixed result has been obtained. As illustrated in Table 5-24, as indicated by Preacher & Hayes (2008) that the indirect effect 95% Confidence Interval; the HC for both clusters did not straddle a 0 between the two, this indicates that there is a mediation effect involved thus concluding that the mediation effects is supported (Creative [LL= 0.0671, UL=0.432], InfoTech [LL= 0.1701, UL=0.4115] .

The Non-Financial Performance has been found to mediates the relationship between the OC and Fin Per for the Creative cluster but not to the InfoTech cluster (Creative [LL= 0.1018, UL=0.4736], InfoTech [LL= -0.0.0548, UL=0.185]. At the same time the Non-Fin Per only mediates the relationship the TC and Fin Per for the InfoTech cluster but not to the Creative cluster (Creative [LL= -0.2932, UL=0.1406], InfoTech [LL= 0.0484, UL=0.2707].

Table 5-24: Mediation analysis for Creative and InfoTech Cluster

	Creative			**InfoTech**		
Relationship	**LL**	**UL**	**Decision**	**LL**	**UL**	**Decision**
HC → Non-Fin Per → Fin Per	0.0671	0.432	**Supported**	0.1701	0.4115	**Supported**
TC → Non-Fin Per → Fin Per	-0.2932	0.1406	Not Supported	0.0484	0.2707	**Supported**
OC → Non-Fin Per → Fin Per	0.1018	0.4736	**Supported**	-0.0548	0.185	Not Supported

5.6.4.2 Company age

Besides the analysis that has been conducted on both clusters, further analysis has been conducted in order to understand whether the company's age has an influence towards these findings. Initially, the company age is divided into five classes, which are less than one year, one to five years, six to ten years, eleven to fifteen years and more than fifteen years (refer Figure 5-5). However, since the companies which are less than one year old, and more than fifteen years old, have less than fifteen data points, a further adjustment is required. Despite the ability of the software to analyse a small sample, as acknowledge, there is a requirement for a minimum of fifteen per data set and this is compulsory before the analysis can be conducted. Therefore, in order to mitigate this problem, the age of the company is further groups into three categories which are less than five years, six to ten years and more than ten years (Table 5-25).

Table 5-25: Company age before and after amendment

Before amendment

Company age	No
More than 15 years	8
11 to 15 years	28
6 to 10 years	63
1 to 5 years	36
Less than 1 year	3
Total	**138**

After amendment

Company age	No
More than 10 years	36
6 to 10 years	63
Less than 5 years	39
Total	**138**

Parallel with the Hair et al., (2017) PLS-SEM procedure, the first step is to ensure the measurement model satisfies the convergent validity and discriminant validity. Therefore, all the three categories have undergone the procedure which witnesses several items having been deleted and the model has achieved the require condition. All three groups have achieved the satisfying convergent validity and discriminant validity as the final model has been established (Appendix 9).

Table 5-26 Final Construct CR and AVE based on company age

	Less than 5 years			6 to 10 years			More than 10 years		
Construct	**CR**	**AVE**	**Convergent Validity (AVE >0.50)**	**CR**	**AVE**	**Convergent Validity (AVE >0.50)**	**CR**	**AVE**	**Convergent Validity (AVE >0.50)**
HC	0.923	0.631	Yes	0.874	0.636	Yes	0.939	0.59	Yes
TC	0.920	0.538	Yes	0.915	0.521	Yes	0.93	0.609	Yes
OC	0.941	0.572	Yes	0.91	0.504	Yes	0.937	0.57	Yes
Fin Per	0.977	0.893	Yes	0.958	0.819	Yes	0.969	0.86	Yes
Non-Fin Per	0.951	0.621	Yes	0.918	0.506	Yes	0.921	0.582	Yes

After the three groups has been found to achieve the criteria, the structural model evaluation has been accessed. In line with Hair et al., (2017) the six steps procedure ,analysis has revealed that all the three groups accept that the HC has a positive relationship with the Non-Fin Per (Less than 5 years $p < 0.00$,

6 to 10 years p < 0.00 and More than 10 years p < 0.024). However, the remaining six relationships show a different result. For example, the HC only shows a positive relationship with the Fin Per for the company age Less than 5 years (p < 0.003). However, this asset does not have a significant relationship with company age 6 to 10 years (p < 0.105) and company More than 10 years (p < 0.059) (Table 5-27).

Table 5-27: Path Coefficient based on company age

	Less than 5 years		6 to 10 years		More than 10 years	
Relationship	**P Values**	**Decision**	**P Values**	**Decision**	**P Values**	**Decision**
HC → Non-Fin Per	0.000	**Supported**	0.000	**Supported**	0.024	**Supported**
HC → Fin Per	0.003	**Supported**	0.105	Not supported	0.059	Not supported
TC → Non-Fin Per	0.181	Not supported	0.140	Not supported	0.007	**Supported**
TC → Fin Per	0.040	**Supported**	0.393	Not supported	0.846	Not supported
OC → Non-Fin Per	0.004	**Supported**	0.029	**Supported**	0.900	Not supported
OC → Fin Per	0.189	Not supported	0.017	**Supported**	0.160	Not supported
Non-Fin Per → Fin Per	0.054	Not supported	0.000	**Supported**	0.002	**Supported**

A further analysis has been conducted to understand whether the Non-Fin Per mediates the intangible assets to the Fin Per. The result shows that the Non-Fin Per have been found to mediate the HC and Fin Per for company age less than 5 years [LL= 0.0216, UL=0.3517] and 6 to 10 years [LL= 0.1228, UL=0.4521], however, it does not show a relationship with company aged more than 10 years [LL= -0.0310, UL=0.5334]. However, all groups agreed that the Non-Fin Per did not mediates the relationship between OC and Fin Per (Less than 5 years [LL= -0.0636, UL=0.4355], 6 to 10 years [LL= -0.0148, UL=0.3156], More than 10 years [LL= -0.3725, UL=0.3301] (Table 5-28).

Table 5-28: Mediation analysis based on company age

	Less than 5 years			6 to 10 years			More than 10 years		
Relationship	LL	UL	Decision	LL	UL	Decision	LL	UL	Decision
HC → Non-Fin Per → Fin Per	0.0216	0.3517	**Supported**	0.1228	0.4521	**Supported**	-0.0310	0.5334	Not Supported
TC → Non-Fin Per → Fin Per	-0.2159	0.1097	Not Supported	-0.033	0.2029	Not Supported	0.0213	0.6737	**Supported**
OC → Non-Fin Per → Fin Per	-0.0636	0.4355	Not Supported	-0.0148	0.3156	Not Supported	-0.3725	0.3301	Not Supported

5.7 Chapter Summary

In this chapter, the quantitative analysis and results have been discussed further outlining several important criteria that need to be conducted before the hypothesis testing. The first procedure to conduct is data screening, ensuring that no missing data has been found, one questionnaire has been omitted due to the lack of engagement responses issue therein. Next, the descriptive statistics of respondents has been presented and the descriptive analysis of respondents has been provided. A further section has provide the model specification used in this study and accordingly identifies the measurement model and structural model.

The analysis section continues with an in-depth analysis on the measurement (outer) model and structural (inner) model. During the measurement model, the convergent validity and discriminant validity are discussed. The convergent validity is assess by measuring three components; the composite reliability, factor loading and average variance extracted (AVE). Furthermore, the Fornell & Larcker (1981) criterion, the cross loading and the HTMT are used to measure the discriminant validity of the model. All measurement requirements have been carried out and the model has proven to be satisfactory.

Once the satisfactory model is obtained, the structural (inner) model is tested. In this procedure, further analysis is conducted following the latest six steps by Hair et al., (2017) which include the assessment of collinearity, path coefficient, coefficient of determination (R^2), Effect size (f^2), predictive relevance (Q^2) and Effect size (q^2). The collinearity assessment found that the entire construct does not suffer with collinearity issues by obtaining the VIF value below than 3.3 threshold. Next, the path coefficient analysis found that four out of seven hypotheses are found to be significant. Apart from the Technology Capital path towards Non-Financial Performance and Financial Performance, and Organization Capital path toward Financial Performance, all other paths are supported. The coefficient of determination (R^2) reported that the intangible assets have a moderate to strong relationship towards Non-Financial Performance with a 58% result. This shows that the intangible assets play an important role in explaining the non-financial performance. With regard to the effect of size context, it was found that the entire intangible assets component has a small effect from size on Financial Performance. Both Technology Capital and Organization Capital also have a small effect on Non-Financial performance, however the Human Capital has a medium effect on size towards Non-Financial Performance. Interestingly the Non-Financial Performance has a large effect on Financial Performance. The assessment of Q^2 indicates that the exogenous variables have predictive relevance over the endogenous variable by both obtaining a value more than zero. Finally, the effect size (q^2) of all the intangible assets

components is very small for both Non-Financial Performance and Financial Performance. Additionally, the Non-Financial Performance has also shown a small predictive relevance towards Financial Performance.

