DETERMINANTS OF PURCHASE DECISION OF CLIENT-SERVER HARDWARE SYSTEM (C-SHS) IN MALAYSIAN SME BUSINESSES

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ABSTRACT

Information and communications technologies (ICT) is regarded as an essential tool in enhancing competitiveness of small and medium enterprises (SMEs) in global marketplaces. Consequently, client-server hardware system (C-SHS) has gained its popularity in SM enterprises. However, there is no specific research done about determinants of purchase decision of C-SHS in SMEs particularly in Malaysia. Thus, this research filled this gap and developed a research problem on *why and how to establish the determinants of purchase decision of C-SHS in Malaysian SME businesses*. A preliminary theoretical framework based on literature and also the integration of Technology Acceptance Model, Diffusion of Innovation theory, and Technology, Organization, and Environment framework was developed. This research employed qualitative methodology using convergent interview and thematic data analysis techniques to explore and confirm the preliminary theoretical framework. Convergent interview is opted since it allows a greater depth of data collection than other types of interviews as it attempts to gain insight into the informant's understanding of a situation or process. The identification of respondents in this research was based on a snowballing technique. The findings from this research confirmed 16 determinants of purchase decision of C-SHS in SMEs, that are, relative advantage, compatibility system, complexity system, existing IT infrastructure, trialability, cost of purchase, top management support, end user IT skill, owner characteristics, resources availability/constraint, perceived usefulness, perceived ease of use, competitive pressure, government support, customer pressure, vendors competency & support. In addition, five (5) newly determinants had been discovered, that are, scalability system, security system, new initiative, brand loyalty, and green IT environment. These newly discovered determinants represent new contributions to the body of knowledge. As a consequent, a revised theoretical framework is derived to capture these new discoveries. The finding of this research has implications on policy, practice, and methodological aspects.

Keywords: Information and Communications Technologies, client-server hardware system, Small and Medium Enterprises.

ABSTRAK

Teknologi maklumat dan komunikasi (ICT) dianggap sebagai alat yang penting dalam meningkatkan daya saing perusahaan kecil dan sederhana (PKS) di arena pasaran global. Antara perkakasan ICT yang penting ialah sistem pelanggan-pelayan (C-SHS) yang semakin mendapat populariti yang tinggi dalam perniagaan. Walau bagaimanapun, penyelidikan dalam topik itu adalah terlalu terhad khususnya di Malaysia. Justeru, kajian ini dilakukan untuk mengisi jurang tersebut dan mengenal pasti masalah kajian iaitu *bagaimana dan mengapa perlu wujudnya penentu keputusan pembelian C-SHS dalam perniagaan PKS di Malaysia.* Sebuah kerangka teori awal telah dibangunkan berdasarkan ulasan karya serta integrasi model penerimaan teknologi (TAM), teori penyebaran inovasi (DOI) dan teori rangka kerja teknologi, organisasi, dan persekitaran (TOE). Penyelidikan ini menggunakan kaedah kualitatif dengan mengaplikasikan kaedah kajian wawancara tertumpu (*convergent*). Penentuan responden dalam kajian ini adalah berdasarkan teknik *snowballing*. Kaedah analisis data tematik telah diguna pakai untuk menganalisis data-data yang dihasilkan melalui kaedah wawancara tertumpu untuk mengesahkan kerangka teori awal yang telah dibangunkan sebelum ini. Hasil daripada analisa kajian ini, sejumlah 16 penentu keputusan pembelian C-SHS telah disahihkan, iaitu kelebihan relatif, keserasian sistem, sistem kerumitan, infrastruktur IT yang sedia ada, keupayaan percubaan, kos pembelian, sokongan pengurusan atasan, kemahiran pengguna IT, karakter pemilik, sumber ketersediaan/kekangan, persepsi kemanfaatan, persepsi mudah penggunaan, tekanan persaingan, sokongan kerajaan, tekanan pelanggan, kompetensi & sokongan vendor. Tambahan lagi, terdapat lima (5) penentu keputusan pembelian C-SHS baharu telah dikenalpasti, meliputi; sistem berskala, sistem keselamatan, inisiatif baru, kesetiaan jenama, dan persekitaran IT hijau. Penemuan baharu ini telah memberi sumbangan serta memberi impak yang tinggi dalam dunia keilmuan global. Kerangka awal teori penyelidikan ini telah disemak dan diubahsuai semula sejajar dengan dapatan kajian ini. Kajian ini telah menggariskan tiga (3) implikasi utama yang meliputi dasar, amalan, dan aspek metodologi.

Kata kunci: Teknologi Maklumat dan Komunikasi, Sistem Pelanggan-Pelayan, Perusahaan Kecil dan Sederhana

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List of Abbreviations

ACCA : Association of Chartered Certified Accountants.

ADB : Asian Development Bank

APEC : Asia-Pacific Economic Cooperation

C-SHS : Client-Server Hardware System

CP : Computer Paradigm

EC : Economic Census

ED : Environmental Determinants

EG : Edinburgh Group

ICT : Information and Communication Technology

IFC : International Finance Cooperation

IS : Information System

IT : Information Technology

MENA : Middle East and Northern Africa

MNEs : Multinational Enterprises

NSDC : National SME Development Council

OECD : Organization for Economic Co-operation and Development

OD : Organizational Determinants

SMEs : Small and Medium Enterprises

SSM : Suruhanjaya Syarikat Malaysia (Companies Commission of Malaysia)

TD : Technological Determinants

CHAPTER 1: INTRODUCTION

1.0 Introduction

This chapter mainly serves as the overview and the background of what this research topic is all about and what is the main problem to be addressed by undertaking this research. It discusses the importance of this research topic and its contribution to the body of knowledge in pertaining to the information and communication technology (ICT) context, specifically in the small and medium enterprises (SMEs) business in Malaysia. In additional this chapter also outlines how this dissertation is prepared. In brief, this chapter is organized according to nine (9) main sections as shown in the flow chart below, Figure 1.1.

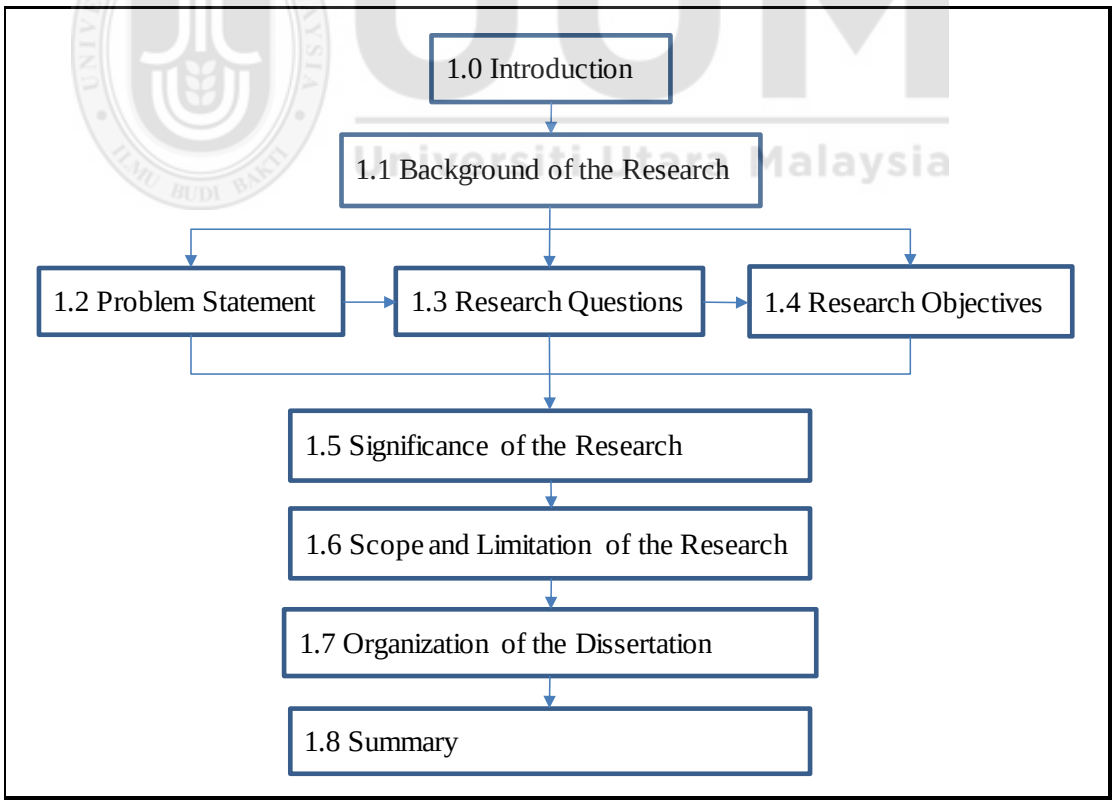


Figure 1.1
The organization and flow of Chapter 1

Source: developed for this research

Section 1.0 provides the general introduction of this chapter. Section 1.1 provides the background of the research, which covers the current ICT development, the impact to the enterprises and highlights the problem faced by the SME's business in Malaysia. This will then lead to the problem statement for this research in Section 1.2. Section 1.3 and 1.4 presents the research questions and research objectives for this research. Section 1.5 justifies the significance and contributions of this research from three (3) perspectives – theoretical, methodological, and practical. In turn, Section 1.6 establishes the scope and limitations of the research. Section 1.7 provides the overview of the organization structure of this dissertation. Lastly, Section 1.8 summarizes the Chapter 1.

1.1 Background of the Research

Technology is transforming every aspect of the business sector and changing the way how businesses are conducted. In essence, ICT is the lifeblood of this change, (Modimogale & Kroeze, 2011). ICT is a powerful tool that allows us to do amazing things and be incredibly productive. The usage of ICT has been widespread in economy activities (Torrent-Sellens & Díaz-Chao, 2010). In the business environment, competition is inevitable and also getting more intensified. To remain and sustain in the business, every business or organization is constantly finding ways and means to enhance the operation process and efficiency. More and more businesses are leveraging on the advance of technology developments to improve the business performance and to gain some competitive advantages (Fisher & Kenny, 2000; Porter, 1980). Besides, organization also capitalizes on the technologies for the survival and success for their company (Lester & Tran, 2008). In short, organization that do not

accept new technologies and do not adjust themselves to accept new technologies will fall behind (Davidoff & Kliener, 1991 cited in Murad &Thomson, 2011).

The term ICT is so powerful and important in every business and aspect of our life in viewed on the wide range of benefits it offers (OECD, 2004). The Minister of Communication in Botswana described ICT as the "world's most important facility in the 21st century" in his speech in the World Communication day (Magang, 2001). Similarly, Saleh and Burgess (2009) have called out that ICT is a crucial tool in the increasingly competitive global economy. Indeed, ICT can do wonderful magic and surprises to the world, be it in business context and also in personal daily life. In the last few decades, ICT has changed the world and also the way *how* people think, *how* people act and react, and *how* people communicate in their daily lives.

Large amount of researches on the area of ICT have been conducted by the academicians around the world. The findings from these researches had been well documented and provided solid evidences and confirmations on the positive impact of ICT on the world and businesses. From the available literatures, ICT has managed to contribute and improve the business performance and operational efficiency of a company (Barua, Konana, Whinston, Yin, 2004; Johnson & Scholes, 1993; Pan & Jang, 2008; Sultan, 2010). ICT can not only increases a company's competitive advantage (Corso, Martini, Pellegrini, Paolucci, 2003; Levy, Powell, Yetton, 2001; Nguyen, Sherif, Newby, 2007; Premkumar, 2003), but ICT can also significantly changed and influenced the way we manage and conduct the business in a more effective and efficient manner as found in many studies conducted (Doherty & Terry, 2009; Fisher & Kenny, 2000; Heathfield, 1997; King, Grover, Hufnagel, 1989; Lai,

Zhao, Wang, 2006; Monteiro & Macdonald, 1996; Porter, 1980; Porter & Miller, 1985; Rackoff, Wiseman, Ulrich, 1985; Rahardjo, 2006; Sledgianowski et al., 2008; Valacich & Schneider, 2010). Undeniably, it is obvious that ICT plays a very crucial and pivotal role in the success of today's businesses. Every business needs to leverage the technology, in particularly, ICT to survives, succeed and propel forward (Lester & Tran, 2008). No businesses can afford to lose out to their competitors just by not having paid enough attention to ICT.

Engagement of ICT is no longer exclusive to the large organizations but also available and accessible to the SME's business. Study has found that ICT is a key component of SME's operation in the competitive environment (Lester & Tran, 2008) and SMEs are recommended to adopt ICT as a strategic tool to generate business growth (Greenspan, 2002). Modern businesses are not possible to survive without the help of ICT, which is having a significant impact on the operations of SME's business (Mihane, 2009). Many previous studies have provided evidence that ICT can strengthen SME's operations and business competitive position (Premkumar, 2003). Evidences indicate that ICT has created positive impact on the firm's performance (Ashhari & Nassir, 2010; Foong, 1999; Hussein & Karim, 2007; Ismail, 2007). Many SME's business have been utilizing ICT to gain the competitive advantages (Corso et al., 2003; Jin, 2007; Lai & Li, 2005; Levy et al., 2001; Moghavvemi, Hakimian, Feissal, 2012; Nguyen et al., 2007; Premkumar, 2003).

One of the key technologies within ICT industry is the client-server hardware system (C-SHS). C-SHS is a computing architecture where it represents a form of distributed processing in which the system distribute information and computing task among

computers that are linked by a network (Chengalur-Smith & Duchessi, 1999). According to Subramanian and Lacity (1997), client-server computing is a phenomenon that is transforming the information system (IS) industry. One of the primary reason is C-SHS allow organization to respond more rapidly because it is able to create and disseminate information which is then distributed to the desktop of individuals (Kavan, O'Hara, Patterson & Bostrom, 1999). In recent years, with the continuing development and advancement of the technologies, the client-server computing system is gaining popularity and has been very critical in the world of IT and also in the world of business. C-SHS is an appropriate technology in today's rapidly changing environment (Kavan et al., 1999) and is an indispensable tool for SMEs to compete and survive in the playing field. In the context of SME's business and at least for now, client-server computing is still a valid and feasible technology over cloud computing which is an emerging technology still in the infancy stages. C-SHS for SME's business still relatively important to develop the business and to gain the competitive edge in the marketplace.

Undeniably, SME's business play a vital role and are a backbone of the national economies in the countries of Asia and the Pacific inclusive of Malaysia (Ramayah & Koay, 2002; Saleh & Ndubisi, 2006). Hence, SME's development in the region is the key for resilient national economies. The global statistic has shown that SME's business contribute substantially to the nation's income, output and employment. To grow the business and tap into a bigger market, going international is one of the channels. Becoming internationally active is clearly good for businesses and the wider economy. However SME's business face a range of both internal and external barriers when they seek to internationalize (ACCA, 2010). SME's business face problems in

doing business internationally particularly in relation to gaining access to markets, stiff competition, shortage of adequate and reliable information, gaining new customers and dealing with regulations and a contraction in lending by banks and other financial institutions (EG, 2013). Research conducted by Edinburgh Group (EG) in 2012 has identified the main barriers to SME's business internationalization as being limited financial resources (particularly for smaller businesses), difficulties or failure in identifying foreign business opportunities, and information shortages.

In the context of SME's business in Malaysia, there are three (3) key challenges and barriers with respect to the continuous growth and competitiveness sustainability. These challenges are i) low ICT adoption rate, ii) low labor productivity and, iii) shortcomings of SME's contribution to the country economy. The following subsections discuss each of the challenge in detail.

i. Low ICT adoption rate in Malaysia SME's business.

The first challenge is low ICT adoption rate. Despite SME's acknowledgment of this fact, yet, the level of acceptance and utilization of ICT is particularly low in SME's business in developing countries (Achimugu, Oluwagbemi, Oluwaranti & Afolabi, 2009). From the past researches and surveys, the ICT adoption rate in the Malaysia SME's business is relatively low (Alam & Ahsan, 2007; Kogilah, Santhapparaj, Eze, 2008; Salleh & Burgess, 2009). The statistics based on the SMEICT Survey has demonstrated that 70% of the SME's business in Malaysia do not have a website. Another survey conducted by ACCM, shows that 72% of SME's business in Malaysia are not ready for e-commerce and that implied majority of Malaysia SME's business have not embrace ICT, in particular the C-SHS.

For purpose of comparison, the ICT adoption rate of SME's business in Malaysia is only 30% whereas it is 80% in Europe and America (Saleh & Burgess, 2009). According to Dato' Hafsah Hashim, CEO of SME Corporation Malaysia in his presentation in the Cairo AMC-CBE-WBG SME Conference, 14 - 15 January 2015, innovation and technology is one of the constraints to the growth of SME's business in Malaysia. Besides this constraint, poor technology uptake is also one of the detractors (Hashim, 2015). Embracing IT to access and obtain relevant and reliable information is vital to the success of SME's business in the regional and global playing fields (EG, 2013). The ability of SME's business to survive in an increasingly competitive global environment is largely predicated on their capability to leverage information as a resource (Mutula & Van Brakel, 2006). However, the underutilization of ICT applications in Malaysia SME's business results in a shortage of adequate and reliable information. Therefore, low ICT adoption rate remains a significant problem and challenge to SME's business in Malaysia.

ii. Low Labor Productivity in Malaysia SME's business.

The second challenge faced by SME's business in Malaysia is its low labor productivity or efficiency of production. As shown in Figure 1.2, the Malaysia SME's business labor productivity, as measured by real GDP per worker, is far below other countries. It is also noticed that US firms are among the highest in labor productivity. One of the explanations for this is linked to a high usage of ICT (Lucchetti & Sterlacchini, 2004; Sadun & Reenen, 2005). Extensive studies have been carried out to determine and discuss the relationship between ICT and productivity. The findings from these studies have shown a strong positive relationship between high labor productivity and the usage of IT (Doo & Sohn, 2008; Esselaar, Stork, Ndiwalana &

Deen-Swarray, 2007; Ianmmarino, Jona-Lasinio & Mantegazza, 2004; Onu, Olabode & Fakunmojo, 2014).

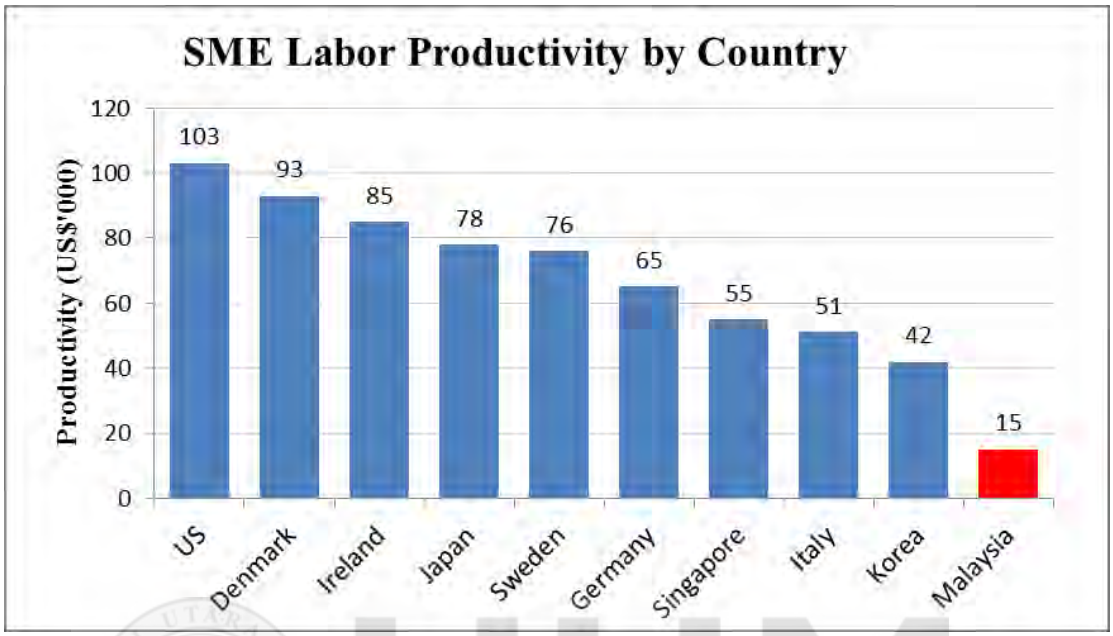


Figure 1.2
SMEs Labor Productivity by Country

Source: developed for this research, based on World Bank from various sources

Low productivity in Malaysia SME's business brings negative impacts in regards to their competitiveness in the global business environment and ultimately this will have negative implications to the growth of the economy in the country. As we know, competitiveness of SME's business is important to the growth and development process of Malaysian economy. As such, low labor productivity is a critical problem and challenge faced by SME's business in Malaysia.

iii. Shortcoming of Malaysia SME's contribution to the country economy.

The third challenge faced by the SME's business in Malaysia is the shortcoming of SME's contribution to the country economy. In Malaysia, SME's business account for the large proportion of businesses where it represents 97.3% of establishments.

Therefore performance of SME' business greatly makes a significant difference in the Malaysia economy. The SME's business contributions to the country economy can be assessed based on three (3) key parameters that are, their share of contribution to gross domestic product (GDP), employment, and export activities. The performance of these three (3) parameters is summarized in Table 1.1 below.

Table 1.1
Gaps of performance in SME's business in Malaysia

Gaps of Performance in SMEs Malaysia	
1. Contribution to GDP	● Approximately 33% compared to 39% (middle-income countries) and 51% (high-incoming countries).
2. Contribution to employment	● Approximately 57% compared to 97.2% (Indonesia), 90% (Korea), 70% (Singapore), 82% (Thailand and China).
3. Contribution to export activities	● Approximately 15%, the lowest in the region.

Source: developed for this research

Firstly, let's looks at the performance in contribution to GDP. From the Economic Census (EC) 2011, Malaysia SME's business only contributes approximately 33% to the total nation's GDP. By contrast, this statistics is relatively much lower than other middle-income nations and high income-nations where their contribution to their nation GDP is on the average of 39% and 51% respectively. Obviously, this presents a gap in terms of Malaysia SME's business contribution to the total national GDP between Malaysia and that of other middle-income and high-income nations.

Secondly, let's assess Malaysia SME's business contribution based on the employment aspect. From the Economic Census 2011 results, Malaysia SME's business contribution to the total nation employment is 57%. Based on the survey report by the Asian Development Bank (2013), Malaysia SME's business contribution

is far lower than that of other countries in Asian countries. SME's business in Indonesia contributes about 97.2% to the national employment, Korea around 90%, Thailand and China contributes more than 82%. Our neighbor, Singapore SME's business contributes around 70% in total employment of the country (OECD, 2013). Thus, at this juncture, it is clear that there exist a gap in Malaysia SME's business contribution to the country employment in relative to others countries contributions.

Thirdly, from the country export sustaining point of view, for the 10-year period from 1998 to 2008, Malaysia SME's business accounted for only 15% of the country's total exports (Tambunan, 2009). By benchmarking, this contribution is among the lowest in the nine (9) selected Asian countries as displays in Figure 1.3.

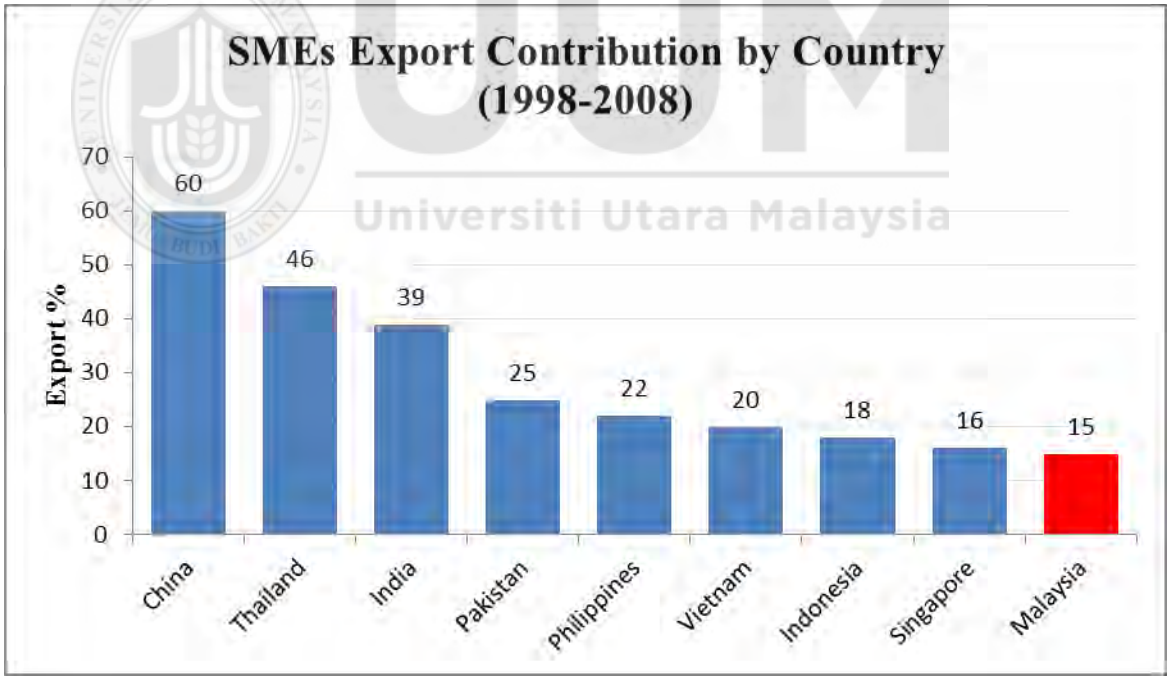


Figure 1.3

Share of SMEs' exports as a percentage of total exports in select Asian countries, average for the period 1998–2008

Source: developed for this research, based on Tambunan (2009)

Based on the assessment and discussion of Malaysia SME's business performance with respect to their share of contribution to gross domestic product (GDP),

employment, and exports activities, it is clear that the performance of SME's business in Malaysia is inferior to those similar income countries in the region. Obviously, Malaysia SME's business performance and contribution to the nation economy is one of the main significant challenges and it represents a gap to be filled.

This problem has been acknowledged by the Malaysian government and therefore the Malaysian government has come out with the SME Masterplan from the year 2012 until 2020. The aim of this master plan is to create a business ecosystem for SMEs which will support towards achieving the high income economy by 2020. Under this master plan, the contribution of SME's business towards nation GDP, employments and export are expected to be 41%, 62%, and 25% respectively by 2020. To achieve these targets, obviously there is a need for SME's business to take a drastic change to improve their business operational process and efficiency and be more competitive in the international marketplace. Leveraging on the use of ICT is one of the promising solutions.

This section has provided the background of the research. The discussion begins with the ICT and its impacts to the businesses, the primary benefits and the importance of ICT in the 21st century competitive business environment, and the research in the ICT and businesses context. This section also discussed about the use of ICT in relation to SME's business, and the C-SHS as one of the key components in ICT to enhance competitiveness in SME's business. The last part of this section discussed the three (3) challenges facing by the SME's business in Malaysia context. To continue with the discussion, the next following section zoomed in to discuss and develop the problem statement for this research.

1.2 Problem Statement

With the background of the problems described above, it is obvious that there exist a serious problem in the SME's business in Malaysia which has impacted on their competitiveness in the global business landscape and ultimately its negative impact to the economy growth in the country. These problems can be attributed primarily to the lack of innovation and technology adoption which constitute one of the key barriers of growth in SME's business (Hashim, 2015). As a consequent to these problems, SME's business in Malaysia actually face a big threat in their survival in the global marketplace and that in turn, decelerates the growth of the country's economy. Therefore, this is a serious problem that cannot be ignored and left unattended. Instead, this problem needs to be addressed in a fastest and systematic manner possible.

Also, as discussed in previous sections, ICT particularly the C-SHS plays a vital role to SME's business. A lot of studies have documented and reported the significance of the contribution and importance of C-SHS to SME's business especially in improving the efficiency of operation process and in enhancing business competitiveness (Barua et al., 2004; Pan & Jang, 2008; Saleh & Burgess, 2009; Sultan, 2010). In that context, C-SHS is deemed as one of the key components in the success of SME's business in Malaysia. However, despite the importance of C-SHS to SME's business, there is only handful of studies, if not none, had been conducted specifically on the C-SHS itself and also in relation to Malaysia SME's business per se.

From the perspective of C-SHS industrial players who supply the system to customer, the business competition is intense. Often, price reduction is the easiest way to be

more competitive and that results in thin or negative margin on the products. The industrial players are constantly find the best approach to improve the bottom line and understand what determine customers to purchase C-SHS. However, very little is understood about determinants of the purchase decision of C-SHS in SME's business in Malaysia (Hashim, 2007). Moreover, what and how these factors determine the Malaysia SME's business owner in purchase decision of C-SHS also remains a big gap to be filled. All in all, this remains a whole lot to be researched, explored, discovered and understood in this research topic. Therefore, this research is important as it addressed two (2) main issues faced by the SME's business owner and also C-SHS industrial players.

In alignment to these thoughts, this research is guided by the research problem statement as follows: *How and why to establish the determinants of the purchase decision of C-SHS in Malaysia SME's business?*

By identifying the determinants of the purchase decision of C-SHS, the owners or top management of SME's business in Malaysia will be better supported and better prepared to adopt and leverage the technology rapidly to enhance the competitiveness and compete in the global arena. Concurrently, knowing what determines the purchase decision of C-SHS in SME's business would certainly improves the sales performance to those C-SHS industrial players.

1.3 Research Issues

From the discussion and formation of the research problem of this research, this section develops the research issues as a mean to state the research problem in a more

specific way from the beginning (Horn, 2009; Saunders, Lewis & Thornhill, 2009; Silverman, 2005). There are three (3) research issues to this research which are as follows:

RI1: What are the technological determinants of purchase decision of C-SHS in SME's business in Malaysia?

RI2: What are the organizational determinants of purchase decision of C-SHS in SME's business in Malaysia?

RI3: What are the environmental determinants of purchase decision of C-SHS in SME's business in Malaysia?

These three (3) research issues were fully analyzed in the data collection and data analysis stage and answered in Chapter 4 of this research.

1.4 Research Objective

The primary purpose of this study is to explore and discover the determinants of purchase decision of C-SHS in SME's business in Malaysia. This research purpose is supported by three (3) specific objectives as follows;

i) To explore and discover what are the *technological* determinants of purchase decision of C-SHS in SME's business in Malaysia.

ii) To explore and discover what are the *organizational* determinants of purchase decision of C-SHS in SME's business in Malaysia.

iii) To explore and discover what are the *environmental* determinants of purchase decision of C-SHS in SME's business in Malaysia.

1.5 Significance of the Research

Having provided the background of this research, problem statement, research issues and objectives in the opening of this introductory chapter, this section justifies the contributions and the significances of this research specifically dedicated to SME's business in the Malaysia context. The discussion of the contributions and significances of this research is divided into three (3) perspectives – i) theoretical perspective, ii) methodological perspective, and iii) practical perspective. For each perspective, the discussion is further broken down into a few aspects. Combining all these three (3) perspectives, it delivers a total of seven (7) aspects of the significances and contributions of this research. A preview of the summary of the significance and contributions of this research is shown in Table 1.2 below.

Table 1.2
Summary of significance of the research

Theoretical Perspective	
1. Contribution to the body of knowledge of ICT literatures	● To provide theoretical extension of determinant factors the purchase decision specifically to the C-SHS.
2. Contribution to the body of knowledge of SMEs literatures	● Enhance the SMEs literature from the aspect of business competitiveness enhancement through engagement of C-SHS and determent factors to acquire C-SHS ● Provides comprehensive support in relation to the future research in the same area of topic.
3. Contribution to the Malaysian SMEs literatures	● To add strength to the Malaysian SMEs literatures by conduct this research on the SME's business in Malaysia
Methodological Perspective	
1. Qualitative using convergent interview technique	● The first rigorous & in-depth study in the Malaysia SME's business industry in relation to the determinant of purchase decision of C-SHS.
2. Purposeive and snowballing samping technique	● Add value and diversify the method of study in the same topic of research. ● Provide the ability and opportunity for cross-checking and confirmation of results and findings.
Pratical Perspective	
1. Benefits to Malaysia SME's business	● As a guideline for SME's business entrepreneur to develop a framework for purchasing C-SHS. ● Enhance business competitiveness via successful integration of C-SHS.
2. Benefits to ICT solution providers	● Improve sales performance and aids in the designing of more effective marketing campagin. ● In developing strategic marketing position based on the voice of customers

Source: developed for this research

1.5.1 Theoretical perspective

Within the theoretical perspective, there are three (3) aspects which regards to the significance and contributions of this research. The first aspect is the *contribution to the body of knowledge of ICT literatures*. Undeniable, there are plenty of the researches which have been conducted over the last decade in ICT. Among these research, a large majority was mainly focused on the factors influencing the adoption of ICT in general. One can hardly come across researches conducted specifically on the C-SHS, either in the local or in the global market space. This is especially so in Malaysia, where there is virtually no research on the area of C-SHS and specifically in the SME's business industry. This implies that the understanding of the determinants of purchase decision of C-SHS in Malaysia SME's business is still at the infancy stage and there is a lot more to discover and explore. This research is fully dedicated to the C-SHS. As such, the findings of this research would provide significant theoretical extension about the determinants of the purchase decision specifically to C-SHS, which therefore added strength to the literatures of ICT.

The second aspect is the *contribution to the body of knowledge of SMEs literatures.* Undoubtedly, in the past there are numerous studies which had been conducted surrounding SME's topic. However, there are no specific studies which can be found in relation to the determinants on the purchase decision of C-SHS. In other words, there is still a gap in the SME's literature to be filled. With that in mind, this research is conducted specifically to the SME's business. Hence, this research would significantly enhance the SME's literature from the aspect of business competitiveness enhancement through the engagement of C-SHS and its determinants in the acquisition of C-SHS. The findings of this study provided comprehensive support in relation to the future research in the same area of research topic.

The third aspect in the context of this research is the *contribution to the Malaysian SMEs literatures specifically.* In regards to this context, virtually none of the research dedicated to the area of C-SHS can be found in the Malaysian SMEs literature. In this perspective, this research which is carried out in SME's business in Malaysia added one more literature and deemed significant to the Malaysian SMEs literatures.

1.5.2 Methodological perspective

Within the methodological perspective, there are two (2) aspects in terms of the significances and contributions of this research. Firstly, this study engaged qualitative approach and used convergent interview as a technique for data collection. This is the first research using this technique and also the first rigorous and in-depth study in the Malaysia SME's business in relation to the determinants of purchases decision of C-SHS.

Secondly, in terms of the sampling technique, this research used combination of the purposive and snowballing approach. These methodologies significantly added value and diversify the method of research in the same topic of interest. The diversification of the method of the research in the same topic of interest provide the ability and opportunity for cross-checking and confirmation of results and findings. Hence, from the methodological perspective, this study is deemed significance and contribute to the current literatures.

1.5.3 Practical Perspective

The third perspective is from the practicality point of view. There are two (2) aspects of significances and contributions within the practical perspective. The first aspect is the *benefits to Malaysia SME's business.* It is essential and critical for SME's

business to capitalize and leverage on the advance of ICT, specifically C-SHS, to improve their operational processes, raise productivity, expand their business and to be competitive in the industry, domestically and globally. In this aspect, it is therefore important for SME's entrepreneurs to develop a framework guideline for purchasing C-SHS. The findings from this research, with respect to the determinant of purchase decision of C-SHS, facilitated the development of the framework to support SME's entrepreneurs in Malaysia for acquiring the system. With the C-SHS integrated into their SME's business, it would help SME's business to improve their competitiveness in the global marketplace. Hence, this research is utmost significance in raising the competitiveness and increasing the presence of Malaysia SME's business in the global marketplace.

The second aspect is the *benefits to ICT hardware and solution providers.* Research has shown more and more SME's business are now realizing the importance of the ICT towards the success of their business. However, from the recent studies, many have reported that the adoption of ICT in Malaysia SME's business is still very low (Alam & Ahsan, 2007; Kogilah et al., 2008; Salleh & Burgess, 2009). From the Microsoft Corporation's report in 2008, only 30% of Malaysia SME's business embraced basic ICT (cited in Chong, Ooi, Lin & Tang, 2009). From the ICT hardware and solutions provider point of view, these findings translated to a huge business opportunity out there to be grabbed. Among the well-known large ICT hardware and solution providers in the market are Dell, HP, IBM and Lenovo. These ICT companies constantly compete with each other to gain the market share in the ICT hardware and solutions industry. Thus, it is important for these ICT hardware and solutions providers to really understand in detail the factors determining the

customer's purchase decision of C-SHS in the SME's business in Malaysia. By understanding these determinant, these ICT hardware and solutions providers are able to design more effective marketing campaigns thus improving their sales performance. In addition, the findings of this study also help ICT solution providers to develop a strategic marketing position based on the voice of customers. Thus, the findings of this research are of importance and significance to the ICT hardware and solution providers.

Based on the above discussions, this research is therefore considered important and significant. Furthermore, this research is also aligned to the government's agenda to promote and grow the SME's business in Malaysia as part of their efforts in achieving a high-income status nation by 2020. The findings from this research benefit multiple stakeholders such as SME's business owners, ICT hardware and solutions providers, and academicians.

1.6 Scope and Limitations of the Research

After presenting the significances and contributions of this research in the previous sections, this section outlines the scope and establishes the boundary of this research along with the limitations. A preview of the summary of the scope of the research is presented in Table 1.3 below.

Table 1.3
Summary of the scope of the research

Criteria	Scope
Enterprises Registration	Suruhanjaya Syarikat Malaysia (SSM)
Operation Location	Malaysia
Sector	• Services • Manufacturing & Manufacturing related services
Type of employee	Full-Time
Number of employee	Not more than 200
Annual Sales Turnover	Not exceeding RM50 million

Source: developed for this research

First and foremost, this research is focused on the Malaysia SME's business registered with the Suruhanjaya Syarikat Malaysia (SSM) and have business operation located in Malaysia. SME's business comprises a very wide spectrum and cut across all sectors of economy in Malaysia. Based on the information from the Department of Statistics Malaysia, the SME's business sectors and its respective contribution is shown in Table 1.4 below.

Table 1.4
Contribution of SME's business by Sector in Malaysia

Sectors	Activities	Contribution of SMEs in %
Services	Wholesales & Retails; Food & Beverages Services; Transport & Storage	90.0
Manufacturing	Textiles & Apparels; Food & Beverages Products; Fabricated Metal Products	5.9
Construction	Non-Residential Buildings; Civil Engineering; Residential Buildings	3.0
Agricultural	Crops; Livestock; Fisheries	1.0
Mining & Quarrying	Stone Quarrying; Mineral Mining	0.1

Source: developed for this research

From the table above, the top two (2) sectors, services and manufacturing, represented almost 96% of the total SME's business in Malaysia. The uses of C-SHS in these sectors are more common than others. Hence, these two (2) sectors constituted the

scope of this research. In addition, one of the pre-requisites of the targeted SME's business in this research from any of these two (2) sectors is that they must have internal IT infrastructure which includes of clients and servers systems with network connectivity and owned by the business itself. Besides the mentioned pre-requisite, the number of employees and sales turnovers are also part of the aspects to define the SME's business for this study. The SME's business studied in this research comprised business with full-time employees not more than 200 and an annual sales of amount not exceeding RM50 million, which is consistent and in accordance to the maximum limit set by the NSDC (2013).

This research has three (3) limitations. Firstly, this research is focused on the SME's business therefore large enterprises are excluded from this research. Secondly, this research is conducted specifically on SME's services and manufacturing sectors in Malaysia only. Hence, generalization of the finding across entire SME's sectors is restricted. Thirdly, this research employed one (1) technique on data collection.

1.7 Organization of the Dissertation

Up to this point, this chapter has provided the complete overview and background of this research, the problems encountered by SME's business in Malaysia and development of the research problem statement and the contributions and significance of this research. Now, this section outlines and provides an overview of the organization of this dissertation. This dissertation is designed and structured into five (5) main chapters as shown in Figure 1.4.

