CONSUMER SELF-SERVICE TECHNOLOGY ADOPTION IN MULTIPLE SERVICE INDUSTRIES IN SAUDI ARABIA

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ABSTRACT

The current convergence of information and communication technology (ICT) is found to be creating new opportunities. Business organizations are leveraging this technology in response to the need for greater business integration, flexibility, and agility. One of the technologies that have been utilized quite aggressively by firms is the Self-Service Technologies (SST). Although the proclaimed benefits of SSTs are enormous, few institutions which have adopted the SST have achieved its intended objectives. Even thought the use of the SSTs in the service settings within the developed economies has attained an increasing level of acceptance by consumers, little is known about the consumer's adoption in the Arab world, particularly in Saudi Arabia which is still lack of research in this area. Therefore, the main aim of this thesis is to explore the SST adoption in multiple sectors in Saudi Arabia as well as the usage of all types of SST. The main focus of this thesis, is to explore the consumers' adoption of the SSTs through the users' seek values. The users' seek values construct is a new construct proposed in this study to complement the Technology Acceptance Model (TAM) framework. The research model composes of four variables: the antecedents of users' seek values; the users' seek values; the customers' intention to use the SST; and the customers' adoption of the SST. Using a mall-intercept technique, a sample of 400 respondents was collected in three major cities in Saudi Arabia. The hypothesis was tested using Structural Equation Modeling (SEM). The results showed that, for the antecedent factors, demographic profiles and personality traits were found to influence the users' seek values. In addition, users' seek values were found to mediate the relationship between the consumers' characteristics and their intention to use the SST. In addition, the intention to use the SST also mediates the relationship between users' seek values and the SST adoption. Finally, the direct positive relationship between customers' intention and adoption was also confirmed. The research concluded with a discussion on the management implications as well as the recommendations and the future research that need to be carried out.

Keywords: users' seek values, antecedents, self-service technologies, technology acceptance model, Saudi Arabia

ABSTRAK

Penemuan semasa tentang teknologi maklumat dan komunikasi (ICT) banyak mewujudkan peluang baharu. Organisasi perniagaan banyak memanfaatkan teknologi sebagai tindak balas kepada keperluan yang meningkat bagi integrasi perniagaan, fleksibiliti, dan ketangkasan. Antara teknologi yang telah digunakan secara agresif oleh firma-firma ialah Teknologi Layan Diri (SST). Walaupun manafaat atau faedah SST dikatakan agak banyak, namun hanya beberapa institusi yang mengguna pakai SST mencapai objektif yang menjadi matlamatnya. Penggunaan SST dalam bidang perkhidmatan di negara ekonomi maju telah menyaksikan peningkatan tahap penerimaan yang tinggi oleh pengguna. Namun, hanya sedikit maklumat yang diketahui dan jumlah kajian yang terhad tentang penggunaan SST oleh pengguna di dunia Arab terutamanya di negara Arab Saudi. Oleh itu, matlamat utama kajian ini adalah untuk meneroka penggunaan SST dalam pelbagai sektor dan juga penggunaan semua jenis SST di negara Arab Saudi. Tumpuan utama kajian ini adalah untuk meneroka tujuan pengguna dalam penggunaan SST berdasarkan objektif penggunaan. Konstruk ini merupakan konstruk baharu yang dicadangkan dalam kajian ini bagi melengkapi rangka Model Penerimaan Teknologi (TAM). Model kajian ini terdiri daripada empat pembolehubah: latar belakang atau anteseden pengguna bagi mendapatkan nilai-nilai, pengguna-pengguna yang mendapatkan nilai-nilai, tujuan pelanggan menggunakan SST, dan penggunaan SST oleh pelanggan. Dengan menggunakan teknik pintasan *mall* (*mall-intercept technique*), sampel daripada 400 orang responden telah dikumpulkan dari tiga bandar utama di Arab Saudi. Hipotesis telah diuji menggunakan Pemodelan Persamaan Berstruktur (SEM). Dapatan kajian menunjukkan faktor-faktor anteseden, profil demografi dan sifat personaliti mempengaruhi pengguna dalam mendapatkan nilai. Di samping itu, pengguna yang mendapatkan nilai didapati menjadi pengantara dalam hubungan antara ciri-ciri pengguna dan tujuan mereka untuk menggunakan SST. Di samping itu, tujuan untuk menggunakan SST pula menjadi pengantara dalam hubungan antara pengguna yang mendapatkan nilai dan penerimaan SST. Akhirnya, ia turut mengesahkan hubungan positif langsung antara niat pelanggan dan penerimaan. Kajian diakhiri dengan perbincangan mengenai implikasi pengurusan serta cadangan dan kajian masa hadapan yang perlu dijalankan.

Kata kunci:Pengguna yang mendapatkan nilai, anteseden, teknologi layan diri, model penerimaan teknologi, Arab Saudi

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LIST OF ABBREVIATIONS

ATM	:	Automated Teller Machine
SST	:	Self-Service Technology
TAM	:	Technology Acceptance Model
TAM2	:	Technology Acceptance Model 2
TPB	:	Theory of Planned Behaviour
TRA	:	Theory of Reasoned Action
WTO	:	World Trade Organization

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The service sector is one of the important contributors to the global economy. More specifically, in North America, the exports of commercial services in 2008 alone, increased by 9% to USD$603 billion while the imports increased by 6% to USD$473 billion. Europe's exports of commercial services on the other hand also showed an increase by 11% to USD$1.9 trillion along with exports by 10% to USD$1.6 trillion. In the meantime, commercial services exports in the context of the Middle Eastern countries was reported at USD$94 billion in 2008, showing an increase of 17% from the year before. Along a similar line, imports also increased by 13% in the same context to USD$158 billion (WTO, 2008). While the economic growth of both the continents of Europe and North America only displayed a slight 1% increase in 2008, the oil exporting regions of South and Central America, the Commonwealth of Independent States, Africa and the Middle East all reported increase in their GDP growth of 5% with Middle East exports growing at the rate of 6.3%.

This buoyant economic growth would obviously affect the growth of the services sector within this region. In addition, the world commercial services exports showed an increase of 11% in 2008 to reach USD$3.7 trillion with the three fastest primary categories of service exports as transport (15% growth), travel (10%), and other commercial services

(10%). The final category includes financial services (51%) whereas travel and transport constituted a quarter each (25% and 23%, respectively) (WTO, 2008).

As illustrated by the 2008 World Trade Organisation figures, the services sector is an important contributor to a nation's economy. Within the Saudi Arabia context, the aggregate income gained from domestic tourism is expected to reach SR73.3 bn in 2010 and SR101.3bn in 2020 as the total expenditure on domestic tourism in 2005 was reported at SR57.8 billion with SR35.5bn attributed to local tourism and SR22.2bn attributed to foreign tourism (Saudi Arabian Monetary Agency/SAMA, 2005).

Within the services sector, the current convergence of information and communication technology (ICT) is generating novel opportunities including redeployment of people, reconfiguration of organizations, sharing information and investing in technologies. The investments are expected to produce technical solutions that accommodate the dynamic business environment and effectively make use of the knowledge value in service relationships to generate superior business value (Arsanjani *et al.*, 2004). These activities that are catered to generating services are arising at many levels of the organization and it makes use of technology to meet the increasing requirement for higher business integration, agility and versatility.

One of the most widely used technologies by firms in response to the service-oriented thinking activities is self-service technologies (SST). They are technological interfaces that allow customers to make use of service that is independent from direct employee involvement (Bitner, Brown, and Meuter, 2000). This kind of interface is known as person to technology service delivery (Dabholkar, 1994). Initially, in the early era of self-

service technology, automated teller machines (ATM) are implemented by banks and other financial intermediaries to disperse money and carry out other services such as balance checking and account transfer. The financial services delivery and consumption has however experienced major changes. Development in technology has restructured the environment of businesses.

Currently, the leading sectors that have adopted and used the Internet and self-service technology on consumer markets include the banking and finance sector and this has led to unprecedented changes in service delivery. For example, the e-banking services development through various e-channels has enabled the provision of new added value for customers. Consequently, as the technology becomes more advance, self-service technology are being deploy in other areas such as retailing, hospitality - which includes transportation, accommodation and travel arrangements and other industries that are critical to the information processing and customer service.

1.2 Background of the Study

Self-service technologies have increasingly become important in the service environment over the past decade. In fact, technology-based interactions are expected to become a crucial element for long-term success in service delivery in the service industry like retailing and hospitality (Meuter et. *al*., 2000) in the future. As such, no wonder tourism and technology are two of the largest and fastest growing industries in the world (Sheldon, 1997). Moreover, self-service technology is expected to become increasingly more important as service providers throughout the world continue to exert efforts and

find ways to lower costs while increasing service to maintain their competitiveness in the market.

In the last few decades, corporations have significantly increased their investment in information technology (Ndubisi, 2005). With the aim of satisfying diverse consumer needs and gaining competitive advantages in the market, retail banks for instance have invested millions in new technologies. Global Information Technology (IT) spending by financial institutions reached USD$351.2 billion in 2008 with an annual growth rate of 5.1%.

In the current dynamic era, technologically-based service concept, customers provide themselves with service through technology with the help of an employee of the service provider or without it (Meuter, Ostrom, Roundtree, and Bitner, 2000; Reda, 2000; Henderson, 2001). The commonly used self-service technologies in the current times include; telephone-based technologies and interactive voice response systems, direct online connections and Internet-based interfaces, interactive freestanding kiosks, and video/CD technologies (Bitner, Ostrom, & Meuter, 2002). Specifically, these technologies throughout service industries include vending machines, ATMs, e-kiosks for baggage check-in or boarding pass at the airports, room check out at hotels. E-blood pressure checking devices, automated car rental technologies, touch-free e-care washers, automated telephone services, self-checkout systems in retail stores, e-self-ordering systems in restaurants (fast food) and service computers having Internet connections at the airports (Kotler, 2000; Meuter, Ostrom, Roundtree, and Bitner, 2000; Carlin, 2002; Harler, 2002; Wright, 2002).

Strategically, the deployment of sophisticated self-service technologies in service encounters is expected to increase consumer satisfaction through improved service quality (Bitner, Brown, and Meuter, 2000; Parasuraman and Grewal, 2000) while cutting costs at the same time (Weijters, B., Rangarajan, D., Falk, T., & Schillewaert, N. 2007). Self-service technologies enable retailers the standardization of their consumer interaction which leads to a steady service atmosphere that is devoid of employee personality and mood (Hsieh, A-T, Yen, C-H., & Chin, K-C. 2004). This type of technology also enables consumers to be productive and involved in the delivery of service, which allows retailers' handling of demand fluctuations without having to deal with costly employee levels adjustment (Curran, J.M., Meuter, M.L., & Surprenant, C.F. 2003).

Among the many self-service technologies, e-banking is considered to be one of the most successful consumer applications in e-commerce (Pousttchi and Schurig, 2004). Initially, research on self-service technologies focused on the consumers' attitudes regarding ATM (Rugimbana and Iversen, 1994; Rugimbana, 1995; Davies *et al.*, 1996; Filotto *et al.*, 1997; Moutinho and Smith, 2000). Current studies have embarked on an analysis of the telephone banking development (Lockett and Littler, 1997; Al-Ashban and Burney, 2001) and personal computer (PC) banking (Mols, 1998). However, recently, research on e-banking has been concentrated on Internet banking (Polatoglu and Ekin, 2001; Black *et al.*, 2002; Karjaluoto, 2002; Mattila *et al.*, 2003; Gerrard and Cunningham, 2003) including the multiple service transaction option through the Internet.

One of the most significant effects of new technologies that are observed during the service encounters at retail banks is that technology-infused banking service channels, such as Automatic Teller Machines (ATMs), Internet banking, and mobile banking services, have replaced face-to-face banking channels. The transition to unstaffed electronic banking service methods has led banks to invest more resources in increasing the security and ability of their technology infrastructures. As evidence, banks' spending for security systems and software totaled about USD$1.2 billion in 1996 and jumped to USD$7.4 billion in 2002 (National commercial banks: SIC 6021, 2003).

Nevertheless, although the proclaimed benefits of self-service technologies are enormous, relatively few institutions have publicly announced that the adopted self-service technology has achieved its intended goals or objectives. The returns on technology infusion are not always satisfactory and are often substantive and not without risk (Jackson, Chow and Leitch, 1997) despite businesses having invested billions of dollars in these technologies (Moon and Frei, 2000; Lee and Allaway, 2002).

Although these institutions believe that these self-service technologies will improve the service delivery of their businesses, consumers on the other hand are skeptical. When deciding whether or not to adopt these technologies, various consumer beliefs, such as discomfort with the new technology and optimism about technology come into play (Parasuraman and Colby, 2001).

Consumers may choose to ignore a new technology because they do not perceive any benefit from its use or in some cases; it may anticipate negative outcomes or have concerns about using a particular technology (Beck, 1992; Calnan, Montaner, and Horne,

2005). Nevertheless, despite this setback, the question for businesses is not whether to adopt this self-service technology but how to use it appropriately. The issue lies in determining the relevant technologies that will assist in improving the experience of customer service (Cartin, 2002), and the delivery of customer value (Gardial and Woodruff, 2003), which work at maximizing customer loyalty, retention, and profitability (Reda, 2002).

Similar to the banking industry, other businesses also reported that despite the large amounts of capital invested in new customer service technology, the expected return on their investment has not been realized, either because employees do not always use the technology; executives contend that they see no linkage between their duties and what the technology does (Pijpers, Bebelmans, Heemstra, and Montfort, 2001); or that it is often at times difficult to gauge users' acceptance when introducing new technology (James, Pirim, Boswell, Reithel, and Barkhi, 2006).

In reality, not all consumers embrace or would make use of the self-service technology in the business environment in the current times. The scenario is such that some consumers look for self-scanning check-outs, self-service flight check in, online banking services, and Internet shopping options, there are others that intentionally would avoid such self-service technologies. Although in the context of the developed countries, the use of self-service technologies has witnesses an increasing level of consumer acceptance, the situation is quite different in other countries around the globe.

While some economies have been absorbing new self-service technologies in a rapid manner, others are slow in their acknowledgement and adoption (Byun, 2007). The

critical first step in getting consumers to accept the technology is getting them to try it for the first time. Behavioral change of consumers is not only significant but consumers should also become co-producers of the service and they have to deliver the service according to their satisfaction (Bendapudi and Leone, 2003).

1.3 Problem Statement

As elaborated in the previous section, despite the advent of these innovative self-service technology that was designed to enhance the life and facilitate the accomplishment of the consumer daily activities, consumer acceptance and their actual adoption of self-service technologies has been viewed to be lagging and less that it should be as well as the number of consumers using these services has not increased to the degree expected (Flavian, et al., 2004). An example about this is in the United States of America where millions are not using the e-banking technologies, nor are they expected to do so in the near future (Kolodinsky and Hogarth, 2001; Wang, Lin, and Tang, 2003). In this context, Anguelov, Hilgert, and Hogarth (2004) state that less than 25% of households were engaged in some form of e-banking activities, which is a form of self-service technologies. This suggests that nearly 75% of households were still using some form of in-person banking as many of these households expressed their lack of trust for using online banking transactions saying that they prefer face-to-face dealings with bank employees in their working places.

In Saudi Arabia, the level of SST adoption is said to be way lower than that of the developed countries due to a number of reasons. Some of these reasons include some economic aspects in which the country's advancement in the infrastructure of SST came

suddenly due to the booming economy and the availability of the petro-dollar which affected the perches power of the Saudi consumers (Motairi & Almeshal, 2013). The researchers further elaborate that it would take the Saudi people a while until they get used to using SST facilities and until they fully trust the use of these facilities. Meanwhile, many Saudi consumers still prefer to do their transactions through direct employees using face-to-face communications. In addition, apart from ATM, most Saudi consumers still prefer to use direct communications through employees in different contexts such as hotel and flight reservations, flight reservations, banking and fun transfers, paying bills, etc (Alrasheed & Mirza, 2011; Alsamadi, 2012). The reasons behind this resistance of Saudi customers to use SST are not fully understood as very limited research has been conducted on SST adoptions and the factors that influence it (Alshorah, 2014). Thus, the study attempts to fill in this gap in the literature by examining SST adoption in multiple Saudi industries among Saudi consumers.

Therefore, to start with the first research gap in this study, in spite of the paucity of the self-service technology utilization (which includes online and offline capability like e-banking, self-service check in), research has yet to fully understand the factors that influence SST adoption (Anguelov, Hilgert and Hogarth, 2004; Taft, 2007). For developers, implementers and system procurers, understanding the dynamics of users' technology adoption continues to be troublesome taking into account that little research attempted to explore SST consumer adoption (Dillon and Morris, 1999; Taft, 2007); and for institutions like banks, as well as for many other industries, the challenge remains the same: how to determine the factors that enhance self-service technology adoption. Thus,

this study attempts to examine the factors that influence SST adoption in a number of Saudi industries.

Secondly, the self-service technology literature lacks of theory to guide empirical work (Wheeler, 2002). Hence, it is important that research is carry out in this subject as the findings would offer an insight on the factors that influence consumers' resistance to self-service technology adoption in various service industries. Therefore, to respond to these challenges, there is a need for an empirically relevant but also theoretically rigorous framework. Specifically speaking, majority of studies on consumer technology adoption have made use of the Technology Acceptance Model (TAM) for their theoretical framework (Davis and Venkatesh, 2000; Gefen, Karahanna, and Straub, 2003; Monsuwe, Dellaert, and Ruyter, 2004; Ramayah and Lo, 2007; Lee, 2010). However, TAM has no construct which represents an overall estimation of the adoption object (Kim, H.-W., Chan, H.C. & Gupta, S. (2007). The model only explains adoption behaviour with two factors namely ease of use and usefulness. Thus, there have been calls by researchers to expand the theoretical framework of SST studies to include other theories that could provide deeper understanding of the factors that influence SST adoption among consumers (Kim et al., 2007). This study attempts to respond to such calls by grounding the study on a recent theoretical framework which grounded on the values consumers associate when making decisions to adopt SST. This theoretical framework is grounded on consumer perceived value.

Perceived value, as a concept, defined business issue in the 1990s and has since then, continued to attract research interest up to this day. In fact, the Marketing Science

Institute (MSI) has included its definition in the list of research priorities for the years 2006–2008. These developments showed the great interest generated by the concept of value creation among researchers in marketing. In businesses, organizations are acknowledging the significance of perceived value in strategic management (Mizik and Jacobson, 2003; Spiteri and Dion, 2004). According to Slater (1997), the creation of customer value is the reason behind the existence of the firm and its success. This statement indicates that the creation of customer value has become a strategic requirement in developing and sustaining business competitive advantage (Wang et al., 2004). In addition, loyalty and profits have been significantly related to customer value (Khalifa, 2004) and this concept is now the basic issue that is addressed in each marketing activity (Holbrook, 1994, 1999).

Perceived consumer value is a subjective construct that is assessed by customers rather than by businesses, thus the value may vary among individuals (Parasuraman and Grewal 2000; Huber et al., 2001; Chew, Shingi and Ahmad, 2006; Turel, Serenko and Bontis, 2007). The subjectivity of perceived consumer value can be better explained by understanding the Means-End Chain Model (Woodruff and Gardial, 1996; Lee et al., 2002). This model, which presents the three levels of a customer value hierarchy (i.e., attributes of a product, consequences of using the product, and ultimate goals that customers want to achieve by using the product), posits that a product itself is not an ultimate goal but rather a means for an individual to achieve a goal. Thus, the degree of consumer's perceived value in using a product may vary across individuals with different personal goals and personal characteristics (Sweeny and Soutar, 2001; Yang, 2006).

The inclusion of consumer perceived value in the respective self-service technology adoption is an important contribution. This is because; the basic and common assumption in examining consumer behaviour is value maximization. This value based approach is a novel approach in understanding consumers' adoption of self-service technology. While this research makes an improvement to the existing TAM model, it still based its theory on the original model which makes this research highly generalizable and applicable to other industries, especially given Ong, et al's. (2004) call to validate or examine previous results of TAM, specifically as it relates to differing technology, user populations, and organizational contexts.

Third, much of the existing research in self-service technology adoption (which includes Internet based technology like e-banking services) adopted the organisational perspective (Matilla, 2006; Daniel, 1999) or the perspective of distribution channel (e.g. Thornton and White, 2001; Black et al., 2002; and Mols, 2001). In addition, previous researches on consumer adoption of self-service technology tend to focus on a specific context or industry (e.g. banking). As far as we know, customer behavior in a "general self-service technology" context (which include online and offline technology) in multiple service industries remained rather an uncharted territory.

Finally, studies in several countries have examined factors that impact consumer acceptance and adoption of self-service technology. These studies are conducted in the US (e.g. Lassar et al., 2005; Kolodinsky et al., 2004), in Europe (Littler and Melanthiou, 2006; Pikkarainen et al, 2004; Howcroft *et al.,* 2002; Karjaluoto *et al.*, 2002; Daniel, 1999), in Australasia (e.g. Lichtenstein and Williamson, 2006; Sathye 1999), and finally,

in Asia (Yiu *et al.*, 2007; Chan and Lu, 2004; Suh and Han, 2002). With respect to the users' acceptance of self-service technology in the developing economies, little is known about the consumer's adoption in the Arab world (Al-Ashban & Barney, 2001). There is lack of studies that addressed the factors influencing consumer behavior to adopt or use self-service technology in the context of Saudi Arabia (Al-Somali, Gholami, & Clegg, 2002).

As Arab countries are generally similar in many ways such as religion, customs and values, history, and language **(**Aladwani, 2003), we believe the research on consumer's adoption of self-service technology in Saudi Arabia is not only imperative but long overdue. The findings of this study would be able to provide information regarding innovation diffusion to other Arab countries. For instance, in 2007, Saudi Arabia spent nearly USD$3.4 billion for information technology, comprising of computers, peripherals, network equipment, packaged software and services. This cost constitutes 0.9% of the GDP, and supports over 6,600 IT companies with approximately 41,300 IT industry employees and assists in producing $190 million in IT-related taxes.

1.4 Research Questions

According to the argument stated and explained in the research problem, the research questions are stated as follows;

1. To what extent do consumer characteristics influence their users seek values in service industries in Saudi Arabia?

(a) To what extent do consumers' demographic characteristics influence their users seek values in service industries in Saudi Arabia?

(b) To what extent consumers' personality traits characteristics influence their users seek values in service industries in Saudi Arabia?

2. To what extent does users seek values mediate the relationship between consumer characteristics and their intention to use SST?

   (a) To what extent does users seek values mediate the relationship between consumers' demographic characteristics and their intention to use SST?

   (b) To what extent does users seek values mediate the relationship between consumers' personality traits and their intention to use SST?

3. To what extent does users seek values influence consumer intention to use SST in Saudi Arabia?
4. To what extent does consumer intention to use SST influence their adoption of SST in Saudi Arabia?
5. Does consumer intention to use SST mediate the relationship between users seek values and their adoption of SST in Saudi Arabia?

1.5 Research Objectives

On the basis of the above research questions, the research objective of this study is stated below;

1. To examine the extent to which consumers' characteristics influence their users seek values in service industries in Saudi Arabia.

(a) To examine the extent to which consumers' demographic characteristics influence their users seek values in SST industries in Saudi Arabia.

(b) To examine the extent to which consumers' personality traits characteristics influence their users seek values in SST industries in Saudi Arabia.

2. To examine the extent to which users seek values mediate the relationship between consumers' characteristics and their intention to use SST.

   (a) To examine the extent to which users seek values mediate the relationship between consumers' demographic characteristics and their intention to use SST in Saudi Arabia.

   (b) To examine the extent to which users seek values mediate the relationship between consumers' personality traits and their intention to use SST in Saudi Arabia.

3. To examine the extent to which users seek values influence their intention to use SST in Saudi Arabia.
4. To examine the extent to which consumer intention to use SST influences their adoption of SST in Saudi Arabia.
5. To examine whether consumer intention to use SST mediates the relationship between users seek values and their adoption of SST in Saudi Arabia.

1.6 Significance of Study

The changing business environment within the service industry appears to influence the business providers to offer greater service quality to consumers and this is possible

through the adoption of self-service technology. Adoption of this SST has been an important area of research in marketing during the past few decades (Allen, 2000; Plouffe *et al.*, 2001). However, one pertinent issue academics and practitioners has been concerned about is whether consumers' perceived value of using these technologies matches the motivation of the providers. Consumers might have concerns about using this technology, which may result in a technology that appears to have benefits for these institutions but never be used by consumers. Understanding what attracts (or inhibits) consumers to use SST would allow businesses to evaluate the technology from their customers' perspectives in order to develop effective marketing strategies which increase the probability of adoption.

This study is believed to be significant as it is expected to generate finings that could be useful for service providers in Saudi Arabia keeping in mind incentives for SST use should be structured around the values of the users (Markus, 1983), e.g. system modifications or additional functionality at a financial loss in order to improve acceptance of the overall system; perceptions of how the system supports or opposes.

Part of the contribution of this study stems out from the inadequacy of prior studies to adequately account for consumer use of self-service technology in the service environments. This is because most of the previous research focused on examining SST adoption in a single industry while very limited research attempted to examine SST adoption in multiple industries. This research contributes to the current literature by carrying out the study comprising of multiple industries within the service sector. These industries include banking, hotels, airports, etc. Unlike previous studies that mainly focus

on a particular industry such as banking, this study is able to generalize the findings as it comprises a multitude of industries.

In addition, it has been mentioned earlier that most of the previous research utilized one theory namely the Technology Acceptance Model (TAM) to form that theoretical ground of their studies. Taking into account that a number of researchers expressed their concerns whether TAM model alone can provide accurate and deep findings, the study takes a step further by the application of the means-end theory with the TAM model. This is believed to contribute to the theoretical knowledge by providing an alternative view of the effect of cognitive perception towards perceived value and the intention to use SST.

The present study is also expected to contribute to theory as it is an attempt to minimize the contention that perceived value has been largely overlooked by marketers (Holbrook, 1999). In addition, prior value models extension to an area of consumer adoption of self-service technology has been largely untouched and is deemed to be critical step in value theory development. Among the primary indicators of the theory's validity is that its working is required to be highlighted under various situations. Owing to the many unique characteristics of the service sector (highly effective being one of them), the employment of the theory in this area is expected significantly contribute to the body of literature. Additionally, this study results can be used to explain the nature of self-service technology in multiple service industries.

Finally, the findings of the factors that influence self-service technology adoption within the Saudi Arabia would enable greater innovation diffusion to other countries within the Middle East region as these countries share similar characteristics. Saudi Arabia is the

dominant country in the Gulf Cooperation Council (GCC) and is at the forefront of the region's banking revolution. Any efforts in the Saudi Arabia business practices would set the precedent to other GCC countries to adopt. The findings would also fill the existing gap of self-service literature within the Middle East continent and provide evidence whether the findings from previous studies done in the developed economy can be generalized to this part of the world.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this thesis is to examine the factors that influence consumers' self-service technology (SST) adoption in various industries within the Saudi Arabian context. Initially, this chapter starts by providing a background of the SST, defining, classifying and elaborating on the various types of SST with the relevant examples of the "equipments" and finally concluded the discussion by providing an exhaustive background and support for the constructs used in the research theoretical framework to be developed in chapter three. In doing so, a dedicated section is written to explain the position that this study takes within the literature. Existing literature specifically the innovation adoption research is explored to elaborate how this study fills the gap or address the limitations highlighted in the current literature. Consequently, the relevant area of studies that serves as the foundation of the framework are discussed and reviewed.

2.2 Background of Self-Service Technology

The growing phenomenon of technology as a major tool for service encounters is overtaking the previously dominating channel of interpersonal interactions. Meuter, Ostrom, Bitner, and Roundtree (2003) for instance commented that the increasing emergence of novel technologies is revolutionizing the experience in retail. Bitner, Brown, and Meuter (2000) further corroborated that technology has changed the essence

of service encounter. The explosion of new technologies not only changing the retail experience, but the service encounters in many industries. Hence, Bitner *et al.* (2002) elaborated that the amount of services that customers had to provide for themselves have significantly increase. Bitner *et al.* (2000) further emphasized that the service encounters is an important and significant factor in aiding customers to develop an opinion about a firm or organization that they are dealing with.

SST is a concept that is becoming more common amongst consumers; it allows customers to deliver self-services without the help of employees (Meuter, Bitner, Ostrom & Brown, 2005). It allows consumers to have various options during the service encounters. Consequently, SST provided customers with independence during service encounters. As the Internet use proliferates, online payment methods become more secure and this leads to growing self-service on a global scale, and its adoption has increased tremendously across many regions.

However, there are some parts of the region that have yet to realize the potential that SST offers. At the moment, the market for electronic kiosks for instance grows at a compounded annual growth rate (CAGR) of nearly 19% through 2014 (GRDI, 2013). As of 2009, the top applications within the interactive kiosks consists of entertainment, retail and travel and this may continue to be the case in 2014 (Abi, 2010).

In terms of market domination, North America is the dominating continent in the global kiosk market constituting two thirds of the established base. Trailing closely is Europe at 18 per cent of world-wide installed base and Asia Pacific at 15 per cent. The Middle East, Africa, India and South America however represent a mere 2% of the global kiosk market

with most of the deployments in areas dominated by financial-services kiosks. Nevertheless, it is projected that majority of kiosk expansion in 2011, with an expected rate of growth at 17% will be in this region in comparison to North America with 13% and Europe and Asia-Pacific 12% each (GRDI, 2013).

Nevertheless, despite the costly affairs of deploying the SST facilities in the service sectors, take up have been relatively slow. For instance, at the moment, a mere one of ten airline tickets are booked online, although this is expected to show a dramatic increase (Abi, 2010).Therefore, several scholars such as Abousaber, Papazafeiropoulou, and Hunaiti, (2007); Aladwani (2003); Ali (2004); Kulchitsky (2004); and Polatoglu and Ekin (2001) urged for in-depth research particularly in the Middle Eastern areas to examine the factors of SSTs adoption.

2.3 Definition of Self-Service Technology (SST)

SST, according to Meuter *et al.* (2000), refers to technological interfaces enabling customers to produce a service that does not entail the direct service of the employee. This means that consumers are able to transact the business transactions without the involvement or interference of the service provider's staffs. As Meuter *et al.* (2005; p. 61) further explained, SST is a way for "customers to generate services by themselves without the help of employees of the service provider.