The mediation effect result, which is represented in Table 5-21, concludes that the Non-Financial Performance does mediate the relationship between Human Capital and Financial Performance. Similarly, the Organization Capital also obtain the same result with the Non-Financial mediating the relationship. However, the Non-Financial Performance was found not to mediate the relationship between Technology Capital and Financial Performance.

After the analysis has been conducted on all the data, further analysis has been conducted based on company cluster (Creative and InfoTech) and company age. The analysis was undertaken to analyse whether the company cluster and company age have an influence on the findings. However, due to the PLS-SEM restriction for the data should not less than fifteen in a data set, a new group has been established and company age groups have been developed into three groups. The procedure follows J. F. J. Hair et al., (2017) where the measurement (outer) model and structural (inner) model have been examined. Based on the company cluster, it has been found that besides Human Capital and Financial Performance, and Non-Financial Performance and Financial Performance have a positive relationship, the other five relationships have mixed results. Furthermore, it has been agreed in both clusters that the Non-Financial Performance mediates the relationship between Human Capital and Financial Performance, which is a similar result to that of the overall study.

According to the company age analysis, it has been concluded that the Human Capital had a positive relationship with the Financial Performance which is consistent with the overall analysis. However, the remaining six analyses has shown a mixed result. The mediation analysis found that mixed results were obtained. However, all the three clusters have agreed that the Non-Financial Performance did not mediate the relationship between Organization Capital and Financial Performance.

Chapter 6

Results and Analysis (Qualitative)

6.1 Chapter overview

This chapter describes the qualitative approach adopted in this study. Based on the explanatory sequential mixed-method approach, the qualitative method was conducted to yield better understanding on the outcomes of the quantitative analysis. Following Creswell (2014), this qualitative study was sought to depict the most significant results, as well as to gain greater insight and meaning from the research. As human capital was statistically found as the most important intangible asset that contributed to digital SMEs with financial and non-financial performance, five sub-questions were carefully developed to offer more meaningful quantitative results.

This chapter starts with the introduction of the qualitative procedure and the process of gaining access to the interviewees. The section continues with the profile of the selected companies for the interview, and later, the qualitative analysis is introduced. In essence, this chapter discusses and analyses the interviews undertaken with five digital SMEs in Malaysia.

6.2 Qualitative procedure

After collecting the results retrived from the quantitative approach, the subsequent collection and analysis in the explanatory sequential mixed-method procedure required qualitative approach and analysis. The purpose of this process is to seek explanation about the quantitative results by conducting a qualitative-based method with several respondents from the quantitative study without selection criteria. Several types of qualitative protocols can be conducted to follow-up the quantitative result with interview being the common method. The two methods that can be applied to perform this procedure are convenience sampling and purposive sampling (Creswell, 2014; Etikan et al., 2016). In this study, the convenience sampling method appeared to be the most suitable approach. Besides, due to time constraint, the decision for convenience sampling was due to the readily available respondents who displayed their interest towards the topic at hand. This method also increases the chance to gain more ‘meaningful’ and in-depth explanation from the previous statistically-derived results.

6.3 Gaining access to the respondents

The targeted respondents in this study refer to business owners or the most highly positioned persons in Malaysia digital SMEs. The owners of SMEs were considered as the most highly knowledgeable people in the company, thus making them the most appropriate candidate for the interview. In preparing a database the respondents in the qualitative part, information gathered from the quantitative survey was used. This is because; a specific question was asked during the survey, if the respondents would be interested to be interviewed at a later date. Initially, nine respondents provided their email and telephone number, exhibiting their interest and agreement to be interviewed. During the process of establishing the qualitative procedure, the entire potential respondent group was contacted and communication was meted out via email to ensure that the potential qualitative respondents were retained and were engaged with the study. Unfortunately, from the nine shortlisted respondents, four had withdrawn from this study. Three companies refused to be interviewed, despite the agreement stated during the quantitative study, and one company did not respond despite sending three follow-up emails. Finally, five respondents positively responded to the interview.

From the five interview sessions, two were conducted over the phone, while the other three were conducted using a digital communication platform; Skype. These processes were undertaken over a three-month period; from January to March 2017. Since most of the interview sessions were conducted in Bahasa Melayu (the native language in Malaysia), the translation process was required. The translation process was carried out throughout April 2017. The translation was checked by three Malaysian PhD students from universities around Manchester to ascertain clarity. Next, the completed translation was emailed to the respondents (Appendix 6). The respondents were given permission either to accept the translation or to provide comment(s) about the translation attached to the email. Fortunately, all respondents had accepted the translation by a confirmed email response. Next, these accepted translations were transcribed. Finally, after the transcription process, the coding process was performed by utilising Microsoft Word. This coding process was carried out to seek information that is relevant to this study (see Appendix 7).

6.4 Background of the Companies

Five interview sessions were conducted via telephone and Skype to gain more in-depth understanding regarding the statistical outcomes mixed within the Creative and InfoTech clusters. In resolving confidentiality issue, all the companies were renamed as follows: Company A as CA, Company B as CB, Company C as CC, Company D as CD, and Company E as CE (see Table 6-1).

a) *Company A (CA)*

CA has been established since 2007. With 30 employees in total, the company has been engaging in animation and advertisement with many large corporations. Upon receiving many awards and accolades for its tremendous performance in the industry, CA has been categorised in the Creative cluster by MSC Malaysia and has received its certification in 2009. The interview was conducted with the owner of the company.

b) *Company B (CB)*

CB has been a provider of digital content products by offering creative animation using multimedia, animation, and motion. Set up in 1996, this company has received awards from all over the world. The interview was conducted with the owner of the company. With 47 work force in total, the company is one of the leading creative content makers in the country. Segmented under the Creative cluster, CB has been recognised by MSC Malaysia in 2000.

c) *Company C (CC)*

This company develops games. The company has been established since 2004 and obtained its MSC Malaysia Certification in 2007. Being in the industry for 13 years, the company has a total workforce of 17 employees. Categorised in InfoTech cluster, the company has developed various gaming products and digital applications. In this study, the interview was conducted with one of the Directors of the company.

d) *Company D (CD)*

With 19 employees in the company, CD has been the leading cloud solution provider in Malaysia since 2002. Offering various comprehensive digital tools for SMEs and IT assets, the company is clustered into InfoTech since 2005. The interview was undertaken with the owner of the company.

e) *Company E (CE)*

Bridging both mobile apps and digital solution, CE has been awarded with the MSC Malaysia status in 2013; a year after the company was established in 2012. Categorised in the InfoTech cluster, this company with 21 workers assists SMEs to boost their potential by incorporating digital into their business. The interview was conducted with a Director of the company.

Table 6-1: Summary of companies

Respondents	MSC cluster	Date of interview	Method	Interview Length
Company A (CA)	Creative	17 January 2017	Skype	2 hours 35 min
Company B (CB)	Creative	23 January 2017	Skype	1 hour 2 min
Company C (CC)	InfoTech	16 February 2017	Skype	2 hours 5 min
Company D (CD)	InfoTech	9 March 2017	Telephone Call	1 hour 10 min
Company E (CE)	InfoTech	14 March 2017	Telephone Call	1 hour 45 min

Note: The interviews were conducted in accordance to Malaysia time (+8 GWT)

6.5 Qualitative analysis

As the central premise of this study is to gain comprehension on the importance and relevance of intangible assets for performance of Malaysian digital SMEs, the macro level quantitative analysis revealed that human capital and organization capital were significant for financial and non-financial performances. The results also found that amongst the three intangible assets, human capital scored the highest in terms of its contribution towards financial and non-financial performances. Therefore, given this result from the quantitative study conducted beforehand, it is vital to seek explanation on the reason for the human capital aspect to emerge as the most important intangible asset across digital SMEs in Malaysia. The depiction provided by the practitioners gave in-depth understanding, apart from offering beneficial information for academics, practitioners, and policymakers.

RQ6: Why does one particular intangible asset emerges as the most important factor in contributing to the performance of digital SMEs in Malaysia?

In addressing this question, human capital appeared to be the most important factor in contributing to the performance of Malaysian digital SMEs. As SMEs are often linked to shortage of resources, it is essential to understand the role and issues of this specific asset towards digital SMEs performance. Understanding this asset in an in-depth manner benefits the academics in assisting the SMEs to make better decision when utilising their existing resources. Furthermore, as the digital industry sector is

always a turbulent and intensely changing environment, it is vital for the digital SMEs to identify and make use of their strategic resources in an efficient manner.