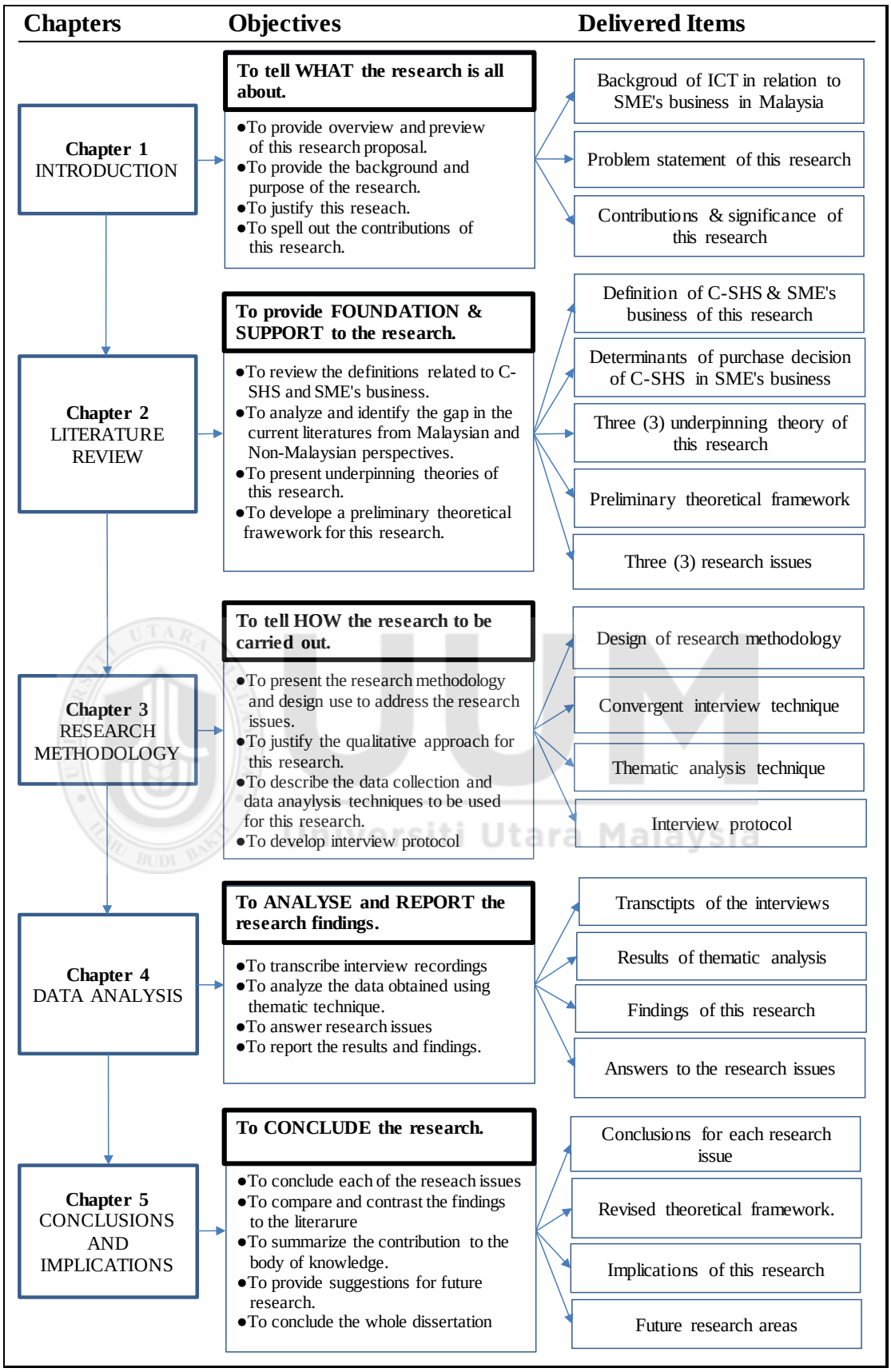


Figure 1.4
The organization structure of this dissertation

Source: developed for this research

Chapter 1 is the INTRODUCTION to this research and it details the main issues in this research. This chapter outlined the background and purpose of this project and presents a brief overview of ICT, in particular on the C-SHS and its impact on SME's business in Malaysia. The three (3) delivered items of this chapter are the background of ICT in relation to the SME's business in Malaysia, research problem statement, and the contributions of this research.

Chapter 2 is the LITERATURE REVIEW and it details the FOUNDATIONS AND SUPPORTS to this research. This chapter mainly focused on the synthesization of literatures reviews from Malaysian and non-Malaysian contexts in regards to the determinants of the purchase decision of C-SHS in SME's business. Relevant technology adoption theories and models are also presented to form the underpinning theory for this research. In addition, this chapter also discussed the development of definitions of C-SHS and SME's business for this research. As a result of this, the five (5) main delivered items of this chapter are the definition of C-SHS and SME's business used in this research, a pool of determinants of purchase decision of C-SHS in Malaysia SME's business, a consolidated underpinning theory, a preliminary theoretical framework for this research, and the research issues of this research.

Chapter 3, which is on the RESEARCH METHODOLOGY details HOW this research was carried out. This chapter described the methodology adopted in this research. It explained and justified the uses of the qualitative approach and convergent interview methods, processes and techniques for data collection and data analysis based on the interview information gathered from the informants. Chapter 3 in this dissertation contained four (4) key delivered items, which are the research

methodology design, the convergent interview technique used for data collection, the thematic analysis techniques used for data analysis in this research, and the interview protocol.

Chapter 4, which is on DATA ANALYSIS, and it ANALYZED AND REPORTED the findings of this research. Convergent interview was used to collect the data and was then analyzed using thematic analysis technique. The results of data analysis was used to address the three (3) research issues of this research. This chapter delivered four (4) key items. These items are interview transcripts, results of the thematic analysis, findings of the research, and the answers to the research issues.

Chapter 5 contained the CONCLUSIONS AND IMPLICATIONS of the whole research. Conclusions were drawn from each research issue and the findings of this research were compared and contrasted to the literature. This chapter delivered four (4) important items, which are, conclusions for each research issue, revised theoretical framework, implications of this research, and suggestions for future research.

1.8 Summary

In summary, the technology particularly ICT, is transforming every aspect of the business sectors and changing the way how businesses are conducted. ICT is a powerful tool that allows us to do amazing things and is incredibly productive. Technology is no longer a luxury item but also a necessity and essential to every business regardless of the size of the business. Every enterprise is leveraging ICT to enhance operational process and efficiency. The contribution of SME's business to

the growth of every nation economy is crucial and significant towards the development of the nation.

In the Malaysia context, the contribution of SME's business towards achieving the high income economy by the year 2020 is significant and vital. Technology driven and innovation-led economy play an important role in achieving the national agenda. In this aspect, ICT has been seen as an important and indispensable tool to support and enable SME's business to improve the operation performance, enhance productivity and to gain competitive edge. However, it was reported that innovation and technology is one of the constraints to the growth of SME's business in Malaysia (Dato's Hafsah, 2013). Due to this constraint, it is therefore essential to put more focus and effort on the ICT element in relation to the SME's business growth and contribution in the Malaysia economy.

Nowadays, many SMEs' business are realizing the criticality of leveraging ICT to enhance business competitiveness, to achieve the company goals and to be successful in international marketplace. Researches have demonstrated that C-SHS is one of the ICT infrastructures which is able to enhance operational process and to achieve competitive advantage in the business. Practically speaking, SME's business is encouraged to acquire and integrate C-SHS in their businesses model. Therefore, it is essential and important to discover and understand the determinants of purchase decision of C-SHS in the SME's business in Malaysia. Integration of C-SHS into Malaysia SME's business can make a difference to their business and improve competiveness in the global marketplace.

From the theoretical perspective, the findings from this research provided insights towards the determinants of purchase decision of C-SHS in SME's business in Malaysia. In other words, this research is significant to the body of knowledge of ICT and SME's industry. In terms of methodological perspective, this research is the first research which utilized the qualitative convergent interview technique and also the most rigorous approach to have in-depth understanding of the phenomenon under studied. Furthermore from the practical perspective, the findings from this research also contributed to the SME's industry and ICT hardware and solution providers to formulate their marketing and sales strategies to secure more sales from the customers hence improving sales performance.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Chapter 1 had provided the WHAT- part of this research, including introduction and overview of the whole report, the importance of the C-SHS in gaining and sustaining the competitive advantages for the business, particularly in the Malaysia SME's business. Now, Chapter 2 aims to provide evidence and serves as the foundation and supports to this research. This chapter consists of ten (10) main sections as shown in the flow chart below, Figure 2.1.

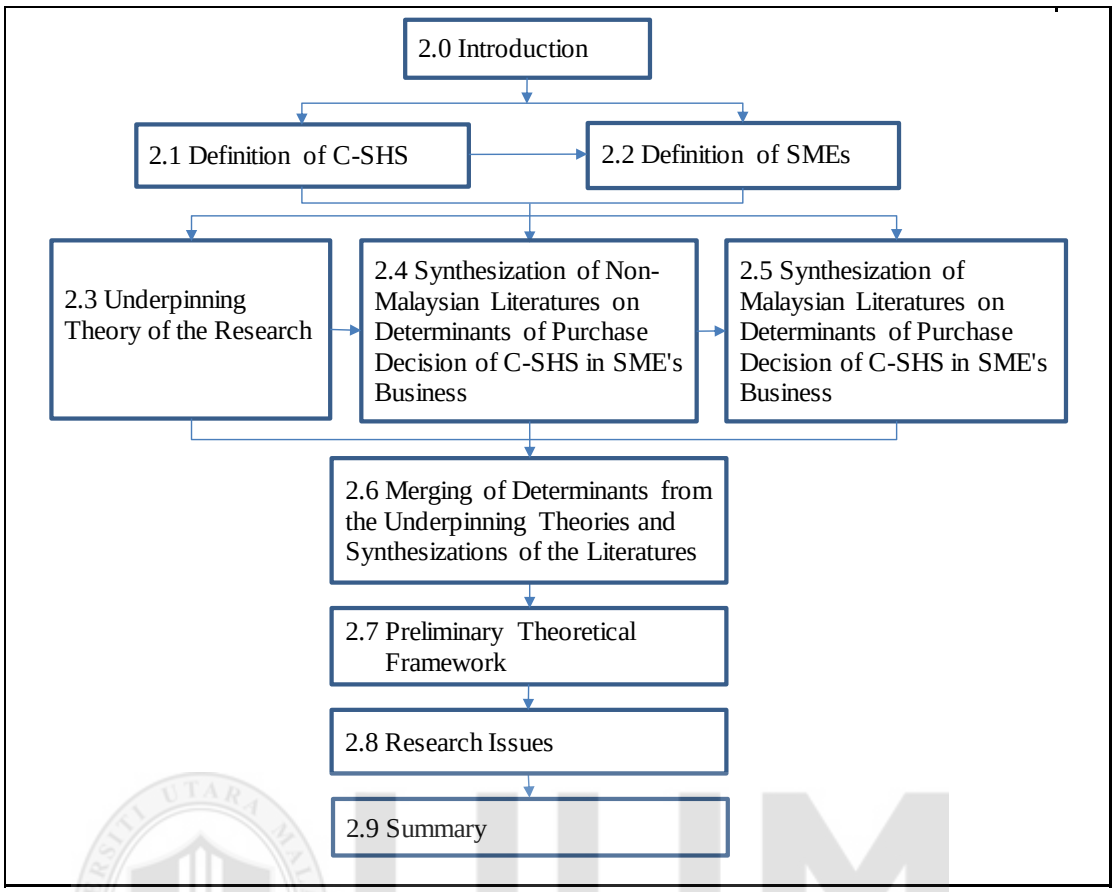


Figure 2.1
The organization and flow of Chapter 2

Source: developed for this research

Section 2.0 provides the general introduction of this chapter. Section 2.1 discusses the definition construction and its components of the C-SHS with great details. Likewise, Section 2.2 defines the scope of the SME's business from the Malaysia context, which is used for this research. Section 2.3 discusses the underpinning theories for this research. Section 2.4 and Section 2.5 presents a great review of the literatures and discussion on the determinants of the purchase decision of the C-SHS in SME's business, based on the perspective from non-Malaysian literatures and Malaysian literatures respectively. Section 2.6 matches two (2) sets of determinants between the literatures synthesization and the underpinning theories whereas Section 2.7 delivers the preliminary theoretical framework for this research based on the synthesization of the literatures and the synthesization of the underpinning theories. Section 2.8

describes the issues about this research with reference to the preliminary theoretical framework developed for this research. The last section, Section 2.9 summarizes this chapter.

2.1 Definition of Client-Server Hardware System (C-SHS)

The introductory section detailed the background and also the overall organization of the Chapter 2. Now, this section elaborates the definition of the key paradigm used in this research, that is, the C-SHS, in the context of language used in the ICT and client-server computing environment.

2.1.1 Client-server computing technology

Prior to the derivation of the definition of C-SHS, this section provides a basic understand of client-server computing technology which serves as the fundamental information to this research. Client-server computing technology is a computing paradigm in the information system industry (Bajaj, 1998; Subramanian & Lacity, 1997). It is a key component in ICT development. A simple illustration of the client-server computing architecture is shown in the diagram below, Figure 2.2.

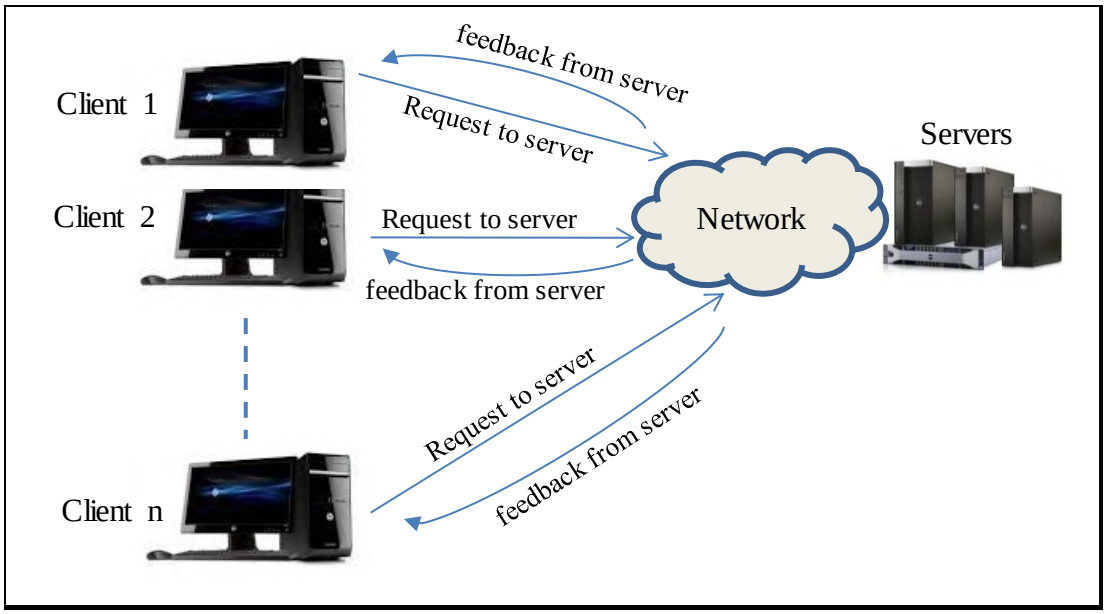


Figure 2.2
The client-server computing architecture

Source: developed for this research

From the above client-server computing architecture diagram, C-SHS is the integration of client hardware, such as notebooks, desktops, workstations, and servers system. Client system and server system are inter-connected through the network devices and services. With the network connection, the client system request information from the server system, and the server system feedback with the requested information accordingly. Within this context, C-SHS is a system represents a form of distributed processing whereby the system distributes the information and computing tasks among computers that are linked by a network (Chengalur-Smith & Duchessi, 1999).

2.1.2 Synthesization of definition of client-server hardware system (C-SHS)

Based on the existing literatures, the number of definition for C-SHS is extremely limited or virtually none, unlike ICT which has plenty of definitions given by scholars and researchers. However, as mentioned earlier, C-SHS is a key component of ICT development which aligns to the function of ICT, therefore we leveraged the definition of ICT as a reference and foundation to derive the definition of C-SHS for this research. Based on the review of the current literatures, six (6) main components for the C-SHS definition have been identified as shown in Table 2.1.

Table 2.1
Summary of components used to define the client-server hardware system (C-SHS) by various researchers

		Researchers												
		1	2	3	4	5	6	7	8	9	10	11		
Components of Definition for C-SHS		**Pham & Nguyenn (2012)**	**Ghobakhloo et al. (2011)**	**Knowledge & Lorraine (2011)**	**Ratanapoophun & Lee (2010)**	**Tan et al. (2009)**	**Iyanda & Ojo (2008)**	**Lester & Tran (2008)**	**Dedrick et al. (2003)**	**Sarosa & Zowghi (2003)**	**Chengalur-Smith & Duchessi (1999)**	**Subramanian & Lacity (1997)**	**Frequency**	**Used for fhis research**
1	Computer Hardware / PC/Server	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**11**	✓
2	Computer Software / OS/ IT Business Apps	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	**10**	✓
3	IT Network Equipment	✓		✓	✓	✓	✓				✓	✓	**7**	✓
4	Internet Connection Services		✓	✓			✓	✓	✓		✓		**6**	✓
5	Telecommunication Equipment			✓	✓		✓		✓	✓			**5**	✓
6	Information System		✓	✓	✓		✓						**4**	✓
The function of C-SHS		To create, produce, analyze, process, package, distribute, receive, retrieve, store, and transform information (Boar,1997; Sarosa & Zowghi, 2003; Bradley & Steward, 2002).												

Source: developed for this research

The first component is *computer hardware*. Computer hardware refers to the physical parts or components of a computer, such as the monitor, mouse, keyboard, computer data storage, hard disk drive, system unit (graphic cards, sound cards, memory, motherboard and chips). Computer hardware system includes, notebooks, desktop, workstation, and server (Chengalur-Smith & Duchessi, 1999; Dedrick, Gurbaxani, Kraemer, 2003; Ghobakhloo, Benitez-Amado, Arias-Aranda, 2011; Iyanda & Ojo, 2008; Knowledge & Lorraine, 2011; Pham & Nguyen, 2012; Ratanapoophun & Lee, 2010; Sarosa & Zowghi, 2003; Tan, Chong, Lin & Eze, 2009; Lester & Tran, 2008). Computer hardware is a fundamental component of any computer system and it is quoted eleven (11) times out of the eleven (11) articles selected as shown in the Table 2.1. Thus, this component is included in the definition for this research.

The second component included in the definition of C-SHS is the *computer software.* Computer software is any set of machine-readable instructions that directs a computer's processor to perform specific operation. In this context, computer software includes the *Operating System (OS)* and all *IT business related applications* (Dedrick et al., 2003, Ghobakhloo et al., 2011; Iyanda & Ojo, 2008; Lester & Tran, 2008; Pham & Nguyen, 2012; Ratanapoophun & Lee, 2010; Sarosa & Zowghi, 2003; Tan et al., 2009) This component has been quoted by ten (10) authors from the synthesization (Table 2.1, row 2). Therefore, this component is included in the definition for this research.

The third component included in the C-SHS is the *IT network equipment.* IT network equipment refers to units which are the last receiver or generate data are called hosts or data terminal equipment. All these terms refer to devices facilitating the use of a

computer network. This component is deemed important and has been included by previous researchers (Chengalur-Smith & Duchessi, 1999; Iyanda & Ojo, 2008; Knowledge & Lorraine, 2011; Pham & Nguyen, 2012; Ratanapoophun & Lee, 2010; Tan et al., 2009). As shown in the synthesization Table 2.1 above, this component also has a relatively high frequency of occurrence. Seven (7) out of the ten (10) articles as shown in the synthesization Table 2.1. As such, this component is part of the family in the C-SHS definition for this research.

Next, the fourth component which used as the definition is the *internet connection services.* IT Network is often associated with the internet connectivity through the telecommunication technology. Internet connection services is a service subscribed by organizations to enable internet connection. Example of the key internet service providers in Malaysia are Telekom Malaysia, Maxis, Celcom, and Digi. Internet connection is a most basic and necessary element for network connectivity. From the literatures point of view, internet connection services has been identified and included as part of the C-SHS definition by several researchers such as Chengalur-Smith and Duchessi (1999), Dedrick et al., 2003, Ghobakhloo et al. (2011), Iyanda and Ojo (2008), and Knowledge and Lorraine (2011). Therefore internet connection services is included as the fourth component in the definition of C-SHS for this research.

The fifth component considered in the construction of definition of C-SHS is *telecommunication equipment.* Telecommunication equipment refers to hardware, such as switches, modems, routers and transmission lines, used for the purposes of telecommunications. This component has been included in the definition by previous studies conducted by Dedrick et al., 2003, Iyanda and Ojo (2008), Knowledge and

Lorraine (2011), Ratanapoophun and Lee, (2012), and Sarosa and Zowghi (2003). From the technical context, this component also serves as an important enabler to internet and network connectivity. Hence, this component is adopted in the family of definition of C-SHS for this research.

The last component which appeared in the literature synthesization Table 2.1 is the *Information System (IS).* An IS is any organized system for the collection, organization, storage and communication of information. More specifically, it is the study of complementary networks in which people and organizations use to collect, filter, process, create and distribute data. To perform these functions, it requires a set of computer hardware that provides the client-server connectivity. Literatures have indicated that IS has been adopted by some authors as part of the components in their studies (Ghobakhloo et al, 2011, Iyanda & Ojo, 2008, Knowledge & Lorraine, 2011 Ratanapoophun & Lee, 2012). Information system has a strong direct connection in this research and as such this component is included in the construction of the definition of C-SHS for this research.

In conclusion, all the six (6) main components discussed above are adopted in the construction of the definition for C-SHS for this research. Therefore, synthesized the above information, the new and the comprehensive definition of C-SHS for the purpose of this research is as follows;

> *An integrated package of computer* ***hardware, software, telecommunication equipment, network connection, and internet services*** *which enable the functions of* ***creating, storing, retrieving, analyzing, distributing, transforming, and manipulating of data.***

2.2 Definition of SME's Business in Malaysia

The previous section had defined the C-SHS for this research. Now, this section discusses the definition of SME's business in Malaysia.

The term SMEs is very subjective and dynamic throughout the world and it cover a wide range of definitions and measurement criteria. These definitions and measurements vary from country to country. Therefore, it is important to define what constitutes a SME's business specifically in the Malaysia context which is adopted for this research.

In Malaysia, SME's businesses are categorized into three (3) categories, that is manufacturing and manufacturing-related services, primary agriculture industry, and services industry including ICT. Two (2) criteria are used to define the SME's business for all economic sectors in the country, which is the *number of employees* and *annual sales turnover*. Effective 1 January 2014, National SME Development Council (NSDC) had announced a new definition of SME's business in Malaysia. The new definition of SME's business is basically to raise, revise or update the thresholds on the criteria based on the existing definition. This new definition is based on the many economy developments in the country since the 2005. The simplified version of new definition of SME's business is as below (NSDC, 2013).

- **Manufacturing**: Sales turnover not exceeding RM50 million OR full-time employees not exceeding 200 workers.
- **Services and other sectors**: Sales turnover not exceeding RM20 million OR full-time employees not exceeding 75 workers.

According to NSDC (2013), a business will be deemed as a SME if it meets either one of the two specified qualifying criteria, whichever is lower. The above new SME's business definition is simplified and summarized in Table 2.2.

Table 2.2
A simplified version of new definition of SME endorsed by NSDC (2013)

Sector	Employees	Sales Turnover
Manufacturing, Manufacturing Related Services and Agro-based Industry	Full time employees < 200	Annual sales turnover < RM 50 million
	OR	
Services, Primary Agriculture, Information and Communication Technology (ICT)	Full time employees < 75	Annual sales turnover < RM 20 million

Despite the availability of the definition on SME's business, there is a noticeable inconsistency of the SME's business definition adopted by various government agencies and organizations in Malaysia (Mohd Harif & Harizal, 2006). This inconsistent definition provided by various government agencies in Malaysia is summarized in Table 2.3 below.

For the purpose of this project, the micro-enterprise category is excluded in this research (Table 2.3, column B,). The reason is, these businesses do not justify the deployment of such a complex computing architecture to serve less than 5 employees in the company. Furthermore, the micro enterprise business also does not have IT expert to manage the system. A basic standalone computer system is sufficient to support the business. In terms of cost factor, it is also not viable and justifiable to spend a lot of money to invest in the C-SHS as the annual turnover of the business is merely less than RM300,000 for micro enterprises. Thus, the scope and definition of

SME's business adopted in this research follow the latest SME's business definition from NSDC as shown in the last column F in Table 2.3 below.

Table 2.3
Definition of SME's business by various government agencies in Malaysia

			A	B	C	D	E	F
			APEC	**CCDSI**	**BNM**	**MITI**	**NSDC**	**Definition of SME for this research**
1	Number of Employee (Full Time)	Small	< 5			<50	<75	< 75
		Medium	< 250			51-75	<200	<200
2	Annual Sales Turnover	Small	< RM3m				< RM20m	< RM20m
		Medium	< RM20m				< RM50m	< RM50m
3	Fixed Asset	Small	< RM3m	< RM250K				
		Medium	< RM15m					
4	Shareholders' Fund	Small			< RM500k			
		Medium			between RM500k & RM2.5m			

Key to Table:
APEC: Asia Pacific Economic Cooperation
CCDSI: Coordinating Council for Development of Small-Scaled Industries.
BNM: Bank Negara Malaysia
MITI: Ministry of International Trade and Industry
NSDC: National SME Development Council

Source: adopted from Mohd Harif & Harizal (2006)

2.3 Underpinning Theory of the Research

Previous sections have provided the definition of C-SHS and SME's business for used in this research. To continue the journey to develop a preliminary theoretical framework for this research, this section reviews and discusses three (3) technology adoption relevant theories or models which will be used to underpin this research. These theories or models served as the underpinning theories for this research in regards to the selection of determinants which under studied and also guided the development of the preliminary theoretical framework.

From the literatures review, there are several technology adoption theories and models available with respect to the ICT research area. Among the three (3) prominent theories and models considered to be the most relevant to the research of technology adoption topics are, i) Technology Acceptance Model (TAM), ii) Diffusion of Innovation Theory (DOI), and iii) Technology, Organization, and Environment framework (TOE). Each of these models is discussed in the following sub-sections.

2.3.1 Technology Acceptance Model (TAM)

Firstly, it is the TAM which is a model originally conceived by Fred Davis in 1986 (Money & Turner, 2004) as shown in the Table 2.4 below.

Table 2.4
Summary of TAM and Revised TAM

Scholors	Constructs	Remarks
Davis et al. (1989)	●Perceived Usefulness (PU) ●Perceived Ease of Use (PEU). ●Behavioral Intention to Use (BIU) ●Actual System Use (ASU) ●Attitude Towards Using (A) ●External Variables	Orignal TAM
Agarwal and Karahanna, (2000)	●Cognitive Absorption ●Product Involvement ●Perceived Enjoyment	Revised TAM
Venkatesh and Davis, (2000)	Social Influence Processes ●Subjective Norm ●Voluntarism ●Images Cognitive Instrumental Processes ●Job Relevance, ●Output Quality, ●Result Demonstrability ●Perceived Ease of Use	Revised TAM
Money and Turner, (2004)	●Perceived Usefulness (PU), ●Perceived Ease of Use (PEU), ●Behavioral Intention to Use (BIU) ●Actual System Use (ASU)	Revised TAM

Source: developed for this research

In the context of ICT adoption related researches, TAM has been reported to be one of the most popular and frequently used theories which acquired significant attention from scholars (Dulcic, Pavlic & Silic, 2012; Nasri & Charfeddine, 2012; Tung, Chang & Chou, 2008).

The primary benefit of using TAM to understand system usage behavior is that it provides a framework to investigate the effects of external variables on system usage (Hong, Thong, Wong & Tam, 2001). TAM was adapted from TRA and developed by Davis et al. in 1989 (Choi & Totten, 2012). Original TAM explains and predicts systems use based on six (6) key constructs or characteristics of innovation, notably perceived usefulness (PU), perceived ease of use (PEU), external variables, attitude towards using the system (A), behavioral intention to use (BIU), and actual system uses (ASU), as shown in the row #1, Table 2.4.

However, subsequently several revisions of TAM have emerged and proposed by, but not limited to, Agarwal and Karahanna's (2000), Venkatesh and Davis's (2000), and Money and Turner's (2004). As displayed in Table 2.4, the revised TAM by Money and Turner (2004) included all constructs from the original TAM except attitude and external variable because "it added little causal explanatory power". Nevertheless, all of the revised TAMs are based on the fundamental of original TAM and thus original TAM is taken as the main underpinning theory for this research.

2.3.2 Diffusion of Innovation Theory (DOI)

The sub-section before this discussed about the TAM as the first underpinning theory which is used for this research. Now, this sub-section discusses on the DOI theory as the second underpinning theory for this research. DOI was developed by Everett E.

Rogers in 1960s. This is another popular and widely used theory for ICT research in the investigation of the behavior of users in adopting new technological innovation (Karahanna, Straub & Chervany, 1999; Tan et al, 2009). Literatures have provided sufficient evidence that DOI is a valid model towards investigating new technological adoption and diffusion in different sectors of economy, including SME's business (Tan et al, 2009). In the context of DOI, 'innovation' is equivalent to 'technology innovation', and usually 'technology innovation' consists of computer hardware and software. Rogers (1983) proposed five (5) important perceived characteristics of innovation used to explain the users' adoption and decision-making process. These five (5) characteristics are relative advantage, compatibility, complexity, trialability and observability, as displayed in Figure 2.3.

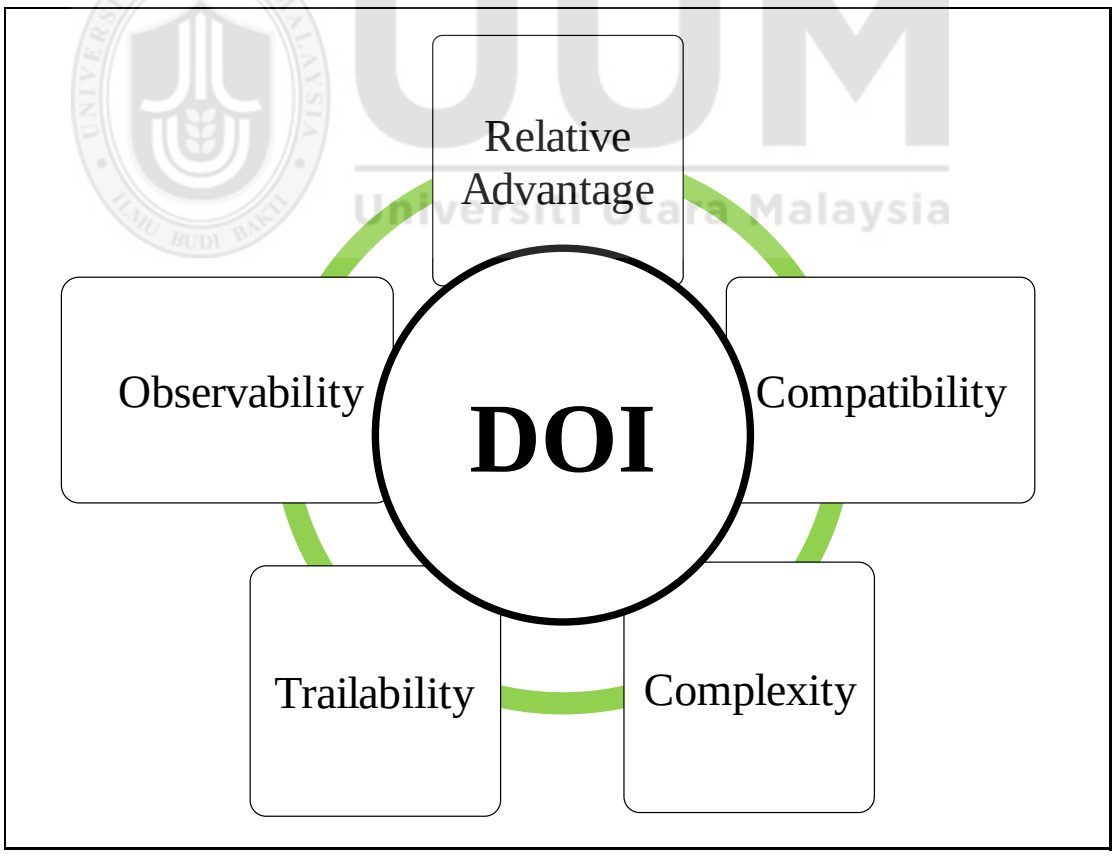


Figure 2.3
DOI Model

Source: developed for this research

In the context of C-SHS in this research, these five (5) characteristics are very much relevant. Therefore, the full DOI theory is used as the second underpinning theory in building a preliminary theoretical framework for this research.

2.3.3 Technology, Organization, and Environment (TOE)

Thus far, two (2) underpinning theories, TAM and DOI, have been discussed. Moving on, this sub-section discusses the third underpinning theory, namely the TOE framework, which was developed for the adoption of technology by Tornatzky and Fleischer in 1990 (Ezer & Kofi, 2014). The TOE framework provides a useful analytical framework that can be used for studying the adoption and assimilation of different types of IT innovation (Oliveira & Martins, 2011). It identifies three (3) important and inter-related aspects of an enterprise's context that influence the technological adoption: *technology context*, *organization context*, and *environment context* as displayed in the diagram below, Figure 2.4

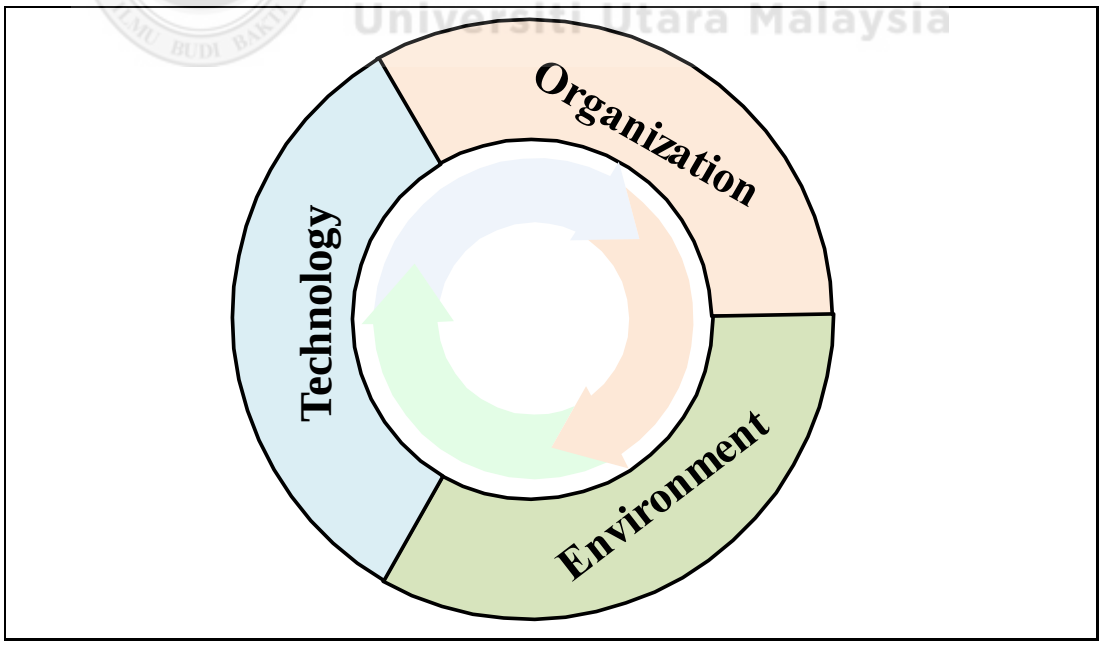


Figure 2.4
TOE Framework

Source: developed based on Tornatzky and Fleischer (1990)

Technology context describes both the internal and external technologies relevant to the firm. This includes current practices and equipment internal to the firm (Starbuck, 1976), as well as the set of available technologies external to the firm (Thompson, 1967; Khandwalla, 1970; Hage, 1980). It also focuses on the characteristics of technologies and infrastructure present such as the number of computers and the technology know-how of the employees. Compatibility with existing systems is also a key determinant in technology innovation (Zhu, Dong, Xu & Kraemer, 2006). The success of technology adoption is influenced by the ability to transfer knowledge across the organization.

Organization context refers to descriptive measures about the organization such as the size of the firm, degree of centralization, and managerial structure, quality of staff and the amount of slack resources available internally. The size of an organization, whether small or large, influences factors for adoption (Saini, Khanna & Kumar, 2012). In addition, Tan (2010) identifies cost, competence, employee resistance and organizational culture as key elements of an organization's technological readiness towards adoption.

Environment context is the arena in which a firm conducts its business such as its industry, competitors, and dealings with the government, regulations and external suppliers (Tornatzky & Fleischer, 1990). Adoption of innovation is higher in emerging industries compared to the established or declining industries (Baker, 2012) since players have to innovate to stay ahead of competition. Governments also directly impact the adoption of technology in SME's business (Das & Das, 2012)

through laws and policies enacted which will either drive or inhibit the adoption of new technology.

From the above discussion, the TOE framework is found to be suitable for this research since (i) it considers the characteristics of C-SHS (technology context), (ii) organizational capabilities of a SME (organization context), and (iii) external environment (environment context) in which SME's business operate. Hence, TOE framework is used as the third underpinning theory in this research.

2.3.4 Synthesization of underpinning theories

The sections above have discussed the three (3) prominent models and theories namely TAM, DOI, and TOE, individually and separately in regards to the understanding of technology adoption in organizations. This section synthesizes these three (3) prominent models and theories to form a foundation to develop a preliminary theoretical framework for this research.

From the discussion above, one can notice that TAM focuses on individual level, whereas DOI emphasizes technology characteristics and both the internal and external characteristics of the organization as drivers for organizational innovativeness. These are identical to the technology and organization context of the TOE framework, but the TOE framework includes a new and important component, which is the environment context. In short, TOE framework encapsulates the determinants or characteristics of the TAM and DOI, and includes the environmental aspect with respect to the adoption of technology in general, and the purchase decision of C-SHS in SME's business in particular in this research.

There are plenty of studies which have been conducted that used either TAM or DOI or TOE individually and separately. Also, there are studies that combined the uses of the TOE framework with DOI (Oliveira & Martins, 2011), TAM and TOE framework (Awa, Ukoha & Emecheta, 2012). But there is no research which has been conducted using the combination of all the three (3) underpinning theories, TAM, DOI and TOE, as discussed previously in the similar research topic. Therefore, this research considers being the pioneer that combined the uses of TOE, DOI and TAM as the underpinning theories to study and develop a preliminary theoretical framework of determinants of purchase decision of C-SHS in SME's business in Malaysia. This concept of combining TAM, DOI, and TOE, is illustrated in the diagram below, Figure 2.5.

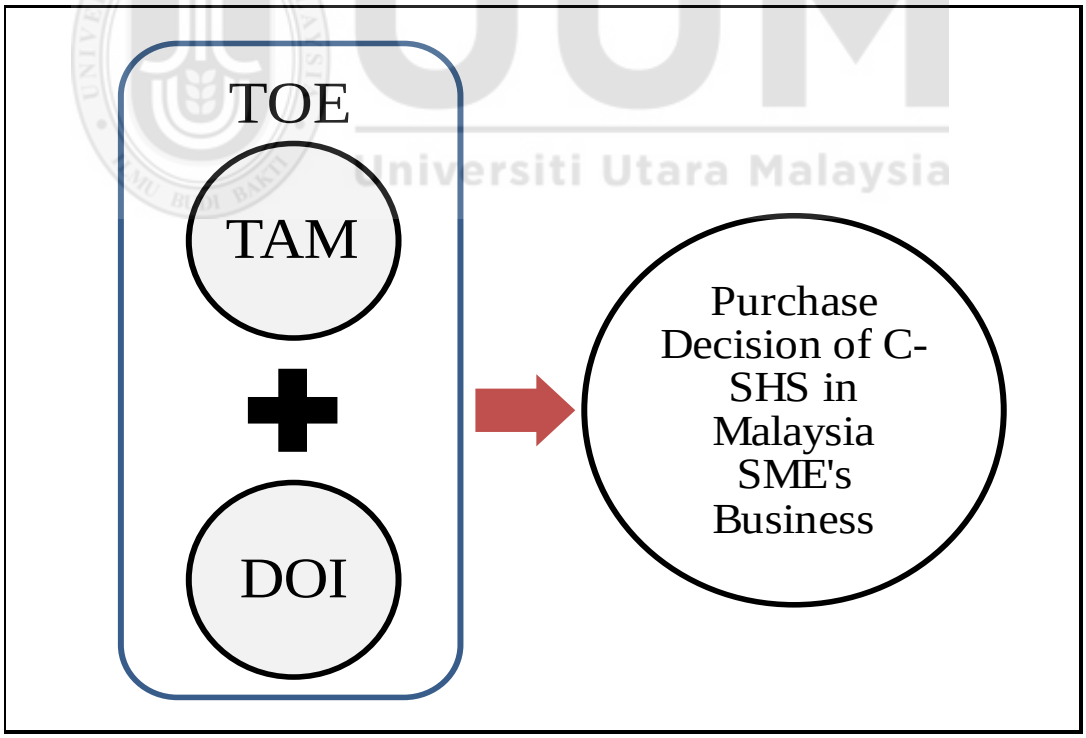


Figure 2.5
The combination of underpinning theories for this research

Source: developed for this research

Building on these three (3) underpinning theories and its associate characteristics discussed earlier, there are in total eleven (11) characteristics of technology adoption or determinants of purchase decision of C-SHS in SME's business which have been identified. These eleven (11) characteristics is listed out in Table 2.5.