Although the responsibility and burden of carrying out the service transaction are now passed to the consumer, SST is seen as a means of providing more touch points for consumers (Curran, Meuter, and Surpenant, 2003). The authority or 'job delegation'

entrusted by the firm service provider to consumers to perform their own transactions enhanced the consumer decision making status where the consumer is now 'involved' in the 'production' or 'execution' of the business transaction – instead of 'passively' waiting on the receiving ends.

As in the famous phrase "Consumer is the King"- consumers will decide what, when and how it wants the transactions to be conducted – at their own terms. Hence, unlike the full-service customers are acclimated to, SST began to expose consumers to services that were more self-served or co-produced. In other words, SST requires active cooperation or co-production and participation from the consumers in executing the required transactions.

2.3.1 Co-production

In general, co-production refers to the simultaneity characteristics of service; the ability to produce and consume at the same time. Auh, Bell, McLeod, and Shih (2007) defined co-production as the constructive participation of the consumer in the process of both service and delivery and it is described as a process requiring meaningful, cooperative contributions to the service process. Arvidsson (2008, p. 326) describes co-production as "one of the most important and fundamental trends in contemporary consumer society".

As technology continues to boom globally, Arvidsson (2008) believes that this trend will be even more vital in the future. Wikstrom (1995) explained that co-production is not a sequential process, but in fact a simultaneous interactive process. He goes on to explain

that the question is no longer about value creation for the customer but it is about value creation with the customer and integrating this into the system.

Zeithaml, Zitner, and Gremler (2006) similarly express that coproduction allows the consumer to assert themselves as an active participant in creating their own world. It can be said that perhaps co-production is a means for customers to participate in a unique and personalized service encounter. Bendapudi and Leone (2003) found that consumers are being given active roles in producing services; and in addition to that the responsibility to both deliver the service, and ensure that they are satisfied with the service that they receive.

Wikstrom (1995) emphasized that co-production is a concept that brings a greater focus on the customer, and that the co-production should create a higher value than the traditional transaction process. Meuter *et al.* (2003) supported that SST is a co-production process. They explained that it enables customers' production and consumption of services through electronic means without the direct help from the service provider employees. Co-production in the use of new SST often involved consumers engaging in new behaviors (Meuter *et al.* 2005). Examples of co-production are determining the designs and colours of a given product like apparels and determining the activities and itineraries of a holiday package.

2.3.2 Classification Schemes for the Self-Service Technology

There are various types of self-service technology (SST). Dabholkar and Bagozzi (2002) segment them into "on-site" and "off-site" options. Basically, "on-site" options are SST

that is placed on the site or access is only available at the service provider location. Generally, the equipment or the facilities are provided by the service provider due to the nature of the service or transactions. Examples of on-site SST are touch screens in department stores, information kiosks at hotels, flight check-in at airports and bills payment at service provider.

Meanwhile, the 'equipment' or facilities for off-site SST options are placed beyond the vicinity of the service provider. These facilities can be provided by the service providers, publicly owned or individually owned. Examples of such SST that can be accessed through personal devices are telephone and online banking, online transactions such as shopping, reservations (accommodation and transportation) and other activities that can be conducted through the internet.

On the other hand, SST applications that are accessed through the service providers at off-site facilities consists of bank transactions through automated teller machines (ATMs), making reservations and purchasing tickets through kiosk, flight check-in through airlines kiosks. These applications of SST have grown tremendously in various industries. In addition to some of the applications of SST mentioned above, Meuter *et al.* (2000) also included utilizing service over the Internet such as tracking courier services like FedEx packages and online brokerage services.

A prevalent classification of SST in the service literature is based on the work of Dabholkar's (1994) classification of service delivery. This classification is useful for understanding the characteristics of different types of services. The following framework shows the similarities as well as the differences of service delivery options based on

technology. It identifies the role of human in delivering services by using technology and also shows the role of technology without the presence of employee in delivering services. Dabholkar (1994) classifies services based on these three dimensions. Table 2.1 illustrates the classification scheme for self-service technology options.

D1 – Who delivers the service? Or who is operating the technology? If the service employee is providing the service for the customer, the service delivery is person-to-person and if the service provider provides some kind of technology which the customer can use it to serve him/herself, the form of service delivery is person-to-technology.

D2 – Where is the service delivered to? The technology could be located at the service site or the home/workplace of the customer.

D3 – How is the delivery of service conducted? The service could be delivered through direct or indirect means where interacts with the technology at company's site and the indirect contact is when the customer use technology over the phone or from his/her home/work.

Some researchers have used or adapted their classification from Dabholkar's main scheme in their studies such as Anselmsson (2001), Wang and Namen (2004) and Anitsal (2005). In these studies, Dabholkar's scheme is modified or customized for their specific study. Anselmsson (2001) for example studied on customer's perceived quality of self-service technology. He proposed the classification based to Dabholkar's (1994) scheme.

His scheme is more emphasized on the person-to-technology service delivery and in contrast of Dabholkar scheme; where person-to-person service delivery is not existed in

his classification. It implies that four major divisions of self-service technology delivery systems exist with distinct qualities. Table 2.1 demonstrate Anselmsson's classification scheme for self-service technology.

Table 2.1
Classification Scheme for Self-Service Technology Options

		Person-to-Person (service employee uses technology to provide service)	**Person-to-Technology** (customer uses technology to perform service for sell)
At Service Site	Physical Proximity (Direct Contact)	**CELL 1A** Customer takes the help of service provider employee who makes use of technology for service delivery	**CELL 2A** Customer goes to service site and makes use of technology to provide himself with the service.
At Service Site	Physical Distance (Indirect Contact)	**CELL 1B** Customer goes to the service site to interact with employees of the service provider who makes use of technology.	**CELL 2B** Customer goes to service site to make use of automated telephone system to provide him with the service.
At Customer's Home/Work Place	Physical Proximity (Direct Contact)	**CELL 3A** Service provider goes to the customer with the technology for service delivery.	**CELL 4A** Customer uses technology by himself to provide service at home/work.
At Customer's Home/Work Place	Physical Distance (Indirect Contact)	**CELL 3B** Customer interacts with service provider from home/work and the service provider makes use of technology for service delivery.	**CELL 4B** Customer contacts automated telephone service from home/work to provide service to him.

Source: Dabholkar (1994)

Wang and Namen (2004) did a study on customer adoption of self-service technology. The researchers worked on the adoption of self-check-in service at Swedish airports as their case study. They used Dabholkar's (1994) and Anselmsson (2001) classification to classify the service delivery options where they used a self-service technology

classification scheme which customized for flight passengers check-in service, adapted from Dabholkar (1994) and Anselmsson (2001). Self-service check-in is a process in which the customer gets his/her boarding pass and baggage tags by using check-in machines (kiosks).

Table 2.2
Anselmsson's Classification Scheme for Self-Service Technology

	CELL 1	**CELL 2**
Direct contact	Customer goes to the service site and makes use of technology to perform service; for instance, ATMs, automated ticket machines, self-scanning, tourist information, etc.	Customer makes use of technology from home/work for the performance of service – for instance, Internet shopping, interactive TV shopping, reservations and booking online, account information, financial transactions and distance learning.
	CELL 3	**CELL 4**
Indirect contact	Customer goes to service site to use the automated telephone system for the performance of service; for instance, automated wake-up calls, telephone banking and account information and retail stores.	Customer makes a call to the automated telephone service from home/work for the performance of service; for instance, telephone banking, automated ticket ordering for flights, cinemas, etc.

Source: Anselmsson (2001)

In conclusion, among all the classification schemes, Dabholkar (1994) scheme seems to be the strongest classification with powerful dimensions. It covers all kinds of services for industries (person-to-person and person-to-technology service delivery). This is an important contribution as it fits into industries and not having industries to fit into its cells as in the previous classifications.

Many studies are based on this classification or adapted for their purpose or specific industry. For the purpose of this study, we have chosen to investigate the adoption of SST in cell 2A and 2B (Dabholkar, 1994) or cell 1 and 3 of Anselmsson (2001) classification. We would provide our clarifications on the rationale for choosing this context in chapter four of the research methodology chapter.

2.3.3 Types of Self-Service Technology

Based from a recent North American Self-Service Kiosk Survey (2007), the three most popular SST platforms within the off-site options are vending, kiosk, and Web applications. A kiosk is defined by the North American Self-Service Kiosk Survey (2007) as a self-standing, technology-based device that is unmanned. Kiosks are distinct from vending or Web application by their touch screen monitors for selection and information search and retrieval techniques for the provision of detailed data. In this section, the different types of kiosks are explained.

Interactive/Multimedia Kiosk

An interactive kiosk is described as computer terminal that generates information access through electronic means. Majority of kiosks generate unattended access to web applications and interactive kiosks are generally located in high foot traffic settings like hotel lobbies/airports.

Kiosks are enabled to perform an extensive range of functions through the integration of technology which would enable its evolvement into self-service kiosks. For instance, kiosks may allow users to access a public utility bill account number for online transaction, or collect cash for products.

Types of kiosks

Financial services kiosk

The financial kiosks enable customers to go through transactions that generally require a bank teller and may involve complex tasks more than that can be provided by the ATM. They are primarily called ‘multi-functional financial service kiosks’. These units are also called check-cashing, bill-payment and even dispensing cash cards machine.

Photo kiosk

An interactive kiosk enables users to print pictures with the help of digital storage equipment. There are two categories of photo kiosks;

Digital Order Stations – This type is located in the retail locations and enables users to place orders for prints and photographic products. Products generally get generated in-store through a digital minilab or in another location to be sent directly to the customer, or to the store where the customer can pick it up at a later time. These stations may or may not have instant printing services and generally do not handle payments.

Instant Print Stations – Instant Print Stations are kiosks equipped with internal printers for the instantaneous creation of photographic prints for self-service paying customers. These stations are often located in public places like hotels and airports. They, unlike the prior stations, handle payments.

Internet kiosk

This type of kiosk is described as a terminal providing public Internet access. These kiosks sometimes look like telephone boots and are generally located in hotel lobbies, medical waiting rooms, apartment complex offices, or airports for instant access to e-mail or web pages. They sometimes have a bill acceptor or a credit card swipe, a computer

keyboard, a mouse and a monitor. Some of them are built on the basis of payment model that is identical to vending machines or Internet cafes, while others provide services for free.

Ticketing kiosk

Ticketing kiosks are widely used throughout the world to help reduce the strains on ticketing clerks especially during peak times. Public facilities like transportation and even service providers like amusement parks have been using unattended outdoor ticketing kiosks for some time. Trains, busses and ferries are typical examples of public transportation using automated self-service ticketing kiosks. Several movie theater branches possess unique ticket machines enabling customers to buy tickets or pick them up after purchasing them online.

Giving or Donation kiosk

Non-profit organizations, mosques and corporations make use of kiosks to collect funds, donations, tithes, or offerings through the self-serve kiosk. Many of them accept credit and pin based debit, print receipts, and they offer email confirmations to the customer. The eZakat/eDerma kiosks in Malaysia for instance are being placed in mosques across the country and it enables Muslims to pay their tithes via a credit or debit card.

Vending Machines

A vending machine is a machine that offers and provides snacks, drinks and other products to consumers from a machine. The products sold through vending machines

differ from one country to another. Vending has experienced major changes ever since its conception. They have evolved to accept credit cards and companies can no monitor them from long distances.

Telemetry is one of the most current vending innovations. Machines with telemetry can send sales and inventory data to a route truck in the parking lot for the driver's information of what products are required for restocking. Data may also be transmitted to far located headquarters to schedule a route stop, to determine a component failure or to verify information. In addition to restocking, according to research 50% of consumers refuse to purchase from a vending machine if it requires the 'use of exact change'. Hence, by offering reasonable wireless technology, telemetry can now provide the medium through which payments without cash can be authenticated.

Automated Teller Machines

An automated teller machine (ATM) or automatic banking machine (ABM), cash machine, or cashpoint, is described as a computerized telecommunication machine that enables customers of financial institutions to access financial transactions in public locations without requiring cashier, human clerk or bank teller. Through ATM use, customers are able to access their bank accounts for cash withdrawals, credit card cash advances and they can check their account balances and even purchase prepaid cell phone cards.

If the ATM currency is different from the bank account's denomination; for instance, if Saudi Riyal from a bank account containing Malaysian Ringgit is withdrawn), the money

is automatically converted at a wholesale rate of exchange. Hence, ATMs provide the most optimal exchange rate for bank customers and are reliably used for this purpose.

Despite the fact that ATMs were developed initially as cash dispensers, they have experienced significant evolvements which include bank-related functions. Some countries, particularly those benefiting from cross-bank ATM network, include ATM functions which are not directly linked to the management of bank accounts namely; paying routine bills, fees and taxes (e.g. SADAD, utilities, phone bills), printing bank statements, loading monetary value into stored value cards like 'touch and go' (in Malaysia), purchasing shares, donating money, check processing, adding pre-paid cell phone or mobile phone credit.

Banks are increasingly attempting to use ATM as a sales device to provide approved loans and targeted advertising through the use of ITM (Intelligent Teller Machine). It is also used as an advertising channel for companies to promote their products or third-party products/services.

2.4 Benefits of Self Service Facilities

The growth in the self-service economy may be attributed to the benefits provided to customers, organizations and the economy. Self-service has proven to provide significant benefits to customers and businesses from supermarket checkout to airline check-in kiosks. Currently, the question lies in 'when will we' instead of 'whether we should' (Dabholkar, 1996). The adoption of self-service is increasingly becoming important in industries for two primary reasons; increased efficiency and minimized costs and labor.

In addition self-service puts control in the customer's hands. The following benefits to consumers, organizations and the economy in general.

2.4.1 Benefits for Consumers

Customers frequently have the option to choose self-service technology; for instance, in a bank, a customer may choose between taking the teller's help and using an ATM; at a hotel, a traveler may choose between using a vending machine and using room service; and, at a petrol station, a customer can choose between pumping her own petrol and having an attendant do it. Customers continue to have options for self-service technology for many reasons and these include time and cost savings, higher control over the service delivery, minimized waiting time, higher perceived customization (Meuter and Bitner 1998), location convenience (Kauffman and Lally 1994), fun and enjoyment in technology use (Dabholkar 1994, 1996), and efficiency, flexibility, and instantaneous delight (Bitner, Brown, and Meuter, 2000).

In other cases, such as with banks, there is typically no extra fee associated with using the human teller versus using the ATM. Therefore, customers may perceive technology-based selections for many reasons; it's easy usage, convenience, avoidance of provider's personnel (Meuter *et al.* 2000).

Self-service technologies can provide consumers greater convenience, accessibility, and ease of use. Convenience is a big factor: self-service technologies often make business available 24 hours a day, seven days a week, rather than being limited to traditional working hours. Consumers often find self-service technology empowering; using the

technology, the customer can control the service encounter and not feel rushed or pressured.

While some businesses may think their customers prefer face-to-face encounters, this is not always true. In a 2009 consumer survey (Abi, 2010), 44 percent of respondents indicated that they would prefer to use a hotel kiosk so that they would have no interaction with the clerk. Frequently, when there are long lines at hotel check in, more guests prefer kiosk check-in. Some consumers also prefer to use self-service technology to protect their privacy and this includes banks, hotels, transportation and retails.

Similarly, consumers may prefer to buy certain personal goods online rather than in-personal a retail store. Self-service technology can also make service encounters more accessible for individuals with disabilities. For example, individuals with mobility disabilities may find online shopping more accessible than shopping in brick-and-mortar stores. Individuals can take advantage of accessibility options in Web browsers to access online applications and services.

Kiosks can also offer features to make them accessible to individuals with disabilities, such as ATMs that have a headphone jack so that users can opt to use an audio interface to complete a banking transaction. Kiosks and Internet-based applications can also provide unique features including multi-lingual interfaces in order to offer user-friendly services. For example, a car rental company may use a multilingual kiosk at an international airport to serve its foreign customers, thereby offering service in more languages than any single employee could possibly provide.

Finally, SST as a co-production not only provides benefits for firms, but it also provides benefits for the consumer. Co-production is beneficial to the customer in several ways including: reasonable prices, higher opportunities for options, higher discretion concerning the configuration of the outcome, shorter waiting times, and a higher possibility of customization (Auh, S., Bell, S.J., McLeod, C.S., & Shih, E. 2007).

2.4.2 Benefits for Businesses

Businesses should use information technology (IT) for competitiveness in the service economy. The IT revolution has resulted in a considerable improvement in productivity, and firms having the highest degrees of investment report the highest levels of productivity for every worker. While most industries have successfully used IT to increase productivity of their back office workers and frontline service employees, there remains significant opportunity to have customers use technology to make the delivery of a good or service more efficient. By deploying self-service technology, companies can further apply the productivity benefits of IT to their business.

SSTs offer opportunities to maximize delivery speed, precision, and customization (Berry 1999), minimize costs, maximize productivity (Alpar 1992; Dabholkar 1996; Kelley 1994) enhance competitiveness and market share (Kauffman and Lally 1994) maximize customer satisfaction and loyalty, and earn a distinct technological reputation (Meuter and Bitner 1998). In the context of banks, the average cost for an online transaction is US$0.20 which only constitutes a fraction of US$4.25- the average cost of branch location transaction (Refer to figure 2.1).For many types of services, the customer has always been a part of the production and delivery process.

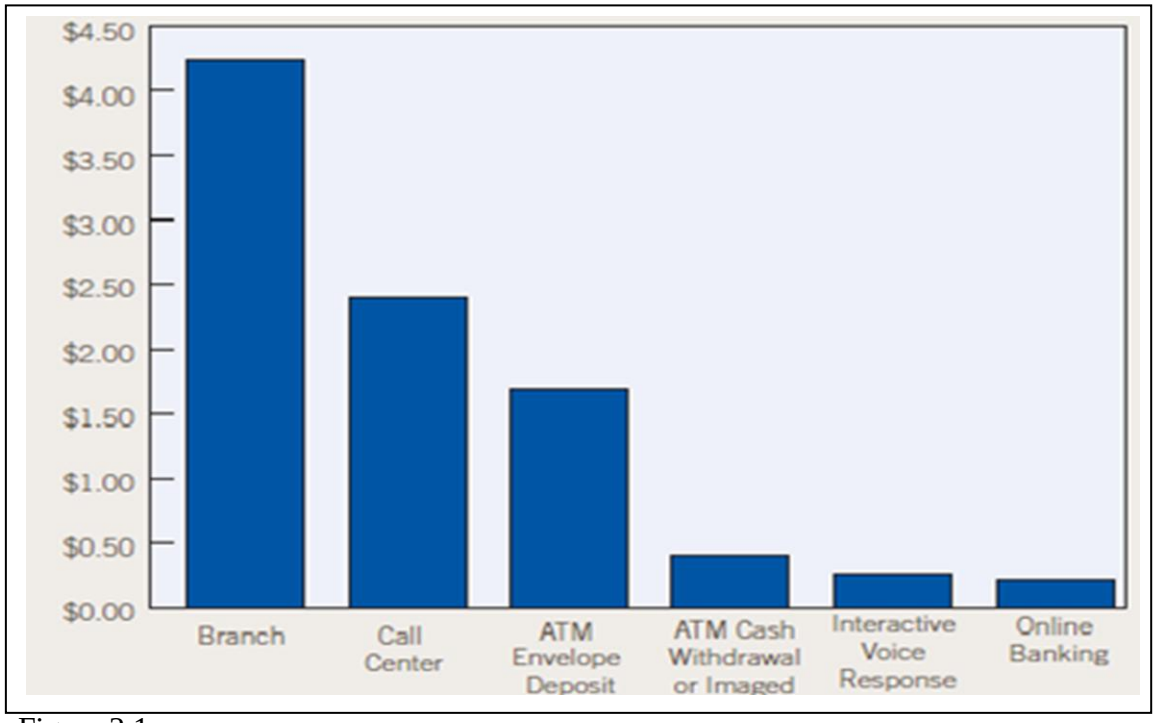

Figure 2.1
Average Bank Transaction Costs by Technology

From a business point of view, these customers are "partial employees "or "co-producers" because they make up an integral part of the service delivery process. Self-service technology is one way for companies to manage these customers to help facilitate the service delivery. Businesses invest in self-service technology because it decreases costs and assists in the provision of higher quality product/service.

Through the use of self-service technology, workers are freed to be assigned to other profitable tasks and hence, reducing payroll costs. For example, a retailer that introduces self-checkout can reassign cashiers to sales or customer service jobs to increase sales and customer satisfaction or cut these jobs to save on overhead. Many organizations use self-service technology to relieve employees from routine transactions so they can work on

higher value tasks. For example, in hospitals, medical staff that previously focused on clerical work can instead focus on the health care needs of their patients.

SSTs are argued to address two key challenges related with interpersonal service encounters by controlling some service delivery heterogeneity and perishability. It is well-known that employees and the customer's mood and personality can combine to negatively impact the interaction (Schneider and Bowen 1985). In banks, ATMs now handle most routine banking transactions thereby allowing tellers to focus on providing additional financial services and customer support. The end result for the consumer is more efficiency, more convenience and better service. Self-service technology can also provide a standardized customer experience and enable companies to improve their customer target for up-selling. For example, a check-in kiosk at an airport can be programmed to sell travelers to upgrade their flights.

Using self-service technology can also help a company increase operational efficiency. E-commerce for instance can save significant costs and inventory for a business from 20 to 25% as it enables firms to rapidly react to orders. The use of technology in the service counter can allow the service provider to tackle various demands without continuously modifying levels of staff. Additionally, SSTs can reasonably extend the timings of service availability to more frequently match the consumer's preference (Curran, Meuter and Surprenant, 2003). In addition, SSTs can reduce incorrect orders and other inaccuracies and save companies billions.

Dabholkar (1996) and Zeithaml, V.A., Bitner, M.J., & Gremler, D.D. (2006) mentioned other benefits to businesses. They explained that by offering technology-based self-

service options to customers, it will help in lowering labor costs and in revenue growth, as well as in taking advantage of the advantages of technology. In addition to freeing up labor costs, Bendapudi and Leone (2003) outline that another benefit to firms is marketing the offering at a lower monetary price, resulting in a win-win situation in the buyer-seller relationship.

Companies have the opportunity to serve their customers more efficiently by transferring some service requests to SST, such as the Internet (Peterson, Balasubramanian, 2002, p. 15; Frambach, Roest *et al.*, 2007, p. 27). Therefore, they view the incorporation of this medium into their portfolio of distribution channels as an efficient and cost-effective means to convey a range of products and services to a wide audience (Rosenbloom, 1999, p. 520; Doyle, 2007, p. 150; Timmorand Rymon, 2007, p. 100).

Cost reductions might result from the automation of certain services and the elimination of the need to perform time-consuming and unprofitable services personally (Curran and Meuter, 2005, p. 103; Meuter, Bitner *et al.*, 2005, p. 61); if planned, implemented, and communicated correctly, customers react to such transfers positively, which results in heightened satisfaction with the service and increased loyalty to the provider (Yen 2005, p. 642; Fassnacht and Koese 2006, p. 19). Hence, more and more companies establish and operate multichannel strategies by incorporating SST, such as the Internet, into their portfolio Wiedmann, K.-P./Frenzel, T./Buxel, H. (2001), p. 421; Wang, Head *et al.*, 2002, p. 78).

2.4.3 Benefits for the Economy

The economy also benefits from self-service technology. Per-capita income growth is the most crucial indicator of a country's economic situation and the growth in per-capital income is largely attributed to the growth of productivity. Greater productivity growth goes a long way in solving pressing societal problems, such as lagging income growth, the national debt, and the ability of society to spend in key areas (e.g., transportation, environmental protection, and health coverage). In addition, if advanced nations sustain or even increase their productivity growth, within a decade workers could have not only higher incomes, but also reduced overall work time and an overall increase in the time they can spend with their families and on leisure.

The importance of embracing self-service technology applies to not only the developed economies but also other nations facing economic challenges from either aging populations or limited supply of local employees as in Saudi Arabia. Self-service technology is a labor-saving device and these savings translate into more efficient output. Embracing productivity-enhancing self-service technologies is necessary to maintain the current standard of living for their workers and retirees in these countries.

Companies used technology to automate processes and because these sectors were such major part of economies, improvements in productivity had large effects on overall per-capita income. As efficiency gains were achieved in the goods sector, however, if economies wanted to grow, they had to find ways to boost efficiencies in the service sector. For the last 40 or so years companies have used technology to streamline many

service processes, particularly what are called “back-office” processes, such as accounting, logistics and ordering, information processing and others.

As a result, many of the opportunities for productivity gains have already been achieved there. The next big frontier for productivity is on what is called the “front office”, aspects of business and government that deal with the customer in functions that largely entail an exchange of information (e.g., a ticket, for example, is simply a form of information, letting someone board a bus or enter a theatre). Self-service technology is significant as it allows enhancement in the various processes efficiency in the economy which in turn, allows reasonable prices and higher salaries. The potential economic benefits of more use of self-service technology are substantial.

2.5 Review of Consumer Self-Service Technology Adoption Research

Research on exploring SST acceptance is gathering interest among service marketing and technology acceptance researchers (Dabholkar, 1996). With the advancement in the ICT and the increasing cost of workforce, the issue has gained interest among academicians and practitioners. In addition, as the technology-based service delivery systems employment and management is quite costly, it is important to comprehend the way consumers make their decisions (Curran, Meuter & Surprenant, 2003). Initially, this section provides a background of studies conducted in the context of self-service technology adoption.

Within the SST research, there seems to be a proliferation of research issues. Earlier studies of self-service technology like Langeard *et al.* (1981) explored segmenting

markets on the basis of the willingness of the consumer to participate in the service delivery. However, a major portion of SST literature investigates the determinants of SST acceptance (Childers *et al.* 2001; Curran, Meuter, and Surprenant 2003; Dabholkar 1994, 1996; Dabholkar and Bagozzi, 2002; Featherman and Pavlou 2003; Plouffe, Hulland, and Vandenbosch, 2001). More recently, studies have concentrated on consumer attitudes towards SSTs (Bobbitt and Dabholkar, 2001; Curran, Meuter, and Suprenant, 2003), readiness of customer to adopt SSTs (Bitner, Ostrom, and Meuter, 2002; Meuter, Bitner, Ostrom, and Brown, 2005), and SSTs consumer satisfaction (Meuter *et al.*, 2000; Sweeney and Lapp, 2004).

Other studies have examined the impact of technology characteristics and situational factors upon the attitudes and intentions of consumers (e.g. Bateson, 1985; Dabholkar, 1996; Dabholkar and Bagozzi, 2002; Lee and Allaway, 2002; Meuter, Ostrom, Bitner, and Roundtree, 2003). The emphasis put forth by researchers in this issue is because research that promotes a greater understanding of forces that motivate current and potential users of technology-based self-service is considered as high priority (Bobbitt and Dabholkar, 2001; Dabholkar, 2000).

Although there is a proliferation of studies regarding SST to date, Dabholkar (1996); Meuter *et al.* (2000) argued that there is very limited empirical research regarding self-service technologies and little to nothing is known concerning the factors that impact the SSTs usage and evaluation. The absence of a technology focus in service encounter research is also highlighted by Bitner *et al.* (2000) and Parasuraman (2000).

Until now, the consumer type preferring/not preferring the use of technological innovations for accessing service supply has yet to be determined (Chang and Samuel, 2004; Vrechopoulos *et al.*, 2001). On top of this, only a few studies have attempted to assess consumers' use of SST in a non-Western context. This lack of cross-cultural comparison is considered as a hindrance for Western service firms that are attempting to provide their services in the emerging/developing market. Most of the research has been conducted in the USA and Western Europe, and it is, therefore, not known whether the usage of SST is similar in other cultures. In the case of the Middle East market, this issue is even more pressing as little is known regarding this market.

Within the innovation and technology adoption literature, several theories have emerged, specifically out of the information sciences literature where researchers are attempting to predict adoption/usage through personal factors. Venkatesh *et al.* (2003) for example, provided an extensive review and history of the many quantitative theories utilized for the prediction of technology use in the past years to highlight the early adopters for organizations.

Specifically to the SST adoption research, majority of the studies are largely inspired among others by the theory of reasoned action (TRA) by Fishbein and Ajzen (1975), the theory of planned behavior by Ajzen (1991), the technology acceptance model by Davis (1989), the diffusion innovation theory by Rogers (2003) and the unified theory of acceptance and use of technology by Venkatesh, Morris, Davis and Davis (2003). Nevertheless, majority of the individual theories have been criticized for their fragmentation, lack of cohesiveness which is attributed to the several factors influencing

the use of technology (Venkatesh, V., Morris, M.G., & Davis, G.B. (2003). Bobbitt and Dabholkar (2001) echoed the same argument where they stated that there is currently no unifying theoretical framework that explains the underlying factors that drive consumer decisions in this issue.

Theoretically-based empirical research on SST has focused primarily on factors associated with the technology of the self-service mechanism itself (Dabholkar, 1996; Davis *et al.*, 1989). Other empirical research on SST has concentrated on the characteristics of users vs. nonusers. Most of this research has focused on the demographic characteristics of the users (e.g. Darian, 1987; Stevens, G. C. (1989).

Another characteristic that has been considered important in this issue is the requirement of service employee interaction (Dabholkar, 1992; 1996; Prendergast and Marr, 1994). Whereas the extant research has opened the way to examine SST adoption, there is a lack of comprehensive theoretical framework that explains and predicts the reason behind the consumers' decision to use/not use such service options (Bobbitt and Dabholkar, 2001).

Abu Shanab (2005) echoed the same argument where he stated that research dedicated to technology acceptance basically lacks the integrated view required to explain the domain and utilize previous studies.

Many other studies have been conducted on self-service technology research and these studies have been conducted in different service-oriented sectors. The following table (Table 2.3) summarizes some of these research studies.