In the initial quantitative phase, human capital emerged as the most important intangible asset for the performance of digital SMEs in Malaysia. Next, in the qualitative phase, four out of five interviewed companies (CB, CC, CD, and CE) agreed that the most important intangible asset by rank was human capital, followed by organization capital and technological capital. However, CA ranked the importance as follows; human capital, technological capital, and organization capital (CA). Despite two major categories were found by segregating the ranking of the most important assets in this industry, in essence, all respondents were unanimous in asserting that human capital is the most important intangible asset in their companies. Thus, it is vital to comprehend the gist of human capital as the most crucial asset for digital SMEs in Malaysia.

The key finding that stipulated human capital as the most essential asset for the performance of digital SMEs is explained by several reasons. This asset is a resource with intangible value that cannot be imitated or replaced by other resources. Compared to other businesses, such as the manufacturing industries, where machinery can be relied on for conducting repeatable jobs; the creative industries demand a unique set of products and services for production. It is often a requirement for this industry to create tailor-made products for their clients. For example, in the animation cluster, clients always require a range of elements to be produced, mostly not avail and novel. Essentially, to deliver such customised demand, irreplaceable and non-imitable human skill and creativity are sought. Since reproducing, as opposed to creating, is undesirable (due to copyright issue); this industry requires things to be conducted differently to create a distinction in their products. Hence, the only resource that can be depended upon to create such ability is human.

'The products in the digital industry are the ideas. You may acquire the most sophisticated technology available in the world, but without humans, the expensive gadget you own is nothing- in fact, the expensive technology is a burden to you, it will swallow your profit as well. In contrast, human ability that can make something out of nothing will secure your business' - (CA).

6.5.1 How can the human capital act as a strategic resource?

The significance of the human role in the digital business not only derives from creativity and skill, but also the capabilities of human to generate ideas to boost performance of industries. It is vital for the digital SMEs to generate distinctive ideas for their products. Compared to investing in other forms of capital that always demand additional and sometimes unpredictable expenditure (e.g., maintenance

cost), human capital dismisses these characteristics. Human capital was found to be a strategic weapon for the digital SMEs to compete in the market. Although it was acknowledged by the SMEs that the technological capability might assist them to grow further, financial constraints had restricted the SMEs to use this asset as the strategic driver. Therefore, most SMEs used their existing resources and their own employees to attain a competitive edge (CB, CC, and CE). Both creativity and skill embedded in humans tend to dominate the importance of these assets. This capability was viewed as unique and cannot be imitated by other resources (CA).

'Although it is easier to work with the machine than to work with human, it is always worth it. Furthermore, in this industry, people with creative thinking are more valuable than an expensive machine. Having people with good brains, we can develop the product in different ways, whilst using our existing technologies'- (CC).

6.5.2 What are the strategies used by the digital SMEs to acquire human capital?

Human capital was regarded as the key asset across the digital SMEs. Compared to other industries, the digital industry has always placed high dependency on this asset, thus making human capital the most important factor. As the industry is also known as creative industry, creativity can only be generated through the ability of humans that cannot be derived from other resources. Both skills and knowledge of the human being are the most important factors identified by the interviewees for the industry. This set of skills and knowledge from humans always grows and improves with time, as well as experience, as witnessed by these companies. The ability of the human's creative mind enables conversion of ideas towards something in order to distinguish from the competitors in the industry, thus making the firm unique through creation of an exclusive image.

Upon reckoning the importance of human capital, SMEs have always placed manpower as a critical aspect in employee selection. Most companies prioritised the selection and employment of experienced people, instead of appointing fresh graduates with no field experience (CA, CB, CC, and CE). Hiring those with good grades and formal qualifications is good; but in the practical realm, they have been found to be good in making decisions rather than toiling in the fieldwork. For digital SMEs, the final decision maker is always the owner of the company, whereby two companies stated that they did not need other decision makers (CC, and CD). Those with creativity and 'out of the box' ideas were their utmost priority as they could offer new ideas and generate new business segments by utilising everything beyond the corporate's capacity. New ideas and new business with existing resources appeared to be key components for all the interviewed companies in providing SMEs lucrative profits.

'This industry is in a very flexible environment, where formal education is not the sole precondition to be taken as granted to succeed, but field experience, skill, and talent have been the priority during the selection of a new worker'- (CB).

Based on the above findings, it is concluded that despite acknowledging the importance of human capital, most practitioners agreed that the value of human capital is not strictly dictated by formal education. Collective talent and skill, field experience, and the ability to be creative are the three important traits that dominate the importance of their existence in the industry. Humans are the most abstract assets as they can change and emerge, hence dismissing formal education as the ultimate factor in the creative industry. In fact, most companies are keener to hire people with more experience than those with excellent academic paper qualifications. Upon reckoning that some people have skill embedded in them, all interviewees noted that education background reflects formal qualification that provides people an academic grade, but can never guarantee creativity.

6.5.3 How to manage human capital in digital SMEs?

After identifying human capital as a crucial asset to digital SMEs, it is the duty of these companies to manage their human capital effectively. In doing so, it is essential to determine factors that benefit the digital SMEs, in order to better manage their human capital. This includes investments made by the SMEs in human capital, and the challenges faced by the companies within the industry while managing this asset. With human capital being viable for digital SMEs, investment in human capital is indeed a major focus of these companies. One major concern that should be taken seriously refers to the investment that the digital SMEs are willing to undertake in order to secure their human capital. According to the practitioners interviewed, such investment in the context of digital SMEs to secure their human capital could be divided into two parts; pre-employment and post-employment.

During the pre-employment stage, most SMEs were willing to invest in securing talented people who have already been in the industry or those with experience, instead of employing new graduates. Four out of five companies claimed to have the tendency to employ an experienced employee rather than fresh graduates. This is due to several reasons. By recruiting more experienced people, the SMEs could earn both monetary and non-monetary benefits.

'We do target talented workers from other companies. We believe that by offering better salary, the worker might provide us good return. We do not need to invest much in training, as offering a slightly higher salary will attract them. Training will cost us money and time. In our business where the technology is rapidly changing, time is everything. If you are late, you will be left behind' - (CE).

More experience people generate more monetary benefit to the companies. Although those experienced tend to request for higher salary than fresh university graduates, it is believed that experienced employees can provide savings to the SMEs in the long run. Those experienced are well equipped with prior training that is costly for several SMEs, and they can work immediately because they already have ideas and experience in performing their job. All those interviewed identified time as a crucial factor in the fast-moving digital industry, hence the demand for their employees to work at a rapid pace. They also required employees who can adapt quickly especially when working on projects. Since the interviewees had experienced recruiting employees who already know the work and may be well known in the industry, they are bound to further assist the SMEs and contribute to more creative ideas, hence turning into precious assets in the industry.

Although most SMEs recruited experienced employees from other companies, one company (CD) was keen in employing fresh graduates without any field experience. The interviewee stated that it was his corporate responsibility to encourage fresh graduates into the industry, and the salary demanded by inexperienced employee is lower than those experienced. As cost has always been an issue for digital SMEs, recruiting new employees on a low salary scale is a solution. These new graduates are believed to have willingness to learn, and they may have their own network that could be beneficial.

'We do encourage young people to join our organization as part of our responsibility to provide job opportunity for young graduates. Based on our experience, people with higher education tend to have responsible and are excited to learn new things. Furthermore, they are easier to train and the formal education as their background makes them more open to others' opinions. More importantly, young graduates have their own networking that will assist our company indirectly when we need it'- (CD).

During the post-employment stage, several SMEs agreed that they had to provide continuous investment to better secure their employees. Although it is not always monetary reward, the SMEs offered their employees incentives for their hard work and to encourage people with brilliant ideas. Using devices, such as 'a token of appreciation', and giving suitable incentives increased their motivation. A sense of corporate inclusion was also identified from the interview outcomes.

Another investment that should be considered by digital SMEs is to continuously provide their employees training and workshops. As the digital world deals with the latest technology and information, it is vital for SMEs to ensure that their employees are always up-to-date with industrial and technological shift. Failing to do so may affect their business prospects.

'Since our business is always project-based, we do provide financial incentives to our workers based on the ideas that they provide. This starts with brainstorming until the project is complete. We do not have specific measures to identify this, but we always encourage and reward them. The reward is not necessarily in monetary terms, sometimes we provide other types of reward, such as technological gadgets (hand phone, camera). Most of the time, it does not need to be an expensive item to reward them. As long as we show our appreciation towards their contribution, our staff seems to be satisfied by further encouragement and application of their ideas for the development of future jobs'- (CD).