Table 2.5
Synthesization of characteristics of purchase decision of C-SHS based on TAM and DOI

		TAM	DOI	
	Characteristics of Technology Adoption or Determinants of Purchase Decision Success of C-SHS in SMEs Businesses	Davis (1989)	Tornatzky & Fleischer (1990)	To be used as base for theoretical framework development in this research
1	Perceived Usefulness	✓		✓
2	Perceived Ease of Use	✓		✓
3	Behavioral Intention to Use	✓		✓
4	Actual System Use/End User IT Skill	✓		✓
5	Attitude	✓		
6	External Variables	✓		
7	Relative Advantage		✓	✓
8	Compatibility		✓	✓
9	Complexity		✓	✓
10	Trialability		✓	✓
11	Observability		✓	✓

Source: developed for this research.

As shown in Table 2.5, the first six (6) characteristics (row 1 to 6) are from TAM, and the remaining five (5) characteristics (row 7 to 11) are from DOI. The last column of Table 2.5, should be given attention as only nine (9) characteristics are considered and used as the base for a preliminary theoretical framework development for this

research. The other two (2) characteristics, attitude and external variable, are not to be taken as the base characteristics under the synthesization of the underpinning theories. The description and justification of each characteristic are as follows.

The first characteristic in the TAM is *perceived usefulness*. Perceived usefulness is defined as "the degree to which a person believes that using a particular system could enhance his or her performance" (Davis, 1989). The second characteristic is *perceived ease of use* which refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). In fact, perceived usefulness and perceived ease of use are the primary determinants of system use (Davis, 1989). Therefore, perceived usefulness and perceived ease of use are kept as the base determinants within the underpinning theories.

The third characteristic captured in TAM is the *behavioral intention to use*. Behavioral intention is the cognitive representation of a person's readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior. Behavior intention indicates how much effort an individual would like to commit to perform such behavior (Punnoose, 2012). In order words, this characteristic refers to the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior. The next characteristic is the *actual system use*. This characteristic refers to the actual usage of the new technology and closely relates to the end user IT skills. Likewise, these two (2) characteristics are very common and popular uses in explaining the technology adoption behavior by the researchers. Hence, behavioral intention to use and the actual system use remained as the base in the synthesization of the underpinning theories.

The fifth characteristic in TAM as displayed in Table 2.5 is *attitud*e. Attitude toward system use is postulated to partially mediate the effect of perceived ease of use and perceived usefulness on behavioral intention. In TAM, attitude plays a mediating role in relation to technology adoption. Furthermore, the role of attitude in explaining behavioral intention or actual adoption behavior is very limited (Venkatesh & Davis, 2000). Due to these reasons, attitude in TAM is dropped from the base list of the determinants for this research.

The sixth characteristic in TAM is *external variables.* This characteristic is too general in the sense that it could cover a wide spread of factors. External variables could encompass economy situation, customer pressure, competitive pressure, government support and etc. Instead, this research is looking for more specific determinants of purchase decision of C-SHS in Malaysia SME's business. Thus, external variables is excluded in this context.

The next batch of five (5) characteristics (row 7 to 11, Table 2.5) is from DOI underpinning theory. The seventh characteristic from Table 2.5 is *relative advantage* and it means that innovation brings greater benefits to users than do other products. The eighth characteristic is *compatibility*. Compatibility refers to the extent to which the value of the innovation, its experience in the past, and users' needs are consistent with each other. The next characteristic from DOI is *complexity* which refers to the degree of difficulty that users have understanding and applying the innovation. The tenth characteristic is trialability. Trialability means how often or how much the innovation can be effectively tested. The last characteristic from DOI or the eleventh characteristic from Table 2.5 is *observability*. This characteristic refers to the extent

to which others can see the innovation (Tung, Chang & Chou, 2008). A wealth of literature has empirically suggested that DOI is a valid tool to investigate and understand the technology adoption in the SME's business. In addition, all these five (5) characteristics in DOI are very specific and directly related to this research topic. Due to these two (2) primary reasons, these five (5) characteristics or determinants are included in the synthesization of the underpinning theories.

As a consequent from the above discussion, nine (9) determinants as shown in the last column of Table 2.5 are kept as the determinant of purchase decision of C-SHS in Malaysia SME's business from the synthesization of underpinning theories. These final nine (9) determinants from the synthesization of the underpinning theories are merged with the determinants from the systhesization of the literatures in Section 2.6.

2.4 Synthesization of Non-Malaysian Literatures on Determinants of Purchase Decision of C-SHS in SME's Business

The previous section has discussed and synthesized the nine (9) determinants of purchase decision of C-SHS in SME's business from the three (3) prominent underpinning theories use for this research (Table 2.5). This section begins to review and synthesize the determinants of the purchase decision of C-SHS in SME's business from the non-Malaysian literatures. The reason to separate the literature review on non-Malaysian and Malaysian context is to engage a more structured approach and also to have a global view prior to narrowing it down to the home country perspective.

In the space of technology adoption, many studies have been conducted on SME's business in developed and developing countries on earth. In the last one and a half

decade, studies were still being conducted by various authors, such as Beheshti (2004), Jeon (2006), Lucchetti and Sterlacchini (2004), Love, Irani and Edwards, (2004), Morikawa (2004), and Ritches and Brindley (2005). In the literatures search exercise, more than 100 articles in relation to this topic have been retrieved and reviewed. After the screening process, the 22 most relevant articles which were published in the referred journal from the year 2000 and up to the year 2014 have been selected. They are tabulated in Table 2.6 below.

Table 2.6
Synthesization of non-Malaysian literatures on the determinants of purchase decision of C-SHS in SME's business

		Authors of the Articles Reviewed on Non Malaysian Literatures																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	Determinants of Purchase Decision of C-SHS in SMEs Businesses	Ezer & Kofi (2014).	Mohammed, Almsafir & Alnaser (2013).	Ramdani, Chevers & Williams (2013).	Irefin, Abdul-Azeez & Tijani (2012).	Kenneth, Rebecca & Ayodo (2012).	Hani & Maha (2012).	Hameed & Counsell (2012).	Lee & Wu (2012).	Fong (2011).	Chinyao, Yahsueh & Mingchang (2011).	Knowledge & Lorraine (2011).	Tran & Hoang (2011).	Ratanapoophun & Lee (2011).	Azam & Quaddus (2009).	Mpofu, Milne & Watkins-Mathys (2009).	Nguyen (2009).	Iyanda & Ojo (2008).	Chong (2006).	Roberts, Steed & Toleman (2006).	Chen (2004).	Windrum & Berranger (2002).	Kendall et al (2001).	**Frequency**	To be considered for this research
1	Top Management Support	✓	✓	✓	✓	✓	✓				✓	✓		✓		✓	✓					✓		**12**	✓
2	Relative Advantage		✓	✓					✓		✓			✓					✓	✓	✓		✓	**9**	✓
3	Resources Availability/Constraint					✓	✓			✓		✓	✓	✓		✓						✓		**8**	✓
4	Competitive Pressure			✓		✓		✓			✓		✓	✓				✓	✓					**8**	✓
5	Owner Characteristics / Behavioral Intention							✓				✓	✓	✓		✓	✓			✓				**7**	✓
6	System Compatibility	✓		✓										✓	✓					✓			✓	**6**	✓
7	End User IT Skill									✓			✓	✓			✓					✓		**5**	✓
8	Vendors Competency & Support	✓							✓				✓				✓					✓		**5**	✓
9	Firm Size			✓	✓						✓			✓						✓				**5**	✓
10	Trialability	✓		✓															✓		✓		✓	**5**	✓
11	Existing IT Infrastructure	✓			✓	✓											✓							**4**	✓
12	Customer Pressure							✓					✓	✓				✓						**4**	✓
13	Trading Partners Pressure						✓	✓			✓							✓						**4**	✓
14	Government Support				✓			✓					✓								✓			**4**	✓
15	Cost of purchase				✓		✓		✓															**3**	✓
16	Obervability			✓											✓				✓					**3**	✓
17	Sysrem Complexity			✓											✓						✓			**3**	✓
18	System Security								✓															**1**	
19	Resistance to new technology	✓																						**1**	
	Total	**6**	**2**	**8**	**5**	**4**	**4**	**5**	**4**	**2**	**5**	**3**	**7**	**9**	**3**	**3**	**5**	**3**	**4**	**4**	**4**	**4**	**3**		**17**

Source: developed for this research

The authors of these 22 articles have conducted their research in the C-SHS related field which suit to the definition of C-SHS in this research and their studies also within the SME's business context outside Malaysia. As shown in Table 2.6, a total of 19 determinants of purchase decision of C-SHS in SME's business have been identified, extracted and synthesized.

The first determinant of the purchase decision of C-SHS among SME's business outside Malaysia context is the *top management support.* This determinant refers to the commitment and support from the upper management which create a positive and supportive climate and environment in pursuing technology adoption (Lin & Lee, 2005; Wang et al., 2010). According to the literature, top management support is importance for the success of purchase and implementing of any ICT system (Hani & Maha, 2012). As shown in Table 2.6, top management support is among the highest reported determinant. This simple statistic implies that top management support is the most crucial determinant towards the adoption of new technology. The authors reported this determinant which has great influence over the adoption and purchase decision of ICT system are Irefin, Abdul-Azeez and Tijani (2012), Chinyao, Yahsueh and Mingchang (2011), Ezer and Kofi (2014), Hani & Maha (2012), Kenneth, Rebecca and Ayodo (2012), Knowledge and Lorraine (2011), Mohammed, Almsafir and Alnase (2013), Mpofu, Milne & Watkins-Mathys, (2009), Nguyen (2009), Ramdani, Chevers and Williams (2013), Ratanapoophun and Lee (2011), and Windrum and Berranger (2002). There are more than half of the articles had demonstrated the significance of this determinant. Therefore it is obvious that top management support in SME's business has major influence on the purchase decision of C-SHS thus this determinant is considered for this research.

The second highest reported influential determinant is the *relative advantage.* Relative advantage is defined as the degree to which a technological factor is perceived as providing greater benefits for firms that the idea it is supersedes (Rogers, 1983). According to Rogers (1995), the greater the perceived relative advantage of a technology, the more rapid its rate of adoption will be. Relative advantage has been

found to be one of the best predictor and is positively related to an innovation's rate of adoption (Tan & Teo, 2000). Furthermore, the similar finding has also been documented by Chen (2004), Chinyao et al. (2011), Chong (2006), Kendall, Tung, Chua, Ng and Tan (2001), Lee and Wu (2012); Mohammed, Almsafir and Alnaser. (2013), Ratanapoophun and Lee (2011), Ramdani et al. (2013), and Roberts, Steel and Toleman (2006). From Table 2.6, this determinant recorded the frequency count of nine (9) or approximately 41% of total articles. In view of this high relative frequency, this determinant is chosen for consideration in this research in Malaysia SME's business.

The third determinant is the *resources availability or constraint.* Resources here are referring to the financial, human, and technology resources such as computers, telephone lines, etc. According to Rashid and Al-Qirim (2001), this determinant plays an important role in the adoption of new technology. The availability of these resources will enhance the purchase decision while the unavailability of these resources will have negative impact on the decision. From the Mohd Harif and Harizal's (2006) study, the lack of working capital in SME's business is found to be the most common weakness in the area of financial management. As such SME's business have limited fund for investment and it is also difficult for them to obtain financing and to secure loans from the banks. From the literatures, many studies have found that resources availability or constraint significantly influenced the purchase decision on C-SHS (Fong, 2011; Hani & Maha, 2012; Kenneth, Rebecca & Ayodo, 2012; Knowledge & Lorraine, 2011; Mpofu et al, 2009; Ratanapoophun & Lee, 2011; Tran & Hoang, 2011; Windrum & Berranger, 2002). Significant evidence has been provided by almost half of the selected articles and authors from these studies also

indicated that resources availability or constraint influenced the purchase decision of C-SHS, and as such, this determinant is considered for further examination in this research.

The fourth important determinant which could determine the purchase decision on C-SHS is the *competitive pressure*. Competitive pressure refers to the level of pressure felt by the firm from competitors within the industry (Chinyao et al., 2011; Hameed & Counsell, 2012). From previous studies in the scope of SME's business, competitive pressure has been found to significantly influence the purchase decision on ICT system (Chinyao et al., 2011; Chong, 2006; Hameed & Counsell, 2012; Iyanda & Ojo, 2008; Kenneth, Rebecca & Ayodo, 2012; Ramdani et al., 2013; Ratanapoophun & Lee, 2011; Tran & Hoang, 2011). This determinant has been confirmed by eight (8) out of the 22 selected articles, which represent around 36% of the total selected articles from the literatures. As such, *competitive pressure* is considered and further investigated in this research.

The next following determinant in Table 2.6 (column 2, row 5) is the *owner characteristic.* From the organizational point of view, owner characteristics play an important role in the making of decisions in IT investment. This determinant is ranked the third from the synthesization of the literature review. Owner characteristics covers a broad spectrum and it refers to owner's behavioral intention, perceived benefits of ICT adoption, such as to improve business efficiency, operation effectiveness, the needs to reach out for new market for opportunity, ICT literacy, level of assertiveness in terms of business decision process, perceived control over requirement for opportunity and resources. Owner's ICT knowledge, qualification and skill also

constitutes owner characteristics. In addition, according to the literatures owner/manager age, experiences and enthusiasm in the adoption of new innovation are also found to have great influence on the purchase decision of ICT system (Hameed & Counsell, 2012; Knowledge & Lorraine, 2011; Mpofu et al, 2009; Nguyen, 2009; Ratanapoophun & Lee, 2011; Roberts, Steel & Toleman, 2006; Tran & Hoang, 2011). Slightly more than one third of the selected articles have found this determinant to be significance, hence, owner characteristic is considered and included in this research within Malaysia SME's business.

Next, the sixth determinant extracted from the non-Malaysian literatures is the *system compatibility*. System compatibility refers to the degree to which the new hardware is perceived as being consistent with existing hardware, file structure, operation, ease of data transfer to other apps, and requirement of users (Robert at el., 2006). The scope of compatibility also includes the extent to which a technology aligns with the firm's needs, including the alignment of a firm's IT strategy with its business strategy (King & Teo, 1996; Walczuch, Van & Lundgren, 2000). Problems could arise if the purchase system encountered compatibility issue with the current system. A number of the managers complained about problems experienced with the software which was not backward compatible, the need to change their systems to match the new software, and being forced to upgrade software when new hardware was purchased (Roberts et al., 2006). These comments or feedback implied the importance of system compatibility in the solution selecting and purchasing of the ICT system by the firm. Several authors have provided evidence that system compatibility positively influenced the purchase decision of ICT system in SME's business (Azam & Quaddus, 2009; Ezer & Kofi, 2014; Kendall et al., 2001; Ramdani et al., 2013; Ratanapoophun

& Lee, 2011; Roberts et al., 2006). Thus, this determinant is considered in this research, in the Malaysia SME's business context.

The seventh determinant is the *end user IT skill*. End user IT skill refers to the IT talent who is capable of handling hardware, software aspect of IT system and has a hybrid knowledge of IS needs and business management strategies for implementing strategic use of IT (Fong, 2011). In order to achieve the expected outcome from any new technology adoption or implementation, people is a critical ingredient. In this context, end user IT skill plays a pivotal role in the success of the project. From the literatures, many studies have indicated the importance of IT talent in influencing the purchase decision on the C-SHS (Fong, 2011; Nguyen, 2009; Ratanapoophun & Lee, 2011; Tran & Hoang, 2011; Windrum & Berranger, 2002). From Table 2.6, approximately 28% of the authors have demonstrated the significance of the end user IT skill as one of the determinant which could determine the purchase decision of C-SHS in SME's business, therefore, this determinant is included in this research in Malaysia SME's business.

The next following influential determinant of purchase decision of C-SHS in SME's business based on the non-Malaysian literatures is the *vendor competency and support*. Vendor competency and support here refers to the IT vendor expertise, after-sales support and services. Also included in the scope of this determinant is the interaction and networking with the vendors that allow firm to exchange, collaborate and share knowledge, information and communication (Nguyen, 2009). According to the literatures, this determinant plays a role in influencing the SME's business owner or manager on the purchase decision of C-SHS (Ezer & Kofi, 2014; Lee & Wu, 2012;

Nguyen, 2009; Tran & Hoang, 2011; Windrum & Berranger, 2002). This determinant is reported in five (5) out of 22 selected articles under the literature review and it is considered for re-examination in this research.

The ninth determinant which could influence the purchase decision on the C-SHS in SME's business is the *firm size*. Firm size is also one of the commonly studied determinants in pertaining to the technology adoption rate in SME's business (Fabiani, Schivard & Trento, 2005; Geroski, 2000; Hall, 2003).The firm size refers to the numbers of employees and annual sales turnover of the business. Multiple empirical studies has indicated a positive correlation between business size and ICT adoption (Chinyao et al., 2011; Irefin et al., 2012; Ramdani et al., 2013; Ratanapoophun & Lee, 2011; Roberts et al., 2006). From the synthesized Table 2.6, the frequency count for firm size is five (5) out of the 22 selected articles. Hence, this determinant is taken for consideration in the next section

Determinant number ten (10) identified from the non-Malaysian literature review is the *trialability*. Trialability refers to the opportunity to try out and experiment on the system on a trial basis before making final decision (Ezer & Kofi, 2014; Rogers, 1983). The ability to try out the innovation and ease of getting out after testing it are important for adopters. Several studies have found that trialability is one of the important significant determinants of purchase decision of ICT (Chen, 2004; Chong, 2006; Ezer & Kofi, 2014; Kendall et al., 2001; Ramdani et al., 2013). From Table 2.6, trialability has the same frequency count as end user IT skill, vendor competency and support, and firm size. Thus, trialability is part of the determinants under studied in this research.

The next determinant from Table 2.6 is the *existing IT infrastructure.* This determinant refers to the existence of common ICT infrastructure, standards and applications in the firm. Literatures have indicated that this determinant could influence the purchase decision of ICT system in the SME's business. Several number of studies had shown that existing IT infrastructure in a firm positively influence the purchase decision on ICT system for SME's business (Ezer & Kofi, 2014; Irefin et al, 2012; Kenneth, Rebecca & Ayodo, 2012; Nguyen, 2009). Close to one fifth of the selected articles have found its positive significance towards the purchase decision of C-SHS in SME's business, thus the topic on existing IT infrastructure is kept for further investigation in this research.

The next determinant from the literature review is the *customer pressure.* Customer pressure refers to the external pressure from customer to adopt a particular innovation. Prior studies had already confirmed that, as small firms are susceptible to the pressure from external customers, these firms adopted IT as a result of demand from customers to increase the efficiency of their inter-organizational communication and transactions (Levy et al, 2003). From Table 2.6, there are four (4) studies reporting the significance of this determinant in determining the purchase decision on C-SHS in SME's business (Hameed & Counsell, 2012; Iyanda & Ojo, 2008; Ratanapoophun & Lee, 2011; Tran & Hoang, 2011). As such, customer pressure is kept as the determinant for further examination in this research in Malaysia SME's business perspective.

The next influencing determinant identified from the non-Malaysian literatures is the *trading partner pressure.* This is the external pressure exerted on the firm from the

trading partner to adopt a particular technology innovation. Trading partners includes IT consultants, vendors and suppliers. According to Chinyao et al. (2011), firms rely on these partners for the IT design and implementation. This determinant has been found to have influencing power to the SME's business in regards to the purchase decision in the IT adoption as reported by a few researchers (Chinyao et al., 2011; Hameed & Counsell, 2012; Hani & Maha, 2012; Iyanda & Ojo, 2008). From the statistic as shown in Table 2.6, four (4) of the selected articles found this is to be a significant determinant. Therefore, trading partner pressure is kept for consideration together with the synthesization of Malaysian literature in the next section.

With reference to Table 2.6, the fourteenth determinant of the purchase decision of C-SHS in SME's business is the *government support.* Government support refers to the government policies and initiatives (Irefin et al., 2012) to promote ICT adoption and use (Hameed & Counsell, 2012). Government policies and initiatives could directly stimulate the development of IT infrastructure and information provision to speed up technology diffusion (Ghobakhloo, Benitez-Amado, & Arias-Aranda, 2011). According to the synthesization of the non-Malaysian literatures, the significant positive relationship could be found between IT adoption and government support (Chen, 2004; Hameed & Counsell, 2012; Irefin et al., 2012; Tran & Hoang, 2011). The frequency count for this determinant is four (4), which is the same count as reported in the other determinant such as existing IT infrastructure, customer pressure, and trading partner pressure. Therefore, government support is included for further investigation in this research.

The next determinant, which is the fifteenth determinant, extracted from the non-Malaysian literatures review which could determine the purchase decision of C-SHS in SME's business is the *cost of purchase* or acquisition cost. Cost of purchase refers to the cost of purchasing computer equipment, establishing a communication network system and internet facility (Irefin et al., 2012). Generally, client-server applications require considerable investment in new operating systems, communication protocols, and hardware components, especially when companies move from mainframe-based legacy applications to the client-server architecture (Smith & Duchessi, 1999). Therefore, cost incurred to acquire ICT system has significant influence in the purchase decision of ICT system in SME's business. Several studies raised the issue on cost concern since the majority of SME's business have limited IT budget (Hani & Maha, 2012). From the non-Malaysian literature, studies have shown that there is a significant relationship between cost of acquisition and purchase decision of the ICT system (Hani & Maha, 2012; Irefin et al., 2012; Lee & Wu, 2012). From the synthesized Table 2.6, approximate 14% of selected articles have provided evidence of the significance of this determinant on the purchase decision of C-SHS in SME's business and as such cost of purchase is further examined in this research.

The number sixteenth determinant of purchase decision on C-SHS within SME's business is the *observability.* Observability refers to the degree of visibility of the new innovation results. In other words, it is the demonstrability result (Slyke, Belanger & Sridhar, 2004). The ability to see the results of new system implementations is important to the decision maker. Past researches had shown that observability greatly determines the purchase decision on the IT system (Hashim, 2007; Tan et al, 2009). From the statistic shown in Table 2.6 (row 16, second last 2

column), there are three (3) studies which have found the significance of this determinant with respect to the purchase decision of C-SHS in SME's business (Azam & Quaddus, 2009; Chong, 2006; Ramdani et al, 2013). With that observability is included in this research in Malaysia SME's business context.

Next, the seventeenth determinant is the system *complexity*. System complexity is the degree of difficulty that users have in understanding and applying the innovation (Tan et al., 2009; Tung, et al, 2008). Systems that are perceived to be easier to use and less complex have a higher likelihood of being accepted and used by potential users (Agarwal & Prasad, 1998). According to Akbulut (2002), system complexity of a technology has a major effect on the adoption decision. From the literature review, many studies have found that system complexity significantly determines the purchase decision of new technology by SME's business owners (Azam & Quaddus, 2009; Chen, 2004; Ramdani et al, 2013). Therefore, this determinant is included in this research.

The last two (2) determinants extracted from the non-Malaysian literatures which could determine the purchase decision of C-SHS are the *system security* and *resistance to new technology* (Table 2.6, row18-19). These two (2) determinants recorded the lowest frequency count of only one (1).

System security refers to information security and privacy, management control, and agility and adaptability. However, only one (1) author, out of the total 22 selected studies, had found that system security is of significance in determining the purchase

decision of C-SHS in SME's business (Lee & Wu, 2012). Hence system security is excluded in this research.

The next lowest frequency count determinant is the r*esistance to new technology.* This determinant refers to the resistance from the employees to adopt the new technology or system. The study conducted by Ezer and Kofi (2014) suggests that this determinant has significant influence on the adoption of new technology. According to Minguzzi and Passaro (2001), resistance to change is associated to the culture of the firm. However, study of culture is out of the scope in this research. Furthermore, as resistance to change has the lowest frequency counts, therefore this determinant is discarded from this research.

To recapitulate, a total seventeen (17) determinants (Table 2.6, last column) of the purchase decision of C-SHS in SME's business have been identified and justified from the 22 selected articles from the Non-Malaysian literatures. These seventeen (17) determinants are carried forward to the synthesization of the Malaysian literatures. The integration of the literatures from the Non-Malaysian and Malaysian perspectives is presented in Table 2.7 in the next following section, Section 2.5.

2.5 Synthesization of Malaysian Literatures on Determinants of Purchase Decision of C-SHS in SME's Business

The previous section had summarized the determinants of purchase decision of C-SHS in SME's business from the perspective of non-Malaysian literatures. From the global views, this section focuses on the local views by further narrowing the synthesization of the determinants of purchase decision of C-SHS in SME's business

bases on the Malaysian literatures. It also compares and highlights the determinants against the determinants revealed in non-Malaysian literatures as presented in Section 2.4.

A similar approach of conducting non-Malaysian literature review has been adopted in this literatures review exercise. From the literature review, only limited studies of the determinants of the purchase decision of C-SHS can be found in the Malaysia SME's business context. In relative, the research of purchase decision of C-SHS in Malaysia SME's business is fewer than those in the non-Malaysian context. Twelve (12) main articles which were published in the referred journal from the year 2000 and beyond, have been selected. The authors of these twelve (12) articles have conducted their research in C-SHS related area which suits the definition of C-SHS used for this research and also in SME's business in Malaysia. The summary of this literature synthesization is presented in Table 2.7 below. There are in total 24 determinants of purchase decision of the C-SHS in Malaysia SME's business, which is inclusive of the 17 determinants carried forward from the synthesization of Non-Malaysian literatures review as shown in Table 2.7.

Table 2.7
Synthesization of Malaysian literatures on the determinants of purchase decision of C-SHS in SME's business

			Authors of the Articles Reviewed on Malaysian Literatures													
			1	2	3	4	5	6	7	8	9	10	11	12		
	Determinants of Purchase Decision of C-SHS in SMEs Businesses	From Non-Malaysian Literatures (Table 2.6)	Poorangi et al (2013).	Abdullah, Shamsuddin, Wahab & Hamid (2012).	Ghobakhloo, Sabouri, Tang, & Zulkifli (2011).	Chee, Phua, Adeline, Siti & Cheng (2011).	Murad & Thomson (2011).	Chong, Ooi, Lin & Tang (2009).	Tan, Chong, Lin & Eze (2009).	Saleh & Burgess (2009).	Alam & Mohammad Noor (2009).	Hashim (2007).	Ramayah, Lim & Sulaiman (2006).	Hussein & Noor (2005).	**Frequency**	**Use for this research**
1	Top Management Support	✓			✓								✓	✓	**4**	✓
2	Resources Availability/Constraint	✓			✓					✓					**3**	✓
3	Owner Characteristics	✓		✓	✓	✓									**4**	✓
4	Competitive Pressure	✓			✓		✓								**3**	✓
5	End User IT Skill	✓		✓	✓					✓	✓	✓			**6**	✓
6	Vendors Competency & Support	✓			✓										**2**	✓
7	Relative Advantage	✓	✓		✓				✓		✓	✓		✓	**7**	✓
8	Existing IT Infrastructure	✓			✓								✓		**3**	✓
9	Customer Pressure	✓			✓		✓								**3**	✓
10	Firm Size_N	✓													**1**	
11	Trading Partners Pressure_N	✓													**1**	
12	Government Support	✓		✓	✓						✓				**4**	✓
13	IT System Compatibility	✓			✓				✓			✓			**4**	✓
14	Cost of purchase	✓			✓					✓					**3**	✓
15	Trialability	✓	✓												**2**	✓
16	System Complexity	✓			✓				✓			✓		✓	**5**	✓
17	Observability	✓	✓						✓			✓		✓	**5**	✓
18	Perceived Usefulness_M				✓	✓									**2**	✓
19	Perceived Ease of Use_M				✓	✓									**2**	✓
20	Economy Situation_M						✓								**1**	
21	IT Solution Availability_M				✓										**1**	
22	Inter-organizational Communication_M							✓							**1**	
23	Inter-organizational Collaboration_M							✓							**1**	
24	Inter-organizational Information Sharing_M							✓							**1**	
	Total	**17**	**3**	**3**	**16**	**3**	**3**	**3**	**4**	**3**	**3**	**5**	**2**	**4**		**17**

Source: developed for this research

Four (4) highlights can be drawn from Table 2.7. These highlights are shown in Table 2.8.

Table 2.8
Highlights and comparison of determinants between Malaysian and Non Malaysian Literatures

HL 1	**Common Determinants Found in Malaysian & Non-Malaysian Literatures** HL 2	
	1. End User IT Skill 2. Owner Characteristics 3. Relative Advantage 4. IT System Compatibility 5. Top Management Support 6. Government Support 7. Competitive Pressure 8. Resources Availability/Constraint	9 Trialability 10. Cost of purchase 11. Customer Pressure 12. Existing IT Infrastructure 13. Vendors Competency & Support 14. System Complexity 15. Observability
	Determinants Found in Malaysian Literatures HL 3	**Determinants Found in Non-Malaysian Literature** HL 4
	1. Perceived Usefulness_M 2. Perceived Ease of Use_M 3. Economy Situation_M 4. Inter-organizational Communication_M 5. Inter-organizational Collaboration_M 6. Inter-organizational Information Sharing_M 7. IT Solution Availability_M	1. Trading Partners Pressure_N 2. Firm Size _N

Source: developed for this research

In the first highlight, 22 determinants of purchase decision of the C-SHS in SME's business are identified from the twelve (12) selected articles from the Malaysian literatures. In the second highlight, fifteen (15) determinants of purchase decision of the C-SHS in SME's business are found to be common in both Malaysian and non-Malaysian literatures. In the third highlight, there are seven (7) determinants which are found only to be in Malaysian literatures and these determinants are indicated by the suffix _M. In the fourth highlight from Table 2.7, there are two (2) determinants (column 2, row 10 and 11) which are found to be only in the Non-Malaysian

literatures but not in the Malaysian literature. These two (2) determinants are firm size and trading partner pressure as indicated by the suffix _N.

The determinant found in both Malaysian and Non-Malaysian literatures imply and reaffirm each other that these determinants are significant and important to determine the purchase decision of C-SHS in SME's business. Therefore, undoubtedly all these fifteen (15) common determinants are included in this research. However, for the two (2) determinants, *Firm Size_N* and *Trading Partner Pressure_N*, which not reported in the Malaysian literatures, this suggest that these two (2) determinants are neither critical nor of significance to the Malaysia SME's business context. As such both firm size and trading partner pressure are excluded from this research.

Moving on, this section continue the discussion on the seven (7) determinants freshly extracted from the Malaysian literatures only. The first two (2) fresh determinants of purchase decision of C-SHS in SME's business in Malaysia are the perceiv*ed usefulness* and *perceived ease of use.* Perceived usefulness refers to the perceived benefits of the system to the firm, and perceived ease of use is perceived easiness of learning and use of the system (Davis, 1989). These two (2) determinants had been widely studied by various researchers and the findings of these studies confirmed its significance and impact in terms of the purchase decision of SME's business owners in Malaysia (Chee, Phua, Adeline, Siti & Cheng, 2011; Ghobakhloo et al., 2011). These two (2) determinants have been quoted two (2) times each out of twelve (12) selected articles (Table 2.7, second last column, row 18-19). Hence, *perceived usefulness* and *perceived ease of use* are included in this research.

From Table 2.7, there are five (5) determinants listed at the very bottom. These determinants are the least quoted determinants from the selected articles within the Malaysian literatures each with the frequency count of equal to one (1). The first determinant is *economy situation_M*. Economy situation is an external environment factor which refers to the market dynamics in domestic and global environment. Studies have been conducted to determine the influence of economy situation on the purchase decision in Malaysia SME's business. As reported by Murad and Thomson (2011), economy situation is found to be the determinant of purchase decision to the new IT system or technology into SME's business operation. However, this determinant is dropped in this research because it has the lowest frequency count of equal to one (1).

The next determinant with the frequency count which is equal to one (1) which could influence the purchase decision of C-SHS in Malaysia SME's business is the *IT solution availability*. This determinant simply refers to the availability of quality IT solution in the market. Studies were found that this determinant significantly determine the purchase decision of C-SHS in SME's business in Malaysia (Abdullah, Shamsuddin, Wahab & Hamid, 2012). In spite of this finding, this determinant is not included in this research as the IT solution to SME's business is abundantly available and the issue of lacking of IT solution does not arise.

The last three (3) determinants with the frequency count which is equal to one (1) which could determine the purchase decision of C-SHS purchase are associated to the inter-organization perspective. There are three (3) dimensions under inter-organization perspective, namely communication, collaboration, and information

sharing. Inter-organizational communication is the ability to transmit accurate, relevant, and understandable information, openly and promptly (Icasati-Johanson and Fleck, 2003). Inter-organizational collaboration is the degree of frequency of collaboration work performed by supply chain partners to meet the diverse demands of their serving market. That inter-organizational collaboration includes contact and interaction, overlapping boards and councils, join programs and written agreements between trading partners (Granot, 1997). Inter-organizational information sharing is the free sharing of information for the success of the organization (Icasati-Johanson & Fleck, 2003). It is aims to avoid delay times, distorted demand signals and poor visibility of exceptional conditions which results in critical information gaps and serious challenges for the supply chain managers (Rubiano & Crespo, 2003). These three (3) determinants are excluded in this research due to the fact that these determinants are the least important in regards to the influence of purchase decision of C-SHS in Malaysia SME's business as indicated by their frequency count which is equal to one (1).

To recapitulate, by integrating the synthesization of the literatures from both Non-Malaysian and Malaysian perspective, a total 17 determinants (Table 2.7, last column) of purchase decision of C-SHS in Malaysia SME's business have been justified and finalized. These 17 determinants from the synthesization of non-Malaysian and Malaysian literatures are merged with the determinants from the underpinning theories as shown in Table 2.5 under subsection 2.3.4. The merging of these two (2) sets of determinants of purchase decision of C-SHS in Malaysia SME's business will be discussed in the next following section. The outcome of the merging of the two (2)

sets of determinants are used for development of a preliminary theoretical framework for this research in Section 2.7.

2.6 Merging of Determinants from the Underpinning Theories and the Synthesization of Literatures

The preceding sections have derived two (2) sets of determinants of purchase decision of C-SHS in SME's business Malaysia based on the synthesization of literatures from non-Malaysian (Section 2.4) and Malaysian perspectives (Section 2.5), and also from the synthesization of underpinning theories (Section 2.3.4). To consolidate, this section merges these two (2) sets of determinants as shown in Figure 2.6 and serves as the solid evidence and basis to develop a preliminary theoretical framework for this research.

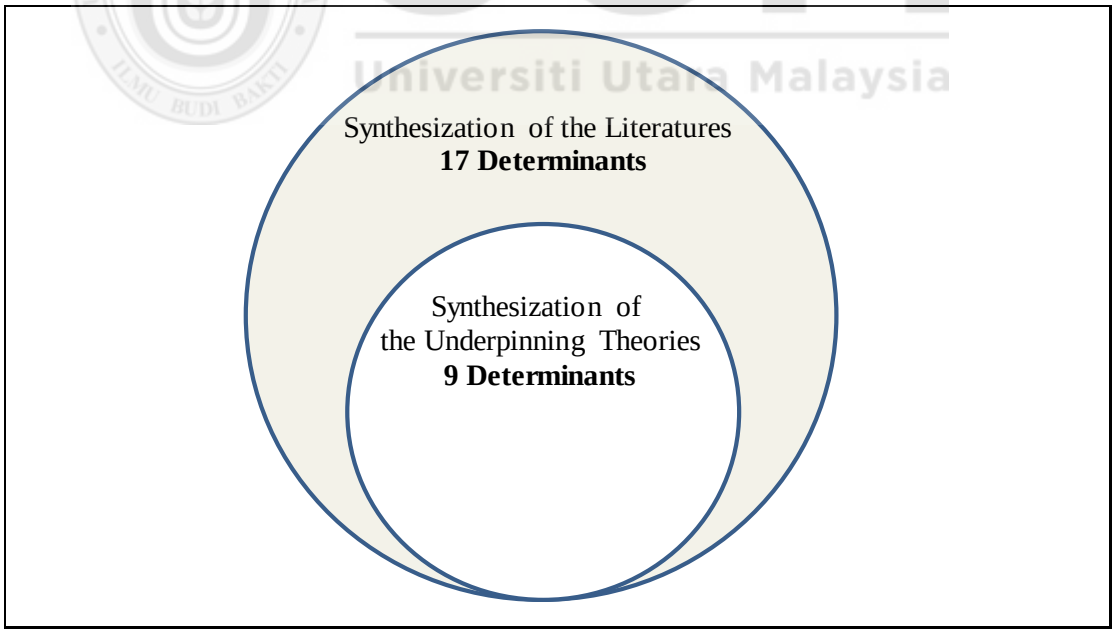


Figure 2.6
Relationship between the two sets of determinants from the synthesization of literatures and the underpinning theories

Source: developed for this research

From Table 2.5 and Table 2.7, there are in total nine (9) determinants of purchase decision of C-SHS in SME's business from the synthesization of the underpinning theories served as a base, and a total of seventeen (17) determinants of purchase decision of C-SHS in SME's business Malaysia from the synthesization of the literatures respectively. At the first glance, the nine (9) determinants from the synthesization of the underpinning theories are subset of the 17 determinants from the synthesization of literature. The relationship between these two (2) sets of determinants is represented by the diagram in Figure 2.6 above. To zoom in on the individual determinants of each set, a one-to-one matching is performed and displayed in Figure 2.7 below.

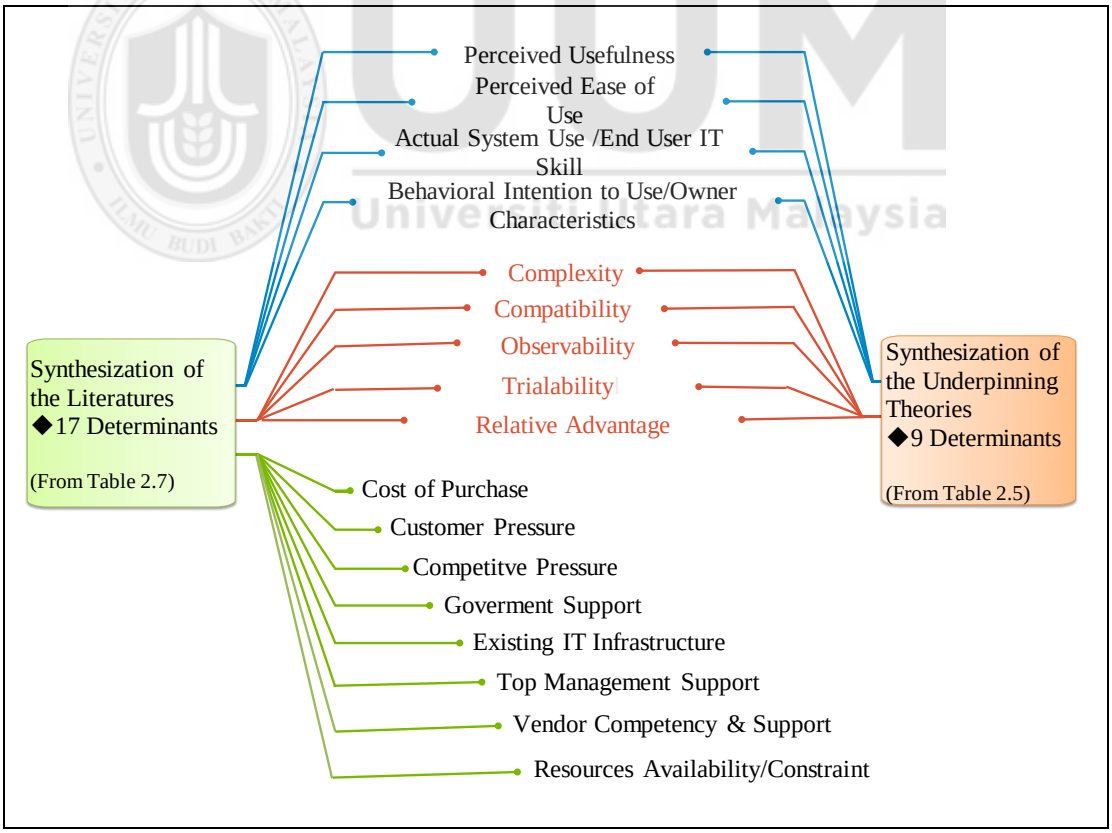


Figure 2.7
Merging of determinants from the literature synthesization and the underpinning theories

Source: developed for this research

The first four (4) determinants of purchase decision of C-SHS in SME's business in Malaysia which appears on the top of the diagram in Figure 2.7 are from TAM. They are perceived usefulness, perceived ease of use, actual system use, and behavioral intention to use. The next five (5) determinants on the same diagram are from DOI, namely complexity, compatibility, observability, trialability, and relative advantage. The remaining 8 determinants of purchase decision of C-SHS in SME's business in Malaysia are cost of purchase, customer pressure, competitive pressure, government support, top management support, existing IT infrastructure, vendor competency and support, and resources availability/constraint. These eight (8) determinants are the additional determinants outside the underpinning theories. In summary, these are the final 17 determinants of purchase decision of C-SHS in Malaysia SME's business which used to construct a preliminary theoretical framework for this research.