Table 2.3

Summarizes Some of These Research Studies

Self-Service Study	Setting	Method	Sample	Type of Study	Findings
Langeard et al. (1981)	Hotel, Airport, Bank, Gas Station, Restaurant, Sale of Traveler's Checks	Scenario-based Questionnaire	Financial Consumers	Profiling SST users	Time and control important for SST users.
Bateson (1985)	Hotel, Airport, Bank, Gas Station, Restaurant, Sale of Traveler's Checks	Scenario-based Questionnaire	Financial Consumers	Profiling SST users	Time, control, and efficiency rated more important to SST users than non-users. Found a do-it-yourself attitude where some consumers prefer the self-serve option even without monetary incentive.
Dabholkar (1992)	Touch screen at a fast food restaurant	Scenario-based Questionnaire	College Students	Assessing Service Quality with SSTs	Prior behavior of using computerized products had a positive effect on attitude toward using SST. Need for interaction had a negative effect on attitude toward using SST.
Dabholkar (1996)	Touch screen at a fast food restaurant	Scenario-based Questionnaire	College Students	Assessing Service Quality with SSTs	Speed of delivery, ease of use, reliability, enjoyment, and control had a positive impact on SST service quality. Enjoyment and Control were found to have a significantly positive relationship with the situational variable of waiting.

Table 2.3 (Continued)

Self-Service Study	Setting	Method	Sample	Type of Study	Findings
Meuter et al. (2000)	Numerous Self-service technologies	Critical Incident	Online Consumers	(Dis)Satisfaction in self- service experiences	Found three categories of satisfying SST incidents: 1) solved an intensified need; 2) Better than the alternative; 3) Did its job. Authors found four categories of unsatisfying incidents: 1) Technology Failure; 2) Process Failure; 3) Poor Design; 4) Customer- Driven Failure
Anselmsson (2001)	Grocery and Library Self Scanning Stations	Mail Surveys	Consumers	Assessing Service Quality with SSTs	Consumers who prefer SST may actually wish to avoid employee interactions. Found that older consumers were not reluctant to use SSTs. Only one-fourth of respondents thought using a SST was faster than traditional channels.
Bobbitt and Dabholkar (2001)	Internet	Conceptual	N/A	Attitudinal theories with self-service technology	Theory of reasoned action posited as theoretical roots of self- service studies.
Bitner, Ostrom, and Meuter (2002)	Numerous SSTs	Critical Incident And Depth Interviews	Online Consumers And University Staff employees	(Dissatisfaction in self-service experiences	Authors recapped the findings from the Meuter et al. (2000) study. Lessons learned from the study were presented, such as maintaining a customer focus and having a clear strategic purpose for SSTs.

Table 2.3 (Continued)

Self-Service Study	Setting	Method	Sample	Type of Study	Findings
Dabholkar and Bagozzi (2002)	Touch screen at a fast food	Scenario-based Questionnaires	College Students	Customer intentions with SSTs.	Ease of use, performance and fun had a significantly positive relationship with attitude toward using SST. Also found support for six moderating variables of self-efficacy, novelty seeking, and need for interaction, waiting time, social anxiety, and self-consciousness. The variables of novelty seeking and perceived waiting were shown to attenuate the relationship between customer attitudes and intentions. All six moderating variables were measured against the three determinants of customer attitudes.
Zhu (2002)	ATMs, Car rental Kiosk, and Travel Website	Experiment	Mall Consumers	Service Failure and Recovery with self-service technology	Looked at self-recovery using a self-service technology. Consumers denoting a high level of control took more responsibility to resolve the problem. SST failures had a significant relationship with switching intentions.

Table 2.3 (Continued)

Self-Service Study	Setting	Method	Sample	Type of Study	Findings
Ladik (2003)	Coupon Kiosk	Questionnaire	Consumers	Customer intentions with self-service technology	SST users were not passive and the results showed that these users had higher levels of loyalty. Coupon proneness impacted SST usage.
Meuter et al. (2003)	Numerous SSTs	Critical Incident & Walk-up Survey	Online Consumers & airline patrons	Anxiety with self-service usage	Technological anxiety had a negative relationship with self-usage service satisfaction, word of mouth, and repeat intentions.
Rowley and Slack (2003)	Kiosks	Case Study	N/A	How technical aspects of SSTs influence customer perceptions	Kiosks taxonomy made up of four functions: inform, interact, transact, and relate.
Dabholkar et al. (2003)	Self-scanning checkout at grocery store	Walk-up Surveys	Grocery store patrons	Customer intentions with self-service technology	Control, reliability, ease of use, and enjoyment were important factors in the adoption of self- scanning.
Meuter et al. (2005)	Prescription refills: Internet and Telephone	Mail Surveys	Pharmaceutical Consumers	Customer intentions with self-service technology	Authors found support for four consumer readiness variables: role clarity, intrinsic motivation, extrinsic motivation, and Ability. These four variables played a mediator role between six innovation characteristics and trial of a SST. The article also found that these consumer readiness variables also mediated five "individual" differences, and a consumer's intention to try a self-service application.

Table 2.3 (Continued)

Self-Service Study	Setting	Method	Sample	Type of Study	Findings
Curran and Meuter (2005)	ATMS, Online Banking, Telephone Banking	Telephone based surveys.	Bank Customers	Attitudes and Intentions with Self-service technology	Authors found further support for the attitudes-intentions relationship in self-service technology. Authors also found that different attributes influences attitudes towards the SST depending on well the SST was known and accepted.
Yen (2005)	Internet Website Purchases	Convenience Survey	MBA Students	Attributes of Satisfaction in self-service.	Author found that efficiency, ease of use, performance, perceived control, and convenience positively influenced satisfaction with self-service experience. Using the technology readiness (TR) variables, she found that performance and convenience had the strongest effect with all the TR groups.
Elliott and Hall (2005)	Self-service technologies in general	Convenience Survey	Undergraduate Students	Gender Differences with SSTs	Authors found that men were more accepting of new technology such as SSTs than women. Authors used technology readiness (TR) variables for comparison of males and females.
Kim & Forsythe (2010)	Online Shoppers	Emailed Surveys	3-age-group shoppers	Age differences between consumers.	The study reported age differences between the three groups. DPI was found to reduce risk associated with online product purchasing.

Having summarized a number of research studies that have been conducted on self-service technologies in different service-oriented sectors, the following section addresses the process of developing the research theoretical framework of this study. The section reviews some of the major models in the technology acceptance area that are relevant to the subject domain under study.

2.5.1 Theory of Reasoned Action (TRA)

The theory of reasoned actions or better known as TRA is a well-developed theory in social psychology research. The theory was brought forward by Fishbein and Ajzen (1975) in their published book "Belief, Attitude, Intention and Behavior: An Introduction in Theory and Research". The authors hypothesized that behavioral intention stems from the individual's attitudes and the significant people's influence. The theory develops a difference between beliefs, attitudes and intention. The TRA model is depicted in Figure 2.2. The behavior of an individual is affected by his intention while the intention is affected by the attitudes towards technology and significant other's attitudes towards technology (subjective norms).

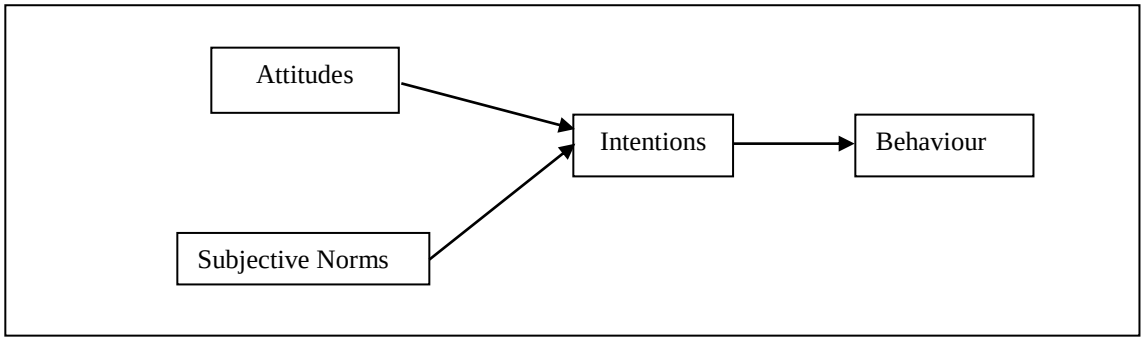

Figure 2.2
Theory of Reasoned Action (TRA)
Source: Davis *et al.* (1989)

Researchers have applied the TRA to many research areas. According to Sheppard, Hartwick and Arshaw (1988), the TRA has a significant predictive ability throughout research boundaries. They based this conclusion on a meta-analysis of 87 separate studies with a total sample of 12,624 observations at a significant level of 0.001.

Along similar line of study, TRA has also been tested as one of the base models in the recent technology options such as e-commerce as well as online buying. For instance, Korzaan (2003) combined TRA with flow theory in his examination of online purchasing. The study reached to the conclusion that attitude directly and significantly impacts intention to take part in online purchasing transaction.

Finally, in a Karahanna, Straub and Chervany (1999) employed TRA in two various settings namely adoption and continuous use and concluded that normative pressures (*situational*) determine the adoption intention, whereas attitudes determine user intention.

2.5.2 Theory of Planned Behaviour (TPB)

The theory of planned behavior (TPB) is extended from TRA with the inclusion of a construct integrating difficulty or ease of performing a behavior called perceived behavior control (PBC). PBC was revealed to be a more significant predictor of intention compared to attitudes and subjective norm. Ajzen reason for extending TRA lies in its limitation in addressing behaviors people have no control over (Ajzen, 1991).

PBC has its basis on Bandura's work of perceived self-efficacy and it is linked to an individual's judgment of how a course of action required to deal with a certain action can be executed. According to Ajzen (1991), behaviors are affected by confidence of

individuals in their ability to perform the behavior. On this basis, PBC and intention will affect behavior while PBC, subjective norm and attitudes will direct impact intention. The theory and its components are displayed in the following figure;

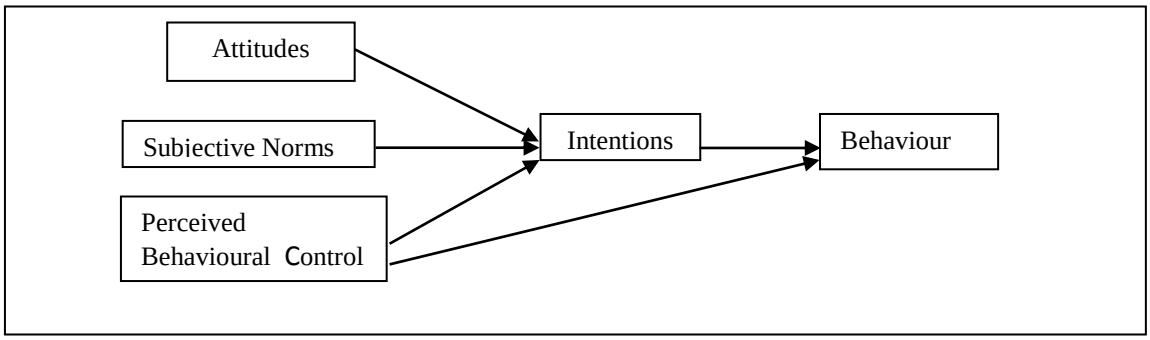

Figure 2.3
Theory of Planned Behaviour (TPB)
Source: Mathieson (1991)

Prior research comprising of a meta-analysis of 185 studies, was analyzed by Armitage and Conner (2001) with the help of TPB. The findings support the significance of efficacy in the TPB and the significant independent prediction of intention by PBC. Additionally, several studies have also conducted a comparison between TPB and other models and concluded that past behavior is a weak determinant of intention in TPB while PBC was able to completely mediate the effect of frequency on intention, but not that of past behavior. Majority of these studies reported that TPB is a significant enhancement on TRA.

Meanwhile, Mathieson (1991) compared TAM with TPB comprising of 262 students using a computer spreadsheet or a calculator. He concluded that; both models provided a good explanation of intention but TAM explained higher variance, the TPB managed to

provide specific information regarding the performance of the system compared to the TAM's general deliverables but TAM was easier to use compared to TPB.

In Hu and Chau's (1999) study, TPB was used in the technology acceptance domain. Based on a study of 421 physicians' usage of technology, the findings depicted PBC and attitudes were significant predictors of intention. On the contrary, the authors failed to find a significant relationship between subjective norms and intention.

2.5.3 Technology Acceptance Model (TAM)

The technology acceptance model, better known as TAM was specifically developed to clarify and predict the behavior of acceptance of IT at work by specifying the determinants in belief-attitude-intention-IT usage relationships (Davis, 1989; Davis, Bagozzi, and Warshaw, 1989; Davis and Venkatesh, 2000). Davis, Bagozzi, and Warshaw (1989) stated that the goal of TAM is to provide parsimonious and theoretically justified models that explain IT adoption determinants throughout various information technologies and user samples.

TAM indicates in Figure 2.4 that beliefs, perceived usefulness and perceived ease of use are influenced by *external variables* and jointly determine the *attitude* toward using IT. In TAM, the perceived ease of use is also a factor affecting perceived usefulness. Then, perceived usefulness, and attitude towards IT usage positively impacts behavioral intention to use IT. Furthermore, behavioral intention to use IT results in actual IT usage.

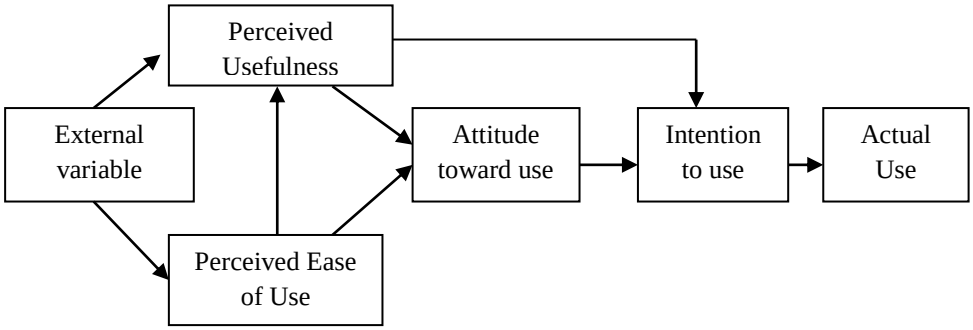

Figure 2.4
Technology Acceptance Model (TAM)
Source: Davis *et al.* (1989)

Since the introduction of TAM, a number of studies have applied it in a broad variety of IT applications to predict user acceptance behaviors of computer technologies, such as (a) wireless Internet (Lu, Yu, Liu, and Yao, 2003), (b) word processors (Adams, Nelson, and Todd, 1992; Davis *et al.*, 1989), (c) email and voice mail (Adams, D. A., Nelson, R. R., & Todd, P. A. 1992; Gefen, Karahanna, and Straub, 2003), (d) enterprise resource planning systems (ERP) (Ramayah and Lo, 2007), (e) database management system software (Szajna, 1994), and (f) online shopping (Gefen and Straub, 1997; Monsuwe, Dellaert, and Ruyter, 2004).

2.5.3.1 Determinants of Technology Acceptance Model (TAM)

External Variables

According to Davis, F.D., Bagozzi, R.P. & Warshaw, P.R. (1989), external variables, such as training, documentation, and user support consultants, have significant influence on perceived ease of use. Also, systems features, for example, menus, icons, mice, and touches screens, are considered important external variables which directly affects

perceived ease of use. On the other hand, perceived usefulness can be viewed as a combined function of external variables along with that of perceived ease of use.

External variables, such as the objective system design characteristics and learning based on feedback, have positive direct effects on perceived usefulness in addition to perceived ease of use (Davis *et al.*, 1989). To explain this relationship, for instance there are two interactive kiosks available. If one of the kiosk uses a 3D computer animation programs that objectively produces higher quality images than the other kiosk, the kiosk with the animation program with objectively higher quality images will be seen as the more useful one.

Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)

According to TAM, attitude towards using IT is determined by perceived usefulness and perceived ease of use. The former is defined as the level to which an individual believes that using the system will lead to the enhancement of his/her job performance (Davis and Venkatesh, 2000, p. 187). In TAM, perceived usefulness has positive direct impact on both *attitude* and behavioral intention (see Figure 4). It is expected that users would accept a particular IT if they believed that this IT would help them to achieve a desirable outcome of job performance; hence, the greater the perceived usefulness of utilizing a particular IT, is the more likely consumer intent to use this particular IT.

On the other hand, perceived ease of use is the level to which an individual believes that using the system will not require effort (Davis and Venkatesh, 2000, p. 187). TAM postulates that perceived ease of use positively impacts perceived usefulness. The reason

is that effort saved by improved perceived ease of use can enable people to do a better job or accomplish more at work, thus enhancing their job performance (Davis *et al.*, 1989). Other things being equal, the easier a certain IT can be learned or used, the more useful it will be perceived. In addition, perceived ease of use is expected to have a positive impact ton attitude towards IT usage and hence, the higher the perceived ease of using a particular IT makes it more likely that the individual will have a positive attitude toward using it.

According to research findings by Davis *et al.* (1989), perceived usefulness is a major determinant of intention to use IT, thus strongly affecting people's intention to use IT. Compared with perceived usefulness, perceived ease of use is considered a significant secondary determinant of intention to use IT, indirectly affecting people's intention to use IT.

Attitude, Intention, and Actual Use

TAM focuses primarily on an effective component of attitude, which is comprised of the positive/negative feeling of an individual towards an object/technology. These feelings are based on the beliefs, perceived ease of use and perceived usefulness. As noted previously, TAM postulates that attitude is the joint function of these two beliefs and will inform an individual's intention to accept IT. According to Davis *et al.* (1989), attitude only partially mediates the relationship between those two beliefs and behavioral intention.

Concerning behavioral intention, TAM postulates that it is jointly predicted by attitude and perceived usefulness (see Figure 2.4). Davis (1989) suggested that behavioral intention to use IT could well and accurately predicts actual IT use. Numerous technology acceptance studies favored this argument such as (e.g., George, 2002; Horton, Buck, Waterson, and Clegg, 2001; So, Wong, and Sculli, 2005; Venkatesh, Morris, Davis, and Davis, 2003).

Lengris, Ingham and Collerette (2003) provided a review of the TAM literature consisting of 80 articles published from 1980 to 2001 in six periodicals. They came to the conclusion that TAM is a useful model although it requires integration to a general perspective as there appears to be conflicting and contradicting results. This is concurred by Ma and Liu (2004). Hence, following the TAM introduction, several constructs have been added to the model to maximize its explanatory strength and to improve the domain's extensiveness.

2.5.4 Technology Acceptance Model 2 (TAM2)

After over a decade of investigating the relationships in the area of technology acceptance, Davis did some modifications to TAM and came up with TAM2. The work done by Venkatesh and Davis (2000) encapsulated the variables of; usage, intention to use, perceived usefulness, experience, social influences process (subjective norm, voluntariness, and image) cognitive instrumental processes (job relevance, output quality, result demonstrability and perceived ease of use). Venkatesh and Davis tested the new TAM and reported that 34-52% of the variance was in usage intention and social

influence measures as well as cognitive instrumental measures influenced user acceptance in a significant manner.

On the other hand, in TAM2, they made use of both PEOU and PU as the main mediators of a set of external variables and intention to use technology. In addition, TAM2 did not include attitude but replaced it with intention to use and usage behavior instead as the final dependent variable. The main distinction between TAM and TAM2 lies in the antecedents of PU. TAM2 predicted PU to all factors while none predicted PEOU. The PU antecedents include subjective norms, image, job relevance, out quality, result demonstrability and perceived ease of use.

2.6 Development of the Research Theoretical Framework

Based from the series of the technology adoption models related to the SST adoption, we have chosen the technology acceptance model (TAM) as the core model of our research theoretical framework. Initially, TAM was chosen to represent our research framework as it is an extensively examined model that is reported to be accurate and effective in its prediction and explanation of the determinants of actual acceptance behavior of computer software, information technology, and Internet-based information systems (Adams *et al.*, 1992; Davis *et al.*, 1989; Gefen and Straub, 1997 Gefen, D., Karahanna, E., & Straub, D. W. 2003; Lu *et al.*, 2003; Monsuwe *et al.*, 2004; Ramayah and Lo, 2007; Szajna, 1994).

TAM has been applied in many studies and has mostly received good results, although several studies have suggested that TAM still needs additional variables to modify it into an even stronger model (Legris, P., Ingham, J., &Collerette, P. 2003; Lucas and Spitler,

2000; Taylor and Todd, 1995).We also identify important attitude determinants toward SST usage and relate attitude to actual behavior in addition to the inclusion of a new construct in the model – user value. With regards to TAM, prior research has stressed on the role of attitude as an antecedent of SST use. But only a few empirical researches have related attitude toward SST use to actual behavior in an actual situation (Straub, 2007). In addition, we also considered the factors that were identified in the research model discussed earlier such as PU, PEOU, experience and social influences.

The original TAM was designed to address individuals in the workplace, an environment in which behavior is typically more rational than at home. Hence, there exists a great similarity between the application of TAM in the workplace and SST at the service provider's site where both activities are characterized by low degrees of entertainment and high focus on efficiency (Eriksson, Kerem, and Nilsson, 2005). Thus, based on Lai and Li's (2005) confirmation of TAM's validity in its application in other SST applications like e-banking, this study posits the predictive value of TAM in determining SST acceptance at the service provider's site.

In addition to that, there are some other important reasons that influence us to adopt TAM as the core model. They are:

1. It has been found that TAM provides a better explanation of attitude compared to other models (Mathieson, 1991).
2. TAM is a flexible model and has been used in many studies (e.g. Davis, 1989; Mathieson, 1991; Taylor and Todd, 1995).

3. TAM has been the most commonly employed model of IT and IS usage (Mathieson, 1991; Taylor and Todd, 1995).
4. TAM offers a quick and reasonably cost method to collect general information concerning the individual's perception of the system (Mathieson, 1991) due to its parsimony and predictive power, making its application in varying circumstances easy (Ndbusi, 2005).

Hence, that explains why TAM is still being used until today as it stand the test of time, and its overarching value adding premise remains appropriate and relevant today, as it did before, namely to, ''provide an explanation of general determinants of computer (and other related device) acceptance'' (Pijpers, Bemelmans, Heemstra, Van Montfort, 2001, p. 960).

Nevertheless, although useful, TAM does have some drawbacks. With regards to the perceived ease of use influencing the behavior intention, we concurred with Straub (1999) that the notion that perceived ease of use can be mapped on directly to the self-efficacy concept is erroneous. In the initial definition, perceived ease of use is referred to as a judgment concerning technology qualities. But self-efficacy is on the other hand, a judgment concerning the individual's abilities.

This does not however mean that no relationship exists between ease of use and self-efficacy. Some authors related that perceived efficacy in a specific based task may impact the perceived ease of use (Agarwal, Sambamurthy, and Stair, 2000) while later research (Venkatesh, 2000) related that self-efficacy is a distinct concept from perceived ease of use. Additionally, although both factors are crucial, the prediction of consumer behavior

on the basis of ease of use and usefulness overlooks several factors as revealed by current models.

Among the most notable criticisms of the TAM is its overlooking of individual differences (Agarwal and Prasad, 1999). Technological beliefs and attitudes are impacted not only by perceived ease of use and perceived usefulness of the product. The initial TAM fails to take into consideration prior experience, age, gender, and other factors that may impact attitudes concerning technology, which in turn, affects the innovation use.

With regards to the self-service technology adoption literature, we found that the self-service literature has merely concentrated on the responses towards self-service; for instance, focal variables highlighted in literature include attitude towards self-service, intention to use a self-service option (Dabholkar, 1996; Dabholkar and Bagozzi, 2002; Curran *et al.*, 2003), self-service technology trial (Meuter *et al.*, 2005) and use of self-service technologies (Meuter *et al.*, 2003).

We argue, for customers, these attributes constitute as the final motive whether or not to use self-service option. Nevertheless, the missing 'variable' that is important to explain this 'equation' is the '*value*' or needs expected from the customer of those particular self-service options. Although individual preferences might differ and therefore customers' needs and wants consequently differ from one another, there are general customers' desires and requirements.

Along this line of research, Van Hagen (2006) examined the needs of customers in terms of travel services and he created pyramid of quality dimensions. Laukkanen (2007)

studies demonstrate that factors including efficiency, convenience and safety are categorized as the most important desired outcomes of banks customers that determine the distinction in customer value perceptions between Internet and mobile banking. Upon comparing these needs and wants to the evaluation of self-service technologies, the SST customers are believed to have specific attributes in their initial assessment.

An extensive literature review of self-service technology adoption revealed various 'values' seek by the consumers in adopting the SST. However, the factors explained in the previous studies seem to represent concepts in different level of abstraction. For example, 24/7 service provision, location free access and service access speed reflect solid attributes of e-channels while time savings and ease-of-use reflect benefits or consequences deriving from the use situation. Finally, concepts like convenience, security and privacy represent more abstract desired end-states of consumers.

Thus, these concepts should not be jumbled together but rather treated as different level constructs that are linked to each other hierarchically. In the light of consumer value perceptions, value can be developed on various degrees of abstraction and can be the result of combined various factors at these levels of abstraction (Laukkanen, 2006).

Thus, it is pertinent that the customers' desired end-states in the consumption of self-service technology services are investigated. Huber, F., Herrmann, A. & Morgan, R.E. (2001) argue that a suitable method which relates product/service consumption and individual's personal values is the means-end theory.

2.6.1 Means-End Theory

The means-end theory is rooted in the cognitive psychology that seeks to clarify the way consumer's choice of a product or service allows him to meet his desired outcome (Guman, 1982). Thus, it is seen as a broad term that describes a set of methods for conducting customer interviews concerning the reasons behind their selections and the interpretations of consumer's responses with regards to links between the results (Olson and Reynolds, 2001). This approach, according to Woodruff and Gardial (1996), suggests an organized reflection of the way customers perceive products and services (See figure 2.5).

The way the products and services are related to customers can be attributed through three levels namely, attributes, consequences and desired outcomes. Whereas attributes describe the product or service, and consequences explain the benefits that the customer seeks resulting from the consumption of product or service, while the desired outcome is considered as the ultimate end through the means provided by the product and service (Woodruff and Gardial, 1996).

The basic idea of the hierarchy is that the intensity of abstraction increases when moving from the lower to higher level. Peter and Olson (2005) argue that business managers and marketing practitioners should understand these three levels of consumers 'product or service knowledge in order to develop effective marketing strategies.

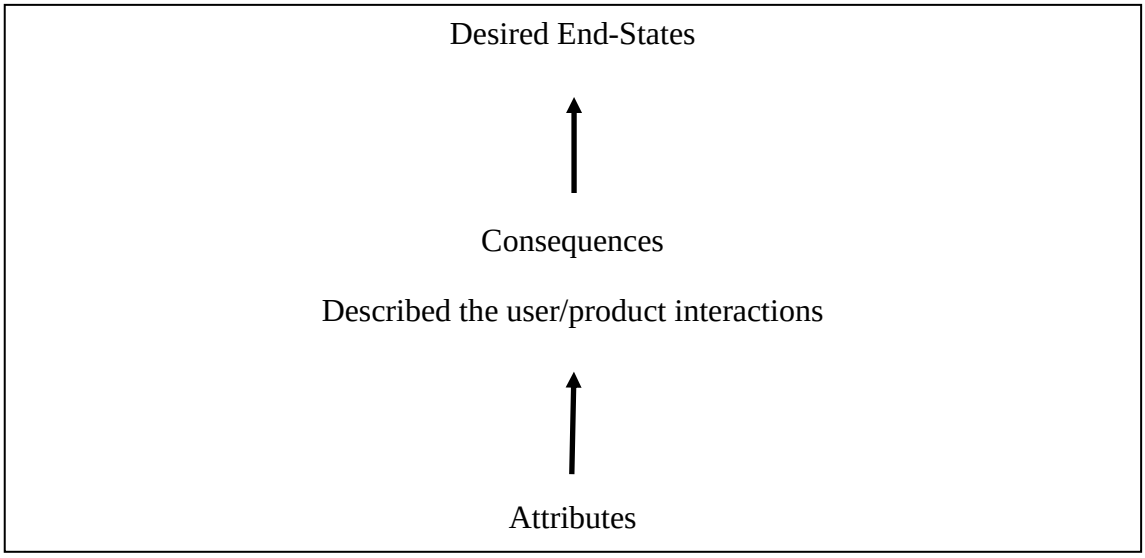

Figure 2.5
Means-End Theory

2.6.2 Mediating Role of User Values

The value seek by the consumer is a subjective construct that is assessed by customers rather than by businesses, thus the value may vary among individuals (Anderson and Narus, 1990; Bolton and Drew, 1991; Huber *et al.*, 2001; Zeithaml, Parasuraman, and Berry, 1990). The subjectivity of the consumer seek value can be better explained by understanding the Means-End Chain Model (Woodruff and Gardial, 1996).

This model, which presents the three levels of a customer value hierarchy (i.e., attributes of a product, consequences of using the product, and ultimate goals that customers want to achieve by using the product), posits that a product itself is not an ultimate goal but rather a means for an individual to achieve a goal. Thus, the degree of consumer's perceived value or value seek from using a product may vary across individuals with different personal goals and personal characteristics (Wilkie, 1990; Woodruff and Gardial, 1996).

Interestingly, as the literature review shows, the majority of studies on consumer technology adoption have used the technology acceptance model (TAM) as the theoretical research framework. However, TAM has no construct which represents an overall estimation of the adoption object (Kim *et al.*, 2007). The model only explains adoption behaviour with two factors namely ease of use and usefulness. The relationship between the value that is/are seek by the user and adoption intention has never been examined before (Kim *et al.*, 2007) although there is a strong empirical support that value affects perceptual intention to use (Sweeny, Soutar and Johnson, 1997).

The inclusion of consumer seek value in the respective self-service technology adoption is an important contribution. This is because; the basic and common assumption in examining consumer behaviour is value maximization. This approach is a novel approach in understanding consumers' adoption of self-service technology. While this research makes an improvement to the existing TAM model, it still based its theory on the original model which makes this research highly generalizable and applicable to other industries.

Accordingly, with reference to these values in adopting SST, we argue that they are prioritized. There is a dominant value that the self-service facilities must fulfill before the user evaluates the next list of value or attributes offered by the service provider. The findings of Völlink, T., Meertens, R. & Midden, C.J.H. (2002) revealed that not all attributes are relevant to the potential adopter at the same time. They found that potential adopters seem mainly interested only in the perceived benefits of an innovation.