6.5.4 What are the challenges faced by the digital SMEs while managing human capital?

As the importance of human capital has been discussed, it is also essential for managers and owners of digital SMEs to identify challenges and obstacles that should be addressed. One huge challenge of this asset is retaining employees. It is always a sticky issue when an employee leaves the company. Although all businesses tend to face this similar issue, it is more severe for the digital industry as it highly depends on a certain employee. For example, an interviewee narrated that in one animation project, the Creative Director might hold the responsibility for the whole project, thus making that person a key person. If the key person suddenly leaves the company while the project is still incomplete, the SMEs will be exposed to many other problems, such as customer complaints that are bound to tarnish the company's reputation and image. The interviewee continued to explain that once tainted with bad reputation, the digital company would face the threat of discontinuing its business. As mentioned by CB, many companies with bad image portrayal were eventually closed down stemming mainly from customer dissatisfaction.

Employees leaving the company have wider implications, as they always have the potential to become company rivals. This was highlighted by the majority of the interviewees as a major dilemma when an employee requests to leave the company. Although the SMEs did want their employees to grow and establish their own company, this always creates a double-side problem; either they are going to work for their competitor or they turn into business rival.

'We are always in a dilemma when our worker resigns from the company, especially if the employee is our main anchor. We do want them to grow (like establishing their own companies) but since they know the industry, we are aware that we are already exposed to new problems. This always happens if our workers have established their capability and skill in the market. Often, other companies are willing to pay them a higher salary, which sometimes we could not match, but besides losing people with skills, we are exposed to potential threat'- (CA).

Accepting the resignation of an employee has a negative implication that may worsen if the employee successfully establishes his/her own signature by doing something unique. These employees have their own trademark. In an industry where everything is creative and unique, depending solely on a particular employee with 'special capability' is sometimes a risk. In an example provided, an animator may have the ability to create distinguished work characterised by images, which are 'one of a kind' and well known in the industry. This animator may use his/her own influence on followers from corporate companies and the public audience.

When the company is very much depending on the one particular employee, it is not always a good sign. This is because, if the person decides to leave the company, the company might lose their name in the industry, placing the company in a problematic situation. It is also worthy to note that in the digital industry, workmanship is not the only deciding factor of success, but also the unique ideas generated by particular employees, which are valuable assets that need to be protected. Therefore, acquiring the best employee is always important but at the same time, it is always a threat' - (CB).

Due to this situation, some SMEs have made a substantial effort by imposing copyright and related right to control their valuable intellectual property. Despite doing so, the threat is still present as it only prevents the third party from using or reproducing their work without permission. Furthermore, they noted that copyright does not protect ideas generated by the one particular individual.

'If they go working for our competitor, it is more difficult for us. But if they set up their own company, frankly it is our nightmare. Some customers are very loyal to the people who work behind the scenes - not solely to the company name. This is because; some employees have been known for their quality of work, their capability of creating something unique or as full of brilliant ideas. Therefore, by the time our person has left our company, it is likely our customers will leave us as well. For this reason, we try to accommodate and secure our experienced and valuable staff. In order to overcome this issue, we are always prepared for counter offer, such as monetary incentive (increase salary) or other benefits' - (CE).

The final challenge in managing human capital is the high turnover rate in the industry. All five SMEs deliberately displayed their concern over employee turnover issue. The main reason for this problem is due to the competitive salaries offered in the industry. An experienced employee may always demand high salary, which sometimes cannot be considered by SMEs. As SMEs are burdened with financial constraints, providing high salary is not easy. The high turnover issue has also led to some SMEs refusing to invest in employee training. According to all interviewees based on their experience,

once an employee undergoes a plethora of training and workshop opportunities (particularly expensive workshop), they not only expose themselves to the employee leaving (after receiving valuable certificate), but the workshop sometimes offers opportunity for the employee to look for another company to work with. One SME provided the following specific example.

'We encourage our people to have informal training rather than formal training. While both types of training will increase their skills and knowledge, formal training will provide them certificates-which later can serve as a licence to the employee to demand higher salary or in worst case scenario, it can be a ticket to look for other jobs with better salary'- (CB).

6.5.5 How human capital contributes to financial and non-financial performances?

With regard to the earlier analysis, human capital had a significant role in establishing the performance of digital SMEs, which can be divided into financial and non-financial performances. Most of the SMEs did have financial measurements to track their financial performance, while only two interviewed companies had some non-financial performance indicators (CA, and CC); the other three companies did not have so despite acknowledging its importance.

6.5.5.1 Human capital contribution towards financial performance

In this study, all the SMEs had some financial performance measures to benchmark their performance. All the five interviewed SMEs used profit as part of their financial performance indicators, wherein financial performance has been a priority in measuring business performance. Apart from using financial ratios, it has been evidenced statistically that human capital has provided the digital SMEs financial performance. Therefore, it is important to understand the underlying reasons for this situation. Human capital supports financial performance in at least three key ways according to those interviewed; by allowing SMEs to focus on establishing a new business, producing quality work, and offering 'cost-benefit' to the SMEs.

Strong human capital assists SMEs in achieving financial performance. All agreed that by obtaining a dependable employee, the owner can focus more on other crucial roles, such as marketing for bringing new businesses into their company. Since SMEs do not have any specific marketing department, they very much depend on the owner of the SMEs to solicit new business projects. Having a good and independent employee enables the owner to focus on marketing and generating new businesses, without the need to place much focus on their existing work or project. Otherwise, the owner of the

SMEs may lose opportunities with much time dedicated to monitoring employees and projects, thereby restricting the true potential of the business.

'Once you have a dependable staff, I (the owner) can focus on more crucial things, such as marketing and bringing new business to our company. For the SMEs like us who have not more than 30 employees, we do not have a marketing department like gigantic companies do. My company depends on me to solicit new business. If the employees are not solid, we have to dedicate ourselves to more jobs, such as monitoring employees' work which in the end restricts our time and movement for soliciting new business. Independent human resources are the most important thing, because it will reduce our burden and indirectly will help us to gain more business and more profit'- (CA).

Next, securing exceptional human capital leads to quality work production. As this industry always demands quality and unique products, human capital was identified by all interviewees as the key resource to achieve these results. More importantly, quality work not only attracts new business, but also produces high-quality products with less cost (e.g., reduction in overtime and utility costs).

Having a talented worker offers SMEs cost-benefit when it comes to technology shift. As this business segment is always interlinked with technology development, the industry requirement is for human capital to always be up-dated with technological knowledge. By obtaining good human capital, all interviewees agreed that SMEs can minimise costs arising from appointing an outsourcing company to conduct several roles that cannot be performed by their existing staff. It is a fact that SMEs with additional expenses end up slashing profits.

6.5.5.2 Human capital contribution towards non-financial performance

From the five interview sessions conducted, only two of the SMEs had specific measure for non-financial performance. CA had customer satisfaction, market share, new account customer, anchor account customer, and quality of work as part of their non-financial measure. Meanwhile, CC has customer satisfaction, customer loyalty, market share, and employee turnover as part of their non-financial measures. The other three SMEs did not have specific non-financial performance measure.

The statistical results revealed that human capital did promote the digital SMEs to achieve better non-financial performance. This finding is supported when the study found that the image of employee is indirectly linked with customer loyalty and new business. A large fraction of the human capital contribution to non-financial performance is related to the issue of creativity and skill, which can promote brand image. As the product in this industry is delivered through creative thinking, the

practitioners felt that the creativity generated by their employees serves as the driver for their success in terms of increasing customer satisfaction, loyalty, and market share (CB, and CC). Furthermore, creative workers always contribute towards generating more competitive products, thus making this asset an integral driver that transforms non-financial performance into financial outcomes.

'After having been in the industry for 10 years, we have experienced many rising and slumping trends in the market. Thanks to our people who have made our company to survive continually by generating products that are always competitive and attractive, which are never out-of-date' - (CA).

Next, the workmanship of human capital, according to all interviewees, seemed to encourage new business and to retain the SMEs' customer profile. The ability and the capability of the employees to provide quality work have enhanced customer satisfaction towards their products. Apart from work quality, the generation of ideas provided by human capital has also enabled their companies to gain better market share, which indirectly promotes higher profitability and financial performance.