2.7 Preliminary Theoretical Framework

Thus far, the discussions have been done on the development of definition for C-SHS (Section 2.1) and SMEs (Section 2.2) for this research, reviewing and integration the three (3) technology-related prominent theories and models to underpin this research (Section 2.3), synthesization of the determinants of purchase decision of C-SHS in SME's business from the literatures from Non-Malaysian (Section 2.4) and Malaysian (Section 2.5) context, and lastly on the merger of the two (2) sets of determinants from the synthesization of the underpinning theories and synthesization of the literatures (Section 2.6). All the discussions above had provided a solid foundation and support to develop a preliminary theoretical framework for this research. The following section discusses the process and formation of a preliminary theoretical framework for this research as illustrated in the diagram below, Figure 2.8.

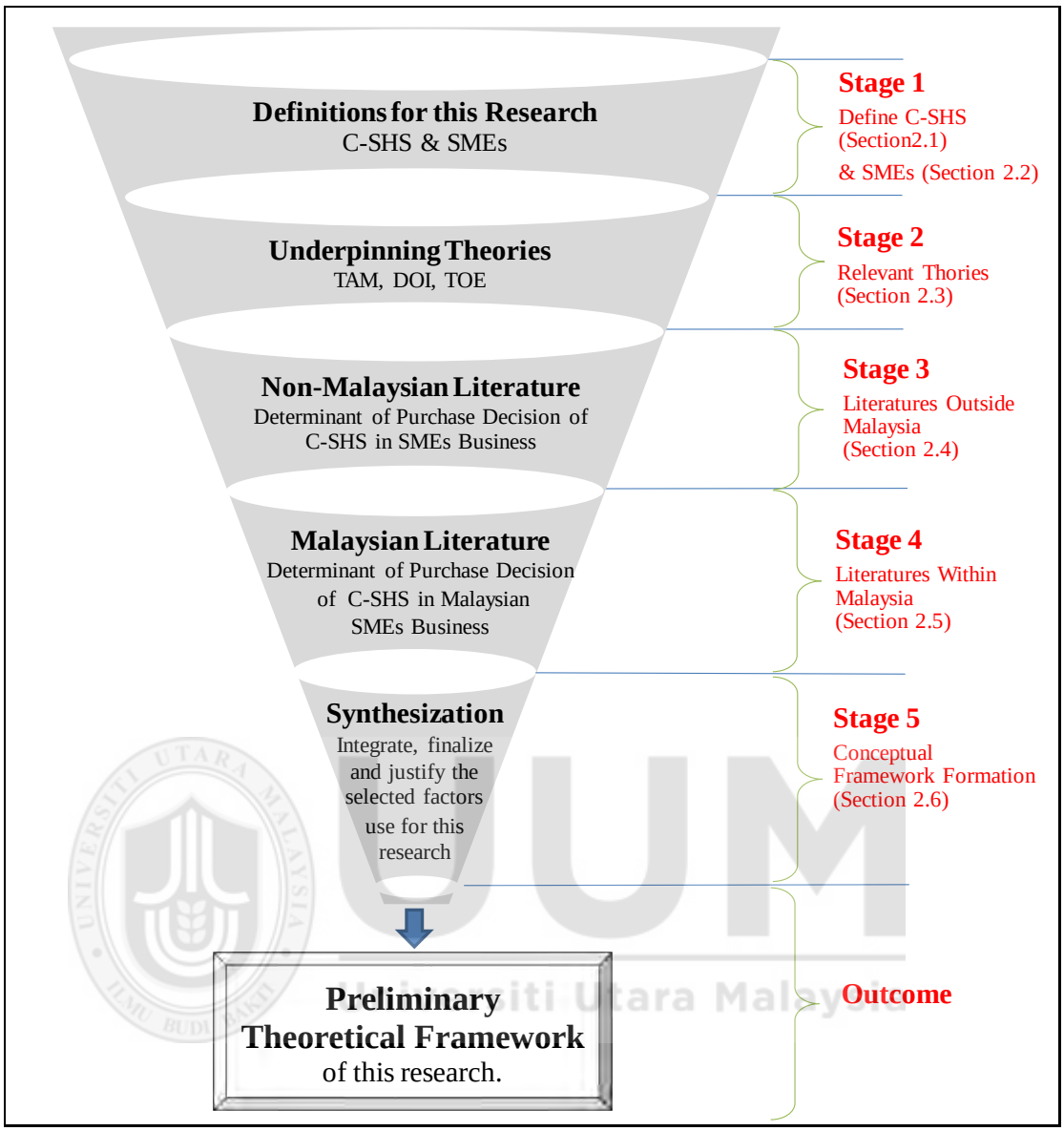


Figure 2.8

The approach of development of the theoretical framework for this research

Source: developed for this research

From the above diagram, the approach of the development of a preliminary theoretical framework for this research is a funnel-like process and consists of five (5) stages. Stage 1 defines the C-SHS and SMEs for the uses of this research. Stage 2 reviews and synthesizes technology adoption related theories and models to serve as the underpinning theory for this research. Stage 3 and 4 synthesizes the literature review on Non-Malaysian and Malaysian perspectives respectively in regards to the

determinants of purchase decision of C-SHS in SME's business. The last stage consolidates the selection of the determinants from the previous stages. The output of this approach is a preliminary theoretical framework of purchase decision of C-SHS in Malaysia SME's business of this research.

For the purpose of this research, all the 17 determinants of purchase decision of C-SHS in SME's business as displayed in Figure 2.7 are categorized into three (3) main aspects according to the TOE framework. As a consequent of this categorization, a preliminary theoretical framework for this research is therefore developed as shown in Figure 2.9 below.

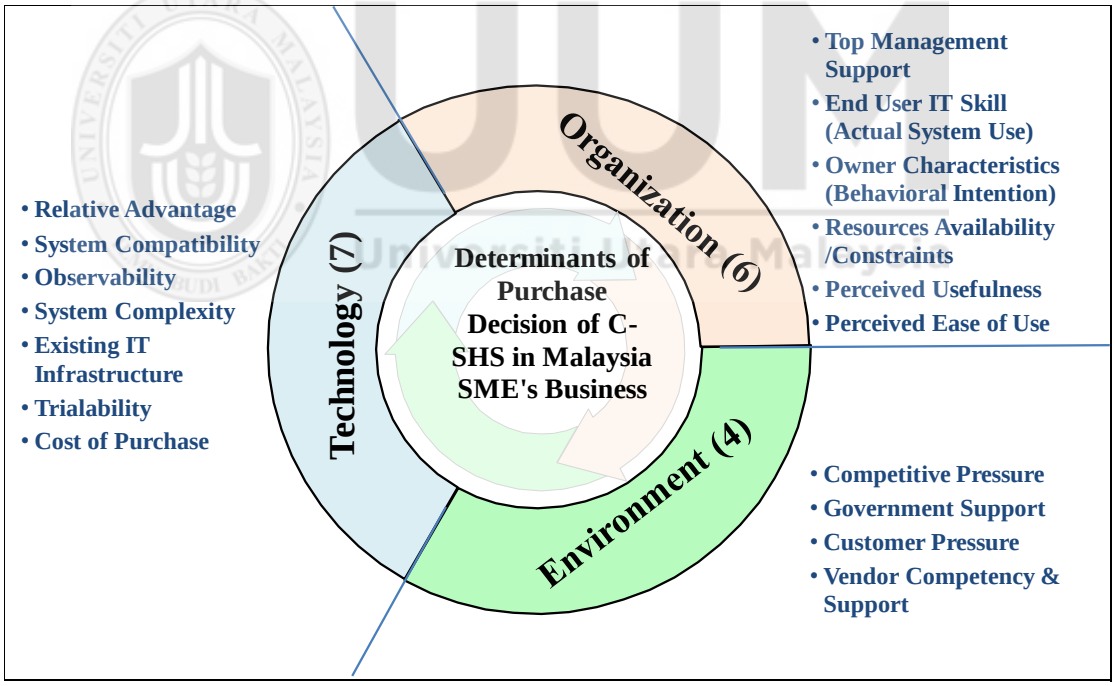


Figure 2.9
Preliminary theoretical framework developed for this research

Source: developed for this research

As shown in Figure 2.9, the technology aspect captures the seven (7) determinants that are relative advantage, system compatibility, existing IT infrastructure, system

complexity, trialability, observability, and cost of purchase. In the organization aspect, it contains the six (6) determinants that are owner characteristics or behavioral intention, end user IT skill or actual system use, top management support, resources availability/constraints, perceived usefulness, and perceived ease of use. The third aspect environment consists of the four (4) determinants. These determinants are government support, competitive pressure, customer pressure, and vendor competency and support.

Up to this point, a preliminary theoretical framework for this research has been successfully developed. The next following section discusses the three (3) issues pertaining to this research with respect to this preliminary theoretical framework.

2.8 Research Issues

The section above presented the preliminary theoretical framework on the determinants of purchase decision of C-SHS in Malaysia SME's business for this research. To further investigate and understand this framework, this section discusses the three (3) research issues for this research as shown in Table 2.9.

Table 2.9
Research issues of this research

No	Research Issues
1	What are the technological determinants of purchase decision of C-SHS in SME's business in Malaysia?
2	What are the organizational determinants of purchase decision of C-SHS in SME's business in Malaysia?
3	What are the environmental determinants of purchase decision of C-SHS in SME's business in Malaysia?

Source: developed for this research

2.8.1 Research issue 1: Technological determinants of purchase decision of C-SHS in SME's business in Malaysia

From the synthesization of the available Malaysian and non-Malaysian literatures as discussed in the previous sections, there are seven (7) technological determinants which could determine the purchase decision of C-SHS in SME's business in Malaysia as displayed in Figure 2.10 below.

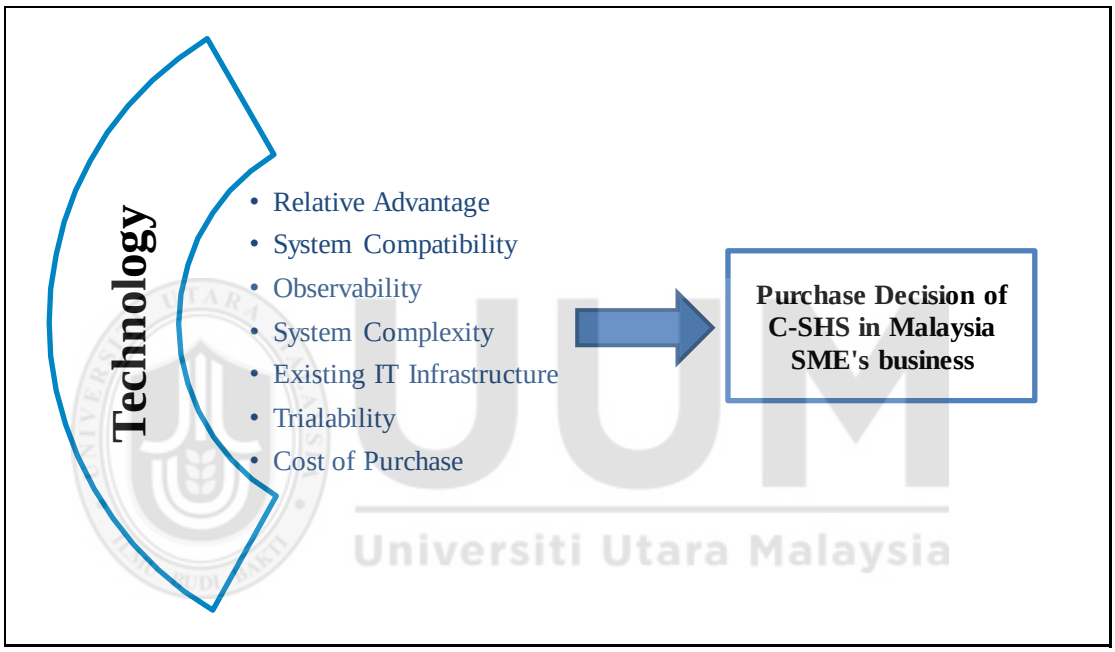


Figure 2.10
Technological determinants of purchase decision of C-SHS in SME's business in Malaysia

Source: developed for this research

The seven (7) technological determinants displayed in Figure 2.10 are relative advantage, system compatibility, existing IT infrastructure, system complexity, trialability, observability, and cost of purchase. Hence, it is proposed that the first research issue to be discussed in great length as follows;

What are the technological determinants of purchase decision of C-SHS in SME's business in Malaysia?

2.8.2 Research issue 2: Organizational determinants of purchase decision of C-SHS in SME's business in Malaysia

From the synthesization of the available Malaysian and non-Malaysian literatures as discussed in the previous sections, there are six (6) organizational determinants which could determine the purchase decision of C-SHS in SME's business in Malaysia as displayed in Figure 2.11 below.

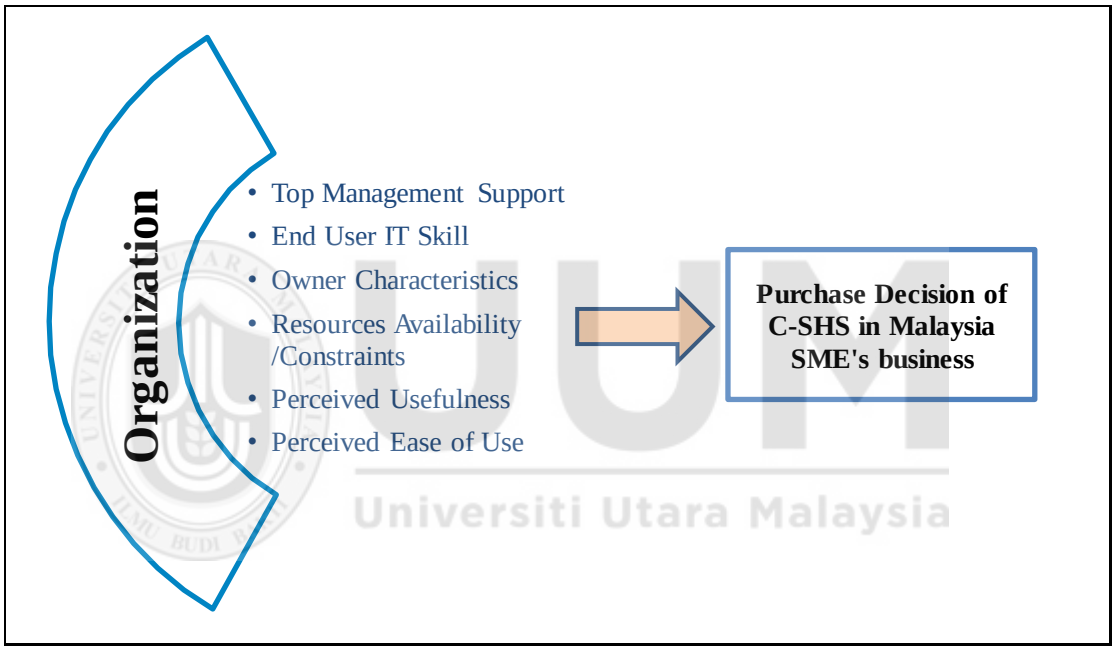


Figure 2.11
Organizational determinant of purchase decision of C-SHS in Malaysia SME's business

Source: developed for this research

The six (6) organizational determinants displayed in Figure 2.11 are owner characteristics, end user IT skill, top management support, resources availability/constraints, perceived usefulness, and perceived ease of use. As such, it is proposed that the second research issue to be discussed in great length as follows;

What are the organizational determinants of purchase decision of C-SHS in SME's business in Malaysia?

2.8.3 Research issue 3: Environmental determinants of purchase decision of C-SHS in SME's business in Malaysia

According to the synthesization of the available literatures from Malaysian and non-Malaysian perspective as discussed in the previous sections, there are four (4) environmental determinants which could determine the purchase decision of C-SHS in SME's business in Malaysia as shown in Figure 2.12 below.

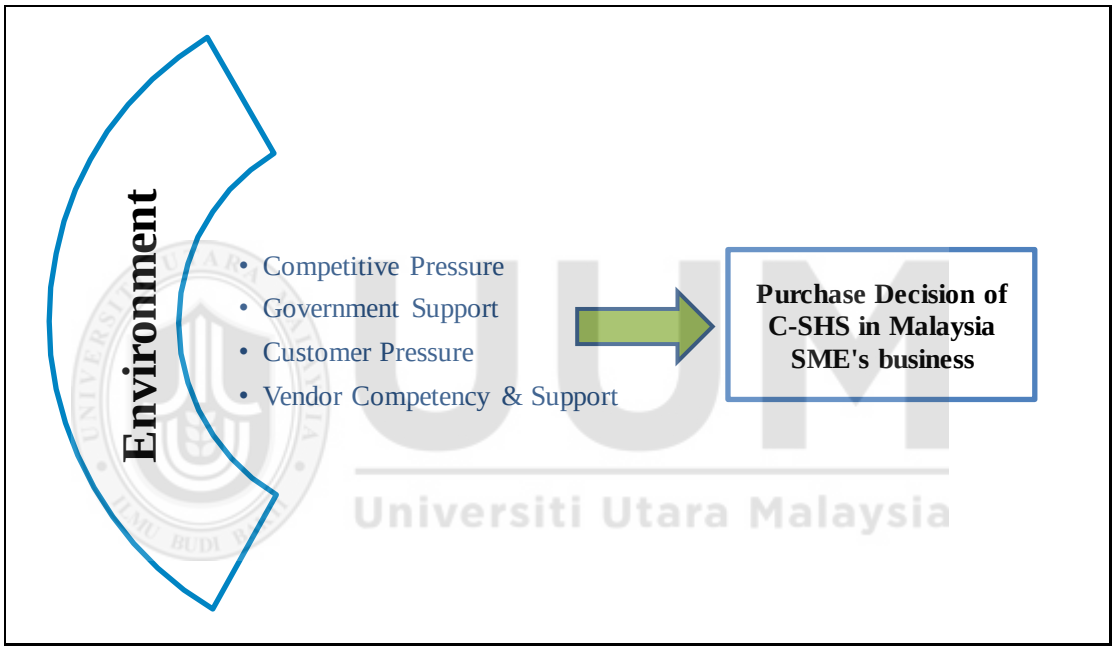


Figure 2.12
Environmental determinants of purchase decision of C-SHS in SME's business in Malaysia

Source: developed for this research

These four (4) environmental determinants are government support, competitive pressure, customer pressure, and vendor competency and support. Hence, it is proposed that the third research issue to be discussed in great length as follows;

What are the environmental determinants of purchase decision of C-SHS in SME's business in Malaysia?

2.9 Summary

From the literature review exercise, it was revealed that plenty studies had been conducted to examine the factors which determine the purchase decision or adoption of ICT in the SME's business sector around the world. From the literatures, a long list of factors, which could determine the purchase decision and adoption of ICT, have been identified and reported by many authors in their studies. However, in spite of all these researches which had been carried out to study, understand, examine, and establish the relationship between the determinants and purchase decision of ICT, there is still very little attention and research specifically on the C-SHS which focuses on the SME's business in Malaysia. This represents a gap in the body of knowledge in the SMEs industry, especially in view of the significant contributions of SME's business to the nation economy growth.

In this chapter, the definition of two (2) main paradigms, that is i) C-SHS and ii) SMEs for the purpose of this research have been constructed and finalized. Three (3) underpinning theories have been reviewed, discussed, and integrated with respect to this research. This research is considered as being the first to combine TAM, DOI and TOE framework to study the purchase decision of C-SHS in SME's business in Malaysia. Asides from this, 17 determinants which could determine the purchase decision of C-SHS in Malaysia SME's business have been identified and finalized through the synthesization of the literation from both the Non-Malaysian and Malaysian perspective. Subsequently, the determinants from the synthesization of the literatures also merged with the determinants from the synthesization of the underpinning theories. The merging of the two (2) sets of determinants of purchase decision of C-SHS in Malaysia SME's business has provided a solid foundation to

develop a preliminary theoretical framework development for this research. The preliminary theoretical framework developed for this research comprises three (3) aspects in according to the TOE framework and it encapsulates the 17 determinants of purchase decision of C-SHS in SME's business in Malaysia. Each aspect of the preliminary theoretical framework contains the relevant determinants of purchase decision of C-SHS in Malaysia SME's business. Three (3) research issues have been derived to further investigate and understand the problem under investigation in this research.

With the above discussion and under present circumstances, it is therefore important and justified for this research be conducted to explore and discover the determinants of purchase decision of C-SHS in SME's business in Malaysia so as to improve their operation efficiency and enhance the business competitiveness in the global environment. From the point of view of ICT hardware and solution providers, the findings from this research provided a deeper insight into what determines the purchase decision of C-SHS by SME's business owners. By knowing this information and knowledge in this aspect, suppliers and the ICT hardware and solution providers can make the necessary business changes and marketing approach to increase their market share and improve their sales performance.

In summary, based on the literature review conducted, this research is deemed appropriate and in a timely manner. Moreover, this research is also in alignment to the nation's agenda and the Government's effort to promote the growth and contribution of SME's business to the economy in Malaysia.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

Chapter 2 had laid the foundation and support about the topic of this research through the review of the current literatures and developed a theoretical framework for this research in pertaining to the determinants of purchase decision of C-SHS in SME's business in Malaysia. Now, Chapter 3 describes how this research was carried out to explore, discover the determinants and to address the research issues within the context of the preliminary theoretical framework developed in Chapter 2. In general, this chapter consists of seven (7) main sections as shown in the flow chart below, Figure 3.1.

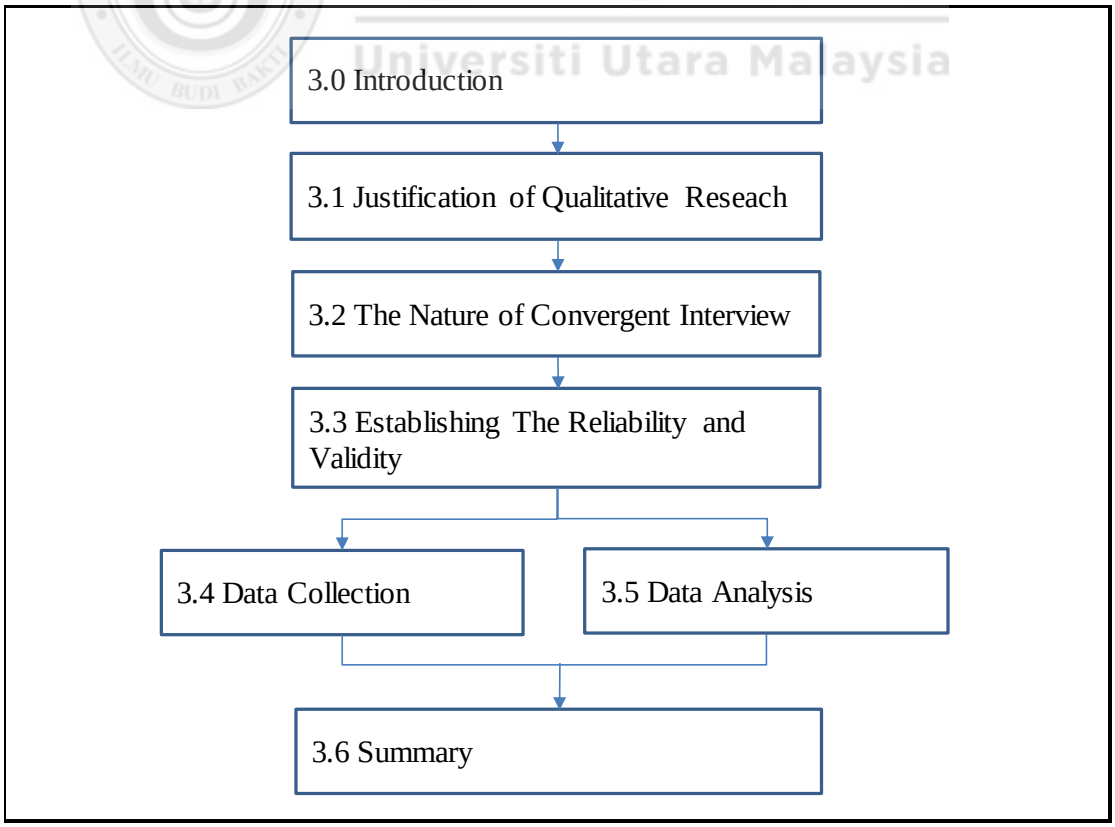


Figure 3.1

The organization and flow of Chapter 3

Source: developed for this research

Section 3.0 provides the general introduction of this chapter. Section 3.1 justifies the uses of the qualitative approach for this research. Section 3.2 describes and justifies the adoption of convergent interview as the primary data collection technique which used in this research. This section covers the convergent interview approach and process, and the strengths. In section 3.3, it outlines the technique to establish the reliability and validity of the findings. Subsequently, Section 3.4 discusses the strategies which adopted for collecting data in this research. Data collection methodology included sampling strategy, sampling population, sampling size and its determination, and followed by the implementation of convergent interview which adopted in this research. Section 3.6 outlines the procedure for data analysis using thematic analysis approach. The final section, Section 3.6, summarizes the overall research methodology.

3.1 Justification of Qualitative Approach for this Research

In the broadest sense, there are two (2) distinct types of research that is, qualitative and quantitative. Both research types have their own characteristics. This section justifies the use of a qualitative approach for this research. Prior to the justification, qualitative and quantitative approach are examined and their key distinctions highlighted.

3.1.1 Qualitative versus Quantitative

Both qualitative and quantitative approaches have their own characteristics and are used for different purposes. The authors Christensen and Johnson (2008) state that the purpose of *qualitative* research is to understand and interpret social actions. Patton (2002) states that qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific setting (Golafshani, 2003). The most common objectives for qualitative research are to explore, discover, and construct unique aspects of a phenomenon. This research approach is subjective and uses observations, in-depth interviews, and open-ended responses to collect data. The types of data collected for this type of research are words, observation, images, pictures or objects.

On the other hand, the purpose of *quantitative* research is to test hypotheses, look at the cause and effect between variables (Golafshani, 2003), and make predictions (Lichtman, 2006). The most common research objectives for this type of research are to describe, explain, and predict. This type of research objectivity is critical; researchers seek precise measurement and analysis of concepts through the use of questionnaires and surveys. The types of data collected are numbers and statistics.

In summary, qualitative research is very broad and subjective while quantitative research is focused, objective, and based mainly on statistics. A summary of the differences between these two (2) approaches is attached in Appendix 1.

3.1.2 Reasons for choosing qualitative approach

There are two (2) reasons why qualitative research is appropriate for this research. The first reason is associated to the objective of this research. The objective of this research is to explore and provide a deeper insight and understanding into a very

little-researched area of what determine the purchase decision of C-SHS in SME's business in Malaysia and how. In other words, this research is about the exploratory of a phenomena rather than hypothesis or theory testing. According to Robson (2002), an exploratory research employs an open and flexible approach in order to find out "what is happening; to seek new insights; to ask questions and to access phenomena in a new light". In aligning to this research objective, qualitative approach is a more suitable type of research against quantitative research (Mohd Harif, 2002). In the same note, Hair, Bush and Ortinau (2009), also suggested that qualitative approach is best for gathering as much information as possible in this very limited research topic.

The second reason is the type of information needed by this research. The depth and detail of qualitative data is required to understand complex phenomena by immersing into the subject matter (Denzin & Lincoln, 2005; Horn, 2009; Silverman, 2005). This view is also supported by Tran & Hoang (2011) as saying qualitative method enables researcher to study individual or organizational behaviors, the phenomena within their environments and in revealing rich and complex processes. Moreover, according to McMaster (2001), information system adoption within SME's business is a complex socio-technical phenomenon. Therefore to fully understand the complex process of purchase decision of C-SHS in SME's business, qualitative method was deployed in this research.

In brief, this research adopted qualitative research to gain more in-depth information and understanding into the complex process of purchase decision of C-SHS in SME's business in Malaysia.

3.2 The Nature of Convergent Interview

The previous section has justified the qualitative approach which is employed for this research. In turn, this section describes in the detail the convergent interview technique and justifies why this technique was chosen as an instrument in data collection for this research.

According to the literatures, for exploratory research, there are a few techniques of collecting data, such as convergent interviews, in-depth interviews, or focus groups, which could be used to refine research issues and reduce uncertainty about the research topic (King, 1994). Each of these methods were reviewed and considered before the final decision was chosen on convergent interview.

Focus groups data collection method is a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, and non-threatening environment. However, the results from focus groups can be biased due to peer pressure and group influence factors. This is because the in-group members may hide their real thoughts and would not speak up their mind (Aaker & Day, 1990). Another challenge on focus group is the difficulty to gather all relevant experts from different locations and industries to attend the focus group session in the same room and at the same time slot due to the conflict in work schedule. Due to the two (2) issues mentioned above hence, focus group method is considered not appropriate for this research.

An in-depth interview is a conversation with an individual conducted by a trained staff that usually collects specific information about one person. One of the

weaknesses in in-depth interview method is in-depth interview does not have a structured way of analyzing data. Hence, it is not useful for use in the exploratory research (Batonda, 1998).

Conversely, convergent interview is a type of in-depth interview procedure characterized by a structured process and unstructured content (Dick, 2012). Convergent interview has the ability to refine the contents and the process of the interview and zoom in on a broad research issue (Rao & Perry, 2003). As such, convergent interview is considered a more suitable data collection technique for this research, and thus it was chosen. Convergent interview technique is defined as a tool used to enrich the information in the research area, that is as 'an interactive interviewing technique for collecting, analyzing, and interpreting relatively large amounts of interview data in less researched and established areas of study' (Riege & Nair, 2004). Convergent interview has emerged as a qualitative technique that attempts to address research topics that lack theoretical underpinning (Dick, 1990). Likewise, also commented by Attwater (2005), convergent interview is becoming popular in qualitative research as it provides a valid, reliable and rigorous process of data collection. Convergent interview has been described as "A way of collecting qualitative information about people's attitudes and beliefs through the use of interviews" (Dick, 1990).

In the core of convergent interview, there are two interlinked processes, which are cyclic or iteration, and data driven (Dick, 2012). These two interlinked processes are interview process and data analysis process as illustrated in the diagram Figure 3.2. In

other words, as shown in the diagram, the data collection alternates with the analysis of interview data in a tight cycle.

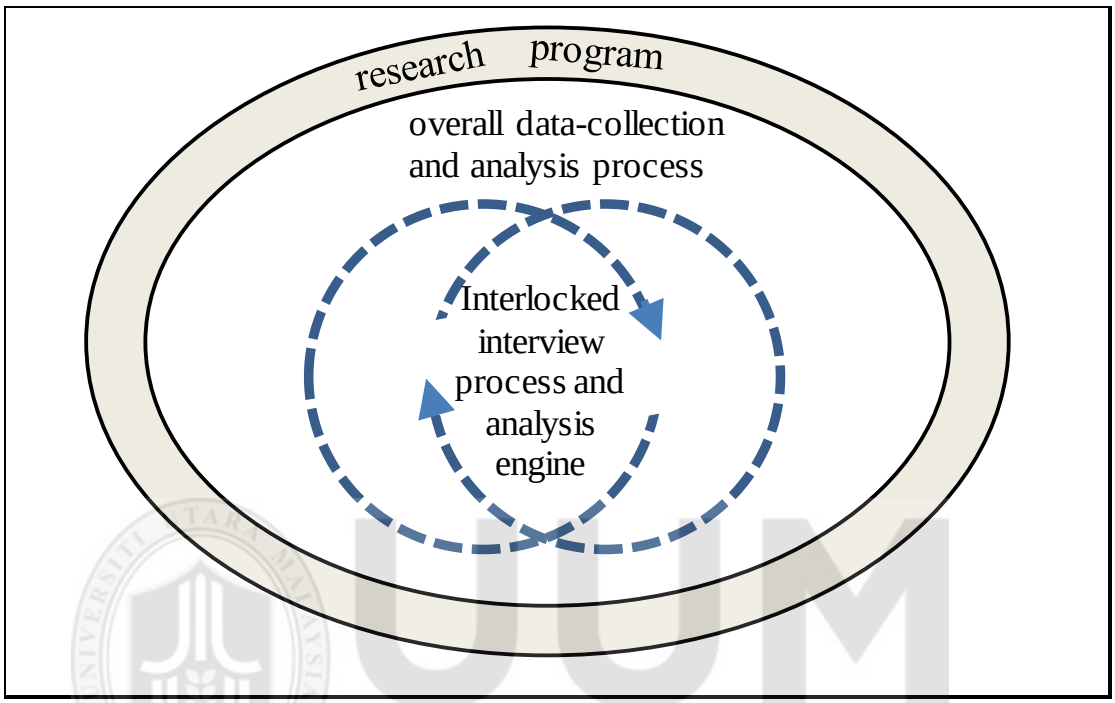


Figure 3.2
Convergent interview interlocked processes

Source: adopted from Dick (2012)

To this end, convergent interview is considered to be a more appropriate method than in-depth interviews and focus groups. Thus it was decided that convergent interview be employed for this research to discover the determinants of purchase decision of C-SHS in SME's business in Malaysia. The process of convergent interview is discussed in next following sub-section.

3.2.1 The process of convergent interview

The previous section had provided the characteristics of convergent interview and justified the uses of this technique for data collection in this research. To elaborate

further in this technique, this section describes the process of convergent interview in great detail.

The procedure of convergent interview is structured but the content at the beginning is relatively unstructured (Carson, Gilmore, Perry & Gronhaug, 2001; Dick, 2012). Figure 3.3 illustrates the steps in conducting convergent interview.

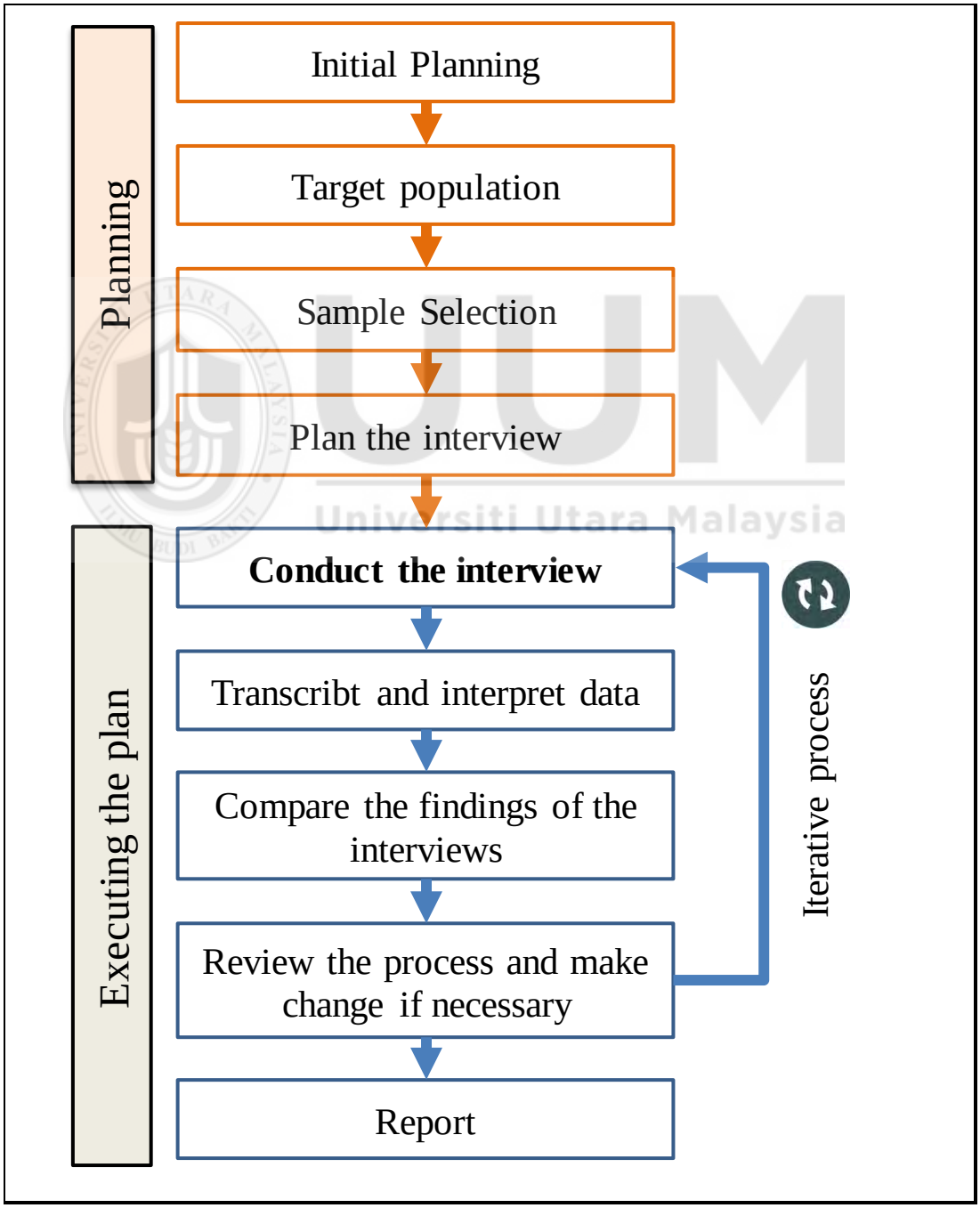


Figure 3.3

Convergent interview steps and iterative process

Source: developed for this research based on Dick (1995)

From Figure 3.3, the process is divided into two (2) phases – Planning phase, and Execute the plan phase. The planning phase encompasses target population, selection of sample or participants, and preparation for interview session. These processes are discussed in detail in Section 3.4. In pertaining to the execution phase, it includes conducting the interview, summarizing and transcribing the information gathered from the interviews, reviewing and revising the process for improvement on the subsequent interview.

Convergent interview adopt a method of using semi-structured interview questions. In other words, convergent interview combines some of the key advantages of both unstructured and structured interviews approach (Dick, 1998). The interviewer develops some interpretation of the data, which will then be used to refine and focus the content and process of subsequent interview. This process is undertaken after each interview as illustrated in Figure 3.4 (Mohd Harif, 2002).

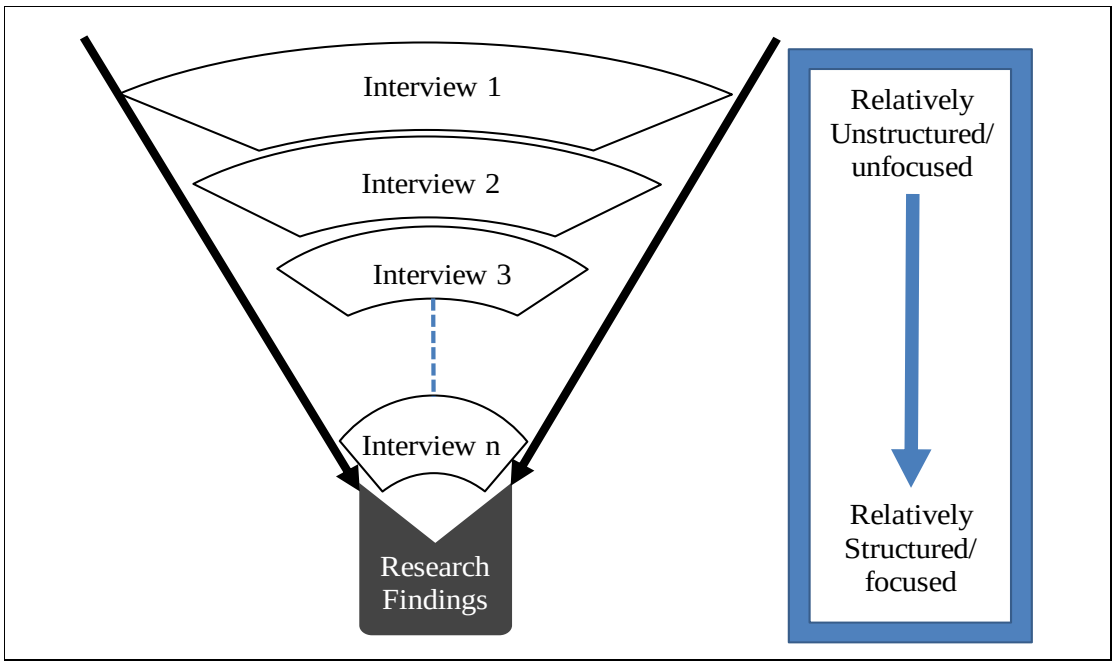


Figure 3.4
The convergent interview approach

Source: modified based on Woodward (1997) for this research

The process of data collection and data analysis is iterative and on-going during the execution phase until all identified participants are interviewed. As a consequence of this iterative and on-going process, convergent interview technique allows the refinement of both questions and responses over a series of interviews or "successive approximants" (Dick 1990; Woodward, 1997, cited in Mohd Harif, 2002). These approximants occurs because each interview is regarded as a complete research process of design, data collection, data analysis and data interpretation, and back to redesign (Dick, 1990). At the end of the interview process, the result is the research findings.