Plouffe, Vandenbosch and Hulland's (2001) studies also showed that for many innovations, adopters choose to concentrate on improving the perceived benefits to enhance the probability of adoption. Only when the perceived benefit is considered sufficiently high, will they proceed with evaluating the intervention on the basis of the other attributes. When the benefits are perceived as minor, the evaluation process is stopped.

Thus, as in the attributes of an innovation (SST), we believe that there is a dominant end value which determines whether the SST would be adopted. We argue that the decision making in the SST adoption is a stepwise process in which a dominant seek value is referred to by Rosenberg and Hovland (1960) and Le Bon and Merunka (1998), as cognitive indices/beliefs presented in an attitude towards innovation.

It is evident that the innovation benefits/usefulness is considered among the most widely acknowledged concepts in the literature dedicated to technology adoption (Agarwal and Prasad, 1999; Davis, 1989; Rogers, 1995) and has been reported to be more crucial when compared to perceived ease of use (Lippert and Forman, 2005). Nevertheless, the current literature lacks the understanding of what individuals perceive as useful or what is valuable to the user in adopting a self-service technology. Numerous case studies showed that the service provider developers along with designers develop functions and feature which they consider to be useful, but only to dismiss them soon after.

Although literature concerning usability is rampant with studies dedicated to ease of use, decision-making processes that individuals have to go through in determining the innovation's value and its effects on intention has yet to be investigated. Adoption is not

synonymous with acceptance (Jaffee, 1998) and understanding and facilitating the acceptance process may be more crucial compared to the actual adoption.

Therefore, it is obvious that the reason behind the SST development is to adhere to the expectations of the consumers and these could include convenience, time and cost savings as well as autonomy (Bitner, Ostrom, and Meuter, 2002). Zeithaml, V.A., Bitner, M.J., & Gremler, D.D. (2006) stated that SSTs successfulness can be attributed to the benefits they provide and these benefits vary based on the type of consumer. Meuter *et al.* (2000) studies correspond with Zeithaml *et al.* (2006) argument where they found that consumers' decision to adopt SST is due to several different benefits such as time and monetary savings, easy to use and availability.

2.6.3 Linkage of User Values in SST Adoption

An understanding of the definition of a value must begin with a definition of a belief, since a value is a special type of belief. A belief is a linkage of an attribute to an object (Fishbein and Ajzen, 1975). It is the information that a person has about an object, regardless of whether or not the information is accurate (Kahle, 1983). Rokeach (1973) described a value as an enduring belief that a particular mode of conduct or end-state of existence is preferable on a social and personal level to a counterpart mode of conduct or end-state of existence (p. 5).

A value, therefore, is a special type of belief indicating an enduring preference for an end-state condition (a "terminal value") or a mode of conduct (an "instrumental value"). Values transcend objects and situations and provide standards central to peoples' lives

(Rokeach, 1973; Kahle, 1983). For example, “inner peace” is a held terminal value if it is enduringly preferred to “inner turmoil”, and being “respectful” is a held instrumental value if it is enduringly preferred to being “disrespectful”.

An attitude is a linkage of a belief or a group of beliefs to an evaluation (Kahle, 1983). For example, a person who states, “using the latest technology is important” assigns the evaluation “important” to the belief that “the latest technology are adopted”. Rosenberg (1956) linked beliefs about valued states to a positive or negative affect toward a cognitive object. His describes this relationship as follows:

In a situation where a person is inclined to respond to a particular object with positive or negative effect, such inclination is coupled by a cognitive structure comprising of beliefs concerning the potentialities of the object for achieving or hindering the realization of valued states; and the positive/negative sign and extremity of the impact felt to the object are associated with the content of its cognitive structure (p.367).

Mueller (1986) explained this theory as:

“There is general agreement that values cause attitudes. More specifically, an attitude regarding the object acts as a function of the level to which the object is perceived to facilitate the attainment of important values. For example, if a user values privacy and independence but disvalues structure or ‘conformity’, the user may have a more positive attitude towards SST facilities where he/she would be able to conduct the transaction independently without the ‘interference’ of a service personnel. Likewise, one’s attitudes toward persons, groups, and all cognitive objects... will be determined largely by the

extent to which each of these objects is associated with the fulfillment of his values." (p. 5)

Both Rosenberg and Mueller are suggesting that a cognitive object's perceived effect on "realization" or support of valued states is related (causally according to Mueller) to the attitude toward the cognitive object. It is this perceived impact of realization of valued states that this study investigates as influential on technology acceptance-related perceptions, attitude, and intention.

Most of the recent technology acceptance literature, however, has not addressed the influence of values on technology acceptance. Davis' TAM (Davis, 1989) is a widely used model for technology acceptance research, but does not contain a value-based construct except for Perceived Usefulness, which actually address workplace-oriented, value-like preferences. Both perceived usefulness and perceived ease of use are utilized to clarify the attitude toward and intention to make use of technology. The model does leave open the potential to incorporate value "impacts" as antecedents of its constructs or as additional external factors.

In addition, much of the testing of TAM has occurred in contexts in which the technology might not be perceived to substantially support or oppose values, such as students evaluating an email system or other general information technology for personal and school usage (e.g., Taylor and Todd, 1995; Igbaria, Guimaraes, and Davis, 1995; Igbaria, 1995; Fenech, 1990; Davis, Bagozzi and Warshaw, 1989; Szanja, 1996; Mathieson, 1991; etc.) or clerical staff using general PC applications (e.g. Chau, 1996). Nevertheless, TAM

is suitable for examining perceptions, attitudes, and intentions before implementation as well as after (e.g., Karahanna, Straub, and Chervany, 1999; Venkatesh and Davis, 2000).

Few studies in the innovation adoption literature exist that consider the relationships between the influence of the user value, attitude and intentions in contexts in which values play a significant role. Some studies have indicated that behavioral intention to use technology needs to consider consumers' perception of value (Chen and Dubinsky, 2003; Cheng, J.M.S., Wang, E.S.T., Lin, J.Y.C. & Vivek, S.D. 2009; Chi , 2008; Soltani and Gharbi, 2008).Agarwal and Karahanna (1998) used value compatibility items as indicators of overall compatibility with an information system with values, but did not look at any specific values or model value compatibility as a separate antecedent.

Nevertheless, not all values that a person holds are influential to the model. The potential influence comes from the importance of the values that the person believes will be supported or opposed by the technology, and the intensity of that support or opposition. For example, "world peace" is a value on some standardized questionnaires (Rokeach, 1973) that a SST user may consider important, but usage of a flight check-in self-service machine may not likely be perceived as either promoting or opposing world peace. Therefore, it is not the complete list of values that the subjects hold that is of interest, but rather the values that would have an impact on technology acceptance of in this case, the employment of SST in achieving those values.

2.6.4 Consumer Characteristics in User Values – Attitude Relationship

In this study, two sets of factors have been hypothesized to influence user values which would in turn influence consumers' intention to use SST which itself influences their adoption of SST. These two sets of factors include consumers' personality traits and their demographic characteristics. Initially, Dabholkar and Bagozzi (2002) presented that personality traits have a key role in evaluating and using self-service technologies. As we have argued in the earlier section, we do not agree with some of the assumptions that TAM proposed in its model. Therefore, for the purpose of this study is to examine three crucial personal characteristics in addition to the demographics profiles of the user. The personality traits are:

(1) *Self-efficacy* is the level to which the customer perceives that the use of self-service is easy or difficult. The fear of using new technology products or what is referred to as technology anxiety, is related to these personal characteristics. (*technology anxiety*).

(2) *Inertia* is the level to which people refuse to change their habits/customs. Other people have an intrinsic need to delve into new experiences by trying out new products known as innovativeness.

(3) *Need for interaction* with a service employee – despite other characteristics, some people are desirous of dealing with personal interface as opposed to just technology.

Prior literature reveals that the entire variables impact the inclination to use self-service (Dabholkar 1996; Meuter *et al.* 2005). Specifically, need for interaction, inertia and

technology anxiety may result in hesitancy to use self-service while self-efficacy may encourage the use of a particular self-service.

Second, Debholkar (1996) showed that the evaluation of a self-service technology depends on the circumstances. For instance, social safety may be different when an individual makes use of transport service during the day compared to nighttime, when the platform is eerie and devoid of people. In addition, the service experience may be different during peak hours compared to off-peak hours.

Also, travel time and place may be crucial conditions for the acceptance of self-service technologies. According to Plouffe, C.R., Vandenbosch, M. & Hulland, J. (2001), although the characteristics of parsimony in TAM are critical, individuals' perceptions when faced with new technologies are likely to differ between one context to another.

Comprehending the acceptance behavior throughout various contexts is required. Furthermore, Meuter *et al.* (2005) contended that the primary hindrance in accepting new technology is convincing people to try it out for the first time. Therefore technological products experience or other types of self-service technologies can be considered as a crucial condition for using and positively evaluating some particular self-service technology. Through intense use of various types of technologies, customers become increasingly confident with them and they will become more inclined to use them.

As regards the effects of these external variables on attitudes and/or intentions, there are differing empirical findings in past studies. Some claimed that a direct causal-effect association exists between external variables and attitudes/behavioral intentions (i.e.

Lippert and Forman, 2005; Liu and Ma, 2005; Ong and Lai, 2006; Wu and Wang, 2005; Yi, M.Y., Jackson, J.D., Park, J.S., & Probst, J.C., (2006), while some believed that the effects of the external variables on attitudes and/or intentions were fully mediated by the two key constructs in TAM: perceived usefulness and perceived ease of use (e.g. Agarual and Prasad, 1999; Curran and Meuter, 2005; Lu, J., Yao, J.E., & Yu, C.-S., (2005); Konradt, U., Christophersen, T., & Schaeffer-Kuelz, U., (2006); van Raaij and Schepers, 2006; Wang, Y.-S., Wang, Y.-M., Lin, H.-H., &Tang, T.-I., (2003); Wu and Wang, 2005).

As a result, whether or not the individual's beliefs comprising of perceived usefulness and perceived ease of use, completely mediate the impact of eternal variable upon attitudes and/or intentions are not known, as there seemingly is no consistent evidence. Other scholars have argued that the impact of the two TAM constructs partially mediated the attitudes or behavioral intentions relationship. In this study, we propose that there is a direct causal effect relationship between the external variable on user seek value and attitudes which eventually effects user intention.

As we have elaborated earlier, Straub (1999) commented that the premise that perceived ease of use can be directly mapped onto the self-efficacy concept is erroneous. Self-efficacy is described as a judgment concerning the individual's abilities. In a particular self-service task, self-efficacy may impact perceived ease of use (Agarwal, Sambamurthy, and Stair, 2000). Venkatesh (2000) stated that self-efficacy is conceptually distinct from perceived ease of use. Therefore, these two variables are drop from our propose model as it does evaluate the overall value of the technology but

instead the ‘usefulness’ of the technology depends on the ‘operability’ of ease of use of the item.

Finally, demographic profiles are frequently used as segmentation variables. An important question is whether or not the impact of SST usage drivers is the same throughout various groups of demographics (Chiu, Lin, and Tang 2005). The significance of demographics in technology adoption has been established in various studies (Morris and Venkatesh 2000; Venkatesh and Morris 2000; Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. (2003). For the purpose of this study, we have identified few variables that will be representing the demographic profiles which are education, age and gender.

2.6.4.1 Education

People are different based on their sensitivity to issues that are related to time (Berry, Seiders, and Grewal, 2002; Hui and Tse, 1996). According to Durrande-Moreau and Usunier (1999), people employed in highly qualified jobs and education levels have a tendency to reflect a more quantitative time orientation as evident from the statement, ‘time is money’. SST is stronger among customers with high education compared to those with low education.

On the basis of an extensive literature review, Rogers (2003) came to the conclusion that earlier adopters reported more years of formal education compared to later adopters. As contended, the defining characteristic of innovations is evidently the newness. Newness is considered as an attribute which may have some use for customers (Blythe, 1999), and

this is clearly the case with highly educated individuals as they are found to be more inclined to adopt new technologies (Im, Bayus, and Mason, 2003).

The impact of education upon user attitude toward technology has been reported in the literature of organizational behavior as impacting the individual's attitude to workplace technologies (Morris and Venkatesh, 2000; Venkatesh and Morris, 2000). Consistent with the work of Evanschitzky and Wunderlich (2006), this study assumed that people that are highly educated perform more extensive information collection and processing efforts as compared to their lowly educated counterparts. This is because the former group makes it a point to gather more information before they make their decisions while the latter depends on less information (Capon and Burke, 1980).

2.6.4.2 Age

In the context of workplace, Morris and Venkatesh (2000) revealed that the association between attitude and intention is not equally significant for everyone. They found that intention to use technology is more significant among the youth compared to their older counterparts.

2.6.4.3 Gender

Recently, more and more studies have concentrated on gender differences in terms of shopping behavior. Males and females have been reported to use different information-processing strategies when they shop (Meyers-Levy and Maheswaran, 1991; Meyers-Levy and Sternthal, 1991). According to some authors, females primarily reflect higher involvement and more efficient information processing in shopping compared to their

male counterparts (Laroche, M, Saad, G., Cleveland, M., & Browne, E. (2000); Laroche, M, Cleveland, M., Bergerson, J. & Goutaland, C. (2003).

This may indicate different priorities while shopping in that, males may be looking to decrease time and effort for shopping while females may want to decrease distraction from the shopping task. With regards to SST use, this would indicate that males attribute higher importance to making shopping an efficient chore through SST, but females may want to keep shopping simple by using SST. Evidence from another context reports the same conclusion.

Gender differences were examined by Venkatesh and Morris (2000) in technology acceptance and they revealed that men's decision to use technology was more significantly impacted technology by their perceptions of its usefulness while women were more impacted by their perceptions of ease of use (p. 115).

2.7 Conclusion

Our proposed model answers the call of Legris, P., Ingham, J., &Collerette, P. (2003); Lucas and Spitler (2000); McFarland (1999) and Taylor and Todd (1995) that suggest that there is a need to incorporate more specific variables into the model. This study therefore contributes to knowledge by following their recommendation. TAM is extended by incorporating self-service technology adoption, a specific form of 'unique' information technology platform. Further to this point, demographic characteristics and personality traits are introduced as independent variables in this study while user seek values represents the first mediating variable and consumer intention to use SST

represents the second mediating variable in this study. Finally, consumers' SST adoption represents the dependent variable in this study. This research model retains the major variables of TAM, namely, perceived usefulness and perceived ease of use. Hence, with the elaborate discussions on the proposed research theoretical framework, the following figure (Figure 2.6) schematizes the relationships among the above variables.

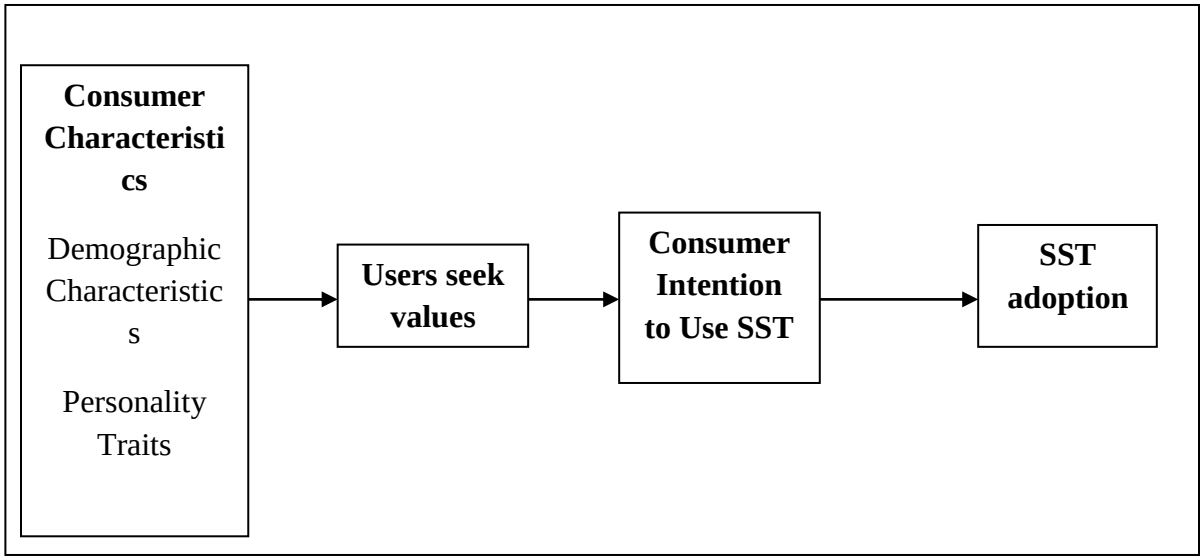

Figure 2.6
Research Theoretical Framework

CHAPTER THREE

HYPOTHESES DEVELOPMENT

3.1 Introduction

In this study, a number of hypotheses have been designed based on related arguments from the literature. These hypotheses are also grounded on the theoretical framework that is designed for this study in which the nature of relationships between the study's variables (independent, mediating, and dependent) is hypothesized and discussed. Specifically, there are 4 main variables in this study in which consumer characteristics (demographic and personality traits) act as the independent variable, user seek values and consumer intention to use SST act as the mediating variables, and finally SST adoption acts as the dependent variable. The following sections address the links between these variables.

Based on the above discussions on the variables and research objectives, five main hypotheses have been developed for examination in this study. Together with these five main hypotheses, 4 other sub-hypotheses are also designed for examination. This makes up the total number of hypotheses that are examined in this study as nine hypotheses. The following sections address the argument that are brought up from the literature regarding these nine hypotheses.

3.2 Consumer Characteristics – User Seek Values Relationship

Consumer or user that adopts the self-service technology varies depending on several variables that affect their perceived values. This perceived values differ from one consumer to another and this is influenced by various individual differences such as demographic factors and personality traits. Demographic factors have been discussed by Rogers (1995); Burke (2002); Parasuraman and Colby (2001); Curran, Meuter and Surprenant (2003); Dabholkar and Bagozzi (2002); Chiu, Lin, and Tang (2005); Morris and Venkatesh (2000); Venkatesh and Morris (2000); and Venkatesh *et al.* (2003). Personality traits have been discussed by Dabholkar and Bagozzi (2002); O'Cass and Fenech (2002); Childers *et al.* (2001); Davis (1993); Eastin and LaRose (2000); Marakas *et al.* (1998); Bandura (1994); Meuter *et al.* (2005); Dabholkar (1996). The above discussion leads this study to confirm that consumer's characteristics which include demographic factors and personality traits influence the user seek values that consumer wish to achieve or satisfy in using and adopting the SST. Hence, H1will be:

Hypothesis 1: Consumer characteristics influence users seek values.

a. Demographic Profiles

Demographic characteristics have long been a focus of innovation adoption literature, it is a primary predictors of adoption in which it influences the consumer's attitude and behavior intention in adopting the SST (Rogers, 1995; Burke, 2002). A thorough literature review of studies dedicated to consumers use of SSTs shows a basic focus on differences among individuals (Parasuraman and Colby, 2001) and differences among

attitude models when it comes to predicting intended behaviors (Curran, Meuter and Surprenant, 2003; Dabholkar and Bagozzi, 2002). The effect of SST usage drivers is not equal throughout various demographic groups (Chiu, Lin, and Tang 2005). The importance of the demographics groups in technology adoption has been recognized in a variety of studies (Morris and Venkatesh 2000; Venkatesh and Morris 2000; Venkatesh *et al.* 2003).

The most four major relevant variables known to have effect on the technology adoption are age, gender, education and income (Burke, 2002). Individuals who tend to adopt new technologies are younger, male, highly educated, and have higher income than their non-adopting counterparts (Labay and Kinnear, 1981; Danko and MacLachlan, 1983; Dickerson and Gentry, 1983; Darian, 1987; Zeithaml and Gilly, 1987; Gatignon and Robertson, 1991; Greco and Fields, 1991; Rogers, 1995; Sim and Koi, 2002; Venkatraman, 1991).

Morris and Venkatesh (2000) claimed that the association between attitude and intention is not the same for every individual. The intention to use the technology is stronger among younger people than the older ones. Currently, many studies found that gender has some influence in the use of technology where both genders utilize different information-processing methods (Meyers-Levy and Maheswaran, 1991; Meyers-Levy and Sternthal, 1991). Females usually demonstrate greater involvement and high information process while shopping compared to their male counterparts (Laroche *et al.*, 2000; Laroche *et al.*, 2003) than can be explained through the different priorities that males want where they

try to keep time and effort investment minimized, while females are desirous of minimizing the distraction from the shopping experience.

In using the self-service technology, this signifies that males place more significance in making efficient shopping with the help of SST, but females avoid complicating their shopping task performance by having to make use of SST. According to Venkatesh and Morris (2000), in comparison to females, males' use of technology is strongly influenced by their perceptions of its usefulness while the female is more strongly influenced by their perceptions of the technology's ease of use (p. 115).

Moreover, Durrande-Moreau and Usunier (1999) contended that individuals who possess high qualified jobs have a greater tendency to show a more quantitative time orientation as implied by the statement, 'time is money'. SST is higher among more highly educated individuals compared to their low-educated counterparts. Also, Rogers (2003) reached to the conclusion that early adopters tend to have more years of formal education compared to later adopters. It is obvious that the defining feature of innovations is their newness and this attribute has some use for customers (Blythe, 1999) and this is particularly the case for highly educated groups as they are more inclined to adopt new technologies (Im, Bayus, and Mason, 2003).

The effect of education on user attitude toward technology is discussed in literatures as having an impact on the attitude and intention of an individual towards workplace technologies (Morris and Venkatesh, 2000; Venkatesh and Morris, 2000; Evanschitzky and Wunderlich, 2006). Individuals having higher levels of education tend to gather and process more extensive information as well as employ more information before they

decide. On the other hand, less educated people however did not perform similarly and rely more on fewer information cues (Morris and Venkatesh, 2000; Venkatesh and Morris, 2000; Evanschitzky and Wunderlich, 2006; Capon and Burke, 1980).

In addition, higher education may result in confidence and the perception that SST is more understandable and invaluable (Breakwell at al., 1986; Gist, 1987; Igbaria and Parasuraman, 1989). Household income also play some role in the adoption of the SST, greater household incomes are more inclined to use the technology in comparison to their low-income counterparts. This is because the high household income is positively associated with the possession of current technology including computers, Internet access and higher education levels of consumers and thus using the self-service technology is something common to them (Lohse *et al.*, 2000).

Higher income may lead to higher chances of access to the needed tools and the motivation for SST use (Breakwell at al., 1986; Gist, 1987; Igbaria and Parasuraman, 1989). This discussion has led this study to confirm the significant of demographic factors in the seek values that consumer look for in using the SST. Hence, hypothesis 1a will be:

Hypothesis 1 (a): Demographic factors which are age, gender, education, and income influence users' seek values.

b. Personality traits

Personality traits have been widely discussed in the consumer behavior literature as an influencing factor in the use of self-service technology (Dabholkar and Bagozzi, 2002;

O'Cass and Fenech, 2002; Childers *et al.*, 2001; Davis, 1993). Personality traits are believed to have effects on consumer's intention thus it is significant in seeking values for the consumers. Three important personality traits that are commonly assessed in the consumer intention and adoption are; self-efficacy as highlighted by Eastin and LaRose (2000), Marakas *et al.* (1998) and Bandura, (1994), inertia as mentioned by Dabholkar and Bagozzi (2002) and Meuter *et al.* (2005) and interaction need (Dabholkar and Bagozzi, 2002; Dabholkar, 1996).

Self-efficacy is the individual's beliefs that he/she is capable and has the resources to perform a particular task successfully (Bandura, 1994). It is the level to which the customer perceives that using the self-service technology is easy or difficult. General computer self-efficacy is defined by Markas *et al.* (1998) as an individual's judgment of efficacy throughout multiple computer application domains, while internet self-efficacy is an individual's judgment of his/her ability to employ Internet skills in a more extensive method, like searching for information or troubleshooting search issues (Eastin and LaRose, 2000). Hence, individuals with low self-efficacy are not certain and are uncomfortable using technology and require simple procedures to guide them to using the technology. Low self-efficacy consumers would unlikely seek the values for the technology adoption as they are not comfortable with the technology whilst high self-efficacy consumers would likely seek the values for the technology adoption as they are comfortable with the technology used. Judgments of self-efficacy are positively linked to outcome expectations (Oliver and Shapiro, 1993). In other words, the higher the person's self-efficacy is, the more likely that person will try to meet the expected result. This is

because consumers have higher tendency to try and persist in behaviors that they feel that they are capable of performing (Eastin and LaRose, 2000).

Inertia refers to the level to which people refuse to change their customs/habits. Inertia may limit efforts to learn about SST. Utilizing new SST calls for investing in time and energy and this minimizes motivation (Gremler, 1995; Olshavsky and Spreng, 1996). Inertia also hinders behavioral changes and results in the hesitancy in trying new service delivery options (Aaker, 1991; Gremler, 1995; Heskett, Sasser and Hart, 1990).

The other personality characteristic related to the user seeks value and consumer behavior intention of technology adoption is the need for interaction with the employee of the service provider (Dabholkar and Bagozzi, 2002). This interaction need refers to the significance of human interaction to the consumer during the provision of service (Dabholkar, 1996). In the context of self-service technology, human interaction with an employee of the service provider is replaced by help-buttons and search features of the technology.

Hence, consumers having high need for interaction will steer clear of using the technology while consumers with a low need for interaction will be more amiable towards the option (Dabholkar and Bagozzi, 2002). This high need for interaction may result in minimized interest in how SST works and the motivation to have a go at it (Dabholakr, 1996; Langeard *et al.*, 1981). In other words, a high level of need of personal interaction minimizes the motivation towards using SST (Bateson, 1985; Dabholakr, 2000; Langeard *et al.*, 1981; Meuter *et al.*, 2000).

This indicates that the characteristic of the consumer's 'need for interaction' has a significant impact on the association between consumer behavior intention and the self-service technology adoption. Because of the lack of physical contract with employees and sales persons in self-service technology adoption environment, the relationships should be stronger for consumers with a high degree of interaction to perceive positive value in self-service technology adoption. The above discussion lead this study to confirm that personality traits influence the user seek values. Hence, hypothesis 1b will be:

Hypothesis 1 (b): Personality traits which are self-efficacy, inertia, and need for interaction influence users seek values.

3.3 Users Seek Values – Mediating Influence

The value sought by the consumer may differ among individuals (Anderson and Narus, 1990; Bolton and Drew, 1991; Huber *et al.*, 2001; Zeithaml, Parasuraman, and Berry, 1990). The Means-End Chain Model (Woodruff and Gardial, 1996) represents the three degrees of customer value hierarchy (i.e., attributes of a product, consequences of using the product, and ultimate goals that customers want to achieve by using the product), hypothesize that a product itself is not an ultimate goal but rather a means for an individual to achieve a goal. Thus, the degree of consumer's perceived value or values seek from using a product may vary across individuals with different personal goals and personal characteristics (Wilkie, 1990; Woodruff and Gardial, 1996).

The relationship between the values seek by the user and adoption intention has never been examined in TAM model (Kim *et al.*, 2007) even though there is a strong empirical

support that value affects perceptual intention to use (Sweeny, Soutar and Johnson, 1997). The addition of consumer seek values in the self-service technology adoption is a significant contribution towards the common assumption in consumer behavior which is value maximization.

Adopters prefer to concentrate on enhancing the perceived benefits to increase the possibility of adoption (Plouffe, Vandenbosch and Hulland, 2001). If the perceived benefit is satisfactorily high, they will evaluate the intervention on the basis of the other attributes. If the benefits are perceived as small, the evaluation will discontinue. As in the attributes of an innovation of SST, we believe that there is a central end value which determines the SST adoption (Rosenberg and Hovland, 1960; Le Bon and Merunka, 1998).

It is evident that the innovation benefits/usefulness is among the most present concepts in the literature dedicated to technology adoption (Agarwal and Prasad, 1999; Davis, 1989; Rogers, 1995), in fact it was proposed to be superior to perceived ease of use (Lippert and Forman, 2005). However, the current literature remains lack in understanding how an individual judges what is useful or what is valuable to the user in adopting a self-service technology. Numerous case studies showed that the service provider developers and designers develop functions and features that they think to be useful, but only for the users to discard them as invaluable or useless.

Although researches on usability have focused on ease of use, the decision making process that individuals experience while determining the innovation's value and its effects on intention has yet to be examined. This is because adoption is not synonymous

with acceptance (Jaffee, 1998) and thus, comprehending the process of acceptance may be more significant that the actual adoption. Based on this premises, this study will confirm that the users seek values intervene the consumer's intention and adoption of SST. Hence, hypothesis 2 is:

Hypothesis 2: Users seek values mediates the relationship between the consumers' individual characteristics and their intention to use SST

Taking into account that in this study, two sets of individual characteristics are investigated, namely consumers' demographic characteristics and their personality traits, the following sub-hypotheses are designed.

Hypothesis 2 (a): Users seek values mediates the relationship between users' demographic characteristics and their intention to use SST.

Hypothesis 2 (b): Users seek values mediates the relationship between users' personality traits and their intention to use SST.

3.4 Users Seek Values – Intention to Use SST Relationship

Consumer motivation to use the SST constitutes as the final motive whether or not to opt for self-service. This is known as values or needs expected from the customer of the particular self-service options. Despite of the differences in individual preferences specifically in the customers' needs and wants, there are some common needs and wants among them (Van Hagen, 2006). The most important desired outcomes of bank customers when determining the differences in customer value perceptions between

Internet and mobile banking are efficiency and convenience (Laukkanen, 2007). There are various 'values' sought by the consumers in adopting the SST such as 24/7 service availability, location free access and service access speed reflect solid attributes of e-channels.

Time savings and easy-to-use concepts represent the advantages or consequences deriving from the use situation. Finally, concepts like convenience, security and privacy represent more abstract desired end-states of consumers. These concepts should be treated as different level constructs that are linked to each other hierarchically. In the view of consumer value perceptions, value can be developed on various levels of abstractions and can stem from different factors (Laukkanen, 2006). Consequently, it is pertinent that the customers' desired end-states in the consumption of self-service technology services are investigated that links the products/services consumption and individual's personal values (Huber *et al.*, 2001).