Finally, human capital was found to assist the non-financial performance of digital SMEs. Well trained and knowledgeable employees have been found by the companies interviewed, to provide support and enhance customer experience, as these SMEs has acquired an exceptional reputation that polishes their company image. The statistical analysis revealed that non-financial performance is important in driving financial performance, although most practitioners did not have specific benchmark to measure their non-financial performance. In fact, more focus is placed on their cash flow and balance sheet. This is because; financial performance is the ultimate goal for their business.

'As SMEs always lack financial support from financial institutions, we always focus on how to make sure our company is still in the business. In order to make sure that we survive, we are not saying that non-financial performance is not important, however, financial performance is the central objective of our businesses - (CE).

Although some SMEs acknowledged that non-financial performance is important, they believe that priority should be given to financial performance.

'Instead of focusing on our non-financial performance during this time, we will continue to focus on the financial stance first. Maybe in the future we will look at non-financial performance'- (CB).

6.5.5.3 Human capital contribution towards non-financial and financial performances

As human capital has been found to essentially support both financial and non-financial performances, this section establishes the relationship between human capital and non-financial performance, which supports financial performance. In precise, it was found that company image, as well as awards and recognition achieved by digital SMEs, has supported them to enhance their financial performance.

For example, CA, which has received several awards for their creative and work quality, has always used their awards and recognition as part of their 'pitch' when soliciting new business. They believe that by showcasing their awards, a good image is created to portray the company as reliable, thus assisting them to gain new business, which later translates into increased financial performance. Apart from exhibiting their awards, they also mentioned their past clients, especially the well-known companies. Large companies that have been their past clients serve as a referral to them. If large companies have sought their service, this indirectly shows their high reputation and quality work.

'Securing business from large corporation is one of our companies' performance indicators. Besides, securing business from them (large corporation) will not only increase our profit, but it will also be an indicator that we have a good reputation'- (CA).

Meanwhile, CB has always used their experienced customers as a referral to their quality or work. The testimonials are highlighted in their promotional posters and website, thus supporting the company and acts as evidence of a positive and satisfying customer base that increase the potential to new business gain.

Good teamwork in the company is also highlighted by the interviewees. Aside from increased productivity, the generation of many good ideas has assisted these companies in reducing turnaround time when delivering jobs to clients. Good quality teamwork increases employee skills and the informal acquisition of new knowledge. Reduced turnaround time, production of quality work, and increased customer satisfaction are all expected to create a better image for the company, thus increasing business potential and lucrative profit, as echoed in the following quote:

'We have always tried our best in making sure that our employees have excellent skills and knowledge. With employees who have good skills and knowledge, it will increase customer experience (non-financial performance). Furthermore, the increase in customer experience will promote our profitability and sales (financial performance) - (CD).

6.6 Conclusion

In essence, intangible assets, particularly human capital, play an important role in digital SMEs. However, these assets cannot be considered as solely important as the true value of intangible assets can be gained by combining several intangible assets. As the SMEs always lack financial support from financial institutions, as noted in the literature; these SMEs always prioritise financial performance to run their business. Although the digital SMEs have acknowledged the importance of non-financial performance, financial performance is still the central objective. Based on the feedback provided by one SME that intangible assets are the most important thing in the digital industry, it is important for SMEs to be aware and remain in control over their intangibles. Although human capital has been found to be important, the total combination of human capital, technology capital, and organization capital dictates the success factors for digital SMEs in devising viable strategy. Despite being valuable, these assets may also pose as ‘silent killer’ if not managed properly.

Chapter 7

Discussion and conclusion

7.1 Chapter overview

This chapter presents the discussion and conclusion to this present study. Divided into four sections, this chapter starts by discussing the related research questions highlighted in Chapter 1. Next, this chapter presents the limitations of this present study. After addressing the theoretical and practical implications of this study, this chapter is concluded with the directions for future research.

7.2 Discussion

The topic areas of RBV and BSC, as a phenomenon, have garnered attention amongst academics and practitioners. Due to their important role, many studies on the topic have merged RBV and BSC to review the relationship between the two. Drawing upon past literature, which suggests that highly technological industries have put their investment portfolio mainly into intangible assets; human, technology, and organization capital have been the top three intangible assets for investment (Goodridge et al., 2014). This study has depicted comprehensive understanding of the relationship between these assets towards the performance of digital SMEs. With the establishment of the Malaysian National Agenda that emphasises on shifting the industry transition from manufacturing to a highly technological and digital economy, it is integral for SMEs to support this reform. By understanding the relationships between intangible assets and performance of digital SMEs, as illustrated in this study, the results not only add to the body of literature, but more importantly, enhance our understanding regarding the role of intangible assets in improving not solely the financial performance of SMEs, but also the non-financial performance. This section is sculpted based on the research questions outlined in Chapter 1.

RQ1: What is the relationship between human capital and performance of Malaysian digital SMEs?

The first research question looked into the relationship between human capital and performance of the Malaysian digital SMEs. In this study, performance is segregated into two categories (financial and non-financial) to reveal more interesting results. Based on the data reported in Chapter 5 (see Table 5-17), the overall analysis found that human capital has a significant relationship for both non-financial

and financial performances. However, this finding contradicts with those reported by Choo, Salleh, and Noruddin (2010), who found that human capital is insignificant and the least significant element in determining performances of IT-based SMEs, as well as Wang and Chang (2005), who found that human capital did not have direct impact on IT industry. As for this present study, it strongly asserts that digital SMEs should appreciate their human capital. It also revealed that both Creative and InfoTech clusters have accepted that the human capital asset supports the non-financial performance aspect. Although human capital did not display a positive relationship with financial performance for the Creative cluster, the InfoTech cluster exhibited a significant relationship between the constructs. In terms of company age, it was agreed by the three age categories that human capital has a positive relationship with non-financial performance. However, in view of the relationship between human capital and financial performance, apart from companies below 5 years of establishment, the other two categories found that human capital did not support the firms with financial performance. In essence, the human capital asset appears to be a true determinant of digital SMEs performance.

RQ2: What is the relationship between technology capital and performance of Malaysian digital SMEs?

The second research question addressed the relationship between technology capital and performance by SMEs. The study outcomes found that technology capital did not provide SMEs with a significant relationship with both financial and non-financial performances. The findings, nonetheless, contradict the results reported by Khalique et al., (2015) that technological capital is positively correlated with the performance of SMEs. This result differs from the outcome that technology capital supports firms in terms of non-financial (Wu et al., 2006) and financial performances (Rivard et al., 2006). This finding has introduced a new perspective that there may not be a relationship between technology capital and SMEs performance.

From the cluster standpoint, technology capital did not have any relationship with financial performance for both clusters. However, technology capital was found to be significant with non-financial performance for the InfoTech cluster. In view of company age, the technology capital asset was found to support companies with more than 10 years of establishment in terms of non-financial performance, while displaying a positive relationship with financial performance for company age below 5 years. In precise, technology capital offered newly established companies (below 5 years) with financial performance, while more matured companies (above 10 years) with non-financial performance.

Overall, technology did not have any relationship with Malaysian digital SMEs for both financial and non-financial performances. This finding reflected the significance of company age. The decision around investing primarily on resources and finance towards technology appeared inappropriate for some companies, especially SMEs that often struggle with financial issues. The findings suggested the SMEs did not invest too much in technology, as technology did not support digital SMEs with regard to maximising performance. Given the fact that digital SMEs are required to use technology in producing their product, they can never deny the importance of technology in this digital sector. Hence, SMEs need to look for other solutions when dealing with technological requirements, as well as avoid owning and investing in technology, by outsourcing technology capability from other companies. By acquiring technology via outsourcing, it not only provides the SMEs cost-benefits in acquiring and setting up physical equipment, but also benefits the SMEs by enabling them to avoid other high and periodical expenses, such as licencing and maintenance.

Although the overall findings conclude that technology capital has an insignificant relationship with SMEs performance, it is believed that technology capital still plays an important role across digital industries. However, depending solely on technology capital to boost firm performance is insufficient as this asset relies on other assets to outperform competition, such as human skills that are embedded in human capital.

RQ3: What is the relationship between organization capital and performance of Malaysian digital SMEs?

The third research question looked into the relationship between organization capital and performance. This study found that organization capital supported non-financial performance. The analysis unravelled that the positive relationship was between organization capital and non-financial performance for the Creative cluster, while a positive relationship was with InfoTech cluster and financial performance. From the company age perspective, organization capital supported non-financial performance for company age below 10 years, but offered financial performance for companies established between 6 and 10 years.

The result of significance between organization capital and performance showed that SMEs with better environment, structure, and culture enjoyed better performance. Similarly, Martín-de-Castro and López-Sáez (2008) concluded that when a firm enhances its structure, culture, and environment; the firm is likely to perform better, and there is evidence that digital SMEs adhere to this direction. Although the prior study had looked into larger high technological business setting, this study that

assessed SMEs resulted in similar outcome. Therefore, it is concluded that organizational capital is important for both SMEs and large technological organizations.