In brief, this section had reviewed the process of convergent interview which is iterative and on-going. It shows that although the content of the interview is relatively unstructured at the beginning, gradually it gets structured and focused as interviews

progresses till the last interviewer. The nature of the convergent interview as such provides rigorousness in data collection.

3.2.2 Strength and justification of use of convergent interview in this research

This section further described the strengths and justifications of use of convergent interview in this research. The four (4) main strengths of convergent interview, which supported and justified its use for this research are explained as follows. Firstly, convergent technique can tremendously improve the credibility of the findings in qualitative (Dick, 1998). Secondly, this technique allows a relatively structured approach to sort out what needs to be done in the research in the early stage (Mohd Harif, Chee, Hussin, Mohd Isa, Othman & Din, 2011). Thirdly, convergent interview is an emergent and data-driven approach and it provides a valid, reliable and rigorous process of data collection (Attwater, 2005; Dick, 2012). Fourthly, on the same token, convergent interview technique also allow researchers to collect a greater depth of data than other type of interview as they attempt to gain insight into the informant's understanding of a situation (Attwater, 2005).

In addition to the strengths of the convergent interview technique as mentioned above, three (3) more justifications are offered by Bob Dick, the guru of this technique, on the use of this technique. The first justification is, as this research is to explore the determinants of purchase decision and of C-SHS, and also due to the ambiguity of the determinants at the current stage therefore convergent technique is most valuable technique to be adopted in this research (Dick, 1998). The second justification is that the convergent interview technique uses a limited number of interviews with the experts that converge on the most important issue within the research topic. The third

justification, according to Dick (1998) is that, convergent interview technique is also useful and can help to decide what questions to ask in the surveys in order to collect relevant information.

With the above viewpoints, therefore it was deemed and justified that the convergent interview is the most appropriate technique for data collection used in this research.

3.2.3 Limitations of convergent interview

Thus far, the discussions are surrounded on the strengths and positive side of the convergent interview technique. The following section discusses the limitations of this technique. From the literatures, there are five (5) limitations of this technique. These limitations are as follows;

i) The level of skill and knowledge of the interviewer.

ii) The level of knowledge of interviewees about the subject matter of the research.

iii) Cannot be used as a standalone technique to establish the validity of research findings.

iv) Increase cost and time when the content and process is unstructured.

v) Shared some weakness with other interview technique.

In brief, despite these limitations observed in the convergent interview technique, they can be minimized and did not outweigh the benefits it offers. The following section discuss how the reliability and validity are established in the research findings and also the implementation of the convergent interview technique which could alleviate these drawbacks.

3.3 Establishing the Reliability and Validity of the Findings

The previous section presented the data collection technique through the use of the convergent interview approach. To continue on, this section discusses and addresses the issue of reliability and validity in this research. The issue of reliability and validity is vital and cannot be ignored in qualitative research and convergent interview is with no exception (William & Lewis, 2005). As commented by Khalid, Hilman and Kumar, (2012) reliability and validity are to examine the fitness of measure, thus it is deemed necessary to address this in this research.

The concept of reliability and validity in qualitative research should be taken into consideration in the process involved in the designing a study, analyzing results and judging the quality of the research (Patton, 2002). There are two different voices in the concept of reliability and validity in qualitative research. The proponents of this concept stated that these concepts are relevant and can be established in qualitative research (Easterby-Smith, Thorpe & Lowe, 2002; Miles & Huberman, 1994; Patton, 1990; Yin, 1989). Conversely, opponents argued that the concept of reliability and validity is of no relevance and is misleading in qualitative research (Stenbacka, 2001). Despite their argument on the irrelevancy of these concept in qualitative research, they have also realized that there is a need for some kind of qualifying check or measure for their research (Creswell & Miller, 2000; Stenbacka, 2001).

Table 3.2 summarized research tests for validity and reliability of convergent interviewing deployed in this research.

Table 3.2

Summary of tests for validity and reliability for convergent interviewing in this research

Tests	**Convergent interview approaches**	**Phase in which the approach occurred**
Constructs validity	●Establishment of triangulation of interview questions ●Flexibility of the interview protocol	Research design Data collection
Internal validity	●Various sample selection with information richness gain from experts in the SME's business in Malaysia	Research design Data collection
External validity	●Sample selection according to their knowledge of C-SHS with a broad knowledge of the SMEs industry for generalization of the finding	Data collection Data analysis
Reliability	●Structured process for administration of interviews ●Structured process of recording , writing and interpreting of data	Research design Data collection process

Source: developed for this research, based on Mohd Harif (2002)

i. Validity

There are three (3) types of validity, construct validity, internal validity, and external validity (Rao & Perry, 2003) have been identified that applicable in convergent interview (Yin, 1989). Construct validity is established through practical approaches to the subject. In other words, construct validity is to develop suitable operational measures to effectively investigate a concept (Emory & Cooper 1991; McDaniel & Gates 1991). In this research, construct validity is achieved through two (2) approaches. Firstly, triangulation of interview questions was established in the research design stage through two or more carefully worded questions to look at the determinants of purchase decision of C-SHS developed from different aspects. Triangulation is aimed to eliminate biasness and increase trustworthiness (Golafshani, 2003). Secondly, the flexibility of the interview protocol allows the interviewer to re-

evaluate and re-design both the content and the process of the interview program, so that at the end of each session the interviewer will ask the question, 'What other question should I have asked you?', thus establishing content validity.

The second type of validity is internal validity. Internal validity refers to causal relationships between variable (Sekaran, 1992; Zikmund, 1997). Even though internal validity is applicable for exploratory and causal studies only (Yin, 1989), it can also apply to sample selection in this research because its information richness helps to validate conclusions (Patton, 1990). In this research, information richness was gained through convergent interviewing with experts in the SME's business in Malaysia.

Lastly, external validity relates to the generalizability of the findings of the research (Emory & Cooper 1991; Sekaran 1992). In this research, external validity was achieved through sampling in terms of generalizability through 'theoretical replication' in interviewee or respondents selection (Yin 1989). That is, the respondents were selected according to their knowledge of C-SHS with a broad knowledge of the whole SMEs industry to ensure that a cross-section of opinions was provided.

ii. Reliability

Reliability refers to being able to demonstrate that another researcher can repeat the operations used in the research and still attain similar findings with a consistent technique (Emory & Cooper 1991; Sekaran 1992), that is, the findings can be replicated if convergent interviewing techniques remain consistent. In this research, the reliability of convergent interviewing was achieved through two (2) approaches. Firstly, reliability was attained through the convergent interview technique by having

a structured process for administration of the interview. Secondly, reliability was achieved in this research through an organizing a structured process for recording, writing, and interpretation of data.

Moreover, in regards to the rigorousness of this research, convergent interview technique is a technique with inbuilt sources of research rigor (Dick, 2012). The interview process used a complete package of more rigorous and detailed interpretation of the situation emerged from interview to interview. Lastly, convergent interview technique dramatically improved the credibility of the findings in this qualitative research (Dick, 2012).

In summary, the above discussion explained how validity and reliability was achieved through research design and various approaches used in this research. Moving on, the next section will discuss the implementation of the convergent interview of this research.

3.4 Data Collection

Data collection is crucial in research, as the data is meant to contribute to a better understanding of a theoretical framework (Bernard, 2002). Therefore this section is dedicated to describe data collection strategy. It begins with the sample selection strategy, sampling population, sampling size and research instrument which is then followed by the implementation of convergent interview, inclusive of interview protocol, interview process structure.

3.4.1 Sampling strategy - purposive snowballing

This section tells the strategy of how samples or respondents were identified and selected for the convergent interview. Sampling strategies is one of the important elements in doing research and it is aims to maximize efficiency and validity of research, be it qualitative or quantitative research (Morse & Niehaus, 2009) cited in Palinkas, Horwitz, Hoagwood, Green, Wisdom and Duan (2013). In qualitative research, sample selection has a profound effect on the ultimate quality of the search (Coyne, 1997). Sampling, in the research context, refers to the selection of individuals for the purpose of collecting information from. In this research, samples are interviewees or respondents.

There are multiple techniques available for sampling. Palinkas et al. (2013) commented that purposive sampling is one of the sampling strategies that is widely used in qualitative research for the identification and selection of information-rich cases related to the phenomenon of interest. On the same thought, according to Patton (1990), information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term purposeful sampling.

In this qualitative research, the goal is to explore, discover and gain a greater depth of understanding of the purchase decision of C-SHS in Malaysia SME's business. To achieve this goal, the information was obtained from the subject matter expert of ICT-related industry and the SME's business owners. This implied that the first sample in this research was carefully selected with purpose. Therefore purposive sampling strategy was deployed in this research. In addition to the purposive sampling, this research also used the snowballing sampling technique which is also known as "chain

sampling". Combining these two (2) sampling techniques, resulted in a technique known as purposive-snowballing technique which is the technique deployed in this research. Figure 3.5 below illustrated the process of snowballing sampling technique used in this research.

The advantage of snowball sampling is that one informant refers the researcher to another, so that the researcher has a good introduction for the next interview. A disadvantage is that the variation in the sample may be limited because it consists of respondents who belong to the networks of the index cases. To overcome this disadvantage, it is important to have at least two different additional entrances in the community.

In this research, the addition of more subsequent respondents were based on the referrals from the first and the previous respondents whom thinks that these referrals have the relevant knowledge and are potentially able to participate or contribute in this research. Most of the referrals were the SME's business owners based in Malaysia.

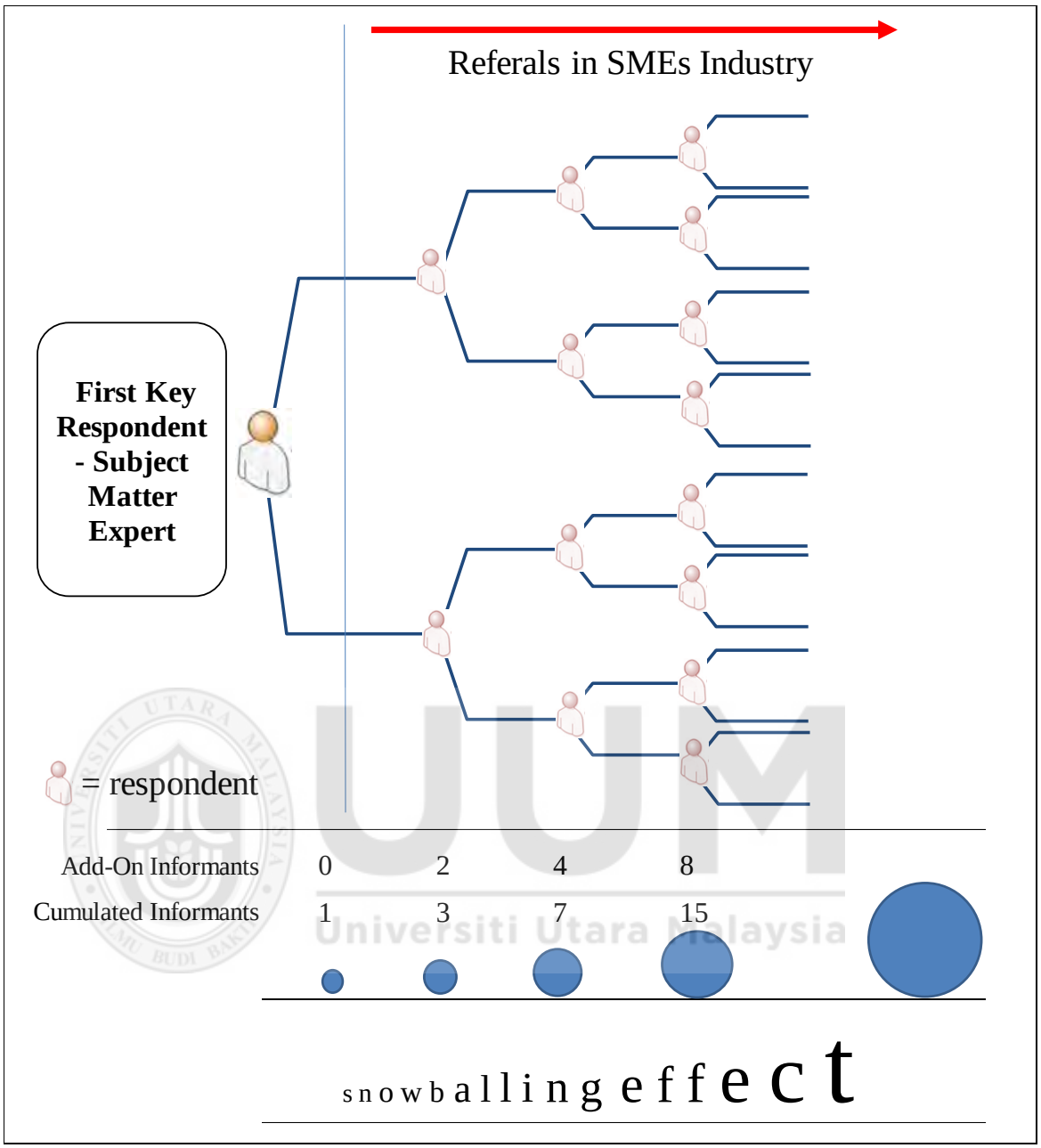


Figure 3.5
Snowballing sampling process for this research

Source: developed for this research

3.4.2 Sampling population

The samples were from the pool of SME's business owners or senior rank officers in charge of ICT system in the company, with business operation in Malaysia. With

respect to the convergent interview technique discussed above, the first sample or key respondent was carefully selected. The first respondent must not be merely "representative" (Dick, 1990) but also be able to direct researchers to others who are familiar with the area of study. For this research, the first sample selected is the expert and experienced person from the ICT-related industry. This person is the vice-president of sales in the multinational technological organization.

3.4.3 Sampling size

In addition to the sampling strategy, the sample size must also be determined. Unlike quantitative research, there are no specific rules for sample size in qualitative research (Patton, 1990). The determination of sample size in qualitative is based on what you want to know, the purpose of the research, what is at stake, what will be useful, what will have credibility, and what can be done with available time and resources (Patton, 1990). Nevertheless, there are at least two (2) aspects to be considered – *saturation* or redundancy (Lincoln & Guba, 1985, cited in Patton, 1990) and *variation representation within the target population* (Nastasi, 2004). Representative aspect has already been discussed in the paragraph just before this. In qualitative research, the emphasis is on saturation or obtaining a comprehensive understanding by continuing to sample until no new substantive information is acquired (Miles & Huberman, 1994). Dick (1990) argues that sample size is "data-driven" whereby sample size must be sufficiently large from which to derive a conclusion and usually it should contain at least twelve (12) interviewees before saturation occurs. However, on the other hand, Riege and Nair (1995) suggest that it is possible for stability to occur with less than twelve (12) interviews. The sampling size for this research was built on the principle of saturation. Adopting the principle of snowballing, this research continued

to add more respondents until a saturation or a stable pattern of agreement or disagreement on the determinants was achieved.

3.4.4 Research instrument

The above sections discussed about sampling plan which included who were the target respondents, how respondents were selected and how the sample size was determined in this research. Now, this section discusses the research instrument that was used to collect information from respondents in this research. The research instrument for this research is the convergent interview with a set of pre-designed semi-structured interview questions. It contains seven (7) open-ended questions. Question one (1) to two (2) were the opening questions where the questions were broad and general in nature. Question three (3) to five (5) were the probing questions. These probing questions were specific to generate a convergence view on the determinant of purchase decision of C-SHS in Malaysia SME's business. Question six (6) which was to ask the interviewer any questions should be asked in regards to this research. Lastly, Question seven (7) was requesting for referral from the respondent to participate in this research. A set of pre-designed interview questions protocol is appended in Appendix 3 for reference.

3.4.5 Implementation of convergent interview

The previous section reviewed the research instrument in this research. In turn, this section describes the implementation of convergent interview and the use of research instrument as the primary data collection approach in detail. The discussion begins with the interview protocol and the interview process structure.

Interview Protocol

Data collection procedure began with sending the invitation letter or email, whichever is appropriate, to the participants identified as described in Section 3.4. A copy of the interview invitation letter is appended in Appendix 2. The purpose of this letter was to obtain consent from these identified participants to accept a face to face interview session. In most cases, the consent for appointment from the respondents were made through phone calls directly. Upon the acceptance of the interview invitation, the date, time and venue for the interview was fixed with the agreement of the interviewee or respondents.

Interviewing Process

From the acceptance of the interview invitation, this section continues on to discuss the interviewing process used in this research. The interview process follows the structure as shown in Figure 3.6.

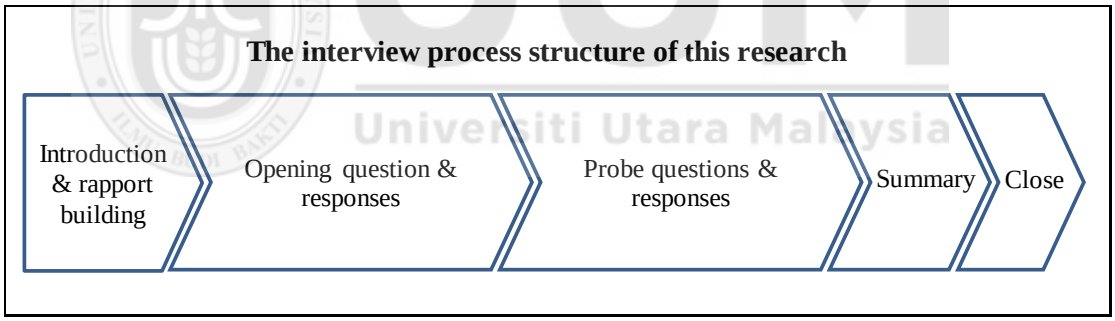


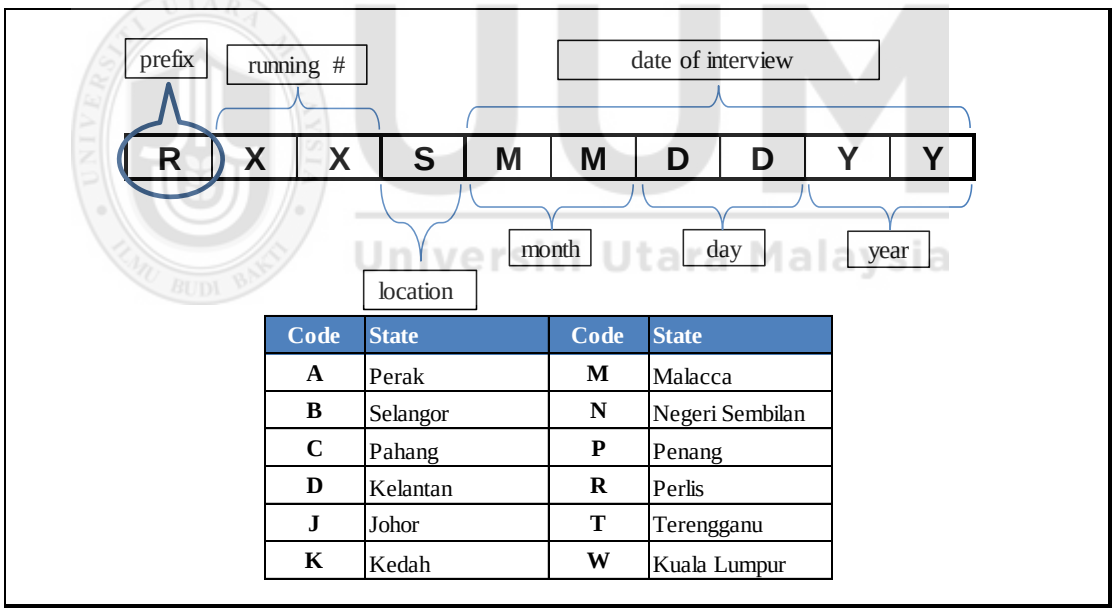
Figure 3.6
The interview process structure of this research

Source: developed for this research based on Dick (2012)

This interview structure is suggested by Dick (2012) and it consists of six (6) blocks arranged in sequent for the entire interview process. The first block is *introduction and rapport building.* In this block, interviewer briefed the respondents about the background of this research and explained the purpose of this interview and informed the respondent the approximate duration of the interview session. This was to ensure

participant set themselves free of disturbance throughout the interview session. Rapport building with the respondents was happened during the introduction section (Dick, 2012). Time spend on this block was approximately ten (10) minutes.

Interviewer also described to the participant on the uses of the data. In addition, participant was assured about the confidentiality of this interview. Participant was informed that notes will be taken along with the digital voice recording. The purpose of this recording also explained to the participant as well. The digital voice recorder was switched on at the start of interview. Each digital voice recording was labeled according to the following naming convention format as illustrated in Figure 3.7.



Code	State	Code	State
A	Perak	**M**	Malacca
B	Selangor	**N**	Negeri Sembilan
C	Pahang	**P**	Penang
D	Kelantan	**R**	Perlis
J	Johor	**T**	Terengganu
K	Kedah	**W**	Kuala Lumpur

Figure 3.7
Labeling convention for interview taped recording

Source: developed for this research

All the label of interview recording begins with letter R, indicated “by Record” and followed by the interview running number, location of interview, and date of interview. For example, the digital voice recorded interview file with label

"*R03P012216*" denotes this interview recording was for third interview and was conducted in Penang SME's business on January 22, 2016.

The second block is *opening question and response.* According to Dick (2012), opening question is important to the success of the technique. The interview began with the opening question which was broad, general and it is almost content-free. The purpose of the opening question was to elicit relevant information without constraining the participant. Therefore that in effect defines the boundary of the information the interviewer wishes to collect. Under the convergent interview technique, a semi-structured interview questions was deployed to collect data. These questions were open-ended. The main aim of this opening question was to encourage the participant to speak for as long as possible and to voice out their views freely. The interviewer plays a role of active listener throughout the session. The interviewer may nod, smile, and say "hmmm", and the like. In other words, the purpose of this block was for the information to be volunteered by the participant (Dick, 2012).

The third block in the interview structure *is probe questions and responses.* The purpose of this block was to generate a convergence towards a tested interpretation by asking specific questions which was planned before the interview. Semi-structured interview questions were used in this block as well.

The fourth block is s*ummarizing* the interview. This block was to checks the accuracy of notes by summarizing the key points as the interviewer understands them and asking for comment.

The final block in the interview structure is c*losing.* The interviewer expresses their appreciation to the participant for spending time and taking part in this research. The interviewer also took the opportunity to seek permission to return to a participant later in the process, if required.

3.5 Data Analysis

Up to this point, the data collection approach for this research has already been discussed. The next process after data collection is data analysis. To continue, this section outlines and discusses the data analysis procedure and interpretation of the convergent interview data. Data analysis in qualitative research is a complex process which aims to truly capture the right insight (Casterle, Gastmans, Bryon & Denier, 2012). According to Kawulieh (2004), analyzing qualitative data requires the researcher to immerse in the data to become familiar with it and at the same time look for pattern and themes searching for various relationship between the data which can help the researcher to understand what they have. These analyzed data which is transferred into information can then be displayed and written up. On the same thoughts, steps in qualitative data analysis on the interview data are inclusive of the following processes such as to organize, transcribe, describe, classify, and categorize (Baqir, 2009).

There are several approaches to analyze the data collected from interviews. However, according to Boyatzis (1998) and Roulston (2001), a thematic approach is one of the widely used techniques in qualitative data analysis. This technique is discussed in great details in the next following section.

3.5.1 Thematic analysis technique

Thematic analysis is a technique in identifying, analyzing and reporting patterns (themes) within the data collected from the interview (Braun & Clarke, 2006). It minimally organizes and describes your data set in (rich) detail. However, it frequently goes further than this, and interprets various aspects of the research topic. Thematic analysis technique consists of six (6) phases as suggests by Braun and Clark (2006). This research followed these six (6) phases as described here.

Phase 1-Becoming familiar with the data.

This step involves "repeated reading" of the data in an active way - searching for meanings, patterns and so on. First, verbal data from interviews was transcribed into written form. The digital recording was played back several times in order to be understood and translated into word document. The process involved reading through the transcription and reviewing all the data, coding the data, looking for themes and sub-themes, interrelating the themes and description, and finally interpreting of the themes and descriptions. The process of transcribing is an excellent way to start familiarizing with the data (Riessman, 1993) although the works of data transcribing is a difficult task (Susan & Kelly, 2002). Once the interview recording was transcribed, it was read through a couple of times before coding begins.

Phase 2-Generating initial codes.

This process began once data was familiarized. This step involved the production of initial codes from the data. Coding is one of the key elements in the data analysis of qualitative data (Flick, 2002) and it is also part of the data analysis (Miles & Huberman, 1994). The data was organized into meaningful groups, as suggested by Tuckett (2005).

Phase 3- Searching for themes.

Searching for theme involves sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes. The outcome of this step was a collection of candidate themes, and sub-themes, and all extracts of data that have been coded in relation to them. However, at this stage none of the codes will be abandoned, because it was uncertain as to whether the themes hold as they are, or whether some need to be combined, refined and separated, or discarded.

Phase 4- Reviewing themes.

This step involves the refinement of the themes from a set of candidate themes developed in previous step. As deemed appropriate, some themes were collapsed into each other, while some theme are broken down into separate themes. The end result of this step was to get a fairly good idea of what different themes were, and how these themes fit together. Furthermore, the end result enables the theme to tell the overall story about the data.

Phase 5- Defining and naming themes.

This step was to define and further refine the themes that were presented for the analysis, and to analyze the data within them. In other words, this step was in identifying the "essence" of what each theme is about (as well as the themes overall), and in determining what aspect of the data each theme captured. At the end this step, it was clearly defined what the themes were, and what they were not.

As presented in Figure 3.3, the data analysis step was an ongoing iterative process. Therefore, the interview data continued to be captured, transcribed, compared, added

to, and/or modified accordingly to new issues that emerged after each interview, while allowing major themes to emerge (Batonda, 1998; Dick, 1990; Riege & Nair, 1995).

Phase 6- Producing the report

This step involved the final analysis and write-up of the thematic analysis report. It tells a complicated story of how the data is collected in this research. The report is presented in Chapter 4.

3.6 Summary

In summary, this chapter detailed HOW the research was carried out to explore and to deepen the understanding about the determinants of purchase decision of C-SHS in SME's business in Malaysia. The chapter began with the justification of the use of qualitative methodology in this research and which is then followed by the description of the nature of the convergent interview technique as the primary method for collecting data. The justification for deploying this method in this research from the aspect of its strengths and limitations are also discussed in this chapter. In addition, this chapter also discussed and established the application of concepts of reliability and validity in the collection of data for this research.

Subsequently, this chapter also discussed the strategies of data collection and data analysis deployed in this research. Data collection strategies covered the sample selection using purposive snowballing technique, the sample population, sample size, research instrument. This is followed with a discussion on the implementation of the convergent interview technique to collect data for use of this research. On the data

analysis section, six (6) phases of thematic analysis technique used for this research were described.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

Chapter 3 described how this research was carried out and how data was collected using the convergent interview technique. This chapter analyzes the data collected to produce insight about the three (3) research issues developed in Section 2.8. This chapter comprises five (5) main sections as shown in Figure 4.1. Section 4.0 provides the overview of this chapter. Section 4.1 provides the research setting and introduces the background for each respondent of Malaysia SME's business, in which the data were collected from for this research. Section 4.2 describes the data analysis process and Section 4.3 addresses each of the three (3) research issues developed for this research. Finally, Section 4.4 summarizes this chapter with the core findings about each individual research issues.

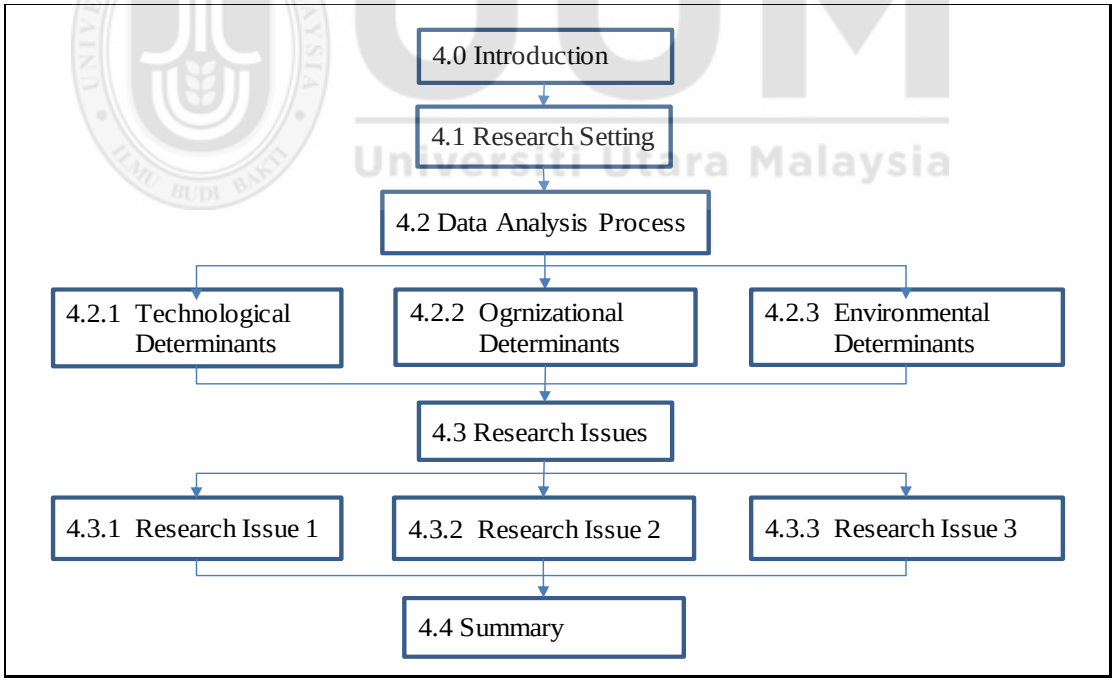


Figure 4.1:
The organization and flow of Chapter 4

Source: developed for this research

4.1 Research Setting

This section introduces the research setting to provide the context required to understand the data provided throughout the discussion thereafter. In addition, this section also provides the profile of each respondent who participated in the interview process.

The interview process was carried out according to the procedure described in Section 3.4.4 and the selection of the respondent was based on the purposeful snowballing technique as stipulated in Section 3.4.1. All the respondents were selected from the population of SME's business in Malaysia as outlined in Section 3.4.2. The interview process ceased at the 17th respondent according to the principle of saturation described in Section 3.4.3. Therefore, the actual final sample size for this research was seventeen (17). These were the seventeen (17) respondents who had willingly accepted the interview invitation to participate and contribute in this research. These respondents were mostly the SME's business owners of the company or Head of IT. The interview were took place in the office of the respondents. On average, the duration for each interview session is approximately 30 minutes. To remain and achieve anonymity, all the respondents and its associated companies were disguised throughout this report and coded with five (5) alphanumerical-digits as shown in Table 4.1 column 2. The arrows shown in the table indicates the referrals from the previous respondents. The pattern of the referral confirmed that the sampling technique is a linear snowball type. Besides this information, Table 4.1 also captured other important information such as the type of SME's sector, the core business, year of establishment, sales turnover and the number of full time employees in the SME's business.

Table 4.1:

Profile of the respondents participated and contributed in this research

Respondent	Respondent Code	Position of Interviewee	SMEs Sector	Core Business	Year of Est.	Annual Turnover, RM 'mil	Number of Emp.
1	EXP01	Vice President of Sales	Sevices	IT	1995	na	na
2	SVC01	IT Director	Services	Retailing	1957	50.0	200
3	SVC02	Head of IT	Services	Education	1977	25.0 - 30.0	100
4	SVC03	Head of IT	Services	Education	1986	32.0	120
5	MFG01	Business Owner	Manufacturing	Plastic Injection	1997	38.0	80
6	MFG02	Business Owner	Manufacturing	Engineering	1997	39.0	120
7	MFG03	IT Manager	Manufacturing	Engineering	1996	17.0	120
8	MFG04	IT Manager	Manufacturing	Engineering	1984	40.0	180
9	MFG05	Business Owner	Manufacturing	Pharmaceutical	1988	15.0 - 20.0	100
10	MFG06	Business Owner	Manufacturing	Engineering	2000	<10.0	50
11	SVC04	Head of IT	Services	Education	1983	10.0 - 15.0	150
12	SVC05	Head of IT	Services	Education	1995	1.0 - 2.0	25
13	MFG07	Head of IT	Manufacturing	Engineering	1993	30.0 - 40.0	200
14	MFG08	IT Executive	Manufacturing	Roofing sheet	1980	40.0 - 50.0	90
15	SVC06	Head of IT	Services	Education	2002	2.0 - 3.0	60
16	SVC07	Head of IT	Services	Education	1987	3.0 - 4.0	110
17	SVC08	Head of IT	Services	Education	2006	2.0 - 3.0	100

Legend: *indicates referrals relationship*

Source: developed for this research

In turn, there were three (3) main challenges of getting the respondents to participate in this research. Firstly, it was very difficult to identify respondents from SME's business which fulfilled the criteria set in Section 1.6. Some of the referrals made by preceding respondents does not fall into the criteria of SME's business or does not own any C-SHS in their factory. In addition, some of the referrals declined to accept the interview request quoting disinterest in participation or lack of time due to busy work schedules. Secondly, multiple attempts were made to connect to the right person

and to secure the appointment schedule. It is very important to speak to the right person in order to collect the right data. Therefore, there were a few cases where it took several attempts to establish the connection and to make the interview appointment schedule. Thirdly, several pre-appointments were postponed by the respondents in last minute due to unforeseen circumstances which arose at the respondents end. That caused some delays in the data collection process. In spite of all these challenges, the interview process was still carried out accordingly to the plan presented in Chapter 3.

The following section contains brief profiles of all the participating respondents.

Profile 1: EXP01

EXP01 is a well-known private multinational technology organization (Table 4.1, row 1). The company develops, sells and supports computers and related products and services such as laptops, desktop, workstations, servers, storage, monitors, printers, tablets, smart phones, and other electronic products. EXP01 is considered an expert in this ICT industry with more than 20 years of C-SHS sales experiences. The company owns and maintain a very comprehensive advanced C-SHS which is managed and maintained by the internal IT expert team. All the clients system are connected through the company's network infrastructure. EXP01 utilize the C-SHS to support the daily business activities and also to support the customer needs and demands. EXP01 kicked off the sample identification snowballing process and recommended SVC01.

Profile 2: SVC01

Respondent SVC01 was recommended by the first interviewee EXP01. SVC01 core business is in retailing and it comprises emporium, minimarket, convenience shop, franchise store and bazaar. The annual sales turnover is around RM45 million and the number of full time employees is around 200. These numbers fulfilled the criteria of SME's business definition in this research. SVC01 owns a very comprehensive in-house C-SHS to run and support the daily business requirements and also to enhance its business effectiveness and efficiency.

Profile 3: SVC02

The next respondent, SVC02, which was referred to by SVC02 is a private college located in Penang, Malaysia. Their core business activity is to provide education services. The annual turnover of SVC02 is around RM30 to RM40 million with a full time staff of around 100. These numbers fit into the criteria of definition of SME's business set for this research. The college invested substantially in the C-SHS to upgrade the college operational efficiency and improve the student learning experiences and to be more competitive in the education industry.

Profile 4: SVC03

The fourth respondent SVC03, was recommended by SVC02. SVC03 is a private business entity established in 1986, in Malaysia. Their primary business activity is to provide education services. SVC03 is categorized in the SME's business sector with

the annual turnaround of RM32 million and the number of full-time staff is 120. That indicator validated that SVC03 has fulfilled the SME's business definition for this research, and hence qualified to be the rightful sample in this research. Respondent SVC03 recommended SVC04 and SVC05, both of whom accepted the interview invitation and their profile will follow then.

Profile 5: MFG01

The fifth respondent MFG01 is a SME's business establishment registered in 1997 and is located at Penang, Malaysia. This company's core business is plastic injection and they specialize in manufacturing a variety of plastic products. Their annual sales turnover and the number of the full-time employees working in MFG01 is RM38 million and 80 respectively. Therefore, MFG01 belongs to the population of SME's business companies which fit into the criteria of SME's definition for this research. At the present, MFG01 employed a more proper C-SHS in the company to support the daily operational activities which includes file storage, retrieving and sharing, invoicing and emails communication. Respondent MFG01 recommended MFG06.

Profile 6: MFG02

Respondent number six (6), MFG02 is a SME's business founded in 1997. The core business activities is to develop and manufacture electrical equipment which performs reliably, costs less, and reduces project costs with the use of cutting-edge technology. The sales turnover of MFG02 is RM39 million and the number of full-time employees is 120. These two (2) indicators suggested that MFG02 fit into the criteria of SME's business definition and therefore is an eligible sample for this research.

Profile 7: MFG03

Respondent MFG03 was referred by MFG02. MFG03 is a Malaysia SME's business establishment with operation commencing since 1996. The main business activities is to design, develop and manufacture customers' tooling and automation requirements. MFG03 annual sales turnover is RM17 million and the number of full-time employees is 120. Thus MFG03 fulfilled the definition of SME's business for this research and qualify as part of the samples in this research. In 2004, MFG03 successfully achieved the top 10 position out of 100 contestants in the outstanding Small Medium Enterprise (SMEs) Golden Bull Awards. MFG03 employed a comprehensive C-SHS in the company to support their daily operational needs and activities.

Profile 8: MFG04

The eighth respondent, MFG04 was recommended by MFG03. MFG04 is a SME's business establishment and was set up in Penang in 1984. The primary business activities is to design and manufacture correction products in the region using the most advanced technologies combined with great expertise in the field of design. The sales turnover is RM40 millions with 180 full-time employees. These numbers falls within the limit as stipulated in the SME's business definition adopted for this research and therefore MFG04 is also a valid respondent for this research.

Profile 9: MFG05

MFG05 is a SME's business establishment. It was incorporated in 1988 and based in Penang, Malaysia. The core business is in pharmaceutical. MFG05 is a leading manufacturer and distributor of medicinal products. The sales turnover is between RM15 to RM20 million and the numbers of full-time employees is 100. These numbers suggested that MFG05 conformed to the criteria of SME's business definition for this research. The company owns a very simple and basic C-SHS to support the business requirement. MFG05 purchased a basic computer system for their staff to use.

Profile 10: MFG06

The tenth respondent, MFG06 was referred by MFG01. MFG06 is a SME's business and was established in the year 2000 to support the semiconductor industry in Penang, Malaysia. The company's core business activities involves the designing and manufacturing precision parts using computerized system and high-end software. The annual sales turnover is below RM10 million and they have 50 full-time employees. This size of business fits into the criteria of SME's business definition for this research. This respondent also recommended respondent MFG07 which is in the SME's industry.

Profile 11: SVC04

Respondent SVC04 was one of the referrals from SVC03. SVC04 is a private business entity established in 1983 in Penang, Malaysia. The main business activities involves providing education services in the region. The annual sales turnover of SVC04 is between RM10 to RM15 million and is supported by 150 full-time employees and this respondents fits into the criteria of SME's business definition

adopted in this research. The college has an advanced C-SHS to support the daily operational needs and also provide better learning experience to the students with high speed internet connectivity.

Profile 12: SVC05

Respondent SVC05 was also another referral suggested by SVC03. SVC05 is a private organization established in 1995 Penang, Malaysia. Likewise, SVC05's core business is in the education services. The size of the business which is RM1 to RM2 million and the number of full-time employees which is 25 confirmed that SVC05 is a valid respondent which fits into the criteria and sample population of the research.

Profile 13: MFG07

The next respondent MFG07 was recommended by MFG06. MFG07 is a SME's business which was established in 1993 Penang, Malaysia. MFG07 is a leading innovative engineering solutions provider with expertise in research and development, manufacturing and the assembly of automated systems to the IT, pharmaceutical, toys, semiconductor and electronics industries. The annual sales turnover for MFG07 is around RM35 million and the full-time employees count is 200. Thus, MFG07 qualified as part of the sample population in accordance with the SME's business definition adopted in this research. MFG07 was given due recognition when it ranked fifth in the Malaysian SME Enterprise 50 Award in 2011 and SME Recognition Award in 2012 due to their outstanding performances. This respondent recommended MFG08, which is in the same SME's industry.

Profile 14: MFG08

The fourteenth respondent, MFG08 was referred to by MFG07. MFG08 is a SME's business entity and was established in 1980. The company's core business is to manufacture and market corrugated roofing sheet made from recycle cellulous fibres, bitumen and resin. MFG08 employed around 90 full-time workers with a sales turnover of around RM40 to RM50 million. This size of this business qualifies MFG08 as a valid respondent in accordance with the criteria of SME's business definition set in this research.

Profile 15: SVC06

Respondent SVC06 was referred to by SVC04. SVC06 is a private business entity established in 2002 and located in Penang, Malaysia. The primary business activities is to provide education services in the region. The annual sales turnover for SVC06 is around RM2.5 million and the full-time employee count is 60. As such, SVC06 is deemed as a valid respondent under the definition of SME in this research. Respondent SVC06 recommended SVC07 as next respondent to talk to.