There is a prevailing value that the self-service facilities must accomplish before the user evaluates the next list of values or attributes offered by the service provider. Völlink *et al.* (2002) claimed that potential adopters are interested only in the perceived benefits of an innovation. Adopters prefer to focus on improving the perceived benefits to increase the possibility of adoption (Plouffe, Vandenbosch and Hulland, 2001). Customer will evaluate the intervention on the basis of other attributes only when they perceived the benefits gainedis sufficiently high. When the benefits are perceived as unimportant, the evaluation process is stopped. As a result, we believe that there is a prevailing end value that determines the adoption of SST.

We argue that the decision making in the SST adoption is a stepwise process in which prevailing seek value is a cognitive indices or beliefs and is reflected in the attitude displayed towards the innovation as stated by Rosenberg and Hovland (1960) and Le Bon and Merunka (1998). Hence, the reason behind the establishment of SST is to comply with consumers' expectations and these could be time/cost savings, convenience or even autonomy (Bitner, Ostrom, and Meuter, 2002). SSTs success is also attributed to the benefits they provide such as time and monetary savings, easy to use, and availability, and these benefits also vary based on the type of consumer (Zeithaml*et al.*, 2006; Meuter*et al.*, 2000).

Consumers choose to use self-service technology for a variety of reasons that benefit them. Among the many advantages are time and cost savings, higher control over the delivery of service, minimized waiting time, greater perceived level of customization (Meuter and Bitner 1998), location convenience (Kauffman and Lally 1994), experienced fun/enjoyment from technology use (Dabholkar 1994, 1996), along with efficiency, spontaneous delight and versatility (Bitner, Brown, and Meuter 2000). In addition, customers may find the technology-based options attractive for many reasons; they are easy to use, they are convenient compared to other options, they allow avoidance of contract with employee of service providers (Meuter *et al.* 2000).

Self-service technologies can provide consumers greater convenience, accessibility, and ease of use. Convenience include: business available 24 hours a day, seven days a week. SST often empowers the consumer to use the technology as they have control over the service interaction and not confined by time or pressured. Co-production also benefit

customer in several ways including: reasonable prices, greater opportunities for options, greater discretion concerning the final product configuration, minimal waiting times, and a higher potential for customization (Auh *et al.*, 2007). Based on this argument, this study hypothesize that users seek values influence the consumer behavior intention to use SST. Therefore, H3 will be:

Hypothesis 3: Users seek values influence consumers' intention to use SST.

3.5 Consumer's Intention to Use SST – Consumers' Adoption of SST

As we have discussed in chapter 2, the theory of reasoned action (TRA) justified how intentions could predict the consumer behavior in adopting the technology (Fishbein and Ajzen, 1975; Sheppard, Hartwick and Arshaw, 1998; Korzaan, 2003; Karahanna, Straub and Chervany, 1999). The theory of planned behavior (TPB) emphasizes the TRA ideas and extended the constructs by including the perceived behavior control. It becomes a stronger predictor of an intention (Ajzen, 1991; Bandura, 1994).

PBC stems from Bandura's work of perceived self-efficacy and it is related to an individual's judgment of how well he/she can execute a course of action needed to deal with a particular action. According to Ajzen (1991), behaviors are affected by the individual's confidence in his/her ability to perform a behavior.

Concerning behavioral intention, TAM postulates that it is jointly predicted by attitude and perceived usefulness. Davis (1989) suggested that behavioral intention to use IT could well and accurately predicts actual IT use. Numerous technology acceptance

studies favored this argument such as (e.g., George, 2002; Horton, Buck, Waterson, and Clegg, 2001; So, Wong, and Sculli, 2005; Venkatesh, Morris, Davis, and Davis, 2003).

In TAM2, Venkatesh and Davis (2000) dropped "attitude" and added 'intention to use' and 'usage behavior' as the final dependent variable. The distinction between the initial TAM and TAM2 is the presence of the PU antecedents. Based on this point, the study only considers behavior intention as a predictor of the consumer use and adoption of SST. Hence, the final hypothesis is:

Hypothesis 4: Consumer intention to use SST influences their adoption of SST.

3.6 Consumer Intention to Use SST – Mediating Influence

It has been argued that users seek values influence their intention to use SST (Auh *et al*., 2007) and at the same time consumers intention to use SST influences their SST adoption (Karahanna, Straub and Chervany, 1999; Korzaan, 2003). Taking into account these links that are supported by the literature, it could be argued that a possible mediating relationship could exist users seek values and their SST adoption. This influence is done due to the mediating impact of consumers intention to use SST on the relationship between users seek values and their SST adoption. Based on this argument, the following hypothesis is designed.

Hypothesis 5: Consumer intention to use SST mediates the relationship between users seek values and their SST adoption.

3.7 Summary of the Chapter

The chapter presented the hypotheses development in this study. The hypotheses that are designed for this study are grounded on the nature of links between the study's main variables, namely independent, dependent, and mediating variables. In this chapter five main hypotheses and four other sub-hypotheses have been designed and all these hypotheses are grounded on the theoretical framework of the study. The following chapter (Chapter Four) presents the methodology that is employed in this study.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

As discussed before, this study aims to examine the factors that influence consumers' self-service technology (SST) adoption in various industries within the Saudi Arabian context. Hence, all the significant variables will be considered in investigating this phenomenon and elaborate further in this section. The systematic way of conducting the research will be incorporated where design for the research, data collection, population and data analysis will be discussed in this chapter.

4.2 Research Design

A research design refers to a research structure that displays the main research such as measures, samples, technique of data collection and analysis work together in addressing the central research questions. In achieving the research objective, this study would be a descriptive correlational study where it attempts to attempts to examine the impact of a number of variables on SST adoption in multiple industries in Saudi Arabia. This study investigated the degree of consumer's adoption on self-service technology from various services offered by the companies or service provider. In studying the factors that influence SST adoption in multiple industries in Saudi Arabia, this study employed a quantitative approach to formulate the methodological ground of the study.

Quantitative approach is described as the systematic empirical examination of quantitative properties and phenomena and the association between them. It handles numerical measurements and is opted for in an empirical study that attempts to test hypotheses. A quantitative research is conducted for the development and employment of mathematical models, theories and hypotheses relating to a phenomenon. The measurement process is the main element of a quantitative research as it offers the basic link between empirical observation and mathematical expression of quantitative associations.

4.3 Measurement and Instrument

Measurement is one of the most important processes in the research method. It is a process of keeping notes and observations that are gathered in the research. This study will employ a survey research technique where a questionnaire was used as the study's major instrument. There are several techniques of survey which include mail survey and self-administered survey. The mail survey is not appropriate to be conducted in Saudi Arabia though it is less costly to be implemented as home address data is not available and mail service is not provided to home address. Hence, this study utilized a self-administered survey where questionnaire was given out personally to the respondents for them to answer, once the respondents completed the questionnaire, it was collected immediately. This is to prevent procrastination in answering the questionnaire as the local culture is known to be polychronic and is acceptable to defer matters.

4.3.1 Instrument

As mentioned earlier, a questionnaire was the major instrument for the study where all the variables involved will be developed as constructs in measuring the consumer self-service adoption. All constructs for the relevant variables including independent, dependent, and mediating were either adopted/adapted from existing measures or developed in the case no existing instrument exist. The independent variables comprise of consumer characteristics which include demographic profiles and personality traits. The dependent variable is the level of consumer's adoption of self-service technology. Mediating variables include users seek values and consumer intention to use SST.

Consumer characteristics can be measured through two main dimensions; demographic profiles which represent the user, and personal traits. Demographic profiles include the four main factors of age, gender, income and education (Burke, 2002). In this context, personal traits encompass expertise (Ratchford *et al.*, 2001; Alba and Hutchinson, 1987), self-efficacy (Eastin and LaRose, 2000; Marakas *et al.*, 1998; Bandura, 1994) and the requirement for interaction (Dabholkar and Bagozzi, 2002; Dabholkar, 1996). Expertise refers to the individual's knowledge and skills level, those who have the most experience using self-service technology according to Ratchford *et al.* (2001), tend to be the most skilled.

Self-efficacy is described as the individual's beliefs that he/she is capable and equipped with resources to perform a specific task successfully (Bandura, 1994). Consumers having self-efficacy are not certain and are uncomfortable using the self-service technology and they require simple instructions to guide them through its use or adoption

process. Self-efficacy judgments are positively linked to the expectations of the outcome (Oliver and Shapiro, 1993). The higher the person's self-efficacy, the more he/she is inclined to achieve the desired result.

Consumers have a tendency to attempt and display behaviors that they perceive achievable (Eastin and LaRose, 2000). The interaction need is defined as the importance of human interaction with the consumer in encounters of service provision (Dabholakr, 1996). Consumers desirous of high interaction will not be inclined to use self-service technology while those with low need for interaction will opt for them (Dabholkar and Bagozzi, 2002).

Level of consumer's adoption of the self-service technology was measured using the six-phase process of adoption comprising of awareness, investigation, and evaluation, followed by trial, repeated use and commitment. Nonetheless, this study focused on the actual use of SST. Therefore, awareness and investigation were considered as non-adopters, evaluation is considered as consumers who are thinking of using the self-service technology, trial is considered as consumers who have used the SST, repeated use is considered as consumers who frequently use the SST while commitment is considered as consumers who regularly use the SST.

All the items used to measure the variables were translated into Arabic and then back-translated to English to insure that the meaning is clear and relevant and to avoid any confusion. In this context, Ozolins (2008) argues that the process of translation and then back translation has become a demanded methodology in different types of research studies. In this process, a translator blinds to the original survey then back translates the

new survey into the source language and compares it to the original document to check the validity of the translation (Hair, 2006).

4.4 Constructs of the Variables

The measurement items of the entire study variables are taken from prior studies. The measurement items are from established sources and have been tested and validated by scholars from various fields and geographic origins. While these measurement items have been shown to be reliable and valid, we continue to test these items in coherence with the normal rigorous practice in data purification. The following section describes the sources and the specific measurement items of the respective constructs adopted in this study.

4.4.1 Independent Variables

Consumer Characteristics:

a) Demographic factors– age, gender, education and household income
b) Personality traits – self-efficacy, inertia, need for interaction

   i) Self-efficacy –six items from Rodin and McAvay .

   ii) Inertia – three items adapted from Gremler, (1995).

   iii) Need for interaction – three items adapted from Dabholkar (1996).

4.4.2 Dependent and Mediating Variables

a) Users Seek Values – convenience, accessibility (Wolfinbarger and Gilly, 2001), saves time, saves effort, flexibility, saves costs, greater control, reduced waiting time, increase customization, convenience of location, enjoyment, efficiency, flexibility, easy to use, service 24 hours a day, seven days a week, no pressure and protect privacy.

b) Behavior Intention to use SST – is the intention to use the SST facilities. These items are adapted from Dabholkar (1996) and Dabholkar and Bagozzi (2002) studies.

c) Adoption of SST – process of adoption is adapted from Rogers (1995) that include trial, evaluation, awareness, investigation, repeated use and commitment. However, this study will only summarize them into five stages instead of six which include non-adopter (awareness and investigation, considering (evaluation), using (trial), using frequently (repeated use), and using regularly (commitment).

Table 4.1

Sources of Scale and Adapted Version

Items	Adoption	Source
	1-استخدام تقنيات الخدمة الذاتية وسيلة فعالة لإدارة وقتي.	Wolfindarger & Gilly (2001)
User Seek Value	2- استخدام تقنيات الخدمة الذاتية سوف تكون مناسبة لي.	
	3- استخدام تقنيات الخدمة الذاتية ستسمح لي بتوفير وقت.	
Time Convenience	4- استخدام تقنيات الخدمة الذاتية ستنجز عمليات في وقت اقل	
1. Using SST is an efficient way to manage my time		
2. Using SST would be convenient for me		
3. Using SST would allow me to save time		
4. Using SST would make transactions less time consuming		
Service Ubiquity	1- استطيع استخدام تقنيات الخدمة الذاتية في أي وقت.	Wolfindarger & Gilly (2001)
	2- استطيع استخدام تقنيات الخدمة الذاتية في أي مكان	
1. I can use SST anytime	3- استطيع استخدام تقنيات الخدمة الذاتية وقت الحاجة	
2. I can use SST anywhere		
3. I can use SST when needed		

Table 4.1 (continued)

Items	Adoption	Source
Autonomy	1-أريد أن اودي احتياجاتي بنفسي .	Wolfindarger & Gilly (2001)
1. I want to handle my needs on my own	2- أريد أن أكون مستقل في التعامل مع شئوني الخاصة.	
2. I want to be autonomous in taking care of my matters		
3. I want to avoid problems by doing on my own	3- أريد تجنب المشاكل معتمدا على نفسي.	
4. I want to make my own choices and decisions		
5. SST lets the customer be in charge	4- أريد صنع اختياراتي و قراراتي الخاصة بنفسي	
6. SST gives me control	5- تجعل تقنيات الخدمة الذاتية العميل مسئولا	
	6- تمنحني تقنيات الخدمة الذاتية السيطرة	
	1-تتطلب تقنيات الخدمة الذاتية عمل قليل.	Wolfindarger & Gilly (2001)
Ease of use	2- سهولة جعل تقنيات الخدمة الذاتية ان افعل ما أريد	
1. SST requires little work	3- تقنيات الخدمة الذاتية سوف تكون معقدة الاستخدام	
2. Easy to get SST to do what I want it to do		
3. SST would be complicated to use	4- تقنيات الخدمة الذاتية سهلة الاستخدام	
4. SST is easy to use		
5. SST does not take much effort	5- تقنيات الخدمة الذاتية لا تتطلب جهدا كبيرا	
Enjoyment	1-استخدام تقنيات الخدمة الذاتية مرح	Wolfindarger & Gilly (2001)
1. Using SSTs is fun	2- استخدام تقنيات الخدمة الذاتية يجلب السرور	
2. Using SSTs is pleasant		
3. Using SSTs is pleasurable	3- استخدام تقنيات الخدمة الذاتية مرضِي	
4. It is exciting to use SSTs		
5. Using SSTs is enjoyable	4- من المثير استخدام تقنيات الخدمة الذاتية	
	5- استخدام تقنيات الخدمة الذاتية ممتع	

Table 4.1 (continued)

Items	Adoption	Source
Effectiveness	1-توفر تقنيات الخدمة الذاتية كل احتياجاتي	Wolfindarger & Gilly (2001)
1. SSTs provide all my needs	2- لدي خبرة كاملة و مرضية في تقنيات الخدمة الذاتية	
2. I have complete satisfactory SSTs experience		
3. SSTs is in customer's best interest	3- تعتبر تقنيات الخدمة الذاتية في مصلحة الزبون	
4. SSTs process free of errors		
5. SSTs is reliable	4- تعتبر تقنيات الخدمة الذاتية عملية خالية من الأخطاء	
	5- تقنيات الخدمة الذاتية موثوق بها	
Security and privacy	1-ارغب بان تكون معاملات بطاقة الائتمان آمنة	Wolfindarger & Gilly (2001)
1. I want secure credit card transactions	2- أريد سجلات المعاملات أن تبقى سرية	
2. I want transaction records to remain confidential		
3. I want safe and secure transaction	3- أريد معاملة سليمة و آمنة	
4. I am conscious about information security		
5. A clear privacy policy is stated in firm's SST	4- مدرك حول آمان المعلومات	
	5- سياسة الخصوصية واضحه في شركات تقنية الخدمات الذاتية	
Usefulness	1-تقنيات الخدمة الذاتية ستكون مفيدة في استكمال مهمتي	Wolfindarger & Gilly (2001)
1. SSTs would be useful in completing my task	2- تقنيات الخدمة الذاتية سيحسن معاملاتي	
2. SSTs would improve my transactions		
	3- تقنيات الخدمة الذاتية ستكون ملائمه	
3. SSTs would be convenient		
4. SSTs would be useful in meeting my needs	4- تقنيات الخدمة الذاتية سيفيدني في تلبية احتياجاتي	

Table 4.1 (Continued)

Items	Adoption	Source
	1-تمكنت من استخدام تقنيات الخدمة الذااتية من دون مساعدة احد.	Rodin and McAvay (1992)
Personality traits	2- تمكنت من استخدام تقنيات الخدمة لو للم استخدمها من قبل.	
Self-Efficacy	3- تمكنت من استخدام تقنيات الخدمة اذا كان بامكاني الاتصال بشخص ما للحصول على مساعده عندما اعلق.	
1. I could use SSTs without the help of others	4- تمكنت من استخدام تقنيات الخدمة اذا لم يبين لي احدهم كيف استخدمها من قبل.	
2. I could use SSTs if I had never used them before		
3. I could use SSTs if I could call someone for help if I got stuck	5- تمكنت من استخدام تقنيات الخدمة بنفسي.	
4. I could use SSTs if no one showed me how to do it first		
5. I could use SSTs on my own	6- تمكنت من استخدام تقنيات الخدمة اذا رايت شخص اخر يستخدمها من قبل.	
6. I could use SSTs if I had seen someone else using them before		
Inertia	1-تغير الطريقة التي عاده استخدمها في فعل الاشياء ستكون مزعجه.	Gremler (1995)
1. Changing the way I normally do things would be troublesome.	2-بالنسبة لي تكلفة الوقت والتحول الى تقنيات الخدمة الذاتيةعالية.	
2. For me the cost in time and problem to switch to SST is high.		
3. Its just not worth the hassle for me to switch to SSTs.	3-لاتستحق المتاعب لي التحول الى تقنيات الخدمة الذاتية.	

Table 4.1 (Continued)

Items	Adoption	Source
Need for interaction	1- الاتصال الشخصي مع احد الموظفين يجعل العمليات خلال تقنيات الخدمة الذاتية ممتعا لي.	Dabholkar (1996)
	2- الاهتمام الشخصي لي من قبل موظف خدمة العملاءمهم بالنسبة لي.	
1. Personal contact with an employee makes transacting through	3- يزعجني استخدام تقنيات الخدمة الذاتية في الوقت الذي استطيع التحدث الى شخص كحل بديل.	
SST enjoyable for me	4- لاريد ان اكون مسئولا عن حدوث اي خطا في تنفيذ العمليات	
2. Personal attention by a customer service employee is important to me		
3. It bothers me to sue SST when I could talk to a live person Instead		
4. .i do not want to be responsible if anything goes wrong in the implementation of processes		

Table 4.1 (Continued)

Items	Adoption	Source
Behavior Intention to use SST	1-أنا _____ لتقنية الخدمة الذاتية مثل الأكشاك الآلكترونية, الفحص الذاتي, الحجز الالكتروني(اختار واحد)	Dabholkar and Bagozzi (2002)
	(مدرك, أفكر بالاستخدام (ولم استخدم) , أحاول الاستخدام(ولم اعتمد) , مستخدم بشكل ,مستخدم ملتزم).	
	2- سوف استخدم على الأرجح تقنيات الخدمة الذاتية في المستقبل القريب .	
	3- راغب لاستخدام تقنيات الخدمة الذاتية مستقبلاً	
1-I am _____ of SSTs such as e-kiosks, self-check in, e-ticketing etc. (Choose one)(Aware, thinking to ,trying to use ,a repeater user, committed)	4-عازم على استخدام تقنيات الخدمة الذاتية في المستقبل القريب	
2-.I am likely to use self-service technologies in the near future	5- سوف أواصل استخدام تقنيات الخدمة الذاتية في المستقبل القريب	
3-I am willing to use self-service technologies in future		
4-I intend to use self-technologies in the near future		
5-I will continue to use self-technologies in the near future		
Adoption of SST	1-كم غالباً تستخدم تقنيات الخدمة الذاتية؟	Rogers (1995)
1. How often do you use self-service technologies?	2- منذ متى وانت تستخدم فيها آلة الخدمة الذاتية؟	
2. How long have you been using the self-service technologies?		
3. 3.Self-service technology is definitely for me?	3- إستخدام تقنية الخدمة الذاتية مناسبة لي؟	
4. If I had to do any transaction, I would still use self-service technology		
	4- في إنجاز معاملاتي سأستمر في استخدام تقنية الخدمات الذاتية ؟	

4.5 Data Collection

The main technique for gathering the data is through a survey in which the instrument, a questionnaire will be distributed to the respondents. Survey research is among the most important areas of measurement in social research. The general area of survey research covers any measurement procedures involving asking respondents questions. A survey is described as ranging from a short paper-and-pencil feedback form to an intensive one-to-one extensive interview.

An instrument which is a questionnaire will be distributed to consumers randomly in three major cities which are Riyadh, Dammam and Jeddah in places where there are a major crowd of residences such as shopping malls, banks, airports, and specific services or utilities businesses such as telecommunication and others. Enumerators will be used to facilitate the data collection and increase the response rate. Respondents will be asked to answer the questions while enumerators will explain the meaning of the questions if needed; as this will speed up and improved the data collection process.

4.6 Population and Sample of the Study

The population for this study would be the people who live in Saudi Arabia and use the self-service technology in various industries in the country. There is no single authoritative sampling frame that is accessible in the country, thus sampling frame will not be drawn based on the population of the people or consumers in the country.

The whole population of consumers in Saudi Arabia is approximately 27 million and 82% of the population is centered in urban area (Saudi Arabia Central Department of

Statistics and Information, 2010). Riyadh is the largest and is also the capital city of the country that has the most population with 6.7million population. Dammam has 2.5 million, Jeddah has 3.6 million populations, Mecca has 1.7 million and Madinah Munawarah has 1.3 million populations (Saudi Arabia Central Department of Statistics and Information, 2010). As Mecca and Madinah are the two holiest cities for Muslim, these two cities are not selected due to security restrictions. Nevertheless, the remaining three cities (Riyadh, Dammam and Jeddah) already comprise of (12.8) million population which is almost half of the Kingdom's population. Hence, for the purpose of convenience sampling, these three cities already represent more than half of the overall population and are sufficient to be selected as the study's sample (Sekaran, 2003).

In selecting the sample respondents for this study and based on Sekaran (2003) who states that if the population of the study exceeds a million, a recommended sample of 384 respondents would be enough to generate findings that could be generated to larger groups. Thus, this study is planned t include 384 respondents that comprise the sample of the study.

4.7 Sampling Method

Sampling is the process of selecting units such as people or organizations from a population, by studying the sample it enables the researchers to fairly generalize the results to the population. In addition, a sample is the group of people who are selected to be in the study, thus sampling is the utilization of a subset of the population to reflect the whole population. The methods of selecting the groups of people can be done by using several sampling procedures. As far as research methodology is concerned, there are two

major sampling methods that are commonly used in research; non-probability and probability sampling. The most appropriate sampling methods is needed to ensure that the sample truly represent the whole population and thus can be generalized to other places and at other times. Non-probability sampling is a sampling technique where not everyone has a chance to be selected as a sample; some people have a greater chance while other not. In contrast, probability sampling is a technique where every person has an equal chance to be selected as a sample at random. This study will use a non-probability technique due to unfeasible and impractical situations to select samples randomly in Saudi Arabia.

Convenience non-probability sampling will be used in examining the antecedents of the self-service technology adoption in Saudi Arabia. Convenience sampling is described as a non-probability sampling method in which the subjects are chosen owing to convenient accessibility and proximity in relation to the researcher (Castillo, 2009). The researcher does not select subjects to represent the entire population.

In every research, it is ideal to examine the entire population but in some cases, the population is just too large and thus, it is impossible to include the entire population, and added to this is the absence of a sampling frame (posting address) and cultural reasons. This is the reason behind the fact that most researchers depend on sampling methods such as convenience sampling, which is considered widely used sampling method. Because of these limitations in sampling, numerous studies conducted on the consumer service technology adoptions have employed convenience sampling (Joseph, McClure, & Joseph,

1999; Kleijnen, Ruyter & Wetzels, 2004; Cheng, Wang, Lin, & Vivek, 2009; Al-Hawari, 2011).

Bush and Hair (1985) in their seminal paper discussing about the use of mall intercept as a data collection method showed that the overall quality of data from the mall intercept appears to be equivalent to that of telephone interviewing. The method is more accurate or its responses are less distorted as compared to the telephone interview method. In addition, since the typical mall intercept respondent is a more frequent user of the subject matter than the telephone respondent, this type of respondent may be more knowledgeable. Therefore, Bush and Hair (1985) argued that given similar individuals, the mall intercept method has more potential for quality responses than the telephone method. Thus, several researchers opt for this sampling method owing to the following reasons; in addition that it is fast, not costly and the subjects are readily available.

In carrying out the data collection for this study, to avoid respondent bias (Bush & Hair, 1985), the research was conducted over a 12-day period that included weekdays and weekend days as well as different hours of the day. This sampling approach allowed us to explain the purpose of the survey to the respondents, which is preferable given the complexity of the task.

4.8 Data Analysis

In most social researches, the data analysis comprises of three main steps namely cleaning and organizing the data for analysis (preparation of data), defining the data (descriptive statistics), and hypotheses and models testing (inferential statistics). The first

step involves the determination and entering of the data in, checking accuracy of data, entering the data into the computer, modifying data, developing and documenting a database structure integrating the many measures. The second step describes the data's basic features and provides summaries concerning the sample and measure along with simple graphics analysis. They are the basis of every quantitative data analysis. In this study, a number analytical techniques were used, namely SPSS, PLS, and SEM.

PLS SEM technique is termed a second generation structural equation modelling (Wold, 1982). The comparatively newly used technique works well with structural equation models that contain latent variables and a series of cause-and-effect connection (Gustafsson & Johnson, 2004). The PLS SEM analysis technique is a good and flexible tool for statistical model building as well as prediction (Ringle, Wende, & Will, 2005). Specifically, the PLS technique was applied in this research work because of these given reasons.

Structural equations models have been shown to be superior models that perform estimations better than regressions for assessing mediation (Brown, 1997; Iacobucci, Saldanha, & Deng, 2007; Mattanah, Hancock, & Brand 2004; Preacher & Hayes, 2004). It has also been reported that PLS SEM accounts for measurement error and can provide more accurate estimates of mediating effects (Chin, 1998a). Secondly, PLS path modelling becomes more appropriate for real world applications and it is more advantageous to use when models are complex (Fornell & Bookstein, 1982; Hulland, 1999). The soft modelling assumptions of PLS technique (i.e., ability to flexibly develop

and validate complex models) gives it the advantage of estimating large complex models (Akter *et al*., 2011).

4.8.1 Descriptive Statistics

In descriptive statistics, several statistical analyses are employed to define the data features on consumer self-service technology. Among the descriptive statics that will be used including univariate analysis involving the investigation throughout cases of a single variable at a time. There are three main characteristics of a single variable that can be looked at:

First, the distribution is the sum of the frequency of individual values or value ranges for a variable. The simplest distribution would contain every variable value and the number of individuals who had each value. Among the most widely used ways to define a single variable is through frequency distribution. Second, the central tendency is related to the manner in which quantitative data is inclined to cluster around a value. A measure of central tendency shows any of a number of methods of specifying the central value. The central tendency value is the average set of measurements like mean, median, and mode.

The dispersion – measures how spread out the set of data is or the spreading of the data. It can be measured using range, variance and standard deviation. Reliability analysis and non-response bias will be conducted as well at this stage.

4.8.2 Inferential Statistics

Inferential statistics is employed to reach conclusions that go over the data gathered (Castillo, 2009). It is used to develop judgments on the independent and dependent variables. Thus, inferential statistics is useful in making inferences from the data to more general conditions. Inferential statistics examine questions, hypotheses and model and thus, in verifying the hypotheses, the major inferential statistics that will be used are the t-test, regression analysis and ANOVA along with other multivariate techniques like factor analysis.

4.8.3 Structural Equation Modeling

In determining the relationship of the various constructs proposed in this study, path analysis will be conducted to determine the inter-relationship among the variables of customer value, customer satisfaction. Path analysis is adopted using AMOS statistical software to fulfill the objective. Items and dimensions discussed in this path analysis area same as the results from the previous factor analysis section. Path analysis is regarded as an advanced form of regression analysis. While the path analysis deals with measured variables, a Structural Equation Modeling (SEM) performs with both measured and latent variables. So, the path analysis is a subset of SEM. A measured variable refers to a variable that is directly observable and measurable whereas a latent model variable is one that cannot be directly measurable except when inferred from measured variables (Stoelting, 2002).

Because this study aims to identify and validate the proposed relationship, it follows Anderson and Gerbing's (1988) two-step method to structural equation modeling for the assessment of the fit of the hypothesized model. In the initial step, a confirmatory factor analysis is carried out for the verification of the psychometric properties of the measurement model. Many indicators are used for the assessment of the goodness of fit and these include NNFI, CFI, and IFI owing to the particular information that they provide. The Non-Normed Fit Index (NNFI) and Comparative Fit Index (CFI) are considered as reliable and consistent fit indices (Gerbing and Anderson, 1992). The NNFI, better known as the Tucker-Lewis Index shows the level to which the hypothesized model fits better compared to the null model and is particularly invaluable in the assessment of the fit of complex models (Byrne, 2000).

The current research's priori cut-off level of NNFI is 0.90 which is consistent with the level suggested in literature (Bentler and Bonnet 1980; Bentler 1992; Byrne2000). The CFI indicates the best approximation of the model's population value (Bentler, 1990). This index is the most commonly reported fit index in the literature of psychology (McDonald and Ho 2002). The commonly cut-off value of 0.90 as suggested by Bentler and Bonnet (1980), and Byrne (2000) is employed in the present research. In addition, the Incremental Fit Index (IFI) is employed to gauge the relative fit of competing models to the data in association to the null model (Bollen, 1989). A priori cut-off for IFI was established by Hu and Bentler (1990) as 0.95 and this is adopted in the current research for IFI model fit criterion.

Moreover, construct reliability and discriminant validity is assessed through the procedure suggested by Fornell and Larcker (1981). This procedure requires the average variance extracted (AVE) for every construct to be higher than the shared variance between a pair of constructs; in other words, AVE > .50 to provide support for discriminant validity among constructs. The construct's internal consistency is also examined through the analysis of the AVE and composite alpha scores for every construct. When an acceptable goodness of fit is established for the measurement model and convergent and discriminant validity is presented for the latent variables, the full hypothesized structural models evaluated as recommended by Anderson and Gerbing (1988).