RQ4: Does non-financial performance have a significant effect on financial performance?

Research question 4 addressed if non-financial performance contributed significantly towards financial performance. Table 5-17 presented in Chapter 5 concludes that non-financial performance did provide digital SMEs financial performance. Both Creative and InfoTech clusters shared similar outcome, which showed that non-financial performance had a significant relationship with financial performance. Accordingly, amongst the three company age categories, this result seemed to support companies established above 5 years (6-10 years and above 10 years). Only companies below 5 years old had insignificant relationship between non-financial and financial performances.

Overall, non-financial performance has a relationship with financial performance. This finding is in line with Skrinjar, Bosilj, and Indihar-Stemberger (2008), who mentioned that non-financial performance supports SMEs with improved financial performance. In digital SMEs environment, many non-financial components tend to support financial performance. By producing on time delivery, as well as being responsive to market demand, customer satisfaction increases and this ultimately leads to improved financial performance of SMEs. Another non-financial factor that seemed beneficial for SMEs regarding financial performance was excellent service quality. In essence, it was found that non-financial performance had a significant role for financial performance of digital SMEs in Malaysia.

RQ5: Does non-financial performance mediate the relationship between intangible assets and financial performance?

Here, the mediating effect of non-financial performance on the relationship between intangible assets (HC, TC, and OC) with financial performance had been addressed. The three types of mediation analyses were conducted in line with Hair's (2014) procedure. The analysis in Table 5-21 concludes that non-financial performance served as a mediator to human capital and organizational capital. As determined in the table, the relationship between human capital and organizational capital was mediated by non-financial performance. However, unlike the relationship, non-financial performance did not mediate the relationship between technology capital and financial performance.

Looking at the clusters, both Creative and InfoTech clusters concluded that non-financial performance mediated the relationship between human capital and financial performance. Interestingly, non-financial performance mediated the relationship between technology capital and financial performance

only for InfoTech cluster. On the other hand, non-financial performance did mediate the relationship between organization capital and financial performance for Creative cluster, but did not do so for InfoTech cluster. This analysis with company age revealed mixed results. All the three categories of company age showed that non-financial performance did not mediate the correlation between organization capital and financial performance.

This finding offers new empirical support for the mediating role of non-financial performance in the relationship between intangible assets and financial performance. This demonstrates a significant role played by non-financial performance in supporting intangible assets towards improving financial performance. This suggests that with an appropriate strategy using the two assets (HC and OC), non-financial performance can be attained and converted into improved financial performance outcomes.

RQ6: Why does one particular intangible asset emerges as the most important factor in contributing to the performance of digital SMEs in Malaysia?

Research question 6 was addressed to gain better understanding on why human capital played a significant role in the performance of SMEs from the stance of practitioners. For this purpose, five interview sessions were conducted to gain more insight into the results retrieved from the quantitative phase.

Human capital emerged as the most important intangible asset for this study. Several reasons have led to this definite conclusion. The first reason is due to the industry itself. In the creative industry, the level of creativity and experience are deemed essential. This phenomenon stems from the requirement to produce a product that is unique and tailor-made to distinguish a firm from its contenders. Unlike the manufacturing industry that often reproduces uniform product(s) in a factory, the creative and digital industry demands creative and varying sets of products to survive. For example, animation and digital applications are design-based and customised to meet the demands and preferences of the clients. As the capability of thinking and creating is only embedded in humans, human capital has been proffered as the most influential asset in generating exceptional performance amidst digital SMEs. As this capability is unique and cannot be imitated by other resources, human capital is the most significant asset to contribute to firm performance.

Obtaining high quality and capable human capital has been regarded as an SME strategy to offset financial constraints. Having creative human capital and fostering knowledgeable people in a company are often used as a weapon to create unique product and to offer outstanding service to clients. The SMEs highly appreciate talented and skilful workers who can create new and unique products by using

existing resources. The interviewees believed that distinctive and unique products are not generate merely via cutting-edge technology, but in conjunction with hiring creative people, a unique product can be developed using existing technologies. Therefore, by emplyoing talented and creative people, it is unnecessary for SMEs to provide the most sophisticated technology capital to promote an economical advantage.

Due to the important role held by human capital in the digital SMEs, employee selection and retention were announced as critical during the employment process. Experienced individuals are deemed to be more important than those with high level 'formal' qualification. A formal qualification is not a precondition for digital SMEs success, hence field experience, skill, and talent are the most important traits that support the company towards success. The SMEs believed that knowledge can be grown not only by obtaining grades from university, but also earned with experience and informal education process. Therefore, acquiring skilful and talented people is more important for digital SMEs. Formal education provides one the foundation of knowledge and in the practical world, to compete and to be successful, experience is more integral than formal education. Therefore, most of the SMEs claimed that they were willing to pay higher salary to an experienced worker, despite them not having formal educational qualification. Meanwhile, those formally educated have been viewed to be good at decision making. In the case of digital SMEs, this capability seems to be less important, since SMEsowners are the key the decision makers.

The high dependency of this industry on human capital not only offers SMEs advantages, but also poses SMEs with a potential threat. Retaining employees appears crucial to the company with high dependency on a particular employee or a team of employees. Problem creeps in when the employee leaves the company; either poached by competitor or when the employee starts a new business. In both scenarios, once the key people in the company leave, they not only create a problem of shortage of skills to the SMEs, but also become a potential rival. Thus, some SMEs tend to hesitate in sending staff to gain formal training. To mitigate the risk, informal training is the best solution for the SMEs to increase knowledge. Some companies use incentive on project-based to display their appreciation to the staff as such reward increases job satisfaction (Lee, Wong, Foo, & Leung, 2011).

From both the quantitative and qualitative studies, evidence supports human capital and organization capital as the key drivers for higher digital SMEs performance. Hence, it is recommended for SMEs to give more attention to these resources. Besides directly providing SMEs with financial performance, these assets were found to enhance non-financial performance. As SMEs often face financial constraints, they should prioritise these assets that are already embedded in their company.

It is evidenced that technology capital for these SMEs did not significantly contribute to financial and non-financial performances. When compared to human capital and organization capital, technology capital displayed an insignificant role towards the performance of digital SMEs in Malaysia. Technology is vital to digital SMEs that demand technology usage to perform their job and to create products. Although technological capital offers a valuable aspect to the digital SMEs, this asset is the easiest asset to replace and substitute. As the firm within the industry has heterogeneous resources, technology can easily be purchased, replaced, and upgraded. The technological capability can be controlled and substituted by other options, such as outsourcing and to gain cost benefits, such as reduced investment and maintenance cost. As Barney (1991) suggested, resources that provide competitive advantage should fulfil the four attributes; valuable, rare, imperfectly imitable and non-substitutable. Here, technology capital is not rare, not imperfectly imitable, and easy to substitute. Although this asset is valuable, it is easily replaced, hence technology is insignificant in contributing to financial and non-financial performances for digital SMEs.

7.3 Limitations and challenges

This study has several limitations, similarly found in any other study of this nature. Six main limitations and challenges were identified in this study, as elaborated in the following.

The first major drawback is the time taken to conduct the interviews as the gap between obtaining the first phase research results and the interview phase was rather wide. Since the explanatory sequential mixed-method approach was adopted in this study, it is essential to undertake both quantitative and qualitative methods that demand the quantitative phase to be completed first, prior to the second qualitative phase. While this method offers several benefits, it also has some shortcomings. This method required more time to be undertaken effectively. In conjunction with this limitation, keeping the potential volunteers interested in participating in the second qualitative study was also challenging. This study had faced many obstacles to coax the SMEs to participate in the first quantitative study due to time and resources pressure on SMEs. Ensuring that the respondents engaged with the next interview phase was also challenging, especially when they had participated in the previous quantitative phase. Some respondents refused to participate in the qualitative study, despite their initial agreement in the survey. It is important to gain insight from the respondents who had already involved in the quantitative study, in order to receive meaningful initial set of explanations from answers in the first phase, wherein much time and effort were invested in phase one. In order to retain the respondents during both the

quantitative and qualitative studies, apart from sending notifications and reminder emails, telephone calls were also made despite issues around managing different time zones.