Profile 16: SVC07

Respondent SVC07 was referred to by SVC06. SVC07 is a premier non-profit business entity established in 1987 in Penang, Malaysia. The core business activities is providing education and training to young students to serve the needs of the industry and community. The business turnover for SVC07 is RM3.5 million per annum and the number of employee is 110. This validated the fulfillment of SVC07 to the SME's business definition adopted in this research and as a valid respondent in

this research. Respondent SVC07 recommended SVC08 which is in the same industry, as the next respondent.

Profile 17: SVC08

Lastly, respondent SVC08 was referred to by SVC07. SVC08 is a private not-for-profit organization established in 2006 and specialized in open distance learning. The core business activity is in providing education services in Malaysia. The annual sales turnover of this organization is between RM2 to RM3 million and with an employment of 100 full-time staff. These number fits into the SME's business definition adopted in this research. With that confirmation, SVC08 is a valid sample used in this research.

In summary, all the 17 respondents interviewed for this research purpose fulfilled the criteria of the SME's business definition adopted in this research as presented in Section 2.2. Moreover the selection of these respondents from Malaysia SME's business population was also carried out according to the snowballing technique described in Section 3.4.1. This implies that data collected from these respondents were valid with respect to this research, and thus it serves as a solid foundation to proceed to the next step which is data analysis. The summary table of the results of the convergent interviews by each of the respondents are appended in the Appendix 4.

4.2 Data Analysis Using Thematic Analysis Technique

The previous section described the natural setting of this research and with that the context for this research has been defined. The stage has also been set to perform the analysis on the data collected from the convergent interviews. With that having said, this section describes the data analysis process and begins the data analysis stage using the thematic analysis technique (Boyatzis, 1998; Roulston, 2001).

The overview of data analysis process deployed in this research is shown in Figure 4.2 below.

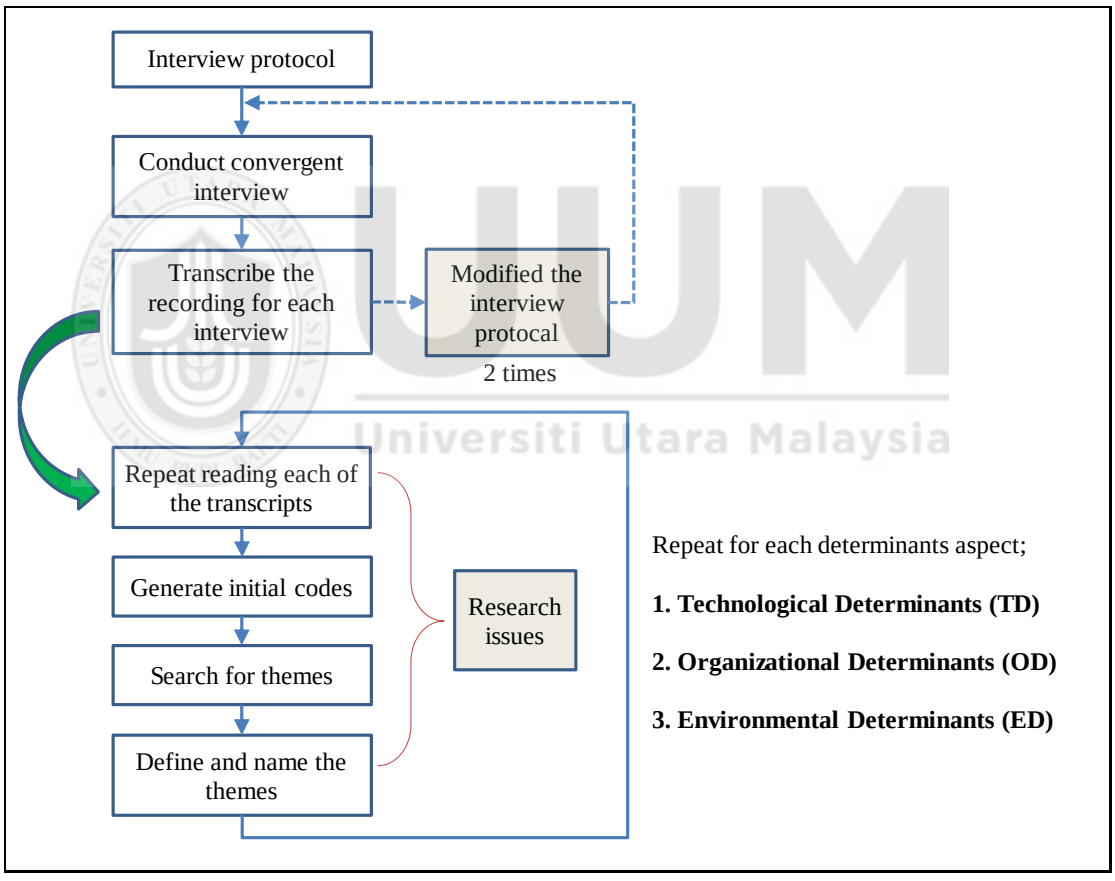


Figure 4.2
Convergent interview and thematic data analysis process flow for technological, organizational and environmental determinants

Source: developed for this research

Upon completion a convergent interview, the data analysis process began right away with the transcription of the interview recordings. The original version of interview protocol was asking very general questions. After ten interview sessions and with all the responses collected, the interview protocol was revised for the first time to incorporate addition relevant, specific and converged questions. At the thirteenth (13^{th}) interview session, the interview protocol was further revised for the second time with more specific questions to drive convergence in the subsequent responses. This process is illustrated in Figure 4.2 above. A total of 17 digital interview recordings have been transcribed in this convergent interview process. The process of transcribing the interview recordings consumed enormous time. In general, three (3) to four (4) hours were spent to transcribe a 30 minutes of the interview recording. Therefore total numbers of hours spent on the transcribing all the 17 interview recording is between 51 hours to 68 hours. All the data analysis in this research were based on these transcripts. In order to get familiar with the content data, these transcripts were read through repeatedly. From there, initial codes of determinant of purchase decision of C-SHS were generated. These codes were then consolidated into the same themes and lastly the themes were further defined to derive a final name for each determinant of purchase decision of C-SHS. The above mentioned processes were repeated for each determinant aspect, namely technological determinants (TD), organizational determinants (OD), and environmental determinants (ED), of purchase decision of C-SHS in Malaysia SME's business. The overall outcome of the data analysis in this research is summarized in Figure 4.3 below.

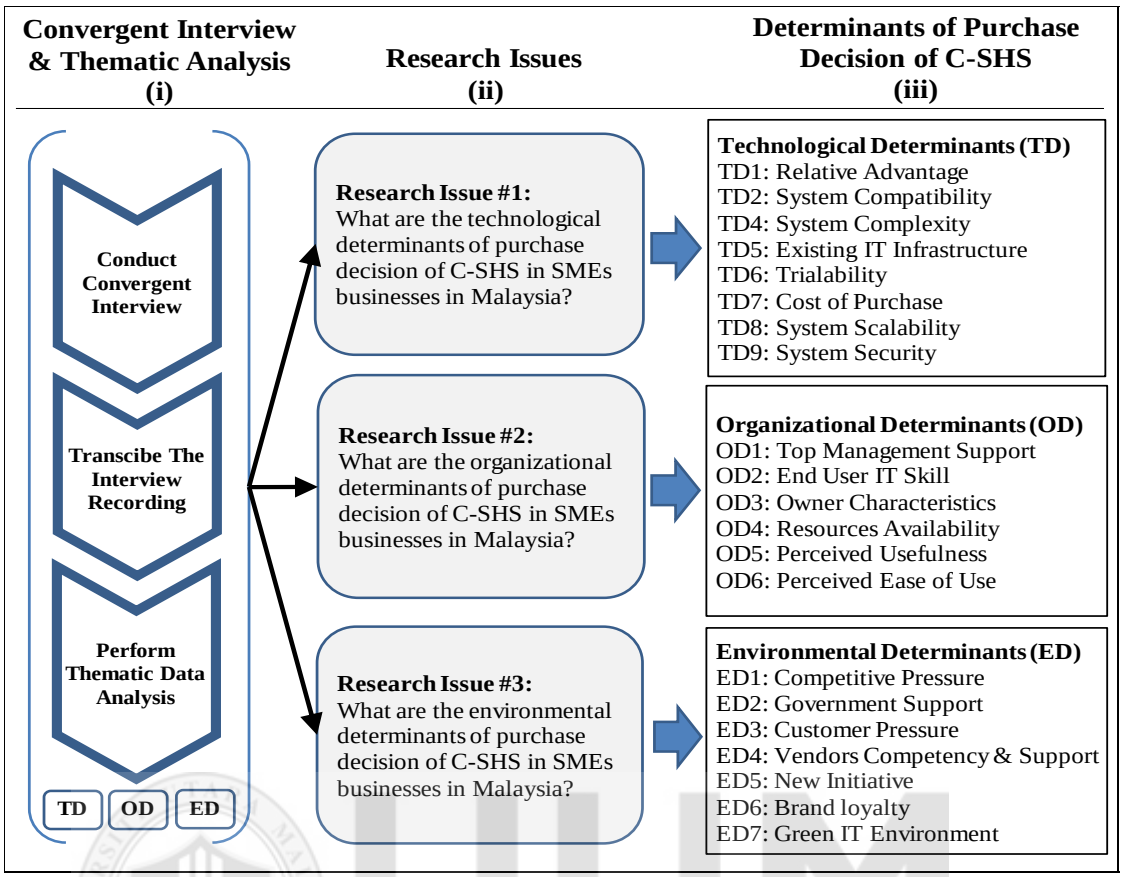


Figure 4.3
Overall summary outcome of data analysis using thematic analysis technique

Source: developed for this research

Figure 4.3 consists of three (3) columns. Column (i) on the left depicts the three (3) main steps of data collection from the convergent interview to the data analysis from the thematic analysis process for each aspect of the determinant of purchase decision of C-SHS in Malaysia SME's business. The output of the thematic data analysis for each aspect of determinants which were used to answer the three (3) research issues of this research is in the middle column (ii). Column (iii) to the right displayed the three (3) aspects of the determinants of purchase decision of C-SHS in Malaysia SME's business which represent the answers to each of the research issue in this research.

4.2.1 Thematic analysis for technological determinants (TD)

The above section provided the preview of the overall summary of the data analysis processes and results using thematic analysis technique for this research. Now, this section zooms into the details of thematic analysis for the TD of purchase decision of C-SHS in Malaysia SME's business.

Based on the 17 interviews conducted, all the respondents have given their views and inputs with regards to the TD of purchase decision of C-SHS in Malaysia SME's business. From the interviews transcripts, the thematic analysis process was conducted as shown in Figure 4.4 which illustrated the thematic analysis process and the results for TD.

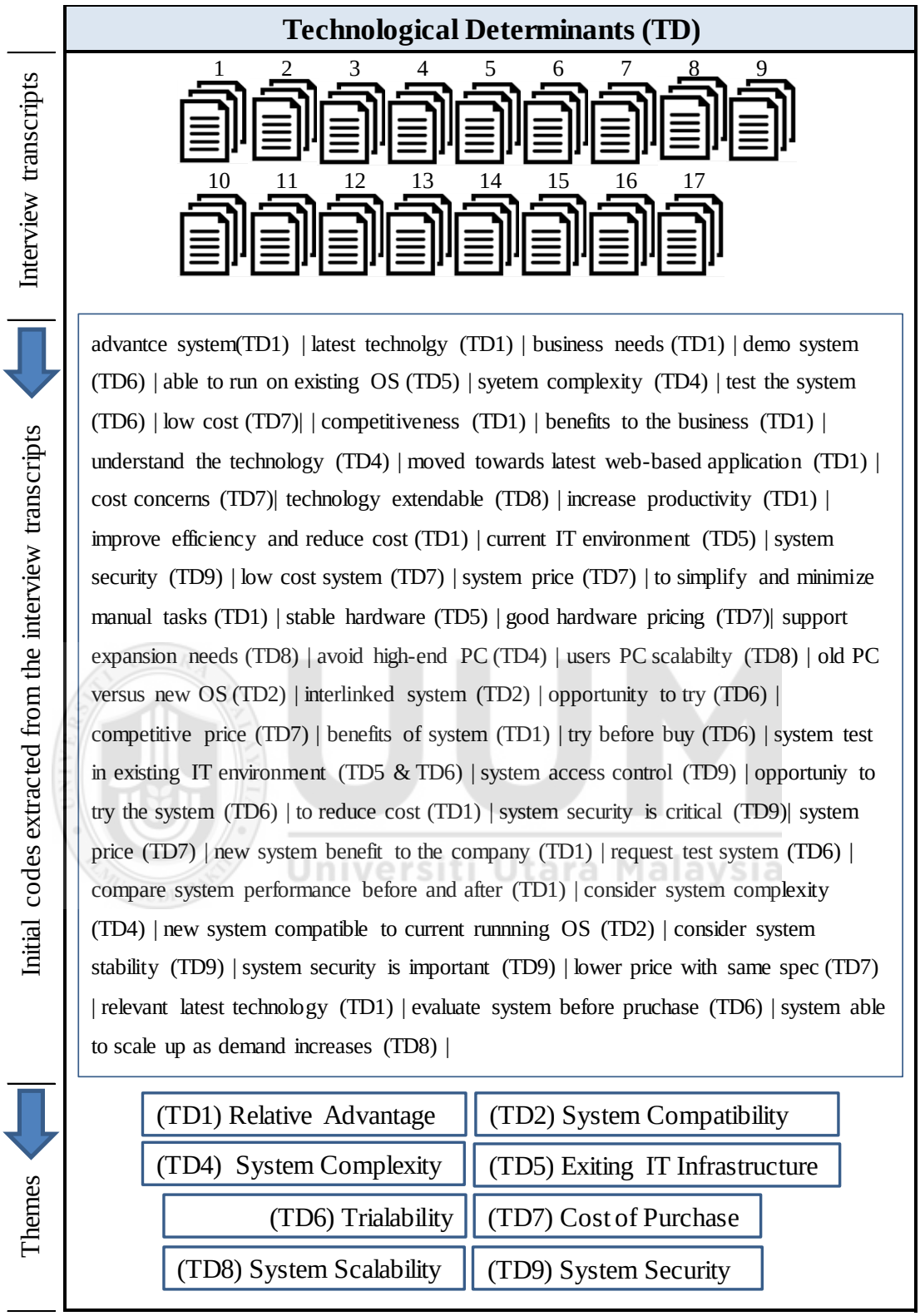


Figure 4.4
Results of thematic analysis for technological determinants (TD)

Source: developed for this research

It begins from the reviewing of all the interview transcripts, followed by the finding and extracting of the initial codes, and lastly to the final themes of TD of purchase decision of C-SHS in Malaysia SME's business. From the thematic analysis process, all the consolidated initials codes can be grouped into eight (8) *main themes* as displayed in the bottom section of Figure 4.4. These eight (8) main themes are TD1: Relative Advantage, TD2: System Compatibility, TD4: System Complexity, TD5: Existing IT Infrastructure, TD6: Trialability, TD7: Cost of Purchase, TD8: System Scalability, and TD9: System Security.

4.2.2 Thematic analysis for organizational determinants (OD)

From the technological determinants discussed above, this section discusses the second aspect of the determinants of purchase decision of C-SHS in Malaysia SME's business that is the organizational determinants (OD). The same thematic analysis technique and process that applied as in the TD was applied in OD. The thematic process and the results are as illustrated in Figure 4.3 below.

Initial codes were extracted from the interview transcripts. These initials codes were then grouped according to the same category or theme. A total of six (6) main themes were created as shown at the bottom of Figure 4.5. These final themes are OD1: Top Management Support, OD2: End User IT Skill, OD3: Owner Characteristics, OD4: Resources Availability/Constraint, OD5: Perceived Usefulness, and OD6: Perceived Ease of Use.

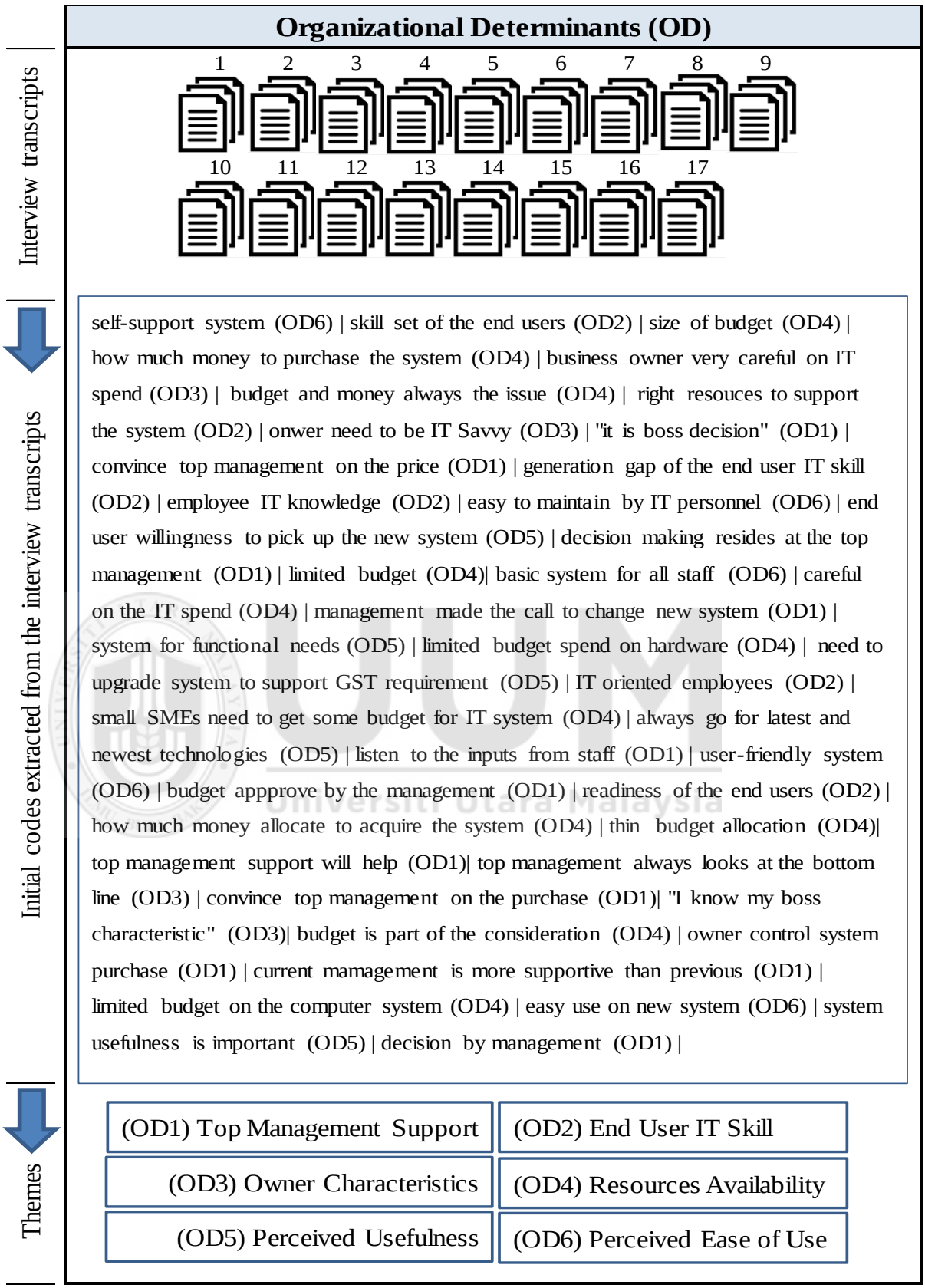


Figure 4.5:
Results of thematic analysis for organizational determinants (OD)

Source: developed for this research

4.2.3 Thematic analysis for environmental determinants (ED)

Up to this point, two (2) aspects of determinants (TD and OD) of purchase decision of C-SHS in Malaysia SME's business had been analyzed using the thematic analysis technique. To continue on with this process and discussion, this section looks at the third aspect of determinants, which is the environmental determinants (ED) of purchase decision of C-SHS in Malaysia SME's business. Utilizing the same approach, the thematic process and results are displayed in Figure 4.6 below.

Likewise, the process began with reading through the interview transcripts one by one several times to get familiarized with the data and the contents. The initial codes were searched and extracted while reading through the interview transcripts of all the 17 respondents from the Malaysia SME's business owners or the person in charge of the C-SHS. These initials codes were then segregated according to the same or similar categories or themes. As a result of this process of codes segregation, seven (7) main themes have been finalized. These themes are ED1: Competitive Pressure, ED2: Government Support, ED3: Customer Pressure, ED4: Vendors Competency and Support, ED5: New Initiative, ED6: Brand Loyalty, and ED7: Green IT Environment, as appeared at the bottom portion of Figure 4.6.

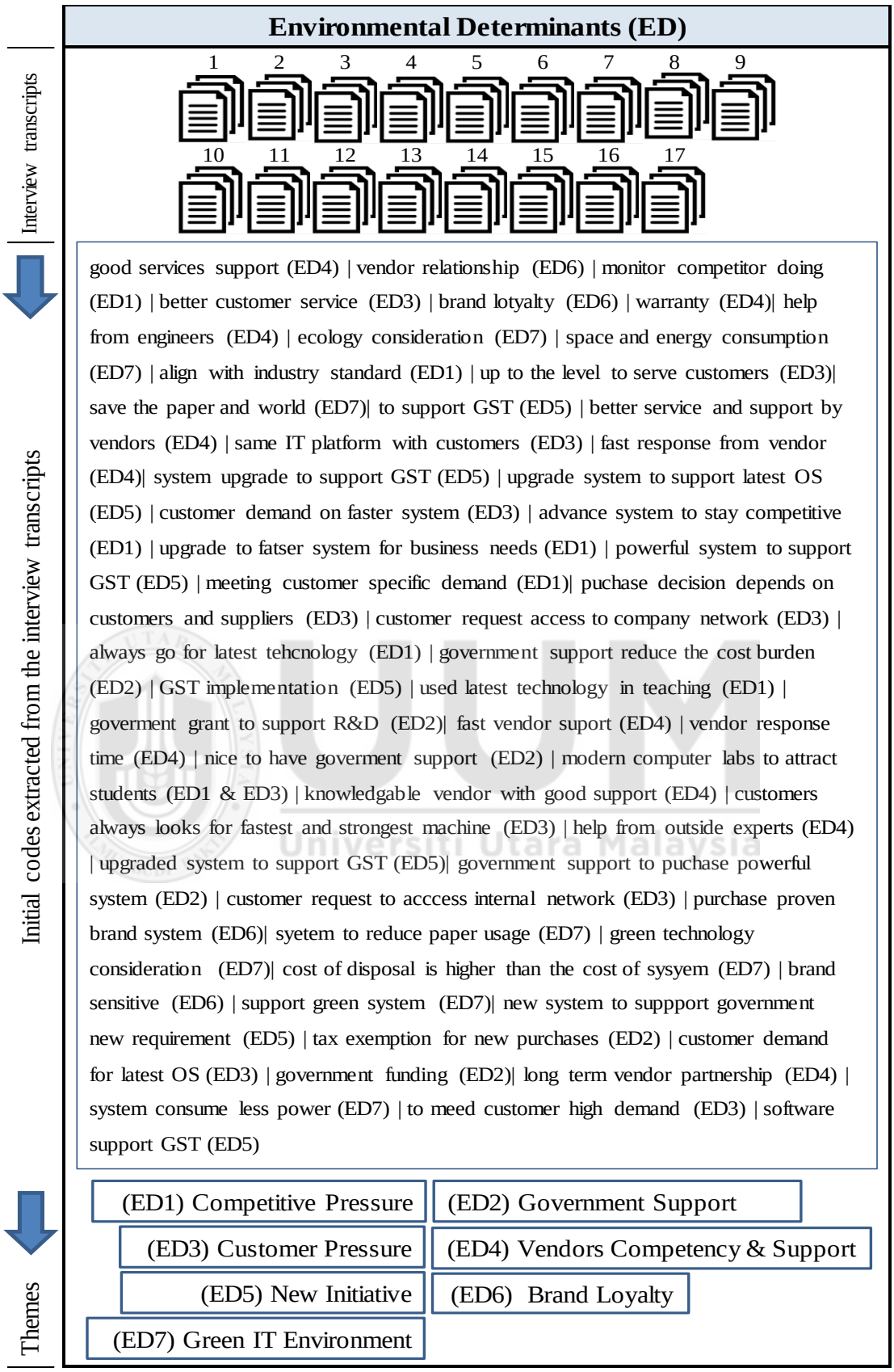


Figure 4.6
Results of thematic analysis for environmental determinants (ED)

Source: developed for this research

In summary, Section 4.2 had successfully performed the data analysis on the three (3) aspect determinants of purchase decision of C-SHS in Malaysia SME's business based on the interview transcripts using the thematic analysis technqiue. The results of the thematic analysis are summarized in Table 4.2 below.

Table 4.2
Summary of data analysis results of determinants of purchase decision of C-SHS in Malaysia SME's business using thematic analysis technique

Determinants of Puchase Decision of C-SHS In Malaysia SME's Business		
Technological 8	**Organizational 6**	**Environmental 7**
Relative Advantage	Top Management Support	Competitive Pressure
System Compatibility	End User IT Skill	Government Support
System Complexity	Owner Characteristics	Customer Pressure
Existing IT Infrastructure	Resources Availability /Constraint	Vendors Competency & Support
Trialability	Perceived Usefulness	New Initiative
Cost of purchase	Perceived Ease of Use	Brand loyalty
System Scalability		Green IT environment
System Security		

Source: developed for this research

From Table 4.2 above, a total of 21 determinants of purchases decision of C-SHS in the Malaysia SME's business have been identified across the three (3) aspects from the convergent interviews and thematic analysis process. Out of this, eight (8) determinants are from the technological aspect, six (6) determinants are from the organizational aspect, and seven (7) determinants are from the environmental aspect. To continue on, these results are used in the next following section with the aims to

answer the three (3) research issues of this research which were derived from Section 1.3 in Chapter 1.

4.3 Research Issues

The section prior to this had carried out the thematic analysis on the data collected through the convergent interview. In turn, this section focuses on the analysis of the three (3) research issues derived within the preliminary theoretical framework of this research as discussed in the Section 2.8.1, 2.8.2, and 2.8.3 (refer to Chapter 2) based on the outcome of the thematic analysis.

4.3.1 Analysis result for research issue 1: Technological determinants of purchase decision of C-SHS in SME's business in Malaysia

Research issue 1 looks at each of the determinants from the technological perspective that could determine the purchase decision of C-SHS in SME's business in Malaysia. As a recall from the discussion in Section 2.8.1 in Chapter 2, the first research issue of this research is as follows;

> *RI1: What are the technological determinants of purchase decision of C-SHS in SME's business in Malaysia?*

From the convergent interview conducted among the 17 respondents from Malaysia SME's business, all the responses acknowledged that technological aspect does matter and it determines their purchase decision on the C-SHS for their organization. Each of these respondent has given their inputs on what they think of the technological factors

which determine their purchase decision of C-SHS. From the thematic data analysis performed in Section 4.2.1 and Figure 4.4 in Chapter 4, there are eight (8) technological determinants of purchase decision of C-SHS in Malaysia SME's business. These individual eight (8) determinants are relative advantage, system compatibility, existing IT infrastructure, system complexity, trialability, cost of purchase, system scalability, and system security. Table 4.3 below summarized each of the technological determinants with respect to the preliminary theoretical framework of this research as shown in Figure 2.9 in Chapter 2.

Table 4.3

Summary of data analysis on the technological determinants with respect to the preliminary theoretical framework

	Technological Determinants from theoretical framwork (refer to Figure 2.9)	Respondents from SME's business in Malaysia																	
		1 EXP01	2 SVC01	3 SVC02	4 SVC03	5 MFG01	6 MFG02	7 MFG03	8 MFG04	9 MFG05	10 MFG06	11 SVC04	12 SVC05	13 MFG07	14 MFG08	15 SVC06	16 SVC07	17 SVC08	Frequency
1	Relative Advantage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		16
2	System Compatibility		✓			✓	✓	✓	✓	✓			✓	✓	✓	✓			10
3	Observability																		0
4	System Complexity	✓	✓			✓		✓		✓	✓				✓	✓	✓		9
5	Existing IT Infrastructure	✓	✓		✓			✓				✓	✓	✓		✓	✓	✓	10
6	Trialability											✓	✓	✓		✓	✓	✓	7
7	Cost of purchase	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16
8	System Scalability*			✓					✓					✓		✓	✓	✓	6
9	System Security*			✓				✓						✓	✓	✓	✓	✓	8

*Legend: * new discovered determinant*

Source: developed for this research

The first determinant of purchase decision of C-SHS is *relative advantage*. Relative advantage refers to the degree to which a technological factor is perceived as providing greater benefits for the organization than the idea that it supersedes

(Rogers, 1983). All the respondents, except respondent SVC05, confirmed that relative advantage does determine their purchase decision of C-SHS. Some related quotes from the respondents are as follows;

> *"The most important factor is the value. The value means how is the system going to help me improve my margin, improve my competitiveness against my competitors next door, reduce cost, provide better customer service to my customer?" – EXP01*

> *"The system must be able to reduce duplicate works. It must also reduce the time to retrieve documents and be less time consuming." – MFG01*

> *"I think, at this stage it has to be how the performance of the system can meet our business requirement."- MFG02*

> *"We will look at the performance of the system before and after the implementation, so as to have a better sense of purchase decision," – SVC06*

Hence, obviously relative advantage is confirmed as a determinant of purchase decision of C-SHS in SME's business in Malaysia from the technological perspective.

The second determinant of purchase decision of C-SHS in SME's business in Malaysia is *system compatibility*. System compatibility refers to the degree to which the new hardware is perceived as being consistent with existing hardware, file structure, operation, ease of data transfer to other applications, and the requirement of users (Robert at el., 2006). Ten (10) out of seventeen (17) respondents have sighted the importance of system compatibility when making decision on the purchase of C-SHS. The responses on this determinant is quite consistent from the last four respondents. Below are some of the related excerpts of what is said by the respondents.

"Some PCs are linked to our machine in the production floor and they have to sync together, so we cannot simply upgrade those PCs." – MFG05

"…sometimes it depends on our environment also, like the OS version. The system must be capable to run on the existing OS that we have and support it. That must be takes into consideration as well." – SVC07

Therefore system compatibility is confirmed as a technological determinant of purchase decision of C-SHS in this research.

The third determinant of purchase decision of C-SHS in SME's business in Malaysia is *observability*. Observability refers to the degree of visibility of the new innovation results. Table 4.3 shows that none of the respondents spoke about this determinant. This could probably be attributed to the fact that SME's business are more concerned about the performance of the system rather than the results demonstrated by the system. As such, observability is not confirmed as determinant of purchase decision of C-SHS in SME's business in Malaysia from the technological perspective.

The next determinant of purchase decision of C-SHS from the technological perspective is *system complexity*. System complexity is the degree of difficulty that users have in understanding and applying the innovation (Tan et al., 2009; Tung, et al, 2008). From Table 4.3, nine (9) respondents had confirmed that the system does influence their purchase decision of C-SHS. They always look for simple system that is easy to understand and operate, and also does not require thorough training. When the interviewees were specifically asked about system complexity, all the respondents gave very consistent answers that is system complexity does impact their purchase

decision. Few statements on this determinants which were excerpted from the interview recordings are as follows:

> *"Understanding the technology is a challenge due to its complexity such as what to buy? why to buy it? why should we buy certain brand and not another brand?..." – SVC01*

> *"Actually we don't require a complex system, we just need a more stable system." – MFG03*

> *"Yes, we also take system complexity as a consideration when purchasing the system." – SVC06*

Therefore, system complexity is confirmed as a valid technological determinant of purchase decision of C-SHS in this research.

The fifth determinant of purchase decision of C-SHS in SME's business in Malaysia from Table 4.3 is *existing IT infrastructure*. This refers to the existence of common ICT infrastructure, standards and applications in the firm. Ten (10) respondents had emphasized that existing IT infrastructure is one of the factors they would consider in the purchase of C-SHS. The view point on this determinant from the interviewees are relatively aligned and converged. Below are the statements made by the respondents on this determinant of purchase decision of C-SHS in Malaysia SME's business.

> *"Definitely, definitely. If I could try out the system in our college before I purchase to see how the products fit into our current IT environment." – SVC05*

> *"Yes, we will consider the existing IT infrastructure. Normally we will say "we have this structure, I try to minimize the impact to our existing structure"." – SVC07*

Hence, existing IT infrastructure is confirmed a valid determinant of purchase decision of C-SHS in SME's business in Malaysia from the technological perspective.

The sixth technological determinant of purchase decision of C-SHS in SME's business in Malaysia from Table 4.3 is *trialability*. Trialability refers to the opportunity to try out and experiment on the system on a trial basis before making the final decision (Ezer & Kofi, 2014; Rogers, 1983). At the beginning of the interview process when asked about the general questions to the interviewees, none of the interviewee mentioned about this determinant. However, when trialability was specifically called out and explained to the subsequent interviewees in the following interview sessions, everyone acknowledged that this determinant actually does determine their purchase decision. In actual fact, some of the interviewees requested vendors to provide demo units to try out in their company IT environments before buying. Several statements made by the respondents were extracted from the interview recordings and listed below.

> *"It will be great if we are given opportunity to try out the technology before purchasing. That is when you taste the sweet right?" – SVC04*

> *"Yes, I love to try out the system before I buy." – SVC05*

> *"Most of the time we request to have a test on the system itself and most of the time our vendor will agree. They will come here to configure the system and leave the system for us to test" – SVC06*

> *"We will ask the vendor whether they can do a POC (proof of concept) or lets us have a demo unit to test it out and try out the functions to look at the features and all that. Actually we will test it out in our system. That means they will set up the devices in our system and then trial run for one or two weeks before any further decision in the purchase is make." – SVC07*

With that, trialability is confirmed in this research as one of the valid determinant of purchase decision of C-SHS in the SME's business in Malaysia.

The seventh determinant of purchase decision of C-SHS from the technological perspective is *cost of purchase*. This determinant refers to the cost of purchasing computer equipment, establishing a communication network system, and internet connectivity (Irefin et al., 2012). Except respondent SVC03, the rest of the sixteen (16) respondents responded in a convincing and consistent manner that pricing of the C-SHS is their main concern. The following are a few quotations pulled out from the interview recordings.

> *"Especially with the SMI, after cross the value, they will look at the pricing and service support." – EXP01*

> *"When you buy PCs, you always go for the price." – SVC01*

> *"The competitive prices of the system. I mean vendor can provide competitive price, they are open for negotiation and the price is not over and the margin is not too high for them. We are always fighting with the price, so that will be one of the main factors." – SVC04*

> *"Finding a good price for a good product (C-SHS) is the biggest thing for us." – SVC05*

Undeniably, cost of purchase is confirmed as one of the determinants of purchase decision of C-SHS in Malaysia SME's business from the technological perspective.

The eighth determinant of purchase decision of C-SHS in Malaysia SME's business is *system scalability* and it is a newly discovered determinant from the thematic analysis with respect to the preliminary theoretical framework of this research. This determinant refers to the ability of the system to support future business growth as

demand increases. When system scalability was specifically asked to the respondents, almost all the respondents confirmed system scalability as part of the factor which determines their purchase decision. The consistency of all the responses was observed in the responses pattern as displayed in Table 4.3. Several relevant statements about this determinant are appended below for reference.

> *"...we are concerned if the technology can extend to the next layer, like very common our window server operating system." – SCV02*

> *"...we constantly enhance our C-SHS because our company is growing so the requirement is getting more now." –MFG07*

> *"System scalability is also important. Last time we only had some of the equipment when we moved in here. Later we found out that the devices cannot cope with the growing demands, and so we had to upgrade the IT system." – SVC06*

Thus, system scalability is confirmed as a valid technological determinant of purchase decision of C-SHS in Malaysia SME's business. Based on the experience on real customer engagement, a lot of customer facing scalability issue with their existing C-SHSH when their business begins to growth and number of system users increased. The bandwidth issue caused the processing speed slowed down, longer time required to load and retrieve information, and system over loaded and hang. These situation certainly caused negative impact to the productivity and user experience. One of the reason for this issue is the customers overlooked or did not think about the system scalability aspect. Thus this newly found determinant is a *new* contribution to the body of knowledge.

The last determinant of purchase decision of C-SHS in SME's business in Malaysia from Table 4.3 is *system security*. System security is the second newly discovered

determinant within the technological aspect in comparison with the determinant from the preliminary theoretical framework of this research. This determinant refers to information security and privacy, management control, agility and adaptability. Based on the responses collected, not every respondent spoke about this determinant, especially during the beginning of the convergent interview process when the general questions were asked. However, as the interview session geared toward convergence in nature, more respondents have quoted this determinant and the consistency of the responses was sighted from the last five (5) respondents as shown in Table 4.3. Relevant statements made by the respondents are shown as follows:

> *"We don't require high-end machines or PC, what we need is just the stability and security of the system." – MFG03*

> *"What we want of course is just basic system security and some permission control on all these systems." – MFG07*

> *"We focus on the system security that protect the internal and external networks." – SVC06*

Hence, system security is confirmed as one of the technological determinants of purchase decision of C-SHS in SME's business in Malaysia. Undeniably system security is always the main concerns to the business owners and also to the customers as well. From my experience as a C-SHS product consultant, some customers very particular with the security system on the vendors or suppliers end. When selecting a vendor to be their business partner, one of the area they look at is the system security of C-SHS at the vendor site. This newly found determinant is also a new contribution to the body of knowledge.

Summary of research issue 1: In summary, the eight (8) technological determinants, inclusive of the two (2) new discoveries, of purchase decision of C-SHS in Malaysia SME's business are relative advantage, system compatibility, system complexity, existing IT infrastructure, trialability, cost of purchase, system scalability, and system security. Therefore, this finding answered the first research issue of this research. The second research issue of this research is discussed in the next following section.

4.3.2 Analysis result for research issue 2: Organizational determinants of purchase decision of C-SHS in SME's business in Malaysia

The previous section discussed the first research issue of this research. This section focuses on the second research issue of this research as below;

RI2: What are the organizational determinants of purchase decision of C-SHS in SME's business in Malaysia?

Results from the convergent interviews had shown that organization aspect does matter and it impact the decision purchase of C-SHS in Malaysia SME's business. Further data analysis from the thematic analysis technique in Section 4.2.2 in Chapter 4 revealed there are six (6) main themes or determinants. These themes are owner characteristics, end user IT Skill, top management support, resources availability/constraint, perceived usefulness, and perceived ease of use. Table 4.4 below summarized each of these organizational determinants with respect to the preliminary theoretical framework of this research as shown in Figure 2.9 in Chapter 2.

Table 4.4

Summary of data analysis on the organizational determinants with respect to the preliminary theoretical framework

	Organizational Determinants from theoretical framwork (refer to Figure 2.9)	Respondents from SME's business in Malaysia																
		1 EXP01	2 SVC01	3 SVC02	4 SVC03	5 MFG01	6 MFG02	7 MFG03	8 MFG04	9 MFG05	10 MFG06	11 SVC04	12 SVC05	13 MFG07	14 MFG08	15 SVC06	16 SVC07	17 SVC08	Frequency
1	Top Management Support			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	14
2	End User IT Skill	✓	✓	✓	✓					✓		✓		✓		✓	✓	✓	10
3	Owner Characteristics	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	14
4	Resources Availability/Constraint	✓	✓		✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	14
5	Perceived Usefulness	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	14
6	Perceived Ease of Use			✓		✓			✓	✓	✓			✓	✓	✓	✓	✓	10

Source: developed for this research

At a glance on the data displayed in Table 4.4, the six (6) determinants had achieved a high degree of consistency. This consistency is indicated by the pattern from the last five (5) respondents as convergent interviews progressed to the end.

The first determinant of purchase decision of C-SHS is *top management support*. Top management support refers to the commitment and support from the upper management which create a positive and supportive climate and environment in pursuing technology adoption (Lin & Lee, 2005; Wang et al., 2010). From the data collected, more than 80% of the respondents agreed that top management support does determine the purchase decision of C-SHS in the organization. This determinant

received very strong signal from the last eight (8) consecutive respondents. Below are the statements about this determinant made by some of the respondents during the interview.

> *"….the boss's decision! They are always concerned about the cost. Even though we do tell them, facilitate them, analyze for them the functions and whatever which is beneficial for the organization and users, somehow they are not convinced with the pricing." – SVC02*

> *"The decision making power is not actually coming from the IT point of view, the decision making power is actually capitalized by the management academic group." – SVC03*

> *"We will gather information and feedback from our staff or our department heads before we make a final decision to purchase the IT system," – MFG06*

> *"The end-users mostly tell us what they want, then I distribute out the configuration or specification, and then I propose, get some quotes, and I would say that sure my boss will adopt it without doubts." –MFG07*

> *"Of course top management support is necessary. Because of the proposal that we have, we will need the approval from the top management. Even sometimes when we initiate the things, we also need to get the green light before we really proceed." – SVC07*

Without hesitation, top management support is confirmed as a valid organizational determinant of the purchase decision of C-SHS in the Malaysia SME's business.