For a thorough assessment of the structural model, Anderson and Gerbing's (1988) procedure provides a series of nested model comparisons. Alternative models determine competing explanation for the associations among the model variables. There is a total of three alternative models examined; a null model specifying no relationships among the latent constructs, a constrained model that underfits the data in relation to the theoretical model through the estimation of fewer structural parameters contained in the hypothesized model, and finally, an unconstrained model which overfits the data in relation to the hypothesized model through the estimation of more paths that are specified by the theoretical model. The hypothesized model is supported if the theoretical model achieves an acceptable goodness-of-fit that is significantly superior to the less complex null and constrained models but not significantly different from the unconstrained models goodness-of-fit.

CHAPTER FIVE

DATA ANALYSIS AND FINDINGS

5.1 Introduction

In this chapter, results of the survey conducted among the population in the three major cities in Saudi Arabia are displayed and discussed. Before the data analysis was done, appropriate purification procedures were initially conducted such as treatment of missing data, non-response bias, multicollinearity, skewness and kurtosis to ensure the normality of the data. Subsequently, descriptive statistics of the sample are shown, followed by a description of their shopping behaviour. Next, the measurements were subjected to various analysis in accordance to Churchill's (1979) and Gerbing and Anderson's (1988) recommendations. Following Churchill (1979), the procedures included i) specifying the domain of the construct; ii) generation of sample items; iii) measurement purification and iv) accessing reliability and validity. Consequently, eight hypotheses were tested using Structural Equation Modeling analysis (SEM) using AMOS version 21.0 software. In addition to the software, WarpPLS was used to validate the model and corroborate the findings of the former analysis. Therefore, the following sections of this chapter is organised accordingly as explained.

5.1.1 Response Rate

There were 900 questionnaires that were initially distributed to major commercial venues and public outlets in which self-service facilities are available to public such as airports, shopping malls and banks in three major cities. The data collection process lasted about 2

months which starts in the first week of October 2012 and ended on the third week of November 2012. Based on the laborious data collection effort, a feedback of 430 returned questionnaires was received. The data collection process consists of enumerators asking questions to respondents based on a mall intercept. Due to the country cultural influence, male and female enumerators were employed. The returned questionnaires were later carefully examined for completeness. Twenty five (25) of those questionnaires were discarded because large sections of the questionnaires were incomplete. Five questionnaires were further discarded as the "reliability" of the responses was doubted. Almost all the answers were "Not sure" or "neutral" reflecting the central tendency problem.

The total number of usable responses resulting from this process was finally 400 representing an effective response rate of 44 per cent. The response rate is quite good considering that the local culture do not normally response favourably to individuals asking questionnaires about their "personal behavior". The high response rate could be due to the "professional looking" of the enumerators that wore business attire (for men) with appropriate identification tags. In addition, each respondent that completed the questionnaire was given a Universiti Utara Malaysia (UUM) commemorative items which are ball-point pen and note pad as an incentive. Meanwhile, for the female, the enumerators wore the "obligatory abaya" using a similar identification tag and provided the same materials as an incentive.

5.1.2 Non-Response Bias

Preliminary screening questions were first asked to determine whether the respondents were "permanent residents" and not tourist. The potential non-response bias was examined through the comparison of the returned questionnaires main variables (Armstrong and Overton, 1977). The researcher found no significant differences between early and late respondents (the first 25% of the respondents against the last 25%) or any of the main variables. Later, for further confirmation the respondents were tested in three separate groups (33.33% or n= around 135 in each group). No significant differences were again found in responses throughout the groups. Hence, non-response bias was not a major issue in the study.

5.1.3 Missing Data (Values)

Analysis of missing data revealed that no single variable exceeded the 15 percent threshold of missing values; i.e. the point at which one should consider deletion of the variable or case (cf. Hair, *et al.*, 2006). Missing values were in the range of 0 – 2.5 percent per variable. When examining missing values within the cases (i.e. observations), it was found that among the cases that had missing data, most of them were missing only one or a few values.

Still, the effects of missing values can be significant, as the computer programs used for statistical analysis (i.e. SPSS and AMOS) require cases/variables with missing values either to be excluded from analysis or replaced by an estimated value. An examination of all cases and variables revealed that the method of list wise deletion of cases from the

analysis would result in a great loss. Hence, there is a risk of introducing bias and distorting patterns by using list wise deletion (de Vaus, 2002). Therefore, the Expectation–Maximation method was used to replace missing values in all quantitative variables, except demographic data. As the EM method involves estimation of the missing value based on regression, taking into account any number of grouping variables, it is regarded to provide much better predictions than using the group or series mean. Moreover, Expectation–Maximation is considered to introduce the least bias into Structural Equation Models (Hair *et al.*, 1998).

5.1.4 Normality of the Data

Descriptive analysis was done on the key variables of the data to determine the normality of the data. Based on a preliminary analysis, some of the variables had a slight skewness and/or kurtosis values outside of the specified accepted range, an often occurring situation in evaluative research (Sweeney, *et al.*, 1997). However, as the notion of a normal distribution is applied only to variables measured at an interval level (de Vaus, 2002), it is primarily the non-normal values of some items among the "main" constructs that are of primary concern. In dealing with this problem, one could consider transforming the non-normal distribution into a more normal shape (de Vaus, 2002).

Nevertheless, this research will not "temper" with the data as the issue does not have a significant effect as Tabachnick and Fidell (2007) argued that skewness will not make any meaningful difference in the analysis and that even though kurtosis may lead to the underestimation of the variance, the risk is minimized by a large sample size (above 200 cases). While there are tests that one could use to evaluate skewness and kurtosis values,

these are too sensitive with large samples (Tabachnick and Fidell, 2007). Therefore, it was decided to leave all variables as they were without transformation, and instead consider dropping them later from the analysis if they seemed to be problematic. In addition, according to Hair et al. (2006), the values of skewness outside the range of +1 to -1 are substantially skewed distribution. It could be seen from the follwing table (Table 5.1) that the Skewness values are within the range.

Table 5.1
Normality of the Data

Variable	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Personality Traits	400	-.415	.122	-.087	.243
Users Seek Values	400	-.981	.122	1.653	.243
Behaviour Intention	400	-.911	.122	1.993	.243
Adoption	400	-.725	.122	.889	.243
Valid N (listwise)	400				

5.1.5 Multicollinearity

Multicollinearity refers to the level to which any variable's impact can be predicted by other variables included in the analysis (Hair *et al.*, 2006). While this is desirable to some extent in factor analysis, where the researcher wants to identify interrelated variables, it can be troublesome in other multivariate techniques as it becomes difficult to ascertain the real impact of each variable. In Structural Equation Models, problems with Multicollinearity can be detected through offending estimates, such as standardized regression weights around 1 or negative variance estimates (Garson, 2007).

In addition to controlling for such estimates during model specification and testing, Multicollinearity was also checked at the measure validation stage by examining the

variance inflation factor (VIF) and *tolerance* values of all variables in the model (Hair, *et al.,* 2006). The threshold values recommended by Hair *et al.* (2006) were used as cut-offs. While a possible solution could be using summated factor scores instead of basing the clustering on all individual items, this is not recommended, as "the variables that truly discriminate among the underlying groups are not well represented in most factor solutions" (Hair, *et al.,* 2006). Thus, the VIF and tolerance values of all items to be included in the structural equation analysis are all examined before proceeding with the analysis.

5.2 Descriptive Statistics

Based on the respondents' description, majority of the sample comprises of male gender (67.3% of the sample). This is considered normal as Saudi Arabia is a male dominated society and due to cultural restrictions, it is difficult to interview the female gender "on the street". The highly skewed male sample is reasonable as Saudi Arabia is known as a patriarchal society and on most daily activities; normally the male conduct the activities on behalf of the members of the family. Nevertheless, the enumerators managed to get responses from 131 female respondents which comprises of 32.8% of the sample.

With regards to age, majority of the respondents are in the middle-age which is from 25-34 years representing 44.3 per cent. Trailing behind the group at 21 per cent is respondents between the ages of 35 to 44 years. These two groups which can be considered as "mature" age group is being sandwich by the relatively young segment (aged 24 and below) at 21.6 per cent and senior citizens (aged 55 and above) at 3.3 percent. The subsequent paragraphs in this chapter are discussed the remaining findings

of the respondents' characteristics to show the validity of the sample. For instance, the sample age group correlates with other demographic characteristics which show the personal information provided by the respondents are reliable and normally distributed. Figure 5.2 shows the respondent's age group.

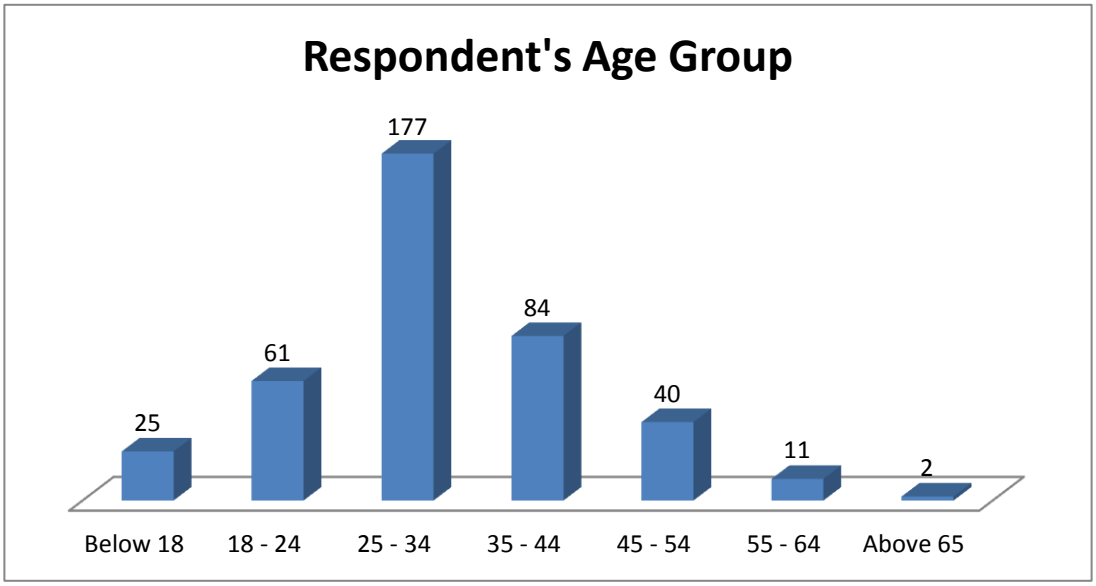

Figure 5.1
Respondent's Age Group

Education wise, the sample represents a relatively "educated" group where almost half of the sample possessed an undergraduate degree at 42% and 5.5% owns a postgraduate qualification. The "intellectual" characteristics of this group could be due to the data collection process carry out in the selected premises – airports, malls and banks. The remaining 23.3 per cent is educated up to secondary school and below. Coherently, the respondent's educational background is related to their occupation where 54 per cent are employed as government officers. This tallied with the 47.5 per cent of the respondents who owns a degree and postgraduate degree. Meanwhile, the subsequent position that ranked in terms of frequency is the private sector at 22 per cent. Interestingly within these

two positions, 26 of the respondents acknowledge themselves as professionals. Out of the 400 respondents, 35 of them are students. This correlates with the respondents on the age bracket of 18 years old of 25 people. Finally, 12 of the respondents are businessman and 18 of them are housewives. The following figure (Figure 5.3) shows the educational level of the respondents.

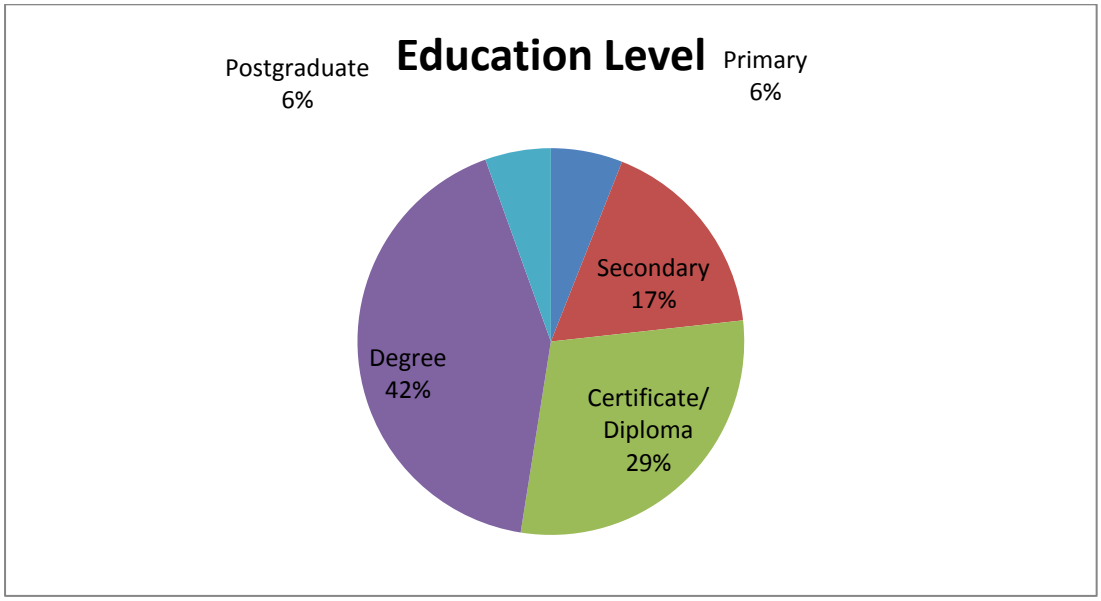

Figure 5.2
Respondent's Education Level

In Saudi Arabia, the average acceptance level for an intermediate government positions is a degree. Jobs like teacher and government staffs offer relatively decent salary. Consequently, this is illustrated in the respondents reported monthly income. Almost 45 per cent of the sample has an income within SAR5001 to SAR10, 000 per month. This information tallied with the information of their education background and occupation. Meanwhile, more than a quarter of the respondents were earning less than SAR5000 a month at 27.8 per cent. This group of respondents could be the group that has an educational level up to only secondary level and below. The next subsequent group at

15.5 per cent earns between SAR10, 001 to SAR15, 000 monthly. Finally, the sample also comprises of the relatively higher income bracket at 12.5 per cent which earns a "gross" monthly income between SAR15, 000 and above. It is interesting to note here that the Kingdom of Saudi Arabia do not impose any personal income tax on its residents regardless of their residency status. Therefore, any "gross" income earn is in fact a net income. The following figure (Figure 5.4) illustrates the profile of the respondent's monthly income.

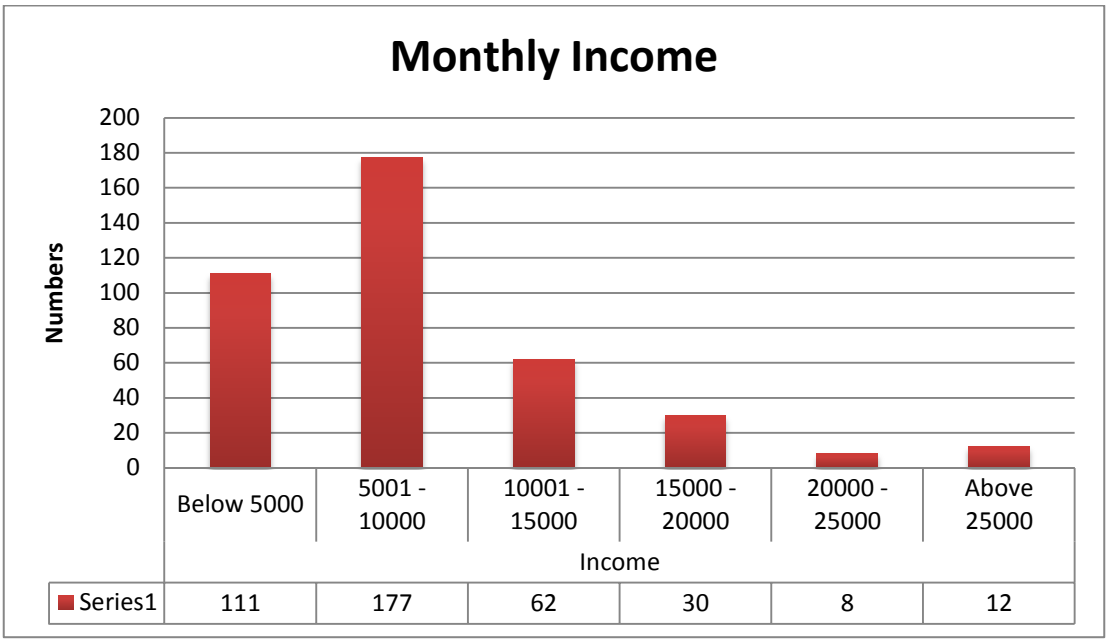

Figure 5.3
Respondent's Monthly Income

The following table (Table 5.1) after this paragraph summarizes the discussions of the demographic characteristics of the respondents.

Table 5.2
Respondent Demographic Statistics

Characteristics		Frequency	Total	Percentage
Gender	Male	269		67.3
	Female	131	400	32.8
Age	Below 18	25		6.3
	18 – 24	61		15.3
	25 – 34	177		44.3
	35 – 44	84		21.0
	45 – 54	40		10.0
	55 – 64	11		2.8
	Above 65	2	400	0.5
Education	Primary	24		6.0
	Secondary	69		17.3
	Certificate/Diploma	117		29.3
	Degree	168		42.0
	Postgraduate	22	400	5.5
Monthly	Below 5000	111		27.8
Income (SAR)	5001 - 10000	177		44.3
	10001 - 15000	62		15.5
	15000 - 20000	30		7.5
	20000 - 25000	8		2.0
	Above 25000	12	400	3.0
Occupation	Private	88		22.0
	Government	216		54.0
	Professionals	26		6.5
	Student	35		8.8
	Businessman	12		3.0
	Housewife	18		4.5
	Other	5	400	1.3

5.2.1 Descriptive Statistics of Self Service Technology Usage Behaviour

In terms of the SST usage behaviour, the findings from the sample depicted interesting facts. Generally, out of 400 respondents, 97 respondents constituting 24.2% of the sample are aware of the availability of SST while 57 of the respondents (14.3%) of the sample are thinking to use SST. In addition, 70 respondents constituting 17.5% of the sample are trying to use SST and 136 respondents (34%) of the sample were reported to be repeated users of SST. Finally, 40 respondents constituting 10% of the sample were reported to be committed users. Figure 5.5 illustrates the SST adopter categories.

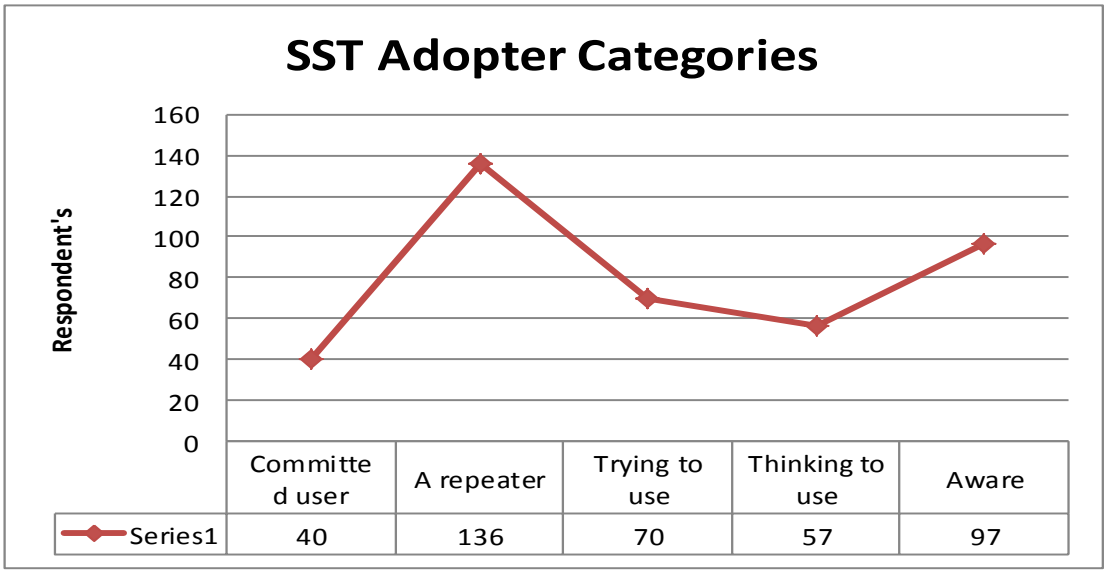

Figure 5.4
SST Adopter Categories

Subsequent to the scores obtain in determining the level of SST user among Saudi Arabian consumers, a more specific question was asked to the respondents where a question was asked in determining their frequency of using SST. The results corroborated the earlier scores for the adopter categories. Initially, out of the 400 respondents, 11 respondents constituting 2.8% of the sample stated that they never used SST while 35

respondents constituting 8.8% of the sample stated that they seldom use SST. In addition, 75 respondents constituting 18.8% of the sample stated that they occasionally use SST while 168 respondents constituting 24% of the sample stated that often use SST. Finally, 111 respondents constituting 27.6 of the sample stated that they always use SST.

Finally, a question was asked to determine the number of years the respondents have used SST. The findings of the study revealed that 43 respondents constituting 10.8% of the sample used SST for less than a year while 61 respondents constituting 15.2 of the sample used SST between 1 to 2 years. In addition, 116 respondents constituting 29% of the sample used SST between 3-4 years while 162 respondents constituting 40.5% of the sample used SST for more than 4 years. Finally, 18 respondents constituting 4.5% of the sample never used SST. The following table (Table 5.2) summarizes SST usage behaviour adoption among the respondents.

Table 5.3
Respondent SST Usage Behaviour

Characteristics		**Frequency**	**Total**	**Percentage**
SST Status	Aware	97		24.3
	Thinking to use	57		14.3
	Trying to use	70		17.5
	A repeated user	136		34.0
	Committed user	40	400	10.0
SST Usage	Never	11		2.8
	Seldom	35		8.8
	Occasionally	75		18.8
	Often	168		42.0
	Always	111	400	27.8
SST Experience (Years Used)	Less than 1 year	43		10.8
	1 – 2 years	61		15.3
	3 – 4 years	116		29.0
	More than 4 years	162		40.5
	Never use	18	400	4.5

5.3 Measurement of Reliability and Validity

This section describes the measurement purification of the scales. As explained in chapter three, all of the measures were adopted or adapted from established scales. The entire scales were exposed to a thorough analysis where the items were refined and different types of reliability tests were conducted before the data was analyzed (as recommended by Churchill 1979, Gerbing and Anderson 1988). The following sub-sections explain the assessment of measurements in light of their reliability, dimensionality, and construct validity through established procedures.

5.3.1 Exploratory Factor Analysis (EFA)

According to Gerbing and Anderson (1988), scale development should cover an assessment of whether or not the multiple measures defining the scale can be considered as alternative indicators of the same construct, i.e. that the scale is unidimensional. They argue that before the item is assessed for its reliability, the unidimensionality of the scale must be established. This is because the measure development procedure may not have created asset of unidimensional items.

Exploratory Factor Analysis (EFA) is a useful scale development method for minimizing a great number of indicators for easy management. EFA is used to assist the researcher to recover underlying measurement model that can be evaluated through Confirmatory Factor Analysis (CFA). Scales are formed by assigning to the same scale that the items load at least moderately onto the same factor.

Therefore, the guidelines provided by Gerbing and Hamilton (1996) of exploratory factor analysis (EFA) was employed as a heuristic strategy for the development of a multiple-indicator measurement model as CFA procedures precursor. Employing the guidelines suggested by Hair *et al.* (2010), EFA was conducted using the principal components analysis and varimax rotation (Lee and Hooley, 2005). Variables displaying factor loadings (<0.5) were considered for elimination along with those with factor loading significantly (>0.3) on over one single factor. The variables communalities reflecting the level of variance accounted for the factor solution of each variable were also included in the examination. Factors having low communalities (<0.4) were considered for elimination. Many other complementary methods were run to determine the most representative and appropriate set of components including eigenvalues more than 1 and scree plot. Finally, items that do not belong conceptually to the other factor that loads into it will also be considered for deletion.

5.3.2 Item Analysis – Reliability

Once the relationship of the items representing the respective constructs had been verified, the reliability of the scales was examined. Reliability refers to the level to which scales generate results consistently if measurements are repeated. Reliability is determined through the proportion of systematic scale variation through the determination of the relationship between scores taken from various administrations of the scale. If the relationship is high, the scale produces consistent results and is thus reliable. Among the widely used methods in measuring reliability and internal consistency is coefficient alpha (α) – where the value varies from 0-1. According to

Nunnally (1978), 0.5 is the lowest acceptable value of coefficient alpha indicating adequate reliability in exploratory research.

5.3.2.1 Users Seek Values

The user seek values is one of the major construct that comprises of the largest dimensions and consequently measurement items developed in this research that relates to the values seek or sought after by the user in adopting SST. There are eight user values or dimensions proposed in this study which are time convenience, service ubiquity, autonomy, enjoyment, security and privacy, ease of use, and finally usefulness. The whole users seek values construct is measured by 37 measurement items.

Initially, reliability analysis was done on all the 37 measurement items which gave a Cronbach's alpha score of 0.93. Subsequently, all the 37 items were then run in the factor analysis based on the suggested guidelines discussed in the prior section. The analysis results displayed a clean distribution of all the eight user values or dimensions with the exception of only two items that were deleted due to cross loadings that are item 3 of the ease of use and item 5 from the security and privacy. The overall factor analysis provided cumulative scores of 70.97 per cent on eight components. Considering that this is one of the few studies that combined all the eight dimensions clustered together for a single study, the result is impressive. While initially, some of the dimensions were considered as "conceptually" similar, the factor analysis results demonstrated that the constructs are conceptually and operationally distinct and unique. The following paragraphs discussed the findings of the principal factor analysis in detail.

The first component of the user seek values identified in the factor analysis with the highest total variance explained at 10.416% is "*Autonomy*". All the six items proposed in the study loaded nicely with an internal consistency reliability of 0.849. Next, in the user seek values dimension was "*Effectiveness*". All the five measurement items loaded nicely in the second component with internal consistency reliability of 0.877 with 10.192% of total variance explained.

The third component in the analysis was "*Enjoyment*" where all five items were retained. This measure produces an internal consistency reliability of 0.866 with 10.054% of total variance explained. Subsequently, the next component was "*Usefulness*" which preserved all the four items originally proposed in the study with an internal consistency reliability of 0.891 with 8.940% of total variance explained.

Consequently, the fifth component of the user seek value construct was "*Time convenience*". The analysis maintained all the four items in the dimension that produce an internal consistency reliability of 0.906 with 8.885% of total variance explained. This dimension has the highest cronbach alpha compared to all the other dimensions in the user seek value. The following dimension identified in the factor analysis was "*Security and Privacy*". This is one of the two dimensions that one of its items was deleted which is iteming 5 "A clear privacy policy is stated in firm's SST". The probable reason for this deletion could be there isn't any privacy policy stated at all of neither the SST premises nor it is displayed in the device screen. If there was a notice anyway, most of the users would have ignored it. Nevertheless, the dimension produce an internal consistency reliability of 0.852 with 8.700% of total variance explained

The seventh component in the user seek value analysis was "*Ease of use*". Item 3 of the dimension was deleted due to cross loading which are "SST would be complicated to use". This item is a negative phrase and is an alternative measurement item to item number 4 "SST is easy to use". Upon assessment of the internal consistency analysis, the reliability of the scale was 0.852 with 7.402% of total variance explained. Finally, the last component identified in the analysis was "Service Ubiquity". The three items proposed in the study was accepted with a 6.383% of total variance explained and an internal consistency reliability of 0.813. Table 5.3 showed the rotated component matrix for the user seeks value constructs and its related dimensions.

Table 5.4
Results of Factor Analysis for Users Seek Values

Factor Items	**Item Loading**
Factor 1 – Autonomy (Cronbach α=0.849/Variance=10.416%)	
I want to avoid problems by doing on my own	0.745
I want to be autonomous in taking care of my matters	0.733
I want to make my own choices and decisions	0.728
SST lets the customer be in charge	0.726
I want to handle my needs on my own	0.667
SST gives me control	0.653
Factor 2 – Effectiveness (Cronbach α=0.877/Variance=10.192%)	
SSTs is in customer's best interest	0.826
I have complete satisfactory SSTs experience	0.823
SSTs process free of errors	0.820
SSTs is reliable	0.788
SSTs provide all my needs	0.710

Table 5.4 (Continued)

Factor Items	**Item Loading**
Factor 3 – Enjoyment (Cronbach α=0.866/Variance=10.054%)	
Using SSTs is pleasant	0.823
Using SSTs is fun	0.793
It is exciting to use SSTs	0.792
Using SSTs is pleasurable	0.789
Using SSTs is enjoyable	0.697
Factor 4 – Usefulness (Cronbach α=0.891/Variance=8.940%)	
SSTs would improve my transactions	0.822
SSTs would be convenient	0.820
SSTs would be useful in meeting my needs	0.734
SSTs would be useful in completing my task	0.706
Factor 5–Time Convenience (Cronbach α=0.906/Variance=8.885%)	
Using SST would allow me to save time	0.766
Using SST would make transactions less time consuming	0.720
SST would be convenient for me	0.700
Using SST is an efficient way to manage my time	0.679
Factor 6 –Security & Privacy (Cronbach α=0.852/Variance=8.700%)	
I want transaction records to remain confidential	0.851
I want secure credit card transactions	0.817
I want safe and secure transaction	0.812
I am conscious about information security	0.516
Factor 7 – Ease of Use (Cronbach α=0.852/Variance=7.402%)	
SST is easy to use	0.767
SST does not take much effort	0.701
Easy to get SST to do what I want it to do	0.697
SST requires little work	0.598

Table 5.4 (Continued)

Factor Items	Item Loading
Factor 8– Service Ubiquity (Cronbach α=0.813/Variance=6.383%)	
I can use SST anywhere	0.814
I can use SST anytime	0.809
I can use SST when needed	0.652

*(All the loadings <.45 is suppressed)

5.3.2.2 Personality Traits

Personality trait is one of the antecedents proposed in this study apart from the demographic factors. This construct contains three dimensions which are self-efficacy, need for interaction and inertia. As this dimension represents an interval scale which permits greater statistical analysis as compared to the nominal and categorical scale in the demographic construct, it represents an important antecedent factor. Coherently, this construct is measured by 13 measurement items. An initial internal reliability analysis produces a Cronbach alpha of 0.870.