In terms of this limitation pertaining to the mixed-method approach, despite its beneficial and practical result, as well as covering the weaknesses in mono-method study, conducting both studies demanded more time and effort, especially during follow-up and data analysis processes. Although Creswell (2011) asserted that the strength of the explanatory design is that it is straightforward to implement, this method requires a lengthy amount of time and much effort. Furthermore, while this study is quantitative in the initial stage, the qualitative study could not proceed before completing quantitative analysis. Hence, it was difficult to precisely decide on the results that required further explanation, mainly because this could only be performed after collecting results from the quantitative phase. However, based on Creswell's (2011) suggestion to decide and plan what the quantitative results provide, and to follow up with the qualitative study, appeared to be instrumental in dictating the research strategy.

The second limitation arose during the data collection process. It was difficult to gain the SMEs' attention, especially while using the internet as the medium of communication. This is because; the SMEs were often too busy to respond to the email. Most of the respondents completed the questionnaire after sending out three emails and after several telephone calls were made. The respondents only responded after a relationship was established with the researcher. Therefore, it is essential to build a relationship to keep the people fully informed that they are dealing with a genuine study and that their responses are treated as strictly confidential. Although Cresswell (2011) had suggested that the researcher should find a 'gatekeeper' (one in the organization supportive of the proposed research), there was no opportunity to discover such an individual in the organizations as an initial point of contact, and it was not easy to identify a gatekeeper especially when the study was conducted from a different geographic location. As the digital SMEs are known to have a small number of staff, there is a potential that the survey had been completed by the key informant and therefore, is considered as a study limitation.

Third, although the use of online questionnaire offers many advantages, such as low in cost and elimination of time barriers, the respondents had the tendency to ignore the email, especially on the initial receipt of the first email. With hindsight, the researcher was advised by other researchers in the area that a connection should be developed with the respondents first, before sending emails containing the questionnaire to the respondents. This was undertaken by engaging with the potential respondents via social media, including the official company Facebook or business social network, such as

LinkedIn. After a connection was established, it had been easier to inform the potential respondents about the aims and purpose of the study. By engaging via social media, the chances of receiving the completed questionnaire increased substantially. Furthermore, this method built 'trust' in the respondents with regard to the study. Besides, this connection generated a personal relationship with the respondent in this virtual platform. Although it is a non-physical interaction, this method allowed the respondents to ask if there they required further clarification, especially around complex issues that can weaken the outcomes received from online survey (Sekaran & Roger, 2009).

The fourth constraint in conducting this study is the potential for insufficient supporting documents and articles around the topics reviewed. Strategic Management Accounting and intangible assets, as topics, offer a beneficial, practical, and essential area for both practitioner and academics to understand and devise tool for usage. Nevertheless, it was not easy to conduct this study, specifically in the context of Malaysia and SMEs. Insufficient academic articles and limited published journals covering this topic had been a challenge in pursuing this study. Most of the previous studies tend to focus on large organizations and only a handful of studies have assessed SMEs (see Crema & Nosella, 2014; R. Jarvis et al., 2007; Lefebvre et al., 1996; Marzo & Scarpino, 2016). Given the fact that SMEs contribute substantially towards national growth, the importance of SMEs is undeniable and their size should not be neglected. Therefore, the limited studies on SMEs, particularly in Malaysia, suggests that more studies need to delve into this subject matter. It also offers opportunities for the Accounting Professional Bodies, the Government, and the Malaysian Advisers to support this sector.

Fifth, the data collected in this study were retrieved from the digital SMEs in Malaysia that have received MSC Malaysia certification. The study outcomes are purely based on the data collection gathered from the stipulated time period. There is a possibility that if the study is conducted in a different time period and business setting, various findings could have been obtained. The results from this study should not be seen as a generalisation to the digital SMEs context as a whole, but strictly to the sample and the context in the study. As convenience sampling was used as the sampling method, only self-selected digital SMEs in Malaysia were contained in this study. Therefore, there is a possibility that the sample might not represent the whole digital SMEs population, thus creating the possibility of biasness, wherein further research is needed in the future to investigate these outcomes.

Finally, as noted by Itami and Roehl (1991), intangible assets can only function appropriately with the support of other resources, whereby the initial intention of this study is to understand the relationship of these assets when bundled together, such as the combination of human capital and technology capital relationship towards financial performance. Understanding this relationship offers more beneficial and

in-depth findings. Unfortunately, the statistical issues had restrained the study to pursue this further. The study initially attempted to utilise the SEM using AMOS; a statistical tool that allows a combination of two variables, but some issues cropped up in obtaining the model-fit measurement. Obtaining model-fit measures (absolute, incremental, and parsimonious fit measures) is fundamental for CB-SEM as it indicates how well the theory fits the data (Byrne, 2010). The CB-SEM is known to be a large sampling technique and requires at least 200 per sample (Lei & Wu, 2007). Due to low sample size, the CB-SEM could not be conducted for this study. This issue was discussed with a Senior Lecturer in Malaysia who is known and has published several articles regarding SEM. It was confirmed that this issue could not be mitigated; instead, the use of PLS was deemed appropriate to overcome the issue faced. In essence, the study had selected the PLS method as it gave similar results despite requiring a smaller sample size (Hair et al., 2011). Unfortunately, the inability of this statistical tool to measure the combination of two variables is a loss to this study.

Despite some unavoidable limitations encountered during this study, the research has successfully arrived at understanding the relationship between intangible assets and performance (financial and non-financial) of Malaysian digital SMEs. Although the findings could not be generalised, the study outcomes may serve as a guideline for practitioners, academics, and policymakers.

7.4 Contribution and policy recommendation

This study had linked intangible assets (HC, TC, and OC) and performance (BSCs) through the lens of the RBV theory. By extending the BSC and RBV, this study has made several contributions to the literature. First, the existing literature suggests that in-depth understanding of assets in an organization is important to firm performance (Amit & Schoemaker, 1993) and these assets play a different role in various industries (Collis & Montgomery, 2008). Although this knowledge is important for all organizations, it appears to be more important for SMEs that are often linked with resources manufacturing or construction, whereby this information is more vital for digital SMEs given the limitations (Fauske, 2007; Ng et al., 2012). However, unlike other SMEs in other industries, this digital sector has been changing at a rapid pace. Technology-based industries have been found to be the most intangible intensive industries (Goodridge et al., 2014; Yancy, 2017), and limited research has attempted to fill this gap. Therefore, to the best of the author's knowledge, this study is the first to explore the relationship between intangible assets and performance of digital SMEs in Malaysia with clear contribution to knowledge.

Second, by using BSCs as the performance measurement guideline, this study adds to the emerging literature on the topic of performance and SMEs. This study has bridged a significant gap in the literature, particularly in the area of Strategic Management Accounting and SMEs. Overall, this research offers support for several relationships, thus contributing significantly to the literature. Despite the combination of the two theories having been evidenced recently (Khalique et al., 2015; Khalique & Pablos, 2015), the research design adopted in this study is unique, as the performance was diversified into two segments; financial and non-financial dimensions. By utilising BSCs, both financial and non-financial performance measurements were analysed to arrive at interesting yields and to create valuable insights for future research. Also, by segregating the performance into two (financial and non-financial performance) this study provides new knowledge about the role of non-financial performance as a mediator between intangible assets and financial performance. It also revealed that non-financial performance measures mediated the relationship between human capital and organization capital towards financial performance. This offers positive implications for practitioner to make decisions about strategy and utilisation of existing resources. More importantly, it also provide knowledge on the contribution of non-financial performance towards the financial performance of this sector. In addition, the study has extend the information by segregating the data via company cluster and company age. This procedure has provide in depth information which is crucial for digital SMEs. Despite many other still put their priorites in achiving the financial objective, studies revealed that some SMEs are also look non-financial performance as prime objectives. Thus this information will possibly able to shed a light to SMEs in achieving the company goal, no matter what is the company objective. Further, the explanation obtained from the industry player has also provide more information on the finding which is received from the earlier procedure. On overall, the information provided in this study is essential to SMEs in conducting business strategies as well as making investment decision. This study clearly has extend the existing knowledge of RBV and has further expand the potential of the balanced scorecards which has not been presented before.

This study provides a clear methodological contribution to the literature. It is evident that many studies in this area have so far use the mono-method; either purely quantitative or purely qualitative in nature. In contrast, this study has distinguished itself by conducting the study in a different setting, whereby the explanatory mixed-method approach was employed. Furthermore, this study highlights its contribution with the use of PLS-SEM to identify the correlation between intangible assets and performance. By doing so, the study adds to the understanding of the most and least important intangible assets amongst the three groupings from the digital SMEs stance. Here, elaboration of the findings has been probed further by conducting qualitative interviews. Merging both sets of results has

further contributed to the evidence around the role of intangible assets based on the stance of practitioners. It provides useful information for the government authorities, as well as digital SMEs, when making investment decisions and resource allocations, particularly based on the outcomes.