The second determinant of the purchase decision of C-SHS in the Malaysia SME's business from Table 4.4 is *end user IT skill*. This determinant refers to the IT talent who is capable of handling the hardware, and software aspect of the IT system and has a hybrid knowledge of IS needs and business management strategies for

implementing the strategic use of IT (Fong, 2011). 60% of the respondents from Malaysia SME's business mentioned they considered the level of employees IT skill when making decision on the purchase of C-SHS. Two (2) related quotes about end-users IT skill from the interviewees are as follow.

> *"…to what extend or IT skill set should they have in the organization? Ok. They have no point in buying a sophisticated system if they don't have the right skill sets to support." – EXP01*

> *"As we are not so high-end and our people are not so IT literature, we basically we just bought normal PCs." – MFG05*

Hence, end user IT skill is confirmed as a determinant of purchase decision of C-SHS in SME's business in Malaysia from the organizational perspective.

The third organizational determinant of purchase decision of C-SHS as shown in Table 4.4 is *owner characteristics*. This determinant refers to the business owner's behavioral intention, perceived benefits of ICT adoption, such as to improve business efficiency, operation effectiveness, the needs to reach out for new market for opportunity, ICT literacy, level of assertiveness in terms of business decision process, perceived control over requirement for opportunity and resources. 14 out of the 17 respondents had stated that owner characteristics does play an important role in the purchase decision of C-SHS in Malaysia SME's business. Appended below are the excerpts from the interview recordings.

> *"The biggest challenge in SMEs is that they don't have the right resources in the organization who can make this type of decision, unless there is a family member who is IT savvy." – SVC01*

"Top management support will help but convincing upper management of that is another thing. Because they just look at the bottom line of how much it is going to cost the college." – SVC05

"I know my boss's characters and what my boss think, he will always say "any cheaper way to get it done?", so I go for the cheapest but yet workable solution." – MFG07

Therefore owner characteristics is confirmed as a determinant of purchase decision of C-SHS in SME's business in Malaysia from the organizational perspective.

The fourth organizational determinant of purchase decision of C-SHS in SME's business in Malaysia in Table 4.4 is *resources availability/constraints*. It refers to the availability of the financial, human, and technology resources such as computers, telephone lines, etc. Except for three (3) respondents who did not mentioned this determinant during the interview session, the rest of the 14 respondents confirmed resources availability does determine the purchase decision of C-SHS in the organization. The statements below were excerpted from the interview recordings with regards to the cost of purchase of C-SHS.

"Actually cost is the main problem. Because we are only SMEs so we try to have some budget of purchasing all these system." – MFG05

"Because being in a company most important you know you are look at the company, you got IT budget to meet. So the most important factor that will affect that will be how much budget you are spending, how much how we want to spend for this technology that you want to acquire." – SVC04

"We are small college with six (6) campuses, so all the money get spread out kind of thin and the amount of money I have to spend, would determine the purchase decision." – SVC05

"Normally we will look into the budget that is allocated to us. The constraints is how much money that we have would determine the specification we can afford." – SVC07

Thus, resources availability/constraints is confirmed as a determinant of purchase decision of C-SHS in SME's business in Malaysia from the organizational perspective.

The fifth determinant of purchase decision of C-SHS in Malaysia SME's business is *perceived usefulness.* Perceived usefulness refers to the perceived benefits of the system to the firm (Davis, 1989). From Table 4.4, more than 80% of the respondents indicated that perceived usefulness of the C-SHS does impact the purchase decision. From the convergent interview, the last five (5) respondents in a row had provided a very consistent responses to this determinant. Appended below are the related quotes from the respondents.

> *"We just need a basic system that is simple, easy to use and convenient to our staff." – MFG01*

> *"System perceived usefulness is really important and that influence my purchase decision as well." – SVC06*

Therefore, perceived usefulness is confirmed as a valid organizational determinant of purchase decision of C-SHS in SME's business in Malaysia.

The last organizational determinant of purchase decision of C-SHS in Table 4.4 is *perceived ease of use*. Perceived ease of use is perceived easiness of learning and use of the system (Davis, 1989). From Table 4.4, approximately 60% of the respondents from Malaysia SME's business had confirmed perceived ease of use to be part of their considering factors in the purchase decision of C-SHS. The consistent responses had also been sighted in the last five (5) consecutive respondents as shown in Table 4.4. Below are a few quotes by the respondents on the perceived usefulness.

"So far, if it is the user friendly and also fit in our working environment, then we will make decision to purchase." – MFG06

"We will consider how user friendly the system is when purchasing the system. It should be straight forward for the users, such as clicking on the screen you to select, that's it." – SVC07

Hence perceived ease of use is also confirmed as a determinant of purchase decision of C-SHS in SME's business in Malaysia from the organizational perspective.

Summary of research issue 2: To sum up for the organization aspect, six (6) determinants of purchase decision of C-SHS in SME's business in Malaysia are top management support, end user IT Skill, owner characteristics, resources availability/constraint, perceived usefulness, and perceived ease of use. Hence, this section answered the research issue 2 of this research. To continue on the discussion, the next section discusses the research issue 3 of this research.

4.3.3 Analysis result for research issue 3: Environmental determinants of purchase decision of C-SHS in SME's business in Malaysia

So far, two (2) research issues have been discussed and answered accordingly. In turn, this section discusses the research issue 3 of this research as follows;

RI3: What are the environmental determinants of purchase decision of C-SHS in SME's business in Malaysia?

Based on the convergent interview conducted on the 17 respondents from Malaysia SME's business, all the respondents indicated that environmental factor does matter in determining the purchase decision of the C-SHS. The results from the thematic

analysis performed in Section 4.2.3 and Figure 4.6 (refer to Chapter 4), had identified seven (7) determinants of purchase decision of C-SHS in Malaysia SME's business from the environmental perspective. These determinants are government support, competitive pressure, vendor competency and support, customer pressure, new initiative, brand loyalty, and green IT environment as tabulated in Table 4.5 below.

Table 4.5:
Summary of data analysis on the environmental determinants with respect to the preliminary theoretical framework

	Environmental Determinants from theoretical framwork (refer to Figure 2.9)	Respondents from SME's business in Malaysia																
		1 EXP01	2 SVC01	3 SVC02	4 SVC03	5 MFG01	6 MFG02	7 MFG03	8 MFG04	9 MFG05	10 MFG06	11 SVC04	12 SVC05	13 MFG07	14 MFG08	15 SVC06	16 SVC07	17 SVC08	Frequency
1	Competitive Pressure	✓			✓			✓		✓	✓	✓			✓	✓	✓		9
2	Government Support	✓						✓		✓	✓	✓	✓	✓	✓	✓	✓		10
3	Customer Pressure	✓			✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		12
4	Vendors Competency & Support	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		13
5	New Initiative*	✓							✓				✓	✓		✓	✓		6
6	Brand loyalty*	✓	✓										✓	✓	✓		✓		6
7	Green IT environment*			✓	✓	✓						✓	✓	✓	✓	✓	✓		9

*Legend: * new discovered determinant*

Source: developed for this research

Table 4.5 displayed each of the seven (7) environmental determinants of purchase decision of C-SHS with respect to the preliminary theoretical framework (refer to Figure 2.9 in Chapter 2) of this research. From the table, a certain degree of consistency on all the determinants had been sighted as convergent interviews progressed through to the last respondent in the list.

The first environmental determinant of purchase decision of C-SHS in SME's business in Malaysia in Table 4.5 is *competitive pressure*. It refers to the level of pressure felt by the firm from competitors within the industry (Chinyao et al., 2011; Hameed & Counsell, 2012). More than half of the respondents had mentioned pressure from the rivals do really determine their purchase decision of C-SHS in the organization in order to stay competitive in the industry. Towards the end of the interviews, the responses from the respondents displayed the consistency on this determinant. Two (2) quotes pulled out from the interviews recordings are as below.

> *"In the education industry, we need to use up-to-date software and then of course the special equipment that we used for teaching such as touchboard." – SVC04*

> *"I understand the competition is intense. Luckily we have some nice computers in the computer labs. We can offer good machines, the computer labs are open all the time, and students can walk in and start using the computers." – SVC05*

Thus, competitive pressure is confirmed as a valid determinant of purchase decision of C-SHS in SME's business in Malaysia from the environmental perspective.

The second environmental determinant of purchase decision of C-SHS in Malaysia SME's business is *government support*. Government support refers to the government policies and initiatives (Irefin et al., 2012) to promote ICT adoption and use (Hameed & Counsell, 2012). From the convergent interviews conducted, eight (8) consecutive respondents had confirmed that government support does really impact their purchase decision on the C-SHS. A relatively strong consistency on the responses from these respondents had been recorded as appeared in Table 4.5. Few statements made by the respondents were extracted from the interview recording as follow.

"Ya, if government support in terms of subsidy on the C-SHS purchase, we will purchase the system with the features that can benefit us." – MFG07

"Government support is an important factor and it helps to lower down our costing." – SVC06

"Government support will determine the purchase because at one time I think government gave tax exemption for certain asset purchased. During that time frame, we will try to purchase in some asset." – SVC07

Hence, government support is confirmed as a determinant of the purchase decision of C-SHS in Malaysia SME's business from the environmental perspective.

The next environmental determinant of purchase decision of C-SHS in SME's business in Malaysia in Table 4.5 is *customer pressure*. Customer pressure refers to the external pressure from customer to adopt a particular innovation. Based on data collected from the interview and the thematic data analysis, 71% of the respondents from Malaysia SME's business had confirmed customer pressure does influence their purchase decision of C-SHS in the organization. Below are the few quotes about customer pressure excerpted from the interview recordings.

"For environment aspect I think everybody should have servers and computers system. It is a necessity now. If you don't have it, that means all your customers or suppliers will looks down on you." – MFG01

"Actually most of our customers are using the emailing system, so we have to implement that also." – MFG03

"My Holland customer requested whether we can have a system where they can log in to our system to see their order on hand and what is their order status. So all these determine our decision for the purchase of the system," – MFG06

"We have a customer who actually requested whether they can access spare parts inventory? The customer wants us to keep the spare part rather by

themselves, but they want a real time monitoring remotely through networks and internet connection." – MFG07

Hence customer pressure is confirmed as an environmental determinant of purchase decision of C-SHS in SME's business in Malaysia.

The fourth determinant of purchase decision of C-SHS in SME's business in Malaysia from the environmental perspective is *vendor competency and support*. Vendor competency and support refers to the IT vendor expertise, after-sales support and the assistance it provides. From the interviews, the respondents expressed the importance and criticality of the vendor competency and support for the C-SHS in the organization. This determinant recorded the highest counts, 13 out of the 17 respondents during the interviews. Several statements made by the respondents were compiled from the interview recordings as below.

"You have to get the right vendor dealer to support, system come with the warranty, any problem you just call them…" – MFG02

"Yes, vendor support is very important. We work with the vendor that provides speedy support, which means if there is any problem, they would be able to come in immediately. I mean the response time is quite crucial. So speedy support is one of the important things." – SVC04

"The first point is the response from our supplier must be very fast, we cannot afford to wait for maybe 1 week or 2 weeks like that." – MFG03

"We have some really good vendors around here to support us, they are very knowledgeable and some really give us good price." – SVC05

"I need some help from the outsiders, I mean those who are actually really expert in the C-SHS." – MFG07

As such, vendor competency and support is confirmed as a valid environmental determinant of purchase decision of C-SHS in Malaysia SME's business.

The next three (3) following environmental determinants (5^{th}, 6^{th}, and 7^{th}) of purchase decision of C-SHS in SME's business in Malaysia are newly discovered determinants with respect to the preliminary theoretical framework of this research. The fifth (5^{th}) determinant of purchase decision of C-SHS from the environmental perspective is *new initiative.* It refers to the new application release or version such as latest version of operation system (OS), or new requirement imposed by the government such as GST reporting requirement. From Table 4.5, approximately more than one third of the respondents confirmed this determinant. Moreover there were some degree of consistency on this determinant which was sighted towards the end of the convergent interview process. Below are some of the statements about this determinant which are pulled out from the interview recordings.

> *"From the environmental aspect, it is basically GST (goods and services tax), we have to upgrade as GST software requires higher-end PCs with fast speed and the servers to support all these." – MFG05*

> *"…lately because of GST since last year, our account department upgraded to a software called Autocount." – MFG07*

> *"For example to fulfill the government requirement, such as sometimes when they need certain information and our existing system does not have the function to capture that information, then we will need to look for the system that is able to capture whatever information to meet the government requirement." – SVC07*

With the above discussion, new initiative is confirmed as one of the environmental determinants of purchase decision of C-SHS in Malaysia SME's business. Very often, customers purchase new system based on the new needs such as new implementation

of the corporate system to serve customer better, or to introduce new services to customer. From my industrial practical knowledge, these new implementation and new services require more advance and powerful IT system to run in order to achieve the desired end results. This newly found determinant is a new contribution to the body of knowledge.

The next newly discovered environmental determinant of purchase decision of C-SHS in Malaysia SME's business is *brand loyalty*. Brand loyalty in this context refers to the extent of the faithfulness of consumers to a particular brand, expressed through their repeat purchases, irrespective of the marketing pressure generated by the competing brands. Approximately one third (1/3) of the respondents from Malaysia SME's business agreed that brand loyalty does impact the purchase decision of C-SHS. Two (2) quotes in relation to this determinants are as follows.

> *"I think it is also very important to have a little bit of brand loyalty. It does help to be brand loyal, it does help to build relationship with the vendor, so that you can understand the roadmap of the product, and the advantage of the products." – SVC01*

> *"My top management is really particular about brand. Because they had bad experience with some of the brand in the past. We also look at how the capable the brand is." – SVC06*

Therefore, brand loyalty is confirmed as a new discovered environmental determinant of purchase decision of C-SHS in SME's business in Malaysia. Brand is such a powerful name in the marketplace. One of my customers told me that they only stick to that brand as they feel much more comfortable with their products and supports. The previous bad experience with the previous brand which caused major disaster in

their business operation also contributed to the switch. This newly found determinant is also new contribution to the body of knowledge.

The last newly discovered environmental determinant of purchase decision of C-SHS in SME's business in Malaysia in Table 4.5 is *green IT environment*. Green IT environment refers to the use of IT resources in an energy-efficient and cost effective manner (Cai, Chen & Bose, 2013). The heat released from hardware, energy consumption, waste associated with the use of hardware or software and disposal of the hardware can cause negative impact to environment (Park & Jeong, 2014). Based on the comments and inputs from the respondents, green IT environment is now becoming a standard feature of the C-SHS. More than half of the respondents confirmed green IT environment does impact the purchase decision of C-SHS. Below are the statements in relation to green IT environment from the interview recordings.

> *"From the environmental side, save the paper save the world. You save a lot of things by consuming less." – MFG01*

> *"Actually right now, most of IT devices will say go green, go green. It is part of the standard features and certainly this is a plus point on the purchase decision." – SVC07*

Therefore, green IT environment is confirmed a valid determinant of purchase decision of C-SHS in SME's business in Malaysia from the environmental perspective. In current practice, many organizations are marching towards environmental certification to improve their company image and generate competitive advantage (Gonza, 2005). From my industrial experience, green IT products are the trend going forward. All the new products introduced to the market are environmental friendly and has carbon emission specification printed on the product brochure.

Likewise, this newly found determinants also a new contribution to the body of knowledge.

Summary of research issue 3: In summary, the seven (7) environmental determinants of purchase decision of C-SHS in Malaysia SME's business, inclusive of three (3) new discoveries, are competitive pressure, government support, customer pressure, vendor competency & support, new initiative, brand loyalty, and green IT environment. Thus, the finding in this section has answered the research issue 3 of this research.

4.4 Summary

To recapitulate, this chapter has analyzed and reported the findings of determinants of the purchase decision of C-SHS in SME's business in Malaysia based on the data collected through convergent interview and analyzed using thematic analysis technique. The data analysis was conducted by examining the three (3) research issues of this research in relation to the three (3) perspective that is technological, organizational, and environmental. Table 4.6 below summarized these findings.

From the results of the analysis, all the determinants of purchase decision of C-SHS in SME's business in Malaysia in the preliminary theoretical framework (Figure 2.9 in Chapter 2) have been confirmed except observability. The observability was neither mentioned nor confirmed by all the respondents. One of the plausible explanation for this non confirmation could be SME's business owners are more concerned on the performance of the C-SHS than on the results demonstrated by the system. On the other hand, five (5) new determinants of purchase decision of C-SHS in SME's business in Malaysia marked with an asterisk, two (2) from the technological aspect

and three (3) from the environmental aspect, have been discovered as shown in Table 4.6. These newly discovered determinants are new contributions to the body of knowledge. The results presented in this chapter have managed to answer all the three (3) research issues of this research.

Table 4.6
Summary of answers to the research issues of this research

	Research Issue	**Determinants of purchase decision of C-SHS in Malaysia SME's business**
1	What are the technological determinants of purchase decision success of C-SHS among Malaysian SMEs businesses?	TD1: Relative Advantage TD2: System Compatability ~~TD3: Observability~~ TD4: System Complexity TD5: Existing IT Infrastructure TD6: Trialability TD7: Cost of Purchase TD8: System Scalability * TD9: System Security *
2	What are the organizational determinants of purchase decision success of C-SHS among Malaysian SMEs businesses?	OD1: Top Management Support OD2: End User IT Skill OD3: Owner Characteristics OD4: Resources Availability OD5: Perceived Usefulness OD6: Percieved Ease of Use
3	What are the environmental determinants of purchase decision success of C-SHS among Malaysian SMEs businesses?	ED1: Competitive Pressure ED2: Government Support ED3: Customer Pressure ED4: Vendors Competency & Support ED5: New Initiative * ED6: Brand loyalty * ED7: Green IT Environment *

*Legend: * new discovered determinant*

Source: developed for this research

CHAPTER 5: CONCLUSIONS AND IMPLICATIONS

5.0 Introduction

This research was designed to address the research issue: *How and why to establish the determinants of the purchase decision of C-SHS in Malaysia SME's business?* To investigate this research problem, this dissertation was divided into five (5) main chapters. This chapter recapitulates and concludes the overall research with explanations of the answers to the research issue of this research.

Chapter 1 was about WHAT this research is all about by providing an overview of the whole dissertation. The first section introduced the background of the research (Section 1.1). The next three (3) sections developed and justified the research problem statement (Section 1.2), research issues (Section 1.3), and research objective (Section 1.4), whereas the fifth sections summarized the significance and contribution of this research from three (3) aspects that are theoretical, methodological and practical (refer to Table 1.2). The sixth section set the boundary of this research and called out the limitations of the research. The last two (2) sections outlined the organization of this dissertation (refer to Figure 1.4) and concluded the chapter.

Chapter 2 provided the FOUNDATION and SUPPORT to this research by reviewing the literature with regards to the determinant of purchase decision of C-SHS in SME's

business in Malaysia. Chapter 2 began with the definition of C-SHS (refer to Table 2.1) and SME's business in Malaysia adopted in this research (Table 2.3). The third section of the chapter reviewed and discussed the three (3) relevant theories namely TAM, DOI, and TOE, which served as the integrated underpinning theories of this research (refer to Figure 2.5). The fourth and fifth sections synthesized the literatures from non-Malaysian (refer to Table 2.6) and Malaysian (refer to Table 2.7) SME's business perspective with respect to the research topic in this research, whereas the sixth section of Chapter 2 consolidated and merged the determinants synthesized from the literatures and from the underpinning theories to serve as the foundation to develop the preliminary theoretical framework of this research (refer to Figure 2.7). The last three (3) sections of Chapter 2 developed the preliminary theoretical framework (refer to Figure 2.9) and formulated the three (3) research issues (Section 2.8) of this research before it concluded the chapter.

Chapter 3 described HOW this research was carried out. The chapter began with the justification to the use of qualitative approach (Section 3.1) for this research. It also further described and justified the use of convergent interview (Section 3.2) as a technique for data collection and described the process of convergent interview. The third section discussed how the validity and reliability were achieved in the data collection and analysis (Section 3.3). The fourth section described data collection strategies including snowball sampling technique (refer to Figure 3.5), sampling population (Section 3.4.2), sampling size (Section 3.4.3), and research instrument (Section 3.4.4). The next section informed how to analyze the data collected using thematic analysis technique (Section 3.5.1) and last section concluded the chapter.

Chapter 4 ANALYZED AND REPORTED the findings of this research based on the data collected from the 17 respondents of Malaysia SME's business through the convergent interview process. This chapter began with the discussion of the setting of this research and provided a brief profile of each respondents (refer to Table 4.1). It was followed with a detailed explanation of the data analysis for each aspect of the determinant of purchase decision of C-SHS based on the thematic analysis technique (refer to Figure 4.2 & Figure 4.3). The last section of this chapter reviewed and discussed the results of thematic analysis for each research issues with respect to the preliminary theoretical framework of this research (Section 4.3) before the chapter is concluded.

In this final chapter, CONCLUSIONS are made about each of the three (3) research issues of this research in the first section. The second section presented the conclusion on the research problem by examining and comparing the findings from Chapter 4 with the literature that led to the revised theoretical framework of this research. The next two (2) subsequent sections of this chapter discussed the implications and limitations of this research. Finally, areas for future research and study are suggested before the whole research in this dissertation is wrapped up. The outline of this Chapter 5 is summarized in Figure 5.1 below.

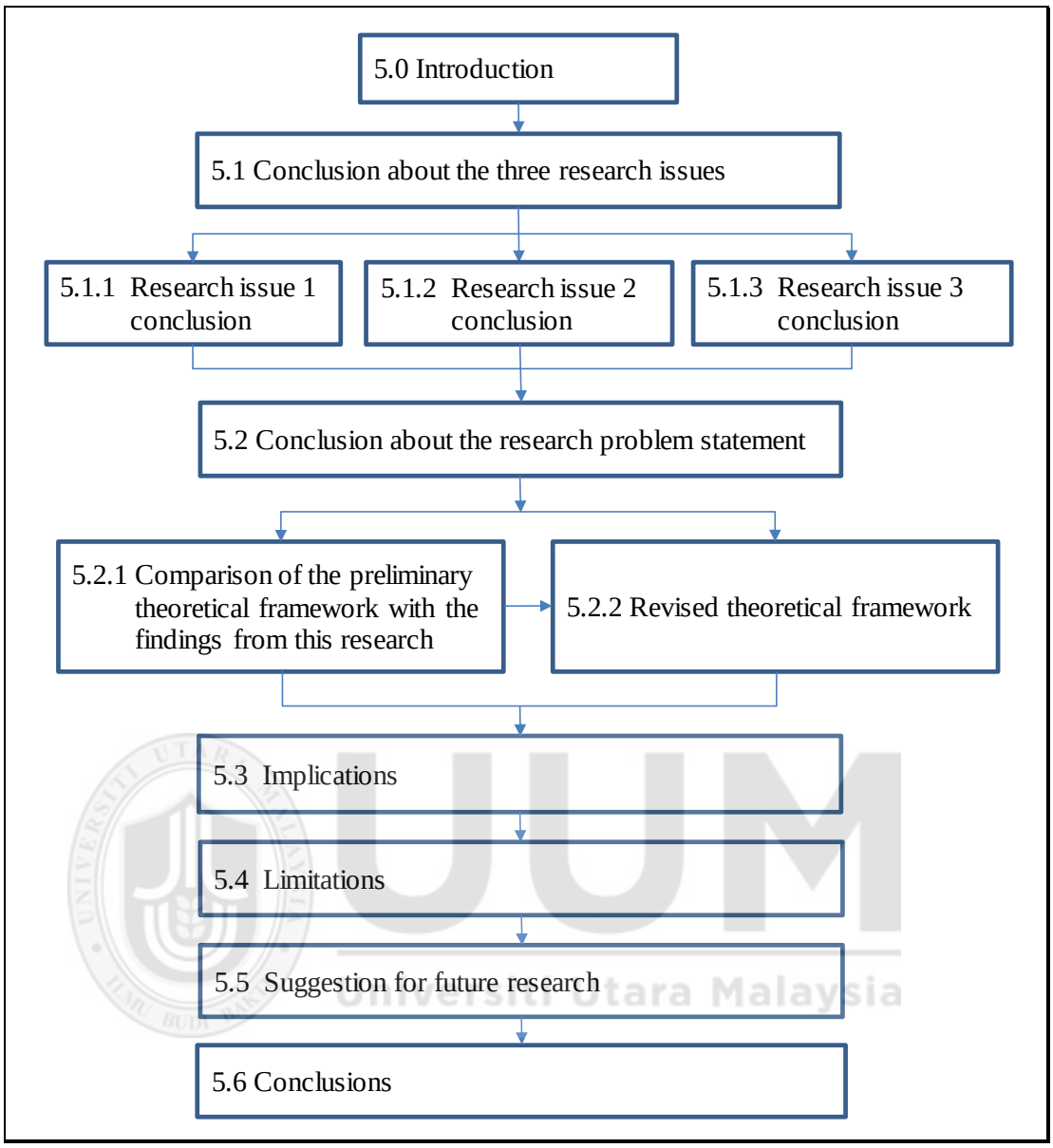


Figure 5.1:
The organization and flow of Chapter 5

Source: developed for this research

5.1 Conclusion on the Three Research Issues

This section summarizes the primary determinants raised in the literature review for each of the research issues and compares these to the findings of this research. In other words, this section compares and contrasts the research findings with the literature, in order to outline the contribution of this research in understanding the

determinants of purchase decision of C-SHS in Malaysia SME's business. A summary of conclusions for each research issue of this research is contained in Table 5.1.

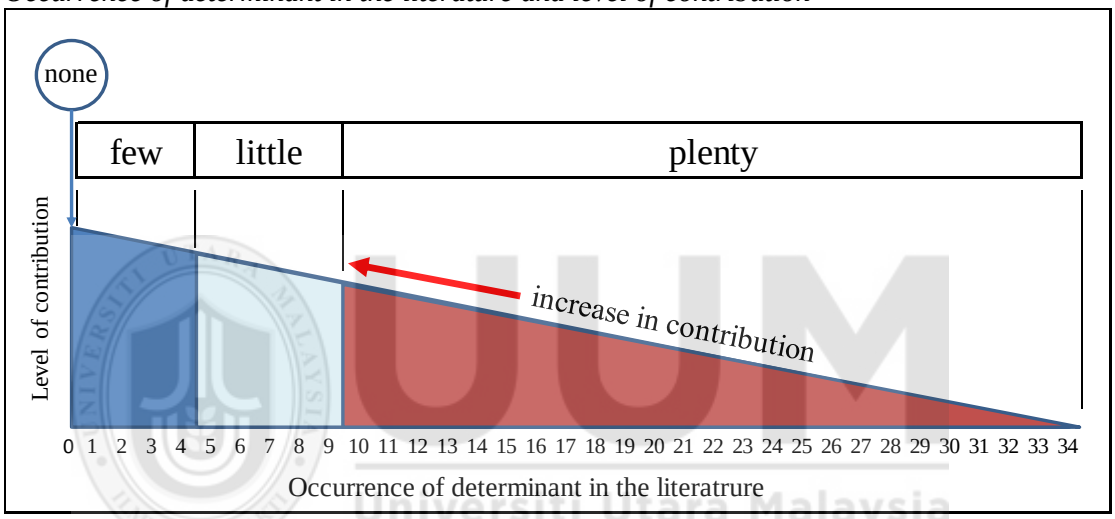
Table 5.1
Summary of conclusions in this research for each of the three research issues

Research issue (i)	**Findings and conclusions about the research issue (ii)**	**Occurrence in the literature (iii)**
1	**1.1 Six (6) technological determinants of purchase decision of C-SHS in Malaysia SME's business from the preliminary theoretical framework.**	
	i. Relative Advantage	Plenty (15)
	ii. System Compatibility	Little (9)
	iii. System Complexity	Little (7)
	iv. Existing IT Infrastructure	Little (6)
	v. Trialability	Little (5)
	vi. Cost of Purchase	Little (5)
	1.2 Two (2) *new* technological determinants of purchase decision of C-SHS in Malaysia SME's business.	
	i. System Scalability	none
	ii. System Security	none
2	**2.1 Six (6) organizational determinants of purchase decision of C-SHS in Malaysia SME's business from the preliminary theoretical framework.**	
	i. Top Management Support	Plenty (15)
	ii. End User IT Skill	Plenty (10)
	iii. Owner Characteristics	Plenty (10)
	iv. Resources Availability	Plenty (10)
	v. Perceived Usefulness	Few (2)
	vi. Perceived Ease of Use	Few (2)
3	**3.1 Four (4) environmental determinants of purchase decision of C-SHS in Malaysia SME's business from the preliminary theoretical framework.**	
	i. Competitive Pressure	Plenty (10)
	ii. Government Support	Little (7)
	iii. Customer Pressure	Little (6)
	iv. Vendors Competency & Support	Little (6)
	3.2 Three (3) *new* environmental determinants of purchase decision of C-SHS in Malaysia SME's business.	
	i. New Initiative	none
	ii. Brand loyalty	none
	iii. Green IT Environment	none

Source: developed for this research with modified from Mohd Harif (2002)

Table 5.1 consists of research issue number (column (i)), the corresponding research issue findings which are broken down by each individual determinant (column (ii)), and the occurrence of each individual determinant in the literature with respect to the purchase decision of C-SHS in SME's business. The occurrence of each individual determinant in the literature is divided into four (4) categories, labeled as "none", "few", "little", and "plenty" as shown in Figure 5.2 below.

Figure 5.2:
Occurrence of determinant in the literature and level of contribution



Source: developed for this research

From Figure 5.2, the four (4) category of occurrence of determinant in the literature are in the inversed proportion of contribution. The highest level of contribution is classified by determinant of purchase decision of C-SHS in Malaysia SME's business that has not been proven before and there is no literature available about the determinant. This level of contribution is equivalent to the occurrence category labelled as "none".

The second highest level of contribution is confirmation or disconfirmation of expectation about a determinant of purchase decision of C-SHS in Malaysia SME's

business that has been proven and found in the literature with the occurrence of five (5) or less, out of a total of 34 synthesized literature (combined Table 2.6 and Table 2.7). This second level of contribution is equivalent to the occurrence category labelled as “few” as shown in Figure 5.2.

The third highest level of contribution involves confirmation or disconfirmation of expectation about a determinant of purchase decision of C-SHS in Malaysia SME’s business that has been proven and found in the literature with the occurrence of ten (10) or less. This level of contribution is equivalent to the occurrence category labelled as “little” as shown in Figure 5.2 above.

The least level of contribution is confirmation or disconfirmation of expectation about a determinant of purchase decision of C-SHS in Malaysia SME’s business that has been proven and found in the literature with the occurrence of more than 10. This level of contribution is equivalent to the occurrence category labelled as “plenty” as shown in Figure 5.2 above.

Before the contributions to the literature are detailed in the next following section, it should be noted that this research has also made an impactful contribution to the marketing strategies of the ICT hardware and solution providers in the markets.

5.1.1 Conclusion about research issue 1: What are the technological determinants of purchase decision of C-SHS in Malaysia SME’s business?

Research issue 1 questioned about what are the determinants of purchase decision of C-SHS from the technological perspective in SME’s business in Malaysia? Two (2) main conclusions can be drawn from the findings about research issue 1 as shown in

the Table 5.2 (conclusion 1.1 and 1.2). Conclusion 1.1 consists of six (6) individual determinants and conclusion 1.2 consists of two (2) new individual determinants of purchase decision of C-SHS from the technological perspective in SME's business in Malaysia.

Conclusion 1.1 (i): *relative advantage* does determine the purchase decision of C-SHS in the Malaysia SME's business. The first conclusion about *relative advantage* is that it can determine the purchase decision of C-SHS in the SME's business in Malaysia. From the Non-Malaysian literature, relative advantages was found to be dominating other determinants with regards to determining of the purchase decision of C-SHS in SME's business (Chen, 2004; Chinyao et al., 2011; Chong, 2006; Kendall et al., 2001; Lee and Wu, 2012; Mohammed et al., 2013; Ratanapoophun and Lee, 2011; Ramdani et al., 2013; and Roberts et al., 2006). In addition, the same phenomena on this determinant was also found in the Malaysian literature (Alam & Mohammad Noor, 2009; Ghobakhloo et al., 2011; Hashim, 2007; Hussein & Noor, 2005; Poorangi, Khin, Nikoonejad & Kardevani, 2013; Tan et al, 2009).

From this research, relative advantage has been confirmed by all the respondents from SME's business in Malaysia, except SVC05, as a determinant of purchase decision of C-SHS in SME's business in Malaysia from the technological perspective. The finding in this research is very consistent to the literature. Therefore, relative advantage is included in the theoretical framework of this research,

Conclusion 1.1 (ii): *system compatibility* does determine the purchase decision of C-SHS in the Malaysia SME's business. The second conclusion about *system*

compatibility is that it can determine the purchase decision of C-SHS in the SME's business in Malaysia. Both non-Malaysian and Malaysian literatures have recorded the significance of system compatibility in determining the purchase decision of C-SHS (Azam & Quaddus, 2009; Ezer & Kofi, 2014; Ghobakhloo et al, 2011; Hashim, 2007; Kendall, et al., 2001; Ramdani et al, 2013; Ratanapoophun & Lee, 2011; Roberts et al, 2006, Tan et al, 2009). From Table 5.2, system compatibility is the second highest reported determinant after relative advantage.

In turn, the finding in this research has confirmed system compatibility as a technological determinant of purchase decision of C-SHS in SME's business in Malaysia in addition to the relevant advantage. As such, system compatibility is included in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia in this research.

Conclusion 1.1 (iii): *system complexity* does determine the purchase decision of C-SHS in the Malaysia SME's business. The third conclusion is that *system complexity* can determine the purchase decision of C-SHS in the SME's business in Malaysia. The significance of system complexity in determining the purchase decision have been documented in the non-Malaysian literature (Azam & Quaddus, 2009; Chen, 2004; Ramdani et al, 2013) and also in the Malaysian literature (Ghobakhloo et al, 2011; Hashim, 2007; Hussein & Noor, 2005; Tan et al, 2009).

The result from the thematic analysis as performed in Section 4.3.1 in Chapter 4 also revealed the same finding as in the literatures. It is therefore, system complexity is included in the theoretical framework of this research.

Conclusion 1.1 (iv): *existing IT infrastructure* does determine the purchase decision of C-SHS in the Malaysia SME's business. The fourth conclusion from the technological perspective is *existing IT infrastructure* does determine the purchase decision of C-SHS in the Malaysia SME's business. The same findings have been found in both non-Malaysia and also Malaysian literature (Ezer & Kofi, 2014; Ghobakhloo et al, 2011; Irefin et al, 2013; Ramayah, Lim & Sulaiman, 2006; Kenneth et al, 2012; Nguyen, 2009).

Approximately 60% of the respondents have confirmed the validity of this determinant from the data analysis discussed in Section 4.3.1 in Chapter 4. Hence, existing IT infrastructure is adopted in the theoretical framework of purchase decision of C-SHS in this research.

Conclusion 1.1 (v): *trialability* does determine the purchase decision of C-SHS in the Malaysia SME's business. Next, the fifth conclusion derived from the results of the data analysis stage is that *trialability* does affect the purchase decision of C-SHS in the SME's business in Malaysia. Several evidence of this determinant have been reported from the non-Malaysia literature (Chen, 2004; Chong, 2006; Ezer & Kofi, 2014; Kendall et al., 2001; Ramdani et al, 2013). Likewise, evidence on this determinant of purchase decision of C-SHS in the SME's business in Malaysia has also been reported by Poorangi et al. (2013).

In this research, trialability has been confirmed by the respondents from SME's business in Malaysia and those responses were very consistent as discussed in the Section 4.3.1 (refer to Chapter 4). With this finding, trialability is taken as one of the

determinants of purchase decision of C-SHS in SME's business in Malaysia in the theoretical framework of this research.

Conclusion 1.1 (vi): *cost of purchase* does determine the purchase decision of C-SHS in the Malaysia SME's business. The sixth conclusion is *cost of purchase* does determine the purchase decision of C-SHS in the Malaysia SME's business. This is about the price of the C-SHS. Current literatures have shown that price does impact the purchase decision of C-SHS (Ghobakhloo et al, 2011; Hani & Maha, 2012; Irefin et al, 2013; Lee & Wu, 2012; Salleh & Burgess, 2009).

Based on the findings from this research, price or cost of purchase is the highest confirmed determinant from the 17 respondents. From the data analysis and discussion in Section 4.3.1 (refer to Chapter 4), cost of purchase is confirmed a valid determinant of purchase decision of C-SHS in SME's business in Malaysia. Hence, cost of purchase is adopted in the theoretical model of purchase decision of C-SHS in the SME's business in Malaysia.

The above six (6) conclusions are focused on the determinants of purchase decision of C-SHS in Malaysia SME's business form the technological perspective which are currently documented in the non-Malaysian and Malaysian literature. The next following section is dedicated to the conclusions on the two (2) newly discovered technological determinants of purchase decision of C-SHS in SME's business in Malaysia.

Conclusion 1.2 (i): *system scalability* does determine the purchase decision of C-SHS in the Malaysia SME's business. The first conclusion on the new determinant,

system scalability, is that it does determine the purchase decision of C-SHS in SME's business in Malaysia. No other previous research has reported on the impact of this determinant, system scalability in relation to the purchase decision of C-SHS especially in Malaysia SME's business.

In this research, system scalability has been confirmed as a valid technological determinant by the respondents in this research and consistency in the responses from these respondents has also been noted as discussed in Section 4.3.1. Therefore, this newly discovered determinant is included in the theoretical framework of this research.

Conclusion 1.2 (ii): *system security* does determine the purchase decision of C-SHS in the Malaysia SME's business. The second conclusion on the newly discovered technological determinant, *system security*, is that it can determine the purchase decision of the C-SHS in the SME's business in Malaysia. From the synthesization of the non-Malaysia literature (Table 2.6), system security has been reported to be of significance by only one study by Lee and Wu, (2012) out of the 22. Therefore this determinant was dropped in the preliminary theoretical framework development.

However, in this research, almost half of the respondents confirmed that system security indeed does determine the purchase decision of C-SHS. In consideration of this relatively high magnitude of confirmation, therefore this newly discovered determinant is recruited in the theoretical framework of this research.

5.1.2 Conclusion about research issue 2: What are the organizational determinants of purchase decision of C-SHS in Malaysia SMEs business?

From the technological perspective as discussed above, this section discusses conclusions drawn for the second research issue that is what are the determinants of purchase decision of C-SHS from the organizational perspective in SME's business in Malaysia? This one (1) main conclusion encapsulated six (6) individual organizational determinants of purchase decision of C-SHS in SME's business in Malaysia as shown in Table 5.1 (conclusion 2.1).

Conclusion 2.1 (i): top management support does determine the purchase decision of C-SHS in the Malaysia SME's business. The first conclusion is about the top management support. Plenty of literatures from both non-Malaysian and Malaysian literature have identified top management support to play a role in determining the purchase decision of C-SHS in the SME's business (Irefin et al, 2012; Chinyao, et al., 2011; Ezer & Kofi, 2014; Ghobakhloo et al, 2011; Hani & Maha, 2012; Hussein & Noor, 2005; Kenneth et al, 2012; Knowledge & Lorraine, 2011; Mohammed et al, 2013; Mpofu & Watkins-Mathys, 2009; Nguyen, 2009; Ramayah et al, 2006; Ramdani et al, 2013; Ratanapoophun & Lee, 2011; Windrum & Berranger, 2002).

In this research, majority of the respondents had confirmed top management support as one of the factors in determining the purchase decision of C-SHS in SME's business in Malaysia as discussed in Section 4.3.2 in Chapter 4. This finding is very consistent with the literatures. Therefore, this organizational determinant is included in the theoretical framework of this research.

Conclusion 2.1 (ii): *end user IT skill* does determine the purchase decision of C-SHS in the Malaysia SME's business. Next, the second conclusion which is the IT skill sets of the end users in the organization, shows that this determinant does determine the purchase decision of C-SHS in the SME's business in Malaysia. Literatures from non-Malaysian perspective have provided evidence that the *end user IT skill*s really does impact the purchase decision of C-SHS in SME's business (Fong, 2011; Nguyen, 2009; Ratanapoophun & Lee, 2011; Tran & Hoang, 2011; Windrum & Berranger, 2002). Similar evidence can also be found in Malaysian literatures (Abdullah et al, 2012; Alam & Mohammad Noor, 2009; Ghobakhloo et al, 2011; Hashim, 2007; 2009; Saleh & Burgess, 2009).