The analysis results displayed more "practical" dimensions as evidenced by the "alignment" of new measurement items. Initially, the personality traits was represented by self-efficacy, need for interaction and inertia. However, based on the results of the analysis, a new dimension was created which is dependency of efficacy while the dimension inertia was merged with need for interaction.

The first component of the personality traits is "*Need for interaction*". The results of the factor analysis suggested that this dimension comprises of the two originally proposed

dimensions which are inertia and need for interaction. However, the Scree test, latent root, and variance extracted criteria all resulted in one factor, with all items loading strongly together instead of falling into one "need for interaction" and "inertia" factor. Hence, instead of the four measurement items, the new dimension contains seven items which is a combination of all the original four items from need for interaction and the three items from inertia. The new dimension has an internal consistency reliability of 0.854 with 26.353% of total variance explained.

The second component in the personality traits construct was "*self-efficacy*". With the exception of two measurement items, all the remaining four items in the dimension were accepted in the factor analysis and accepted as self-efficacy. The internal consistency analysis - Cronbach alpha of the dimension was 0.872 and25.087% of total variance explained.

Finally, the last dimension in the construct is a new dimension based on the measurement items of the self-efficacy dimension. This new dimension is relabeled "*Dependency of efficacy*" based on the interpretation of the measurement items. The items designated for this new dimension are "I could use SSTs if I could call someone for help if I got stuck" and "I could use SSTs if I had seen someone else using them before". This new dimension makes more sense as initially it was previously lumped together with self-efficacy. The two items proposed in the study produced an internal consistency Cronbach alpha of 0.634 and a total variance explained of 13.338%. The overall rotated component matrix for the personality traits construct and its related dimensions are depicted in Table 5.4.

Table 5.5
Results of Factor Analysis for Personality Traits

Factor Items	Item Loading
Factor 1 – Need for Interaction Cronbach=0.854/Variance=26.353%)	
1. It's just not worth the hassle for me to switch to SSTs	0.812
2. For me the cost in time and problem to switch to SST is high	
3. Changing the way I normally do things would be troublesome	0.798
4. It bothers me to use SST when I could talk to a live person instead	0.790
5. I do not want to be responsible if anything goes wrong in the implementation process	0.707
6. Personal contact with an employee makes transacting through SST enjoyable for me	0.636
7. Personal attention by a customer service employee is important to me	0.512
	0.495
Factor 2 – Self Efficacy (Cronbach α=0.872/Variance=25.087%)	
1. I could use SSTs without the help of others	0.844
2. I could use SSTs if I had never used them before	0.821
3. I could use SSTs if no one showed me how to do it first	0.820
4. I could use SSTs on my own	0.789
Factor 3– Efficacy Dependency (Cronbach α=0.634/Variance=13.338%)	
1. I could use SSTs if I could call someone for help if I got stuck	0.780
2. I could use SSTs if I had seen someone else using them before	0.779

*(All the loadings <.45 is suppressed)

5.3.2.3 Behaviour Intention and SST Adoption

Finally, the last two important construct proposed in this study is behaviour intention (to adopt SST) and SST adoption. Unlike previous studies of technology adoption which only proposed intention to use, this study proposed the intention to use and adoption construct concurrently. The argument for not testing the two constructs concurrently was intention to use could actually "measure" adoption among respondents of technology adoption studies. It is also difficult to "differentiate" the two constructs together. The results of the factor analysis however prove otherwise. The two dimensions are proven to be conceptually and uniquely distinct. Principal component analysis was done on the dimension and the total variance explained by the dimension is 72.436%. Subsequently, internal consistency of the dimension was tested which produced a Cronbach alpha of 0.873.

Finally, the dimension of SST adoption goes through the same process of factor analysis. The analysis retained all the measurement items of the SST adoption with the average variance explained at 59.509%. The initial internal reliability analysis produces a Cronbach alpha of 0.619. The following Table 4.6 illustrated the rotated component matrix for the final two dimensions adopted in this study which is behaviour intention and SST adoption.

Table 5.6
Results of Factor Analysis for Behaviour Intention & SST Adoption

Factor Items	**Item Loading**
Factor 1 – Behaviour Intention (Cronbach α=0.873/Variance=72.436%)	
I will continue to use self-technologies in the near future	0.864
I am willing to use self-service technologies in future	0.858
I intend to use self-technologies in the near future	0.854
I am likely to use self-service technologies in the near future	0.828
Factor 2 – Adoption (Cronbach α=0.619/Variance=59.509%)	
SST is definitely for me	0.809
If I had to do any transaction, I would still use self-service technology	0.753
How often do you use self-service technologies?	0.750

*(All the loadings <.45 is suppressed)

The results of the principal component analysis showed that all the proposed four constructs and nineteen dimensions adopted in this study are universally distinct and unique. Out of the measurement items developed for this study, only two items were dropped. In coherent with the rigorous procedures proposed and adopted in previous studies in innovation adoption, the following purification process involve testing the construct dimensionality through Confirmatory Factor Analysis (CFA). The following sections will discuss the results of the analysis using Structural Equation Modeling (SEM) using AMOS.

5.3.3 Confirmatory Factor Analysis (CFA)

As we have stated in chapter three, EFA will be used initially as a precursor in the measurement purification process. EFA only allows the expected number of factors specification but although this is a shift from exploratory, it is not considered as confirmatory analysis in contrast to CFA where the pattern on which the measurement items load onto specific factors are known in advance. This includes convergent validity and discriminant validity under the principles of SEM (using AMOS software version 19.0). Subsequently, the testing of the structural model, also with SEM, served as a confirmatory assessment of the nomological validity. Therefore, this section will discuss the results derived from the CFA through the AMOS software.

5.3.3.1 Users Seek Values

Initially, all the eight dimensions of users seek values which are time convenience, service ubiquity, autonomy, security and privacy, enjoyment, effectiveness, ease of use, and usefulness that were earlier identified in the EFA were analysed for the subsequent stage of confirmatory analysis. The initial measurement model for the CFA for the construct did not result to a satisfactory score. The goodness-of-fit indexes were less than the recommended scores. Though all regression weights in the model were significant, model fit still was not acceptable and the modification indices showed many values that were very high.

Therefore, a decision was made to revise the initial model based on the recommended modification index. The revised measurement model depicted an acceptable score where

the goodness-of-fit indexes exceed the recommended scores as suggested by Lichtenstein *et al.*, 1992. Therefore, the revised model was accepted in the confirmatory analysis for the user seek value dimension. The revised measurement model for user seek values is depicted in Figure 5.5

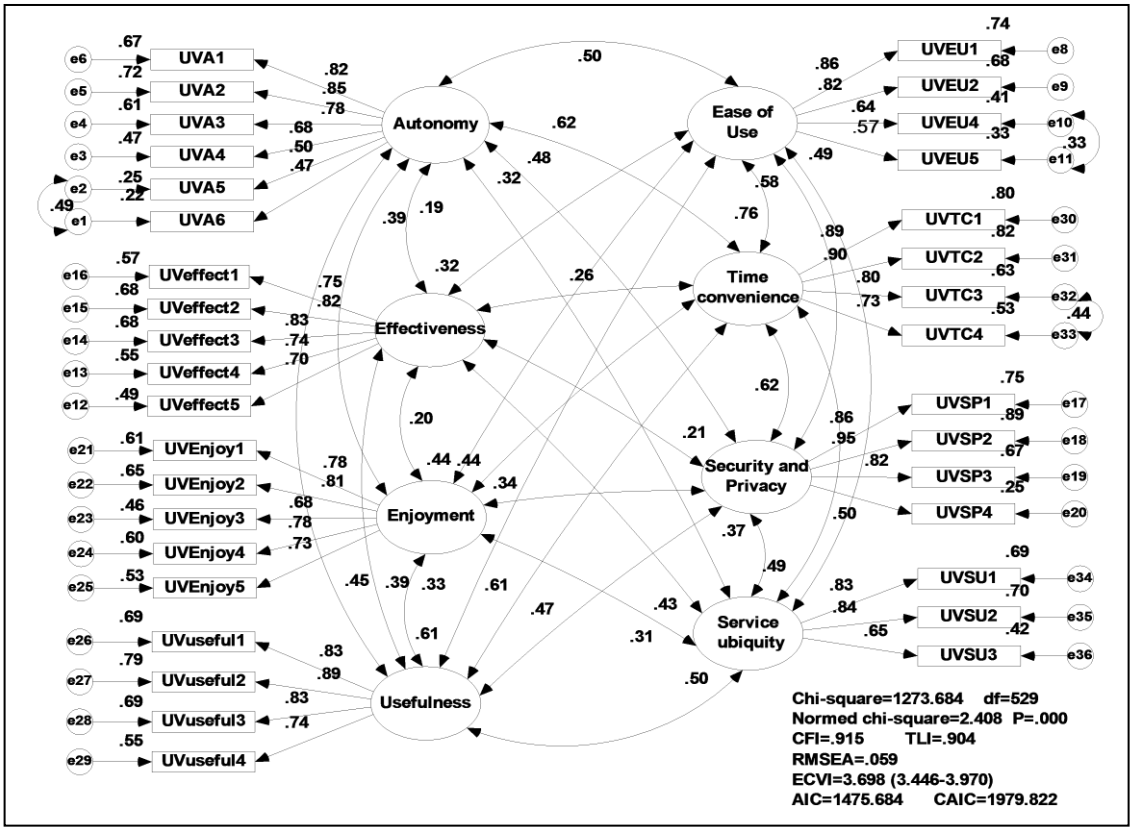

Figure 5.5
Results of CFA for Users Seek Values

As depicted in Figure 5.6, with the exception of effectiveness dimension, all the loading factors for the individual measurements were above the suggested guidelines for the measurement item. Subsequently, the measurement for each factor were analysed based on summated score of all the items representing the dimension. The result of the analysis based on the summated score is much easier to "digest" or to figure out the interrelationship between the dimensions as the output is much simplified. The analyses

also showed the higher-order or second-order relationship of the dimensions of user seek value. The revised model for CFA based on the summated score is as depicted in the following figure (Figure 5.6).

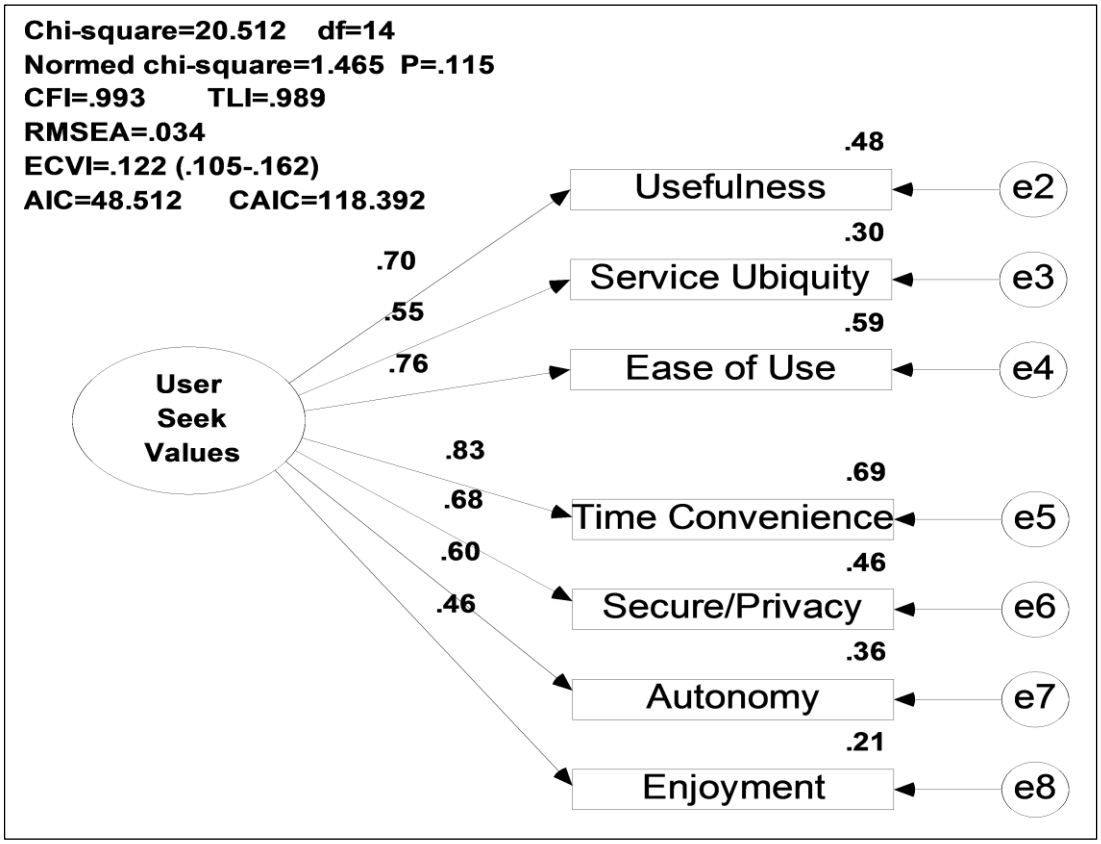

Figure 5.7
Results of CFA for Users Seek Values Based on Summated Score

The findings of the CFA analysis for users seek value based on the summated score demonstrated that all the remaining seven dimensions (effectiveness was eliminated due to poor factor loading) are acceptable. Time convenience seems to have the highest factor loading (0.906) while the loading for the other dimensions were as follow: ease of use (0.852). Next are usefulness (0.891), secure and privacy (0.852), autonomy (0.849), service enjoyment (0.866). While a lot of innovation studies have identified enjoyment as an important factor in adopting a technology, the results showed here illustrates an

important point. For SST, time convenience, ease of use, usefulness and secure / privacy are the important dimensions identified in the adoption of SST across all sectors.

5.3.3.2 Personality Traits

The new dimension of personality traits that comprises of need for interaction (labeled need for interaction and inertia in the CFA), self-efficacy and dependency of efficacy (labeled self-efficacy 2 in the CFA) were subjected to the same form of analysis as its predecessor constructs. Again, the initial measurement model requires tweaking based on the modification indexes as the goodness-of-fit indexes were below the recommended index with CFI=0.815 and TLI=0.767. Therefore, based from the recommended modification index, the revised measurement model reached the suggested goodness-of-fit score where the CFI=0.947 and TLI=0.927. Figure 5.7 illustrates the measurement model of personality traits.

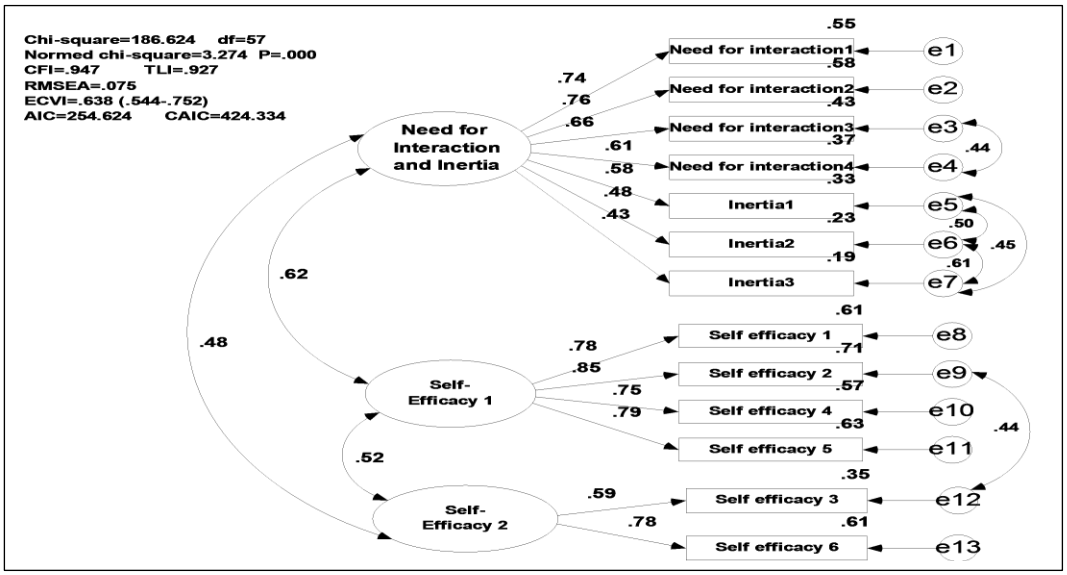

Figure 5.7
Results of CFA for Personality Traits

5.3.3.3 Behaviour Intention and SST Adoption

Behaviour intention (to adopt SST) and SST adoption is the final two constructs that are analysed for CFA. Initially, the EFA analysis retained all the measurement items in the two constructs which proves that the construct are conceptually and uniquely distinct. The CFA results confirmed that all the four items in the behaviour intention and three items in SST adoption is valid (convergent and discriminant validity) based on the original model (without any revision to the model). The two constructs meet the recommended threshold of the goodness-of-fit indexes suggested by previous scholars in this study. The following figures (Figure 5.8 and Figure 5.9) illustrate the results of the CFA of the two constructs.

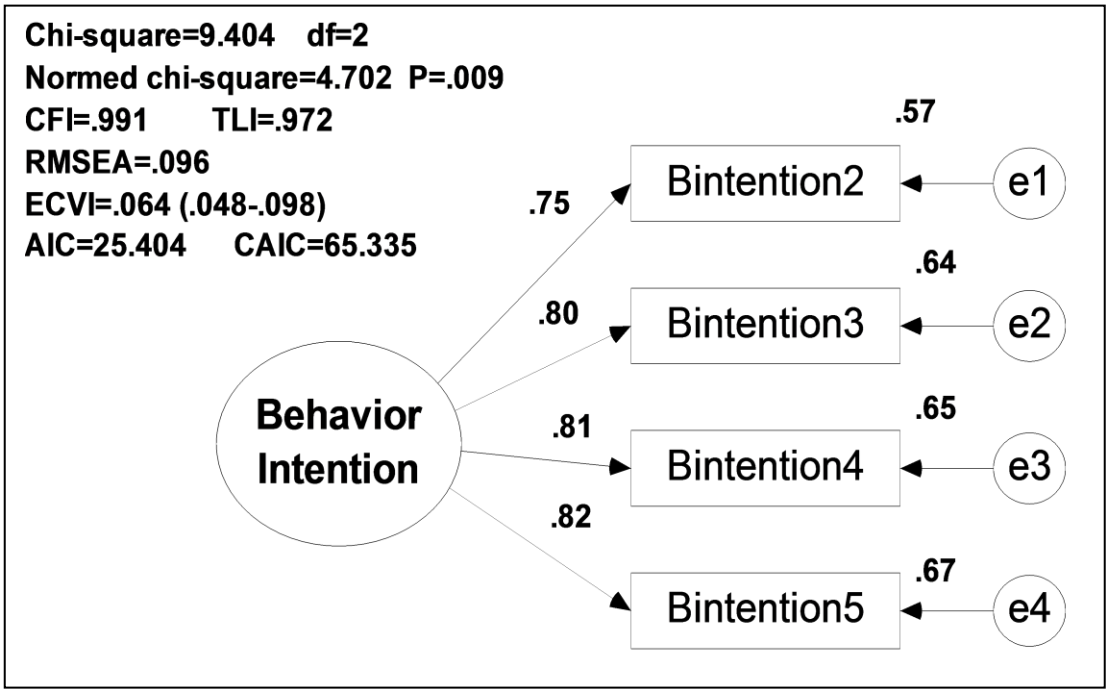

Figure 5.8
Results of CFA for Behaviour Intention

As for the SST adoption construct, the dimension has only 3 items. As constructs with only two or three items are under- or just-identified, no model fit indices can be obtained (Ping Jr., 2004). Therefore, the measurement model for SST adoption is just-identification – meaning it does not have the full information of the maximum likelihood indices. The result of the CFA is displayed in the following (Figure 5.10).

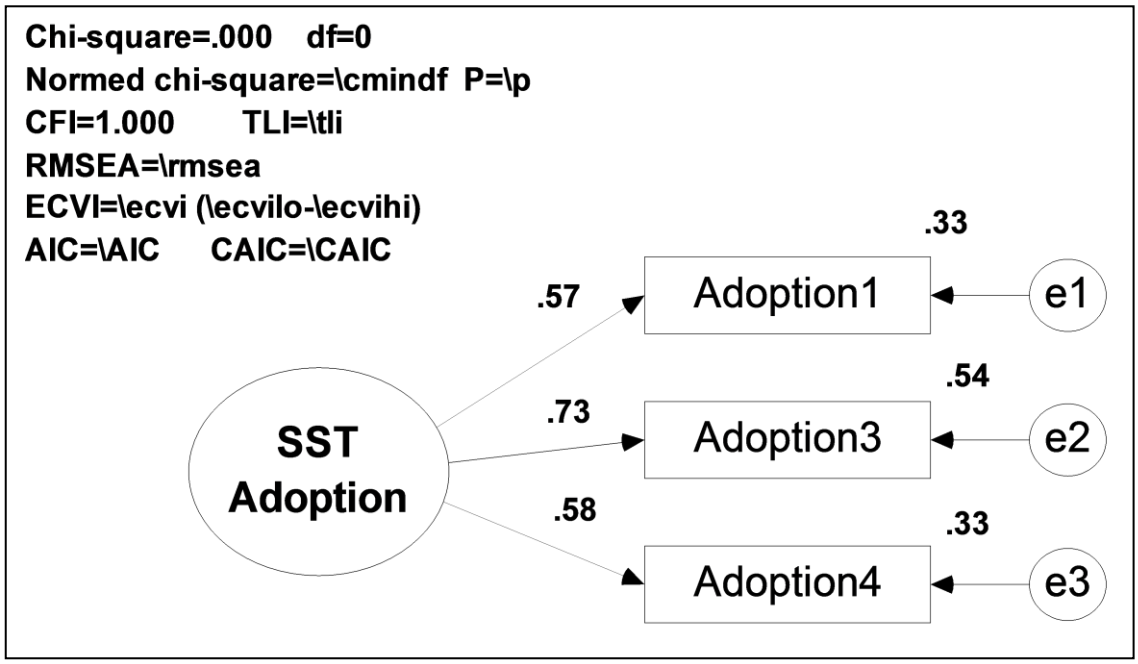

Figure 5.9
Results of CFA for SST Adoption

Based from the overall results of the CFA on all the constructs adopted in this study, all the constructs and its dimensions fulfill the recommended threshold level in terms of goodness-of-fit. The table below (Table 5.6) presents the indices goodness-of-fit for the entire study constructs.

Table 5.7
All Constructs – Model Fit Indices

Construct	CMIN/DF	GFI	AGFI	CFI	NFI	RMSEA	PCLOSE
User Seek Values	1.465	.986	.973	.993	.978	.034	.784
Personality Traits				.947		.075	
Behaviour Intention	4.702	.989	.943	.991	.988	.096	.079
SST adoption	Measurement model is just- identification.						

5.4 Model Specification and Hypotheses Testing

This section discussed the results of the hypothesis testing based on the hypothesis developed in the earlier chapter. In each hypothesis testing, we explained in detail the data utilized for the analysis and the type of analysis performed. As compared to the multiple regression analysis using SPSS, structural equation modeling (SEM) enables testing all the relationship concurrently with graphic illustrations of the path relationship. In addition, SEM could even propose the possible relationship that was not initially "a priory". For this study, AMOS 21.0 and WarpPLS are used to test the hypothesis. Due to the nature of the complex relationship between the constructs however, the analysis using structural equation modeling would test the "main" relationship first.

Finally, the users seek value factors were tested using WarpPLS software. WarpPLS is "user-friendly" and powerful statistical software that is gaining momentum among researchers and academicians. This software is used with SEM and is argue as the pioneer software in linear and nonlinear algorithms. The statistical package delivers a

massive sets of SEM outputs and automatically calculates indirect and total effects which is one of the first statistical software available currently in the market that are enable to do so. In addition, respective P values as well as collinearity estimates are also available.

Model specification also involves setting the reliabilities of each construct, which is commonly done by fixing the factor loading of one item in each construct to 1 (Hair, *et al.*, 2006). Otherwise, the model will be under identified. Accordingly, in each construct, the item that had the highest loading in CFA was fixed to 1. Finally, as described in the following paragraphs, some of the analysis would involve testing "alternative" models. This is based on Anderson and Gerbing (1988) as well as Byrne (2001) suggestions that data analysis with structural equation modeling usually involves processes of re-specification and re-estimation.

In determining the strength of the relationship within the standardized path estimate, Cohen's effect size conventions are followed as standard rules in identifying small, medium and large effects. Results of the hypotheses can be assessed by examining the regression weights (path coefficients) and their associated significance. The following table presents Cohen's (1988) descriptors of correlation coefficients of various sizes.

Table 5.8
Determination of Relationship Strength

Description of Effect	**Effect Size (d)**
Small	$d < 0.2$
Medium	$0.2 < d < 0.8$
Large	$d < 0.8$

Source: Cohen (1988)

Initially, four main constructs were tested in the first structural equation modeling analysis. The constructs are user seek value, personality traits, behaviour intention and SST adoption. The structural model fitted the data and effect sizes. It also produces overall goodness-of-fit indexes above the recommended threshold of 0.90. The results showed that the direct and indirect relationship were significant. This is based on Sobel (1982) argument that if the coefficient of indirect effect was more than .08, the relationship is significant.

Meanwhile, Cohen and Cohen (1983) stated that if the direct relationship between independent and mediating variables and direct relationship between mediating and dependent variables were statically significant, the indirect relationship is statistically significant. Therefore, based on these statistical assertions, the results of the relationship presented are as in Table 4.8. According to Cohen's (1988) descriptors of correlation coefficients, it can be said that the mediating relationship has a medium effect. Meanwhile, the structural equation results are presented in Figure 5.11 Based on the analysis, the CFI=0.927 and TLI=0.907.

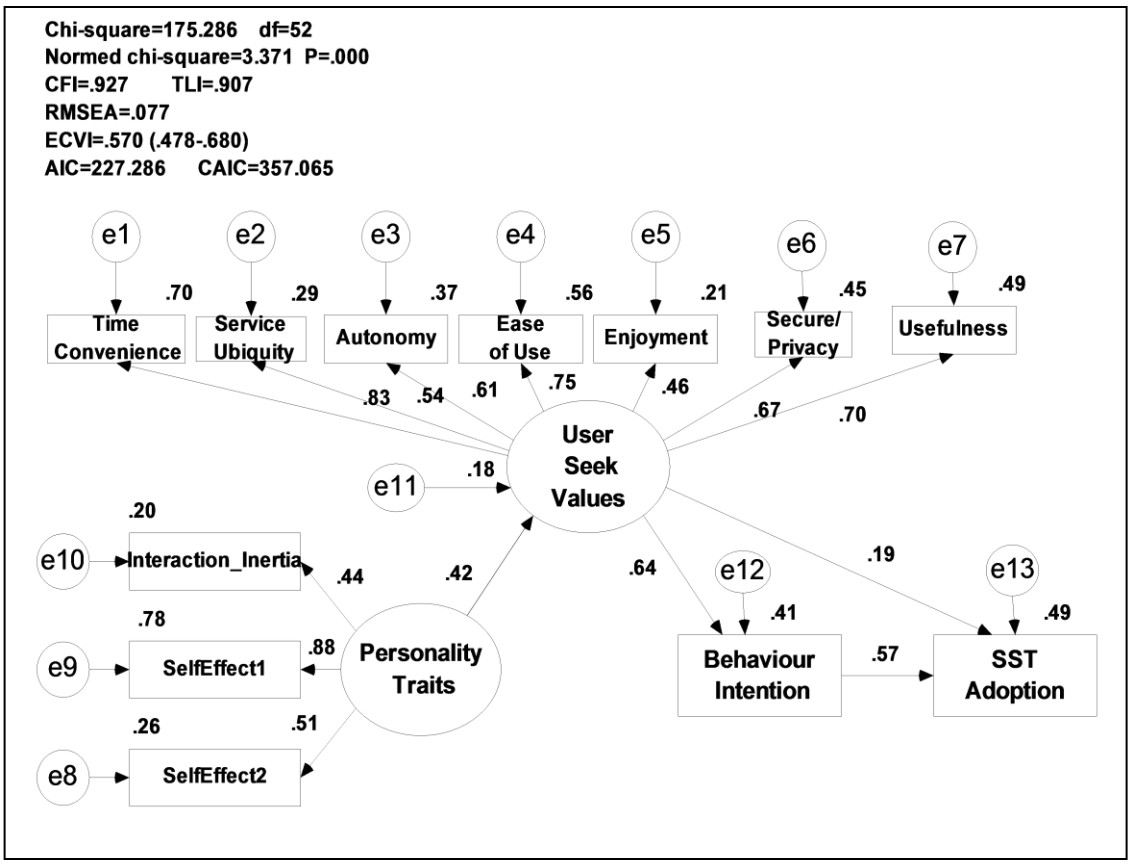

Figure 5.10
Results of SEM for Conceptual Framework

Table 5.9
Results of Hypothesis Testing for Indirect Effects

	Hypothesis	Exogenous/ Independent	Endogenous/ Dependent	Mediating	Indirect effect	Results
1.	1 (a)	Personality Traits	Behaviour Intention	User Seek Values	.269	Significant
2.	1 (b)	Personality Traits	SST Adoption	User Seek Values	.231	Significant
3.	H: 3	User Seek Values	SST Adoption	Behaviour Intention	.362	Significant

Subsequently, further analysis of SEM was done by adding the demographic variables in the conceptual model. The demographic variables of income, age, education, gender and occupation represent the construct. The initial results showed that gender and occupation have low coefficients at -0.22 and 0.2 respectively, suggesting that the items is removed from the model. The revised structural model fit the data very well and surpassed the recommended threshold level of goodness-of-fit indexes. All measures of model fit indicated that the model fits the data well, as seen in Table 5.9 below. Figure 5.11 illustrates the relationship of the proposed constructs in the research conceptual framework.