Based on the empirical findings in this study, the organizational capital displayed an important role in SMEs performance, while human capital emerged as the ultimate asset in the industry. Besides its contribution to financial and non-financial performances being deemed as important, industry cluster and company age had led to the above findings. Hence, in order to improve the performance of digital SMEs; policymakers, academics, and practitioners should acknowledge their importance and devise more viable and strategic inputs to support this segment.

For academics, it is strongly suggested that more studies need to be conducted with regard to understanding the relationships discussed in this study. Similarly, in line with the study outcomes, it suggests that policymakers should place greater emphasis on human capital and organization capital in supporting the growth of this industry. Providing SMEs with fiscal and/or monetary incentives specifically linked to human and organizational matters, is an instance that may help digital SMEs to enhance their performances. For example, tax exemptions can be imposed for fees spent on training and conferences or by providing SMEs with financial support for them to obtain a better business environment that might be of some assistance that can benefit these SMEs.

Finally, as human capital has significant relationships with both financial and non-financial performances, practitioner should prioritise human capital when making strategic and investment decisions. Perhaps, providing this support may enhance the SMEs' future performance.

7.5 Direction for future research

As this study sought to understand the relationship of intangible assets and performance of SMEs, future potential directions for additional input may further enhance understanding of this topic. As urged by Creswell (2014), the explanatory sequential mixed-method is often conducted to seek explanation of the quantitative results, which demands further exploration using qualitative outcomes. Findings that are considered beneficial to follow up, either statistically significant or non-significant results, are key significant predictors, along with variables that are distinguished between groups, outliers or extreme cases, or distinguishing demographic characteristics. While this study had carried out a qualitative interview to follow up on the most statistically significant results, a vast range of

opportunities is available to conduct future studies. Future research may want to elaborate on technology capital being the least important intangible asset, despite many studies having claimed that this asset is integral for high technological industries. Another option is to identify the key significant predictors that lead to the quantitative outcomes.

Second, as this present study concentrated on the three most important intangible assets in the literature, it is believed that other various intangible assets have been described in other studies. As a different business sector may view different assets as significant, future research may explore other sets of intangible assets in accordance with their business setting and size.

Third, since various reports have claimed that intangible assets have an important role in high technology industries and SMEs; this study is specific to one country. Within the context of digital SMEs in Malaysia, there are vast possibilities to conduct a similar study in various other business settings in other countries or regions. The large digital technological firm can adapt the same research design by further comparing the results based on the size of the industry, as well as geographical variances that may yield additional interesting insights.

Goodridge et al., (2014), and Kaplan and Norton (2004) asserted that the aspects of human, technology, and organization have been viewed as the top three intangible investments, as investigated in this study. There are chances that other variables may play an important role and may have a significant impact on the intangible assets neglected in this study. From the stance of performance, apart from the four BSC components in this study, the variables examined in the study focused on several areas, thus inclusion of other constructs is recommended for future studies.

Upon diversifying performance into two; financial and non-financial elements, this study strictly looked into the contribution of intangible assets towards non-financial and financial performances, as well as the role of non-financial performance as a mediator. By using a similar research design, future research may assess financial performance as a mediator to non-financial performance. The performance measurement topic is highly important and has gained much attention in the literature. This calls for future research to consider other performance measurement tools that incorporate financial and non-financial elements, as well as multidimensional performance measures, such as EFQM, Performance PRISM, and SMART Pyramid.

Finally, it is purported that the intangible assets not only be measured in isolation, as new constucts can be created by combining two or more constructs. For instance, rather than measuring HC, OC, and TC alone, the combinations of HC and TC, HC and OC, as well as OC and TC, can be explored. Biagi

(2012) and Itami and Roehl (1991) found that intangible assets only work if the combination of other assets is optimised. To expand this study, CB-SEM using AMOS may be applied to allow a different perspective on the importance of these assets. Furthermore, this provides new information on how the bundle of assets contributes to non-financial and financial performances.

7.6 Conclusion

This chapter has brought together the empirical evidence in accordance to the previous chapters of this thesis. Despite a wide body of prior studies that have assessed the various relationships between intangible assets and performance, little has been documented on the combination of human, technology, and organizational capital together. Besides, as positive financial performance has been found vital for SMEs, in contrast, this study has extended the stance of performance by embedding the aspect of non-financial performance into this study. This thesis, therefore, contributes to the ongoing body of knowledge pertaining to the relationship between intangible assets and performance, particularly within the Malaysian context.

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Appendix 1

Common Method Bias

Appendix 2

Invitation letter

Appendix 3

Online questionnaire using Bristol Online System (BOS)

Appendix 4

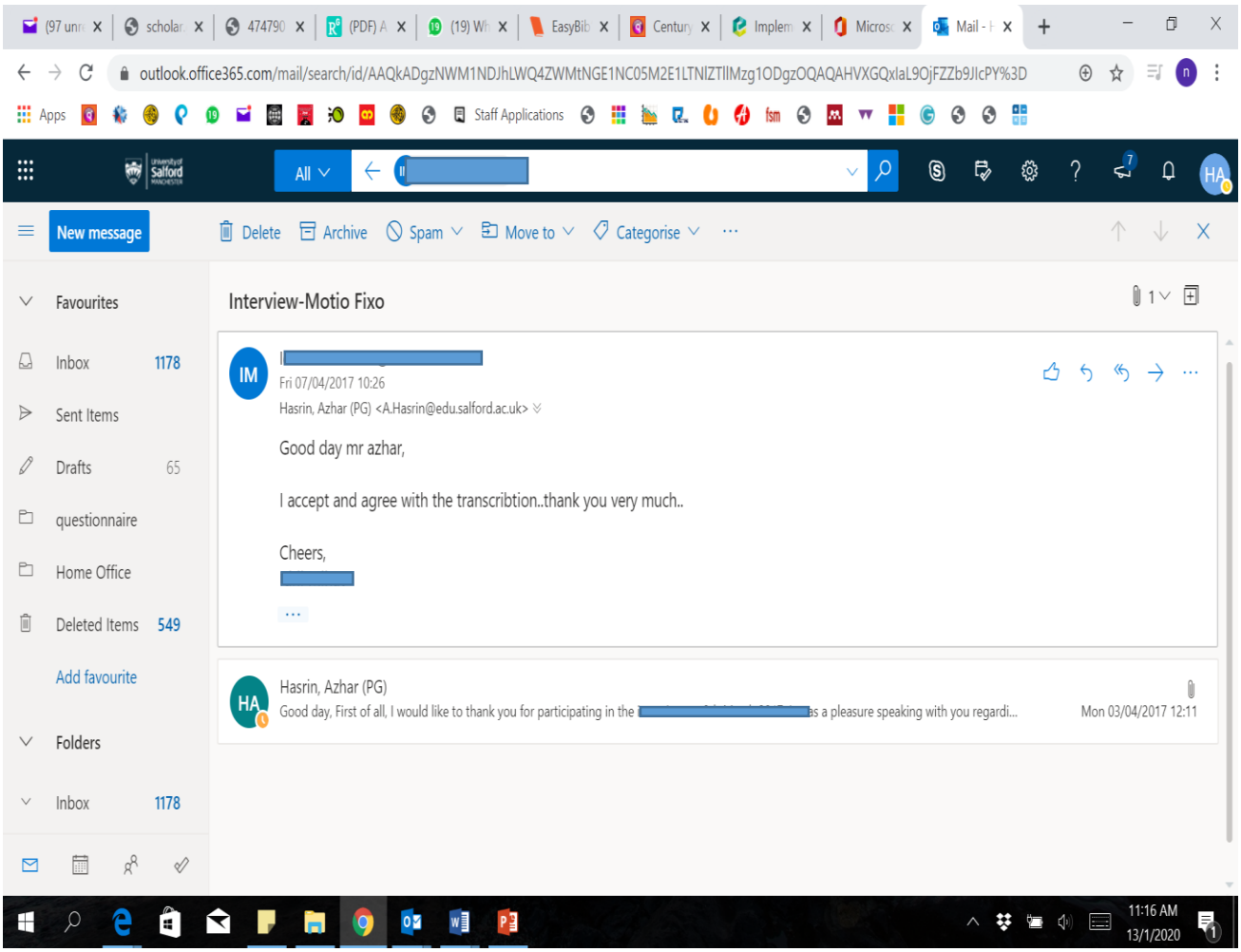
Follow up email

Appendix 5

Follow up with extention email

Appendix 6

Confirmation of translation



Appendix 7

Qualitative Summary

Appendix 8

Final model : Company cluster

Appendix 9

Final model : Company age