In turn, the respondents from Malaysia SME's business in this research also confirmed that this determinant, the end user IT skill as a factor in determining the purchase decision of C-SHS in the organization as discussed in Section 4.3.2 in Chapter 4. The findings in this research indeed enhanced the validity of this organizational determinant, thus end user IT skill is included in the theoretical framework of this research.

Conclusion 2.1 (iii): *owner characteristics* does determine the purchase decision of C-SHS in the Malaysia SME's business. The third conclusion pertains to the determinant, *owner characteristics* is that this determinant does determine the purchase decision of C-SHS. Existing body of knowledge from Malaysia and outside Malaysia provided sufficient evident to support this conclusion (Abdullah et al, 2012; Chee et al, 2011; Ghobakhloo et al, 2011; Hameed & Counsell, 2012; Knowledge &

Lorraine, 2011; Mpofu & Watkins-Mathys, 2009; Nguyen, 2009; Ratanapoophun & Lee, 2011; Roberts et al, 2006; Tran & Hoang, 2011).

In this research, most of the respondents from the Malaysia SME's business had confirmed again that owner characteristics does determine the purchase decision of C-SHS from the organizational perspective. This finding is very consistent with the finding in past studies. As such, owner characteristics is taken as one (1) of the family members in the theoretical framework of this research.

Conclusion 2.1 (iv): *resource availability* does determine the purchase decision of C-SHS in the Malaysia SME's business. The fourth individual conclusion is about *resources availability* in the organization and that this determinant does impact the purchase decision of C-SHS in SME's business in Malaysia. In SME's business, resources availability is one of the main challenges. The previous researches have documented the significance of resources availability in determining the purchase decision of C-SHS in the SME's business (Fong, 2011; Hani & Maha, 2012; Ghobakhloo et al, 2011; Kenneth et al, 2012; Knowledge & Lorraine, 2011; Mpofu & Watkins-Mathys, 2009; Ratanapoophun & Lee, 2011; Saleh & Burgess, 2009; Tran & Hoang, 2011; Windrum & Berranger, 2002).

In turn, the findings from the data analysis stage using thematic analysis technique in this research (Section 4.3.2 in Chapter 4) had confirmed that resources availability within the organization can determine the purchase decision of C-SHS in SME's business in Malaysia. Resources availability is among the highest determinant

confirmed by the respondent participated in this research. Hence, this organizational determinant is included in the theoretical framework of this research.

Conclusion 2.1 (v): *perceived usefulness* does determine the purchase decision of C-SHS in the Malaysia SME's business. Next, this conclusion relates to the *perceived usefulness* by the organization which states that this determinant does determine the purchase decision of C-SHS in SME's business in Malaysia. Unlike previous determinants discussed above, perceived usefulness of the system is only found documented in the non-Malaysian literature (Chee et al, 2011; Ghobakhloo et al, 2011).

In this research, the findings in Section 4.3.2 in Chapter 4 indicated that perceived usefulness by the organization does significantly determine the purchase decision of C-SHS in the SME's business in Malaysia. Therefore perceived usefulness is taken as the determinant in the theoretical framework of this research.

Conclusion 2.1 (vi): *perceived ease of use* does determine the purchase decision of C-SHS in the Malaysia SME's business. Finally, the sixth (6) conclusion about research issue 2 which is concerned with the *perceived ease of use* of the system within the organization concludes that this determinant does determine purchase decision of C-SHS in SME's business in Malaysia. The synthesization of the Malaysian literature provided evidence that perceived ease of use significantly impact the purchase decision of C-SHS in the SME's business (Chee et al, 2011; Ghobakhloo et al, 2011).

In turn, the findings from this research confirmed that the perceived ease of use can determine the purchase decision of C-SHS in the SME's business in Malaysia. Thus, this determinant is adopted in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia from the organizational perspective.

5.1.3 Conclusion about research issue 3: What are the environmental determinants of purchase decision of C-SHS in Malaysia SME's business?

At this juncture, conclusions about the two (2) research issue of this research from the technological and organizational perspective have been drawn and discussed. Now, this section focuses on the conclusion drawn from third research issue of this research (refer to Table 5.1). The third research issue is about what are the determinants that impact the purchase decision of C-SHS in the SMEs businesses from the environmental perspective? Two (2) main conclusions can be made from the findings about the research issue as shown in Table 5.1 (conclusion 3.1 and conclusion 3.2). Conclusion 3.1 which pertains to the four (4) environmental determinants of purchase decision of C-SHS in the SME's business in Malaysia has been captured in the current literature, whereas conclusion 3.2 is about the three (3) *new* environmental determinants of purchase decision of C-SHS in the SME's business in Malaysia that have not been proven or captured in the current literature.

Conclusion 3.1 (i): *competitive pressure* does determine the purchase decision of C-SHS in the Malaysia SME's business. The first conclusion is about *external pressure* from the competitions and its effects on the purchase decision of C-SHS in the SME's business in Malaysia. Current literatures from the non-Malaysian and Malaysian literatures have provided sufficient supportive evidence that competitive pressure does determine the purchase decision of C-SHS in SME's business (Chinyao

et al., 2011; Chong, 2006; Hameed & Counsell, 2012; Ghobakhloo et al, 2011; Iyanda & Ojo, 2008; Kenneth et al, 2012; Murad & Thomson,, 2011; Ramdani et al., 2013; Ratanapoophun & Lee, 2011; Tran & Hoang, 2011).

In turn, the findings in Section 4.3.3 in Chapter 4 of this research had confirmed that competitive pressure does determine the purchase decision of C-SHS in SME's business in Malaysia from the environmental perspective. With that conclusion, competitive pressure is included in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia of this research.

Conclusion 3.1 (ii): *government support* does determine the purchase decision of C-SHS in the Malaysia SME's business. The second conclusion concluded that *government support* does determine the purchase decision of C-SHS in SME's business in Malaysia. The synthesization of non-Malaysian literature indicated that government support can really affect the purchase decision of C-SHS in SME's business (Chen, 2004; Hameed & Counsell, 2012; Irefin et al., 2012; Tran & Hoang, 2011). Likewise synthesization of Malaysian literature also provided the same evidence (Abdullah et al, 2012; Alam & Mohammad Noor, 2009; Ghobakhloo et al, 2011).

In this research, the findings also pointed to the same direction where government support does determine the purchase decision of C-SHS in SME's business in Malaysia from the environmental perspective (refer to Section 4.3.3 in Chapter 4). Therefore, government support is included in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia of this research

Conclusion 3.1 (iii): *customer pressure* does determine the purchase decision of C-SHS in the Malaysia SME's business. Next, the third conclusion that drawn in relation to the research issue 3 is *customer pressure* does determine the purchase decision of C-SHS in SME's business in Malaysia. Relatively speaking, little research reported this environmental determinant does impact the purchase decision of C-SHS in the SME's business (Ghobakhloo et al, 2011; Hameed & Counsell, 2012; Iyanda & Ojo, 2008; Murad & Thomson, 2011; Ratanapoophun & Lee, 2011; Tran & Hoang, 2011).

Findings from this research (refer to Section 4.3.3 in Chapter 4) revealed that customer pressure plays a key role in determine the purchase decision of C-SHS in the SME's business in Malaysia. These findings is consistent with what have been reported in previous studies. Hence, customer pressure is included in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia of this research

Conclusion 3.1 (iv): *vendor competency and support* does determine the purchase decision of C-SHS in the Malaysia SME's business. Lastly, the fourth conclusion, *vendor competency and support* concluded that this determinant does determine the purchase decision of C-SHS in the SME's business in Malaysia. Little studies have reported the significance of this determinant in the purchase decision of C-SHS in SME's business (Ezer & Kofi, 2014; Ghobakhloo et al, 2011; Lee & Wu, 2012; Nguyen, 2009; Tran & Hoang, 2011; Windrum & Berranger, 2002).

In comparison, more than 75% of the respondents who participated in this research confirmed that vendor competency and support does determine the purchase decision of C-SHS in SME's business in Malaysia. Again, this finding is very aligned and consistent with the literatures. Therefore, vendor competency and support is included in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia.

Conclusion 3.2 (i): *new initiative* does determine the purchase decision of C-SHS in the Malaysia SME's business. The first conclusion on the new discovered determinant, *new initiative* concluded that this new determinant does determine the purchase decision of C-SHS in the Malaysia SME's businesses. This determinant has not been mentioned in any of the non-Malaysian and Malaysian literatures.

However, more than one third (1/3) of the respondents in this research confirmed that new initiative does determine does determine the purchase decision of C-SHS in SME's business in Malaysia. As such, this newly discovered determinant is included in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia.

Conclusion 3.2 (ii): *brand loyalty* determine the purchase decision of C-SHS in the Malaysia SME's businesses. The next conclusion on the newly discovered determinant is about *brand loyalty.* It shows that this determinant does impact the purchase decision of C-SHS in the SME's business in Malaysia. Being a newly discovered determinant, it means that brand loyalty has never been reported as a significant determinant in the current literature.

In contrast, this research has found brand loyalty to be of significance in determining the purchase decision of C-SHS in the SME's business in Malaysia from the environmental perspective. Thus, this determinant is included in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia.

Conclusion 3.2 (iii): *green IT environment* determine the purchase decision of C-SHS in the Malaysia SME's business. The last conclusion on the newly discovered determinant is *green IT environment* system which concluded that this determinant does affect the purchase decision of C-SHS in the SME's business in Malaysia. From the synthesization of literatures from both the non-Malaysian and Malaysian context, none provided evidence of how this new determinant, green IT environment influence the purchase decision of C-SHS in the SME's business in Malaysia.

In turn, the finding from this research revealed that green IT environment indeed does determine the purchase decision of C-SHS in the SME's business in Malaysia. More than half of the respondents from the SME's business have confirmed this determinant to be valid. In view of this fact, green IT environment is included in the theoretical framework of purchase decision of C-SHS in SME's business in Malaysia.

In summary, a total of 21 conclusions for the determinants of purchase decision of C-SHS in SME's business in Malaysia have been drawn in relation to the three (3) research issue of this research. Each individual conclusion is compared to and contrasted in the research findings with the literature. As a consequent, the final 21 concluded determinants from the three (3) aspects, namely technological,

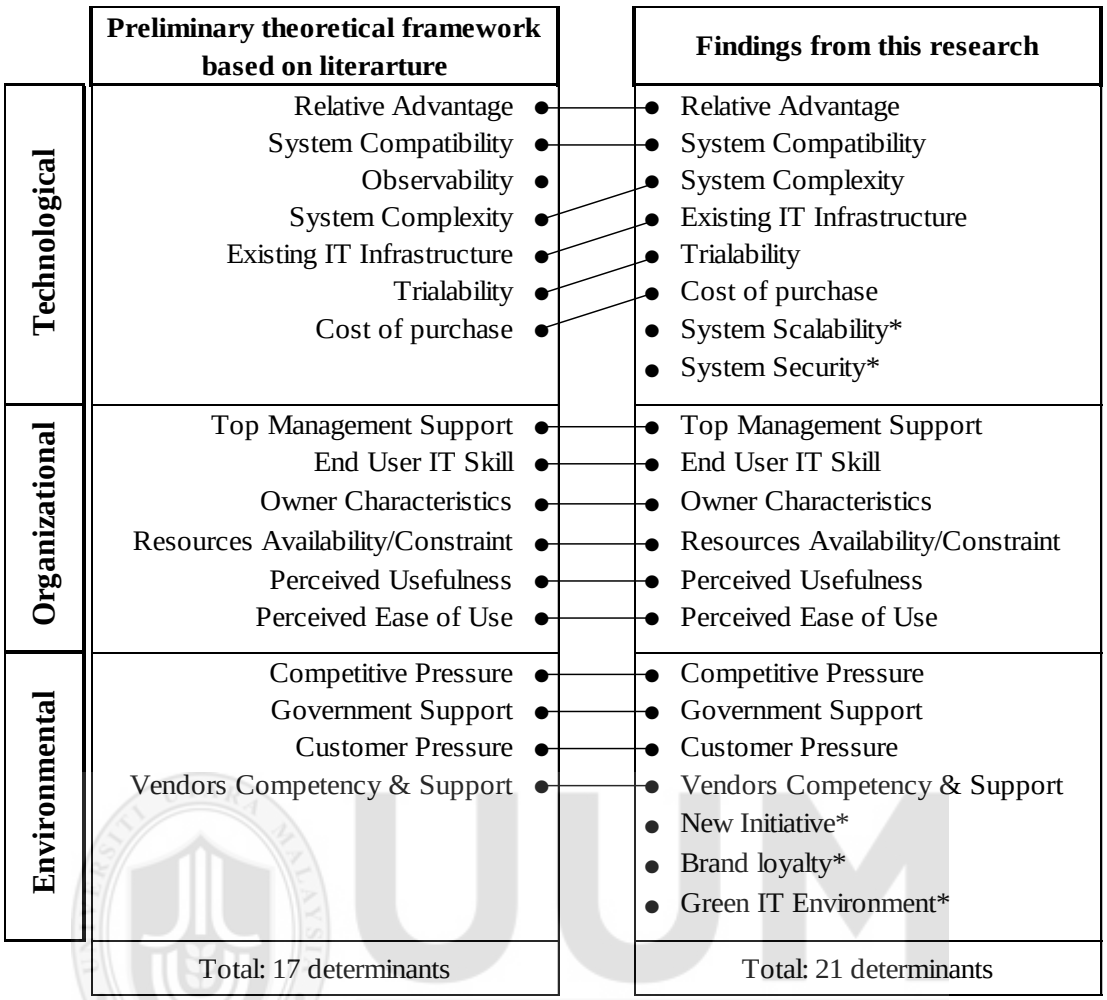
organizational, and environmental are included in the theoretical framework of this research.

5.2 Conclusions on the Research Problem

The above section discussed the conclusions about the three (3) research issues. With the above discussion, it is now possible to address the overall research problem of this research: *How and why to establish the determinants of the purchase decision of C-SHS in Malaysia SMEs business?*

5.2.1 Preliminary theoretical framework versus findings from this research

In Chapter 2, a preliminary theoretical framework (Figure 2.9) of purchase decision of C-SHS in SME's business in Malaysia was developed based on the synthesization of literatures presented in Section 2.4 and Section 2.5. In that preliminary theoretical framework, it contained 17 determinants of purchase decision of C-SHS from three (3) aspects namely technological, organizational, and environmental. However, the findings in this research produced another set of determinants which comprises 21 determinants across the same three (3) aspects. These two (2) sets of determinants are put side by side for ease of comparison as shown in Figure 5.3 below.



Legend: ●——● *Same determinant in preliminary theoretical framework and findings from this research*

* *New discovered determinant in this research*

Figure 5.3
Preliminary theoretical framework versus findings of this research

Source: developed for this research

From the technological perspective as shown in Figure 5.3, seven (7) determinants are derived from the literature synthesization. Among these, six (6) determinants have been confirmed by the respondents from the Malaysia SME's business. These six (6) confirmed determinants are relative advantage, system compatibility, existing IT infrastructure, system complexity, trialability, and cost of purchase. However, there is one (1) determinant which was not confirmed by any of the respondents in this research. This determinant is observability. On the other hand, there are two (2) newly discovered determinants have emerged in this research. These two (2) new

determinants are system scalability and system security. System scalability refers to the ability of the system to scale and support the business growth. System security refers to the control of the system accessibility to protect the company's proprietary and confidential information.

In terms of organizational perspective, all the six (6) determinants of purchase decision of C-SHS in SME's business Malaysia which were captured in the preliminary theoretical framework are also confirmed in this research. These six (6) organizational determinants are top management support, end user IT skill, owner characteristics, resources availability/constraint, perceived usefulness, and perceived ease of use. No additional new discovery is found in this organizational aspect in this research.

Lastly, from the environmental perspective, all the four (4) determinants of purchase decision of C-SHS in SME's business which were found in the preliminary theoretical framework of this research are also confirmed in this research. These four (4) confirmed determinants are competitive pressure, government support, customer pressure, and vendor competency and support. In addition, three (3) new determinants from the environmental perspective have been discovered. These newly discovered determinants are new initiative, brand loyalty, and green IT environment.

From the outcome of this comparison between the preliminary theoretical framework and the findings from this research, one (1) determinant from the literature was not confirmed in this research whereas the rest of 16 determinants from the literature are confirmed in this research. At the same time, five (5) new determinants have emerged

in this research. With the disconfirmation of one determinant and addition of five (5) new determinants, a total of 21 determinants have been confirmed in this research.

5.2.2 Revised theoretical framework

The previous section highlighted the comparison between the preliminary theoretical framework developed in Section 2.7 of Chapter 2 and the findings in this research. In turn, this section discusses the minor amendment made to the preliminary theoretical framework and replaced with a *revised* theoretical framework of purchase decision of C-SHS in Malaysia SME's business. This concluding framework was developed as a result of the discussion of the three (3) research issues of this research and the confirmation of the determinants in the previous section. The revised framework is illustrated in Figure 5.4 below. This revised framework serves as a base for discussion on the conclusion of the research problem statement as a whole: *How and why to establish the determinants of the purchase decision of C-SHS in Malaysia SME's business?*

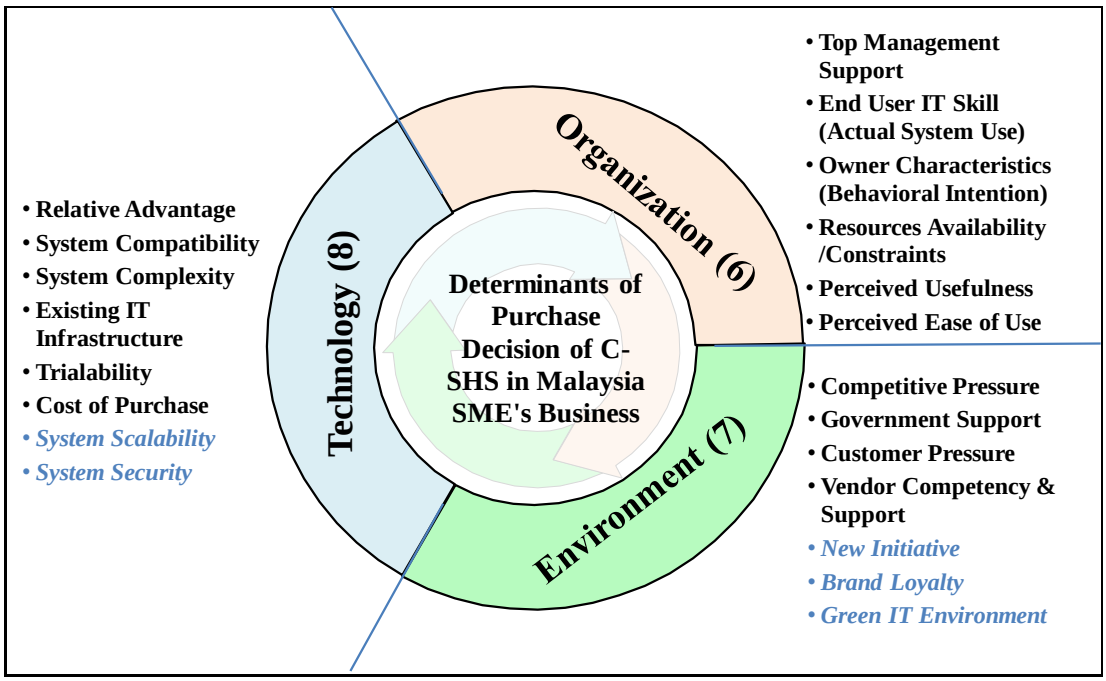


Figure 5.4
Revised theoretical framework based on the findings of this research

Source: developed for this research

From the above revised theoretical framework, the following conclusions are drawn;

1. The purchase decision of C-SHS can be determined from the *technological* perspective in SME's business in Malaysia.
2. The purchase decision of C-SHS can be determined from the *organizational* perspective in SME's business in Malaysia.
3. The purchase decision of C-SHS can be determined from the *environmental* perspective in SME's business in Malaysia.
4. There are eight (8) technological determinants, inclusive of 2 newly discovered determinants, which determine the purchase decision of C-SHS in SME's business in Malaysia.
5. There are six (6) organization determinants which determine the purchase decision of C-SHS in SME's business in Malaysia.

6. There are seven (7) environmental determinants, inclusive of 3 newly discovered determinants, which determine the purchase decision of C-SHS in SME's business in Malaysia.

In summary, this research provides a comprehensive framework for SME's business in Malaysia with respect to the purchase decision of C-SHS as shown in Figure 5.4. This framework is to systematically and accurately guide the decision making process in SME's business in Malaysia towards a successful purchase of C-SHS in their organization. The framework can be used by ICT hardware and solution providers to develop more effective marketing strategies to increase sales performance.

5.3 Implications of the research

In the previous section, the problem statement in this research was fully addressed and a revised theoretical framework of purchase decision of C-SHS in SME's business in Malaysia was also presented based on the findings of this research. It is now the time to discuss the implications of the findings of this research in respect to i) policy, ii) practice, and iii) methodology.

i) Implication for policy

The first implication for policy relates to the innovation and technology adoption focus area under the government master plan (2012-2020) to develop SME's business and to increase the contribution of SME's business to the GDP in the country. Therefore, this research provides the insight that government can support SME's business in the country through incentives, grants or new initiatives to encourage the

adoption of technology that can improve their productivity and enhance their competitiveness in the global playing field.

ii) Implication for practice

This research has two (2) implications for practice. The first implication for practice of this research is to provide a guideline for SME's entrepreneurs to develop a framework for their purchase of C-SHS. This framework encompasses the determinants which have been confirmed by the SME's business owners and hence provide an accurate and clear direction on the purchase decision.

The second implication for practice of this research concerns the marketing strategy of ICT hardware and solution providers. The findings of this research is actually also the voice of customers from the point of view of ICT hardware and solution providers. By knowing how customers think and what aspect customers would consider in the purchase of C-SHS, ICT hardware and solution providers able to formulate a more effective marketing campaign and strategy which accurately address customer concerns, hence improve the sales performance.

iii) Implication on methodology

This research has methodological implications. This is the first rigorous and in-depth study of SME's business in Malaysia which uses the convergent interview technique developed by Dick (1998). This methodology delivered the findings to address the problem issue in this research, and thus it proves the ability of this technique in tackling a phenomena. In short, this research provides another example of the power of qualitative convergent interview research methodology.

Secondly, this research also has implication on the sampling methodology. It is the first research in this topic of research which combined the purposive sampling and snowballing sampling technique. This added diversity to the sampling technique used in this limited research topic.

5.4 Limitations

In Chapter 1 (Section 1.6), two (2) limitations of the scope of this research were called out. Firstly, this research is confined to the services and manufacturing sectors of SME's business in Malaysia. There are other sectors such as construction, agricultural, and mining and quarrying. Therefore, generalization of the finding across SME's business is limited. Secondly, the sample population in this research is limited to the SME's business which owned an in-house C-SHS. There are many more SME's business which do not own a C-SHS but only possess a simple and basic standalone computer system. In Chapter 4 (Section 4.1), another limitation encountered in this research encountered was in the data collection process, in specific, the time for the SME's business owner to participate in the interview. However, this limitation was minimized by careful planning and preparation in advance for the interview process.

5.5 Suggestion for Future Research

This section provides and discusses the future research in relation to this research. There are four (4) suggestions for future research. Firstly, this research employed the qualitative convergent interview to develop a framework of purchase decision of C-SHS in SME's business in Malaysia. Further research could now be undertaken to test the framework using quantitative approach.

Secondly, this is one of the first studies about the determinants of purchase decision specifically with regards to C-SHS. However, this study is from Malaysian perspective only and examined only the Malaysia SME's business which meet the requirement of Malaysian regulations. Further research could be undertaken from another developing country's perspective such as Indonesia, India, or Thailand, to confirm whether the determinants found here are idiosyncratic or generic to the SME's business in all the other countries.

Thirdly, this research did not focus on the gender of SME's business owners in terms of the responses of determinants in the purchase decision. Knowing the fact that there are female entrepreneurs in Malaysia SME's business, therefore, further research could be undertaken to investigate any differences or similarity of the determinants of purchase decision of C-SHS by gender of SME's business owners.

Finally, this research has resulted in a framework of purchase decision of C-SHS in SME's business in Malaysia. This framework does not only benefit the SME's business but also can be leveraged by IT hardware and solution providers for their marketing efforts. Hence, future research could be undertaken to assess the impact of this framework on sales performance.

5.6 Conclusions

In this chapter, discussion and comparison of the literature with the findings of the three (3) research issues were presented. Conclusions have been made in relation to each of the research issues. Conclusions on the research problem statement were also drawn and presented. A revised theoretical framework of purchase decision of C-SHS

in SME's business in Malaysia was also developed. Implications and limitations of this research were discussed. Finally, suggestions for future research were offered.

In overall conclusion, this research successfully addressed the research issues and provides a framework of determinants of purchase decision of C-SHS in SME's business in Malaysia from the three (3) perspectives. In addition, this research also contributed to the body of knowledge in the SME's business in Malaysia. Lastly, the main objective of this research has been met.

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APPENDICES

Appendix 1: Qualitative vs quantitative research

Dimension	Qualitative	Quantitative
1. Nature of reality	• relates to the descriptions, meaning, concepts, definitions, metaphors, and symbols of things, that is, 'what', 'how', 'when', and 'where'	• counts and measures of things
2. Objective	• to gain a qualitative understanding of the underlying reasons and motivations	• to quantify the data and generalise the results from the sample to the population of interest
3. Control	• conducted in natural settings	• controlled settings to prevent outcomes becoming improperly influenced outcomes
4. Orientation	• systematically understand people's life experience through human involvement,	• answer questions such as 'how many', 'how often', and 'what proportion'
5. Interaction with respondent	• more interaction with the participants, and more room for ongoing alteration as the research proceeds	• little opportunity to alter initial decisions in the light of early findings
6. Type of analysis	• subjective, interpretive	• statistical summarisation
7. Sample size	• small	• large
8. Type of data gathered	• 'real', 'rich', and 'deep'	• 'hard' and 'replicable'

Source: extracted from Mohd Harif (2002)

Appendix 2: Interview invitation letter

Koay Aik Hoe
No1, Lintang Bukit Penara 1,
11000 Balik Pulau,
Pulau Pinang.

< Interviewee Name>
<Address 1>
<Address 2>
<Address 3> Date:

Request for Research Interview Session

Greeting!
I am Markoz Koay, a Doctorate Business Administration (DBA) student from UUM. Currently I am doing final research as part of the requirements under DBA program. My research topic is *Determinants of Purchase Decision Success of Client-Server Hardware System (C-SHS) in Malaysia SMEs. I am* under the supervision of **Professor Dr Mohd Amy Azhar Mohd Harif.**

The purpose of this letter is to request an interview appointment with your good-self. The goal of the interview is to explore and discover, from your expert opinion, what factors could determine the purchase decision of client-server hardware system (C-SHS) in Malaysia SME's business.

The interview will take approximately 30 minutes. Our conversation will be tape recorded which is necessary for later transcription and verification of the key points. I assure you all information obtain throughout interview will be kept confidential and will be used for academic purpose only.

If you have any question, please contact me via mobile 010 234 9283 or my supervisor, **Professor Dr Mohd Amy Azhar Mohd Harif** at amyazhar@uum.edu.my .

Thank you for your support.
Yours truly,

Markoz Koay Aik Hoe (Matrix 94693)
DBA Student, UUM.

Appendix 3: Interview protocol

Koay Aik Hoe, Markoz, Matrix No. 94693
+6010 234 9283
Universiti Utara Malaysia,
Sintok, 06010 Kedah
Email: ahkoay_2002@hotmail.com

Mentor: Professor Mohd Amy Azhar Mohd Harif
Email: amyazhar@uum.edu.my

Determinants of Purchase Decision of Client-Server Hardware System in Malaysian SMEs

Interview Protocol of Convergent Interviewing

Date : _____ 2015 Time: _____

Company : _____

Interviewee : _____

Position :_____

Introduction

Thank you for taking the time to participate in this university research project. This research project investigates determinants of purchase decision of Client-server Hardware System in SME business in Malaysia.

Ethical Concerns

All data collected in this interview is confidential and anonymous. For the safety benefits of your company and yourself, I will disguise your company and your name

in the final research report along with any other identifying details, in order to achieve anonymity.

Could I please tape record this interview as it will assist me with my data analysis? If yes, please feel free to push ***'pause'*** button of the tape recorder at any time during the interview.

Do you have further question regarding the objective or procedure of the interview? Please note that you can terminate the interview at any time that you wish.

Questions

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1. Please tell me about your works experiences in Information and Communication Technology industry (ICT)?

2. In your opinion, what are the challenges in purchase of IT system such as client-server hardware system(C-SHS) for your business uses?

3. What are the **technological** factors (determinants) which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?

4. What are the **organization** factors (determinants) which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?

5. What are the **environment** factors (determinants) which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?

6. What other questions should I have asked you in regards to this research topic?

7. Would you please provide me few referrals in SMEs business that in your opinion that person can contribute to this research and I should talk to?

In closing, I would like to thank you for spending your valuable times and taking part in this research. Appreciate that very much.

May I ask your permission to return later in the process if I have any points need to clarify with you?

Thank you.

Appendix 4: Results of convergent interviewing

Respondent	3. What are the ***technological*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?	4. What are the ***organizational*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?	5. What are the ***environmental*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?
#1:EXP01	● the value they will get out of the system such as; ●improve the margin ●more competitive against the competitors ●to reduce the cost ●better customer services ●pricing ●self-support system due to lack of IT resources ●what is SMEs IT infrastructure?	●self-support system ●the skill set of the end users. ●do they have the money to purchase what they need and how much is the budget ●the business owner very careful of the spend because whatever he spend come from his pocket ●system that help SMEs meet their business needs and requirements	●better services support ●The relationship with the vendor. ●what is competitor doing? ●market trend* ●what is customer asking them to do? ●what is customer want ●better customer services
#2:SVC01	●benefit to the business ●to understand the technology on what to buy, when to buy ● when purchase the system always go for the pricing ●buy different technology, moving away from desktop infrastructure to a thin-client infra to virtual infrastructure, to support company needs	●able to meet the requirements of the business ●budget and money is always the issue ●right resources in the organization to support the system ●Family member of the business who is IT savvy will give them better guidance to pick up the right system	●Brand loyalty ●build relationship to understand the product roadmap ●warranty – you can buy servers hardware with 5 years warranty ●good longevity part ●vert good pool of engineers to help from the support & leaning perspective

#3:SVC02	●always concern about the cost ●the technology that can extend to the next layer ●increase productivity of the user ●Keen to leverage on new technology with enhance features to improve efficiency and reduce cost	●One of the challenges in purchase of C-SHS is – it is the boss decision ●hard to convince the top management on the pricing ●generation of the end users ●employee IT Knowledge ●IT personnel easy to do maintenance and backup ●Remote control of the system ●Annual audit by the internal auditors for system Security, access control ●System and data security requirement and control ●End user willing to pick up the new system	●Ecology consideration ● space and energy consumption
Respondent	3. What are the ***technological*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?	4. What are the ***organizational*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?	5. What are the ***environmental*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?
#4:SVC03	●base on the business requirement ●to take into consideration of the location of the servers ●existing environment of the client and design ●system security point of view	●decision making power resides in the management team ●matured IT personnel ● the boss could be medical doctor, or MBA grad and doesn't really align with the technology trend and may not understand from the technical point of view and that impact on the purchase decision ●limited budget that the organization has ●to suit the organization functional requirement	●location of the C-SHS
#5:MFG01	●to make the staff works more efficient ●Basic system to serve the purpose of basic business needs and requirements of the daily operation tasks ●we consider low cost system	●every company should have server and computers or else customer, supplier will looks down on you ●"If you don't have the server, that mean you are not up to the level to serve in the industry" ●able to use by all staff to save, retrieve the files and sharing across internal departments. ●it is easier to use and more convenient ●For more work-life balance ●very careful about the spend on C-SHS	●customers looks down if not C-SHS ●To be in tandem with the industry standard ●to be up to the level to serve the industry or else you are outdated ●save the paper save the world

#6:MFG02	●Pricing is importance for the start-up ●tasks simplification, minimize manual tedious tasks ●System performance is critical for business growth	●general clerk require basic normal computer system, and R&D require more powerful computer system ●the whole company is using ERP and SAP business software ●To serve the basic business needs and requirements according to the functional areas	●To support the implementation of GST transactions ● better service and support by the vendor or dealer
#7:MFG03	●Hardware must be very stable and compatible ●System Security via firewall. ●To support business requirement ●looking for good pricing for hardware ●Existing IT infrastructure to support the expansion needs ●we don't required high-end PC, just a simple system will do	●management decided to purchase ERP system therefore invested into servers. ●we cannot spend too much on the hardware due to limited budget	●to be able to communicate with customer on the same IT platform such as emailing system. "Customers are using emailing system, so we have to implement the same" ●Looking for the Responsiveness of our sub-con/vendors - need fast response. ●response from supplier must be very fast within 24hrs
Respondent	3. What are the ***technological*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?	4. What are the ***organizational*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?	5. What are the ***environmental*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?
#8:MFG04	●Need to catch up with the latest technology and applications to support the company business ●Concern on Hardware Price increase due to currency depreciation ●Faster system to support ●User PC scalability ● Old PC vs new OS	●limited budget ●Management made the call to change system to ERP and Oracle ●management make the call to upgrade the C-SHS ●upgrade system to support GST transaction	●To change or upgrade the system to support the implementation of GST implementation ●to upgrade our system to support the PCs and Server on release of new OS version ●System support issue upon expiry of the license ●everyone is looking for faster hardware and software and faster network/server. ●always looks for advanced things to stay competitive
#9:MFG05	●Normal IT system according to the business needs ●Budget ●Production linked to the PCs therefore restricted our system upgrade ●we cannot simply upgrade that that PCs ●constraint to the change on the system ●just purchased a normal PCs and not so advance system	●employee IT Knowledge and provide training to the employees ●our employees are not so IT oriented ● We are only SME so we try to get some budget for C-SHS	●business need therefore upgrade to faster PCs ●speed of the PCs and Serves is important ●implementation of GST need more powerful IT system ●Meeting Customer requirement on barcode printing

#10:MFG06	●the system must be able to fit into the working environment ●Able to meet the business requirement ●Latest advance technology ●Pricing is very critical	●always goes for the newest and latest technology and latest revision of apps ●purchase of system based on the inputs/feedback from the staff ●system need to be user-friendly	●purchase decision very much depends on the customer and suppliers ●Customer request to access to the company system to check on the stock and order status. ●always go for latest technology ●supporting from the government help to reduce the burden
#11:SVC04	●price to maintain the technology ● opportunity to test the system will be great ●need to constantly upgrade the OS to support the system ●IT Infrastructure is always upgrade per the technology trend ●competitive Price is one of the main concerns ●the benefit we get out of the system and hardware	●all budget to be approved by the management ●the readiness of the people who operate the machine need to go for training ●in the company, we have a budget to spend for C-SHS ●how much allocate to acquire the system	●GTS impact the price of the system ●need to use the up to date software and special equipment for teaching such as touch board ●we sometimes will get the grant for R&D from the government ● Yes, vendor support and competency is important-speedy support mean any problem immediately come in to support ●the respond time is crucia
Respondent	3. What are the ***technological*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?	4. What are the ***organizational*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?	5. What are the ***environmental*** determinants which could determine your purchase decision of client-server hardware system (C-SHS) in Malaysian SMEs business?
#12:SVC05	●the biggest thing is price ●Good price along with good product ●Yes, I love to try the system before I buy ●Definitely, definitely. I love to try it out in the college IT environment before I really purchase the system	●money spread out kind of thin for us to spend ●the amount of money I have to spend on C-SHS ●Yes, I know top management support will help ●the management always looks at the bottom line how much it going to cost the college ●need to convince the top management to support the purchase	●there is no support from the government, and it is nice if they give us money to purchase ●the competition is intense to attract students ●Yes, we purchase good computer system for the computer labs for students' uses. ●Yes, we have some really good vendor to support us. They are very knowledgeable ●customers always cry for strongest and fastest machine ●I try to reuse, reduce, and recycle as much as I can

#13:MFG07	●to support the operation functional needs and business growth ●always up to date to the latest product in the market which benefit to the company ●able to enhance the system to support the business growth from 30 systems to now more than 100 systems ● to have control on the access to the servers, that is basic security ●Yes, we are looking into current\ infra to cater for more users with bigger storage capacity ●Yes, I believe scalability is important ●Yes, opportunity to try the system influence my purchase decision ●need to reduce the cost	●when I propose, I would say that sure my boss will adopt it without doubts. ●"I know my boss characters and what my boss think" eg: any cheaper way to get it done? ●system depends on employees expertise, our designers are professional in their own respect of career, so they tell us what they want" ●Yes, of course budget is part of the consideration ● Conduct simple training to the end users ●System to run 3D intensive	●I need some helps from outsider experts. ●ISO requirement, SOP. Audit compliance. ●Request from outsiders ●If government support I will go for SAP ●with GST implemented last year, our system was upgraded to support it ●If government give grant we want to go for a more powerful hardware and software - features benefit to us! ●Previously, there was a customer request to access to our network to check and monitor the inventory ●Yes, we go for brand loyalty, for eg 3Com vs Cisco, I will go for Cisco which is the proven brand in the market ●Yes, yes, green technology, we try to reduce the use of papers. ●Paperless is based on our responsibility to the planet, commitment to the environment
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#14:MFG08	●system security is critical in the company ●price of the system is the concern ●new system must be compatible with the current system ●certainly the purchase of new IT system must benefit to the company	●the purchase of system is control very tight by the owner ● current top management is more supportive than previous on the C-SHS ●very limited budget on computer system ●the new system need to be easy to use by the employees ●able to support the production uses	●green technology is one of the main concern ●Spend more than the price of the machine to dispose of the old system ●vendor support is critical to support our operation needs. ●yes, we hope government can provide support in the purchase of computer system ●nowadays every company purchase computers system to be more efficient in the business operation ● we have good relationship with the computer vendor

#15:SVC06	●we have system security to looks into ●most of the time we request to have a test on the system itself ●to look at the performance before and after the implementation ● Yes, we recently upgrade our IT infra due to network connection, internet connectivity issues. ●system complexity is also under consideration. ●system scalability-YES. Last time we only have some of the equipment when we moving in here. We find out that the device really cannot cater the amount of the students so we need to upgrade	●top management also look into the issue together, meeting to discuss. ●we always consider end user (std) comments ●we are given very tight budget to spend on IT ●System Usefulness is really important ●provide training one of the basic training ●a lot of decision more depend on the management	●complaint from student regards want more faster system, internet and network connectivity ●government support help to lower down the costing ●we consider what other competitor purchased ●my top management they really particular about the brand ●green tech is really important, our org support green program.
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#16:SVC07	●based on our business needs ●Yes, we will consider the system complexity when making purchase ●whether the system is capable to run on the OS that we have and support it. ●Yes, we will consider existing IT infrastructure also ●try to minimize the impact to our existing IT infrastructure ●Yes, we also consider system stability ● We request vendor to provide a demo unit to test it out and try out the function, looks at the features and all that ●yes, system security is important, if the system meet our requirement we will proceed to purchase ●we looks for lower prices system with the same specification	●the budget allocate is limited ●the constraint is how much money do we have ● we also consider how user friendly the system ●it depend on college planning and direction ●moved from PC client software to web-based applications ● if we purchase in the system, we will train the users on how to use the system ● simple system for user just clicks on the screen to select ●yes, top management support needed ●whatever proposal that we have. We still need the approval from the top management ●yes, the owner characteristics definitely have impact on the purchase decision	●new requirements imposed by government ●purchase new system able to capture the information required by the government ●yes, government support will determine the purchase. ●we purchase the system when government gave tax exemption ●yes, more or less pressure from competitors also impact the purchase decision ●yes, demand from customer/students certainly impact the purchase of new and latest OS system ●system with green technology is a standard feature nowadays and it is an added advantage ●vendor support also very important ●vdr should be less calculative

#17:SVC08	●we will go for the latest technology which is relevant ●yes, we will try out the demon units and the features ●yes, existing IT infrastructure is for sure will impact decision ●we need to evaluate many system such as ERP before purchase new system ●yes, cost, compatibility and security will impact my purchase decision ●system scalability is important, the system must be able to scale up as the demand increased	●budget is key and need to perform the cost benefit analysis ●yes, top management support is important on the purchase of C-SHS ●I will consider do I have the right people to maintain the system ●yes, owner characteristic or stakeholders will influence the purchase decision ●system need to upgrade and enhance to support the operation needs ●user-friendly of the system part of the consideration	●funding from government of course is good ●yes, we need to be more competitive in the niche market ●yes, we looks for long term support from the vendor ●yes, to certain extent brand loyalty also influence the purchase decision ●we also consider the system that consumed less power and energy ● customer pressure very high and we need to exceed the expectation ●new software were purchased to support GST