Table 5.10
Regression Weights and Significance of Paths: Total Sample

Hypothesis	**Paths**	**Standardized Estimate**	**Standard Error**	**Critical ratio**	**Sig.**
H:1	User Seek Value → Behaviour intention	.640	.184	13.313	***
H: 2(a)	Demographic → User seek value	.166	.047	2.600	.009
H: 2 (b)	Personality → traits User seek value	.420	.059	6.045	***
H: 7	Behaviour intention → SST adoption	.565	.035		***

The two main structural equation analysis have successfully tested the proposed relationship between the antecedents towards user seek values, use seek values

influencing behaviour intention and finally the relationship of behaviour intention towards SST adoption.

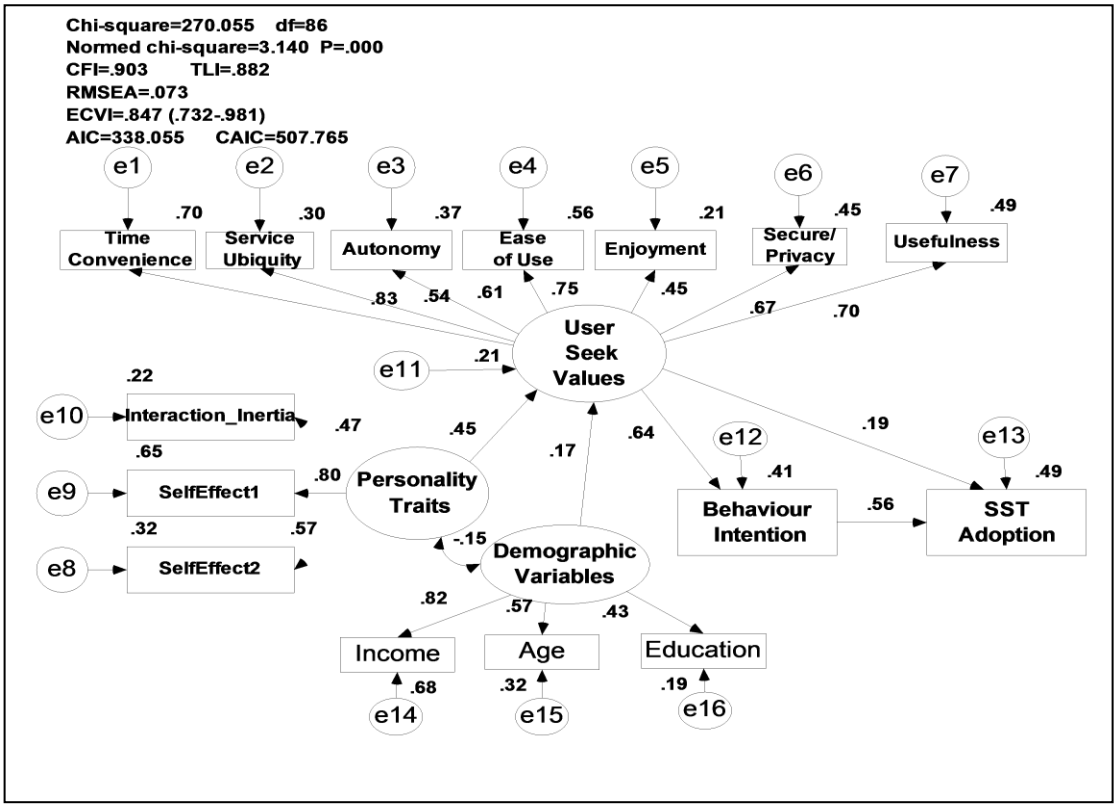

Figure 5.12
Results of SEM for Full Theoretical Framework

For the first analysis, we tested the exogenous variable personal traits as the baseline model which includes personal characteristics, user seek value, behavior intention and SST adoption. In addition, all standardized residual covariances were well under the 2.58 limit, and the modification indices showed only few and small values. Figure 5.12 exhibit the results of the above said analysis.

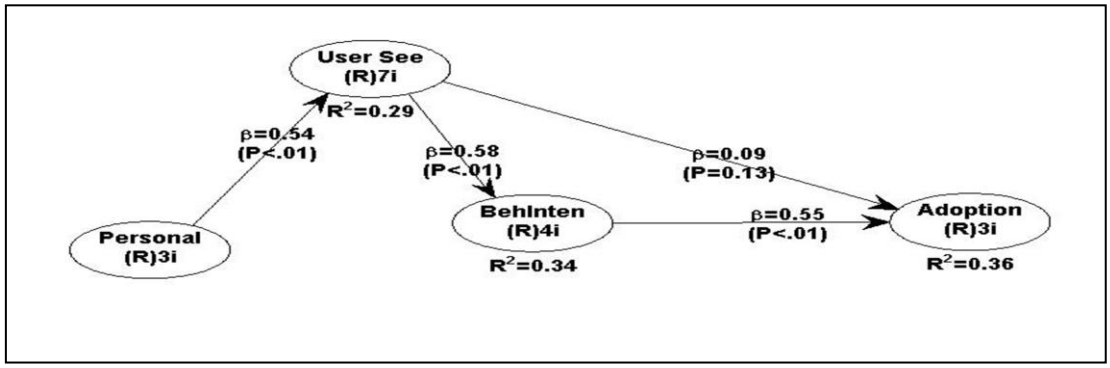

Figure 5.13
Results Using WarpPLS for Conceptual Framework

5.5 Summary of the Results

This study extends the continuing number of researches carried out on the innovation adoption specifically in the adoption of self-service technology. Although there has been an abundant of research done on technology adoption, the subject remains an important area of research inquiry in marketing and continues to draw attention from new researchers. Our study differs as we looked at the adoption of self-service technology comprising from various platforms of technology crossing from various industries. The all-encompassing aspects of our studies which combines all the different forms of self-service technology (as compared to the specific focus of a particular form of technology) and the cross sectional of multiple industries or sectors encompassing banking, hotels, airports, service operators covers the issue of generalizability.

Although various scholars have acknowledged the possible linkage between customer "motivations" or motives (users seek values) and customer intention to use, there is limited empirical evidence with anecdotal evidence linking this proposed construct. In this study, we have empirically substantiated through the usage of complex structural

equation modeling analysis conducted on the proposed relationship in the customer intention to use and the actual SST technology adoption relationship.

This study contributed to the innovation adoption literature by combining the "internal" and "external" factors influencing the user intentions to adopt the various platforms of self-service technology. The findings of the study provide some clarifications to the much debatable issue of whether it is worthy to measure customer intentions to adopt and the actual adoption itself. The results of the findings were conclusive in corroborating the relationship of the two constructs. This study paved the way for more future studies to be done in this area. The results of this study have confirmed some of the conceptual framework that was developed for this study. The following chapter will elaborate the findings of the study in more detail. In addition, the chapter will also discuss its implications toward managerial and theoretical perspective, limitations of the study and future studies.

CHAPTER SIX

DISCUSSIONS AND CONCLUSIONS

6.1 Introduction

This chapter aims to explain the results of the data analysis and the findings of the preceding chapter. Subsequently, this chapter comprises the discussion of the descriptive statistics, construct reliability and validity, model testing and consequently hypothesis testing of the research conceptual framework. The findings were later linked with the results of similar studies conducted previously to gather an understanding of the generalizability of the outcome in addition to uncover the contribution of the present study. Because the main purpose of the study is the determination of the impact of consumer seek values in adopting the self-service technology (SST), the overall discussions of the chapter centers around the construct, its antecedents and the association between customer intention to use SST and the technology adoption itself. Therefore, this chapter is organized as follows; synopsis, discussion of findings, implications of the study, study limitations and recommendations for future research.

6.2 Synopsis

As reiterated in the prior chapters, the main aim behind this study is to determine the motives or values that consumers of SST seek when planning or using the respective technology. As we have reiterated in the earlier chapter of this thesis, SST is increasingly becoming increasingly significant as service providers throughout the globe continue to exert effort to minimize costs and maximize service for sustaining competitiveness in the

market. In the last few decades, corporations have significantly increased their investment in the respective technology (Ndubisi, 2005).

Although the deployment of these sophisticated SST in service encounters is expected to increase consumer satisfaction through improved service quality (Bitner, Brown, and Meuter, 2000; Parasuraman and Grewal, 2000) while cutting costs at the same time (Weijters *et al.*, 2007), consumers on the other hand are skeptical. As such, only few institutions have publicly announced that the adopted SST has achieved its intended goals or objectives. In fact, the consumer adoptions of SST have been below industry expectations (McDonald, 2002). Hence, if the service technology is not adopted by consumers, the service provider may face great expenses as it needs to keep the operational staff under employment, and continue investing in new technology (Lee and Allaway, 2002).

Therefore, a concern that is lurking within the self-service technology literature is determining what is the motivation or expected value of consumers when using these technologies (Taft, 2007). Surprisingly, although SST has been installed throughout the world, there is still marked lack of attempts to determine the consumers' assessments associated with the usage of SST (Weijters *et al.*, 2007). In the event of evaluating new or unfamiliar situations as in the process of adopting SST, cognitive analysis is particularly appropriate for such purposes (Kim *et al.*, 2007). Therefore, this thesis adopts the view that expectations on the basis of cognitive analysis are basic to perceived value of self-service technology adoption.

Initially, all the constructs and dimensions in the study were gathered and adopted from a combination of previous studies conducted mostly in the developed economies. Although all the scales were found to be reliable within the respective context of the studies, the scale has not been tested in the context of a "general all-across the industry" SST and in the Middle East countries such as Saudi Arabia. The results of the measurements purification that consists of construct/ item reliability and validity revealed that the scales reliability and validity are confirmed in many sectors in the Saudi Arabian context.

Out of the hundred measurement items tested in the study, only two items were deleted from the analysis. These were deleted due to its failure to meet the specified criterion (e.g. cross-loading). The following section will discussed the outcome of the analysis in more detail. Nevertheless, before the subject is discussed in detail, the descriptive statistics of the respondents precedes the section. Accordingly, this chapter concluded the section by elaborating the findings on the antecedents of the consumer users seek values and its influence on customer intention to use the technology and actual adoption of SST.

6.3 Discussion of Findings and Implications

6.3.1 Descriptive Statistics of the Sample

To start with, the sample was representable of the Saudi Arabian population. The sample was dominated by male respondents which is a manifestation of the patriarchal society. Although the study uses female enumerators to solicit data from female respondents, it was difficult due to the fact that they need to get the permission from their husband to "cooperate" with the enumerators. On most occasions, the husband refused to let their

wives to talk to “strangers” which is acceptable as it conforms to the local culture. Another factor that leads towards the skewed number of male respondents is because the kingdom itself has a ratio of 1.27: 1 male to female (Saudi Arabia Central Department of Statistics and Information. 2010). Therefore, the composition of male comprising of two thirds of the sample is considered acceptable.

In general, the descriptive characteristics of the sample showed a consistent description where the information on age, education, income and occupation correspond with each other. In addition, the sample characteristics seem to represent the general characteristics of the Saudi Arabia population, the Saudi Arabia Central Department of Statistics and Information book (2010). Details that the country age structure is dominated by citizens ranging from age 14 to 64 at 67 per cent. The population under the age of 14 is about 29 per cent while those over 65 are only around 3 per cent.

Although the information provided by the Saudi Arabia Central Department of Statistics and Information (2010) book was enlightening, the age category was too broad to make any useful assessment. With respect to the age bracket of our sample, the age correlates with the education background. For instance, the respondents within the age of 18 to 24 correlate to those who own a secondary education (or those who are still not graduated from their undergraduate studies). Correspondingly, the remaining age bracket correlates with the other educational background such as diploma, degree and postgraduate. Interestingly, more than 47 percent of the sample possessed university degrees with 5.5 percent of them earns a postgraduate qualification.

Parallel to the respondent educational background, the data on the reported monthly income shows a consistency where 46.6 per cent of those who has an educational background of a secondary and certificate or diploma correlates with the reported monthly income of SAR5000 to SAR10, 000 at 44.3 per cent. Meanwhile, those with a university degree would most probably are represented by the respondents that earns a monthly income of SAR10, 000 to SAR20, 000 a month while the 5.5 per cent respondent who has a postgraduate education parallel with the 5 per cent of the respondents who earn SAR20, 000 and above (3 per cent earns SAR25, 000 and above). The relatively high monthly income reported for the respective educational background signifies the "above average" remuneration for employees in the Kingdom. As a matter of fact, based on random interviews of students in Saudi Arabia universities, it is common for students' to "earn" monthly allowances of SAR5, 000 as depicted in the study 27.8 per cent.

Finally, the majority of the respondents worked with the government and the next major employment is in the private sector. The remaining occupations of the respondents are professionals at 6.5 per cent with tallies the 5.5 percent of those who has a postgraduate education. As we have clarified in the beginning of the section, the sample characteristics correlate with the kingdom general population. For instance, majority of the country's workforce are with the government and the next big segment is with the private sector. Therefore, this study is confident that the possibility of sampling error is minimized if not eliminated.

Based on the descriptive characteristics of the sample, it shows that the sample is representative of the population. In addition, as explained in the previous chapter, measures were taken to ensure that the sample is not affected by non-response bias where selected key indicators of the construct were tested to ensure that there were no significant differences.

6.3.2 Self-Service Technology (SST) Usage Patterns

The "behavioural" results of the customer adoption patterns of SST are quite impressive. In general, based on the statistics - 61.5 percent of the respondents have either "tried" or is currently trying to use SST depicting that the country adoption rates have reach the "late majority" within the adopter categories. However, a detailed looked at the data revealed that only 44 per cent of the respondents is actually using SST on a regular basis. This illustrated that in terms of the adoption categories, SST adoption rates are still within the early majority category.

This result is corroborated by the frequency of the usage of SST where the statistics correlate with the 42 per cent of the respondents who use it on a "regular" basis. While the result reflects a good acceptance rate, the overall scores of the adopter categories of SST may be influence by the more "established" SST such as ATM and online services such as online banking. If this is true, then more needs to be done to increase the adoption rates of the other "contemporary "or new SST facilities.

Nevertheless, the adoption categories of SST could not be verified in terms of the number of years the respondents have used it. While 40 percent of the respondents stated that they

have used it for more than four years, the remaining 30 per cent of the respondents stated that they have used it between three to four years. While the figure could justify the earlier statistics that stated that 61 per cent of the respondents have either "tried" or is currently trying to use SST, the remaining 26 percent of the respondents showed that they are "experimenting" with SST where they have used the technology within less than 2 years.

Based on our earlier argument, it may be plausible that 40 per cent of the respondents who reported that they have used the SST for more than four years were referring to the more "established" SST such as ATM and online services such as banking while the 26 per cent of the "recent" adopter may be referring to the more novel or contemporary SST machines. Therefore, considering that the interest of the study focus on the contemporary or new SST facilities, the results is relatively modest where it illustrates that in terms of adopter categories, adoption is still in the "very" early majority stage.

6.4 Assessment of Research Construct Measurements

6.4.1 Users Seek Values

Before we discussed the findings of the relevant hypothesis testing proposed in this study, this section explains the results of the analysis in the development of the research constructs. In general, there are five constructs proposed in this study that are interrelated in the model. Two of these constructs represent the independent variables in this study, namely consumers' demographic characteristics and their personality traits. In addition, the study also included two mediating variables, namely users seek values and

consumers' intention to use SST. Finally, the dependent variable in this study is consumers' SST adoption.

As the "main" contribution of this study is the development of the users seek values, this section starts by explaining in detail the findings of the confirmatory factor analysis of the construct. The reliability and validity analysis conducted through exploratory factor analysis and structural equation modeling showed that the proposed constructs are reliable and valid. Although previous studies have used or studied some of these factors, to our knowledge – this is the first study that combines all the different factors into one single higher-order constructs name as "users seek values" in a multiple-industry context.

The "purification" results of the users seek values demonstrate the "comprehensiveness" of the initially eight different values seek by the consumer in the utilization or adoption of SST (effectiveness was eliminated due to poor factor loading). These "seek values" is different from the conceptual perspective of SST "benefits" (like in previous studies) as these are the values that consumers seek prior to the usage of the SST. Unlike other "well established" technologies, consumers may not be aware of the benefits that the contemporary or new SST has to offer. Despite the rigour and stringent analysis conducted on the measurements, the scales prove to be valid, reliable and represented a "comprehensiveness" view of the different values seek by the consumer of SST.

Based on the confirmatory factor analysis of the users seek values construct, the results showed an interesting discovery. Time convenience is the most authoritative users "seek" values when it comes to using SST. At the same time, a "relatively important" user seeks

values – effectiveness was eliminated. Time convenience means that consumers "seek" an efficient way to manage their time, convenient, would allow the consumer to save time and would make their transactions less time consuming.

On the other hand, it is understood or expected that the SST machine should provide all their needs, completely satisfy their experience, serve their best interest, free of errors as well as reliable. Surprisingly, despite the "obvious" rationale of why consumer use or adopt SST, little is mentioned about time convenience in previous studies that investigate about the adoption of SST. Thus, while the more "popular" values like enjoyment, ease of use and usefulness which are heavily research, our findings showed that time convenience has predominance towards all other values. Therefore, the outcome of this analysis confirm the "conventional wisdom" of the consumers seek values when using a SST.

Subsequently, the second and third user seek values are ease of use and usefulness. These two values are commonly and widely investigated values within the technology adoption research in general and SST adoption research in specific. The findings of this study corroborated that consumers expect an easy to use or operate machines which would meet their particular needs and tasks. Our findings demonstrated the consistency of the importance of the two values as reported in previous studies in influencing the intention or tendency of consumer to use SST.

Next, a similarly important values highlighted in the analysis is the security/privacy values and at number five followed by service ubiquity. Consumers concern over the security and privacy of SST facilities has always dominated the reasons for consumer

unwillingness to adopt such facilities. While the findings of our study corroborates past findings, the results showed that despite numerous stringent security measures and the advancement of security technology, consumer still views security and "breach" of privacy as one of the important concerns influencing their values in adopting such facilities. Perhaps, the latest "hacking" events affecting the giant technology front-runner companies should serve as a stark reminder for companies that security and breach of privacy will continue to haunt consumer concerns over the use of technology related equipment such as SST.

Therefore, firms need to continuingly provide assurance and updated their security measures to reduce the risk factor associated with using SST while at the same time – highlighting the service ubiquity of the facilities where consumers can use SST anytime, anywhere and whenever needed without any fears.

Finally, the least user seek value in their intention to use SST is autonomy. Although SST enables a customer to carry out their task independently from the service provider's personnel, customers do not actually "seek" this value for the sake of being autonomous – to be in charge of their own affairs either to gain control, to make their own decisions or to avoid "possible" problems. Customers do not "voluntarily relieve" their privileges to be serve by the service providers personnel in favour of doing it themselves in order to be "autonomous".

In a country that is characterised by high power distance, customers expect to be serve where the culture and practice of self-service is still not well received. In fact, most of the mundane services such as petrol pump, putting groceries in beg or car washing to name a

few still are still conducted on a full service basis – where in most of the developed economies and including some of the developing nations have resorted to self-service. Therefore, that explains the rationale of autonomy being the least users seek values in consumer intention to use SST.

6.4.2 Personality Traits

The findings of the CFA for the personality traits construct are quite interesting. To start with, the results corroborate the "strength" of the efficacy factor as one of the most important personality traits in consumer adoption of technology (Bandura, 1994; Marakas *et al.*, 1998; Eastin and LaRose, 2000). Initially, the measurement items of self-efficacy include the "independent" efficacy and "dependent" efficacy based on previous studies. The EFA and CFA results showed that these measurement items comprise of two "separate" but closely related factors. The former factor describes a "truly" self-efficacy trait where the user has the ability to use the SST independent of others while the latter factor describes that the user would be able to use SST depending upon the assistance of others or if help is available. Having said that, these two factors are correlated with the user need for interaction and the consumer "normal" way of doing things (inertia).

6.4.3 Behaviour Intention and SST Adoption

The results of the CFA demonstrate that the two factors are indeed conceptually and uniquely distinct. While there were argument by previous scholars (Wong, and Sculli, 2005; Venkatesh, Morris, Davis, and Davis, 2003) that it is difficult to distinguish between consumer intention to use technology and adopting the technology itself, the

results of the study showed that the two constructs were significantly distinct. Therefore, by separating the consumer intention to use SST and the actual adoption of the SST itself, the findings of the study would better explain between the relationships of the two constructs and would actually test the "full" relationship of the SST adoption model instead of only assuming that consumer intention to use technology is an "actual" adoption.

6.5 Structured Equation Modeling Results

Following the practice of previous scholars in testing the proposed relationship of the related constructs, the measurement model was earlier tested before all the proposed relationship were tested using the AMOS software. In general, the proposed measurement model satisfied the stringent requirements stipulated by Lichtenstein *et al.* (1992) invalidating the theoretical model before it can be subjected to the model testing. This is demonstrated where all the goodness-of-fit indexes surpassed the recommended threshold of 0.90-0.95 requirements.

Therefore, although this is one of the earlier studies done by any researcher to combine the proposed factors into a higher order construct, the results were quite satisfactory. In fact, the model goodness-of-fit indexes in this study were much better than similar studies that were carried out in the past (e.g. Moutinho and Smith, 2000; Al-Ashban and Burney, 2001; Gerrard and Cunningham, 2003). Hence, we believe that the proposed model has high credibility and simultaneously rigorous.

6.5.1 Consumer Characteristics Influence Users Seek Values

While the main hypothesis of this study was to determine the users seek values that influence consumer intention to use SST, an equally important objective of the study was to determine the antecedents of the users seek values. Hitherto, quite a large number of the previous studies tend to relate directly the antecedents to attributes of the innovation or elements in the TAM model.

Our study proposes the antecedents which compose of the consumer characteristics are inherently link to the user seek values. The consumer characteristics consist of consumer demographic characteristics and consumer personality traits. This study is one of the few studies that combined the "visible" characteristics of the consumer and the personality aspects of the consumer. The following section will elaborate the findings of the demographic characteristics followed by the influence of personality traits over users seek values.

6.5.2 Demographic Factors Influence Users Seek Values

Demographic characteristics have long been a focus of technology adoption literature. Previous studies have examined it as direct usage antecedents (Chang and Samuel, 2004; Nilsson, 2007) and the primary predictors of consumer's attitude and belief which influence behavior intention in adopting the SST (Elliott and Hall, 2005; Wu, 2003).

Although their effects on technology adoption are found to be less influential or often conflicting (Kelly, Lawlor and Mulvey, 2010), we incorporate a number of demographic

factors because of their extensive presence in adoption literature. In addition, researchers continue to associate demographic characteristics with technology adoption because they provide reasonable grounds for traditional marketing segmentation (Wu, 2003; Chang and Samuel, 2004; Lee *et al.*, 2010; Nilsson, 2007).

Coherently, the demographic characteristics in this study comprise of consumers' gender, age, income, education and occupation. However, based on the rigorous analysis of structural equation modeling, only three demographic characteristics which are users' age, income and education were retained and were significantly found to influence users seek values. Both gender and occupation were dropped from the analysis due to low parameter coefficients.

A reasonable explanation of the elimination of the two demographic characteristics could be due to the skewed sample in terms of gender. In addition, as we have already argued in the earlier chapter, Saudi Arabia is a patriarchal society and most often, the daily tasks or chores are done by men. Therefore, the influence of gender is "moderated" in this context. Meanwhile, the "broad" definition or classification of occupations is the probable reason why it is problematical to link occupation with the users seeks values.

Our findings which relate age, income and education toward users seek values in SST correlates well with the previous studies that showed these demographic characteristics as having the relationship with SST adoption. Burke (2002) stated that the most four major relevant variables known to have effect on the technology adoption are age, gender, education and income.

Individuals adopting new technologies have the tendency to be younger, highly educated and receive higher income compared to non-adopters (Labay and Kinnear, 1981; Danko and MacLachlan, 1983; Dickerson and Gentry, 1983; Darian, 1987; Zeithaml and Gilly, 1987; Gatignon and Robertson, 1991; Venkatraman, 1991; Greco and Fields, 1991; Rogers, 1995; Sim and Koi, 2002).

The findings in this study support the argument and findings of previous studies that found innovative people tend to be young (Im *et al.*, 2003). Generally, younger people are relatively early adopters of new ideas, service, and products. This can be illustrated by Im *et al.* (2003) study where he found that younger consumers own more electronic products that were considered as new and innovative products as compared to the older consumer.

A possible explanation to this phenomenon could be the leaning ability. Older people have the tendency to perceive a minimization of their cognitive capabilities while learning and they are characterized by lower perceptions of self-efficacy in terms of cognitive functioning (Hertzog and Hultsch, 2000). As a result, many older people believe that they are "too old" to learn how to use technologies (e.g. SST). Consistently, it is found that age has the most significant and negative influence on technology anxiety among various demographics (Simon and Usunier, 2007).

In addition, older people tend to be more "calmer" and are more patient in waiting for their turn to be served. This may not be the case for younger customers as their degree of tolerance are relatively low. As such, this may influence their users seek values for time convenience, control as well as usefulness. Hence, younger consumers are willing to "do-

it-yourself" rather than "helplessly" waiting to be served. Younger generations are also not concerned with the "power distance" issue.

Therefore, despite Saudi Arabia is considered as one of the country with the highest power distance index, the younger generations considered doing by themselves as "cool" or "enjoyable". This may not be true for older generations as they expect to be served. Moreover, Dean (2008) reported that older consumers stated that they "miss" human interaction when making self-service transactions.

Meanwhile, Durrande-Moreau and Usunier (1999) stated that highly educated people are more inclined to display a more quantitative time orientation or seeking time convenience. This could be due to greater appreciation of time as in the maxim that "time is money". Therefore, although the study was done in the context of a polychronic time society, individuals who are highly educated behave in a monochronic time "mindset".

In addition, consumers who are early adopters of new technology can be characterized by educational attainment because people's way of gathering and processing is highly dependent upon education level (Im *et al.*, 2003). Consequently, higher level of education may result in confidence and the perception that SST is comprehensible and invaluable (useful) (Breakwell at al., 1986; Gist, 1987; Igbaria and Parasuraman, 1989).

Finally, the research findings also provide evidence that household income play some role in the adoption of the SST through the users seek value. This could be explained where higher household income is often positively correlated with the possession of technology related products like computers, smart phones and internet access.

Therefore, it is most likely that self-service technology is something common to them (Lohse *et al.*, 2000). Greater income may lead to the increased opportunities to access the needed tools and the motivation for SST use (Breakwell et al., 1986; Gist, 1987; Igbaria and Parasuraman, 1989). Consequently, this would lead them towards a specific seek value that compliments their role or lifestyle such as time convenience, usefulness, secure / privacy and autonomy.

The significant results linking consumer's age, education and income with users seek value and consequently intention to use SST conforms to previous studies conducted in other parts of the world. Our findings demonstrate that although the study was done in a conservative "culture" or social environment, the results do not vary with studies done in the developed Western economies. This signifies that for technological related "products" or "services", the adopters for new technologies such as SST are globally "similar".

6.5.3 Personality Traits Influences Users Seek Values

Personality traits have been widely discussed in the consumer behavior literature as an influencing factor in the use of self-service technology (Davis, 1993; Dabholkar and Bagozzi, 2002; Childers *et al.*, 2001; O'Cass and Fenech, 2002). We argue that personality traits have an effects on consumer's intention through the values seek by the consumers.

Based from our exhaustive literature review, we proposed that consumers self-efficacy (Eastin and LaRose, 2000; Marakas *et al.*, 1998; Bandura, 1994); inertia (Dabholkar and Bagozzi, 2002; Meuter *et al.*, 2005) and need for interaction (Dabholkar and Bagozzi,

2002; Dabholkar, 1996) influence the consumers seek values and ultimately intention to use SST.

However, following the rigorous procedures of measurement purification, the construct was redefined to comprise of self-efficacy, efficacy dependency and need for interaction. All the three factors were found to be significantly influencing users seek values and ultimately their intention to use SST. Our study shows that self-efficacy has the strongest relationship with user seek values. Self-efficacy has already been considered and even adopted as an antecedent factor in some extended models of TAM and TPB and improved the performance of model (Hsu and Chiu, 2004; Pavlou, 2006; Wang *et al.*, 2006).

Our study further enhanced the generalizability of the previous findings through the incorporation of users seek values in the TAM framework. An individual who believes that he/she has the efficacy to successfully use the SST facilities without the assistance or guidance from the service providers may actually expect that the SST is easy to use. Consequently, with his ability to use the facilities independently, the consumer may expect the SST to provide the user an advantage such as time convenience and useful for his/her purpose.

Self-efficacy could actually correlates with the person's education where the higher the consumers education level, the greater his/her cognitive ability to learn and try new things. Therefore, this will influence the consumers' confidence and his needs to control of how things ought to be done or the expected outcome of his task. In order to ensure

that the consumer is able to control the things that he wishes, the consumer seeks to become autonomous in “dictating” the SST facilities and “not the other way round”.

On the same breath, a consumer believes that he/she are able to conduct specific transactions “provided” that there are someone that they could ask for help. Consumers also feel that they are capable to execute the transactions through the SST if he/she can observe how it is done before they do it themselves. In responding to this argument, we believe there are several explanations that explain the efficacy “dependency” factor. Initially, consumers with this “ability” still see the SST as something risky either due to its newness or due to the unfamiliarity of using the SST. Their previous experience of using a similar like SST facilities may not be parallel enough for the consumers to “transfer” the knowledge and experience in trying this new SST facility.

Therefore, to reduce the risk of using the facilities, these consumers take “comfort” knowing that help is around the corner or having other customers to “demonstrate” how it is done. Coherently, the value that these consumers seek would be ease of use. The spin-off from ease of use would be other values which are related to SST such as time convenience, usefulness as well as secure and privacy.

The final factor - need for interaction combines with “inertia” shows a significant relationship with users seek value albeit having the lowest parameters coefficient. Consumers who possessed this factor would have a preference with the “traditional” way of doing things since they prefer interaction with the service providers’ personnel or continue to do the task the normal or old ways.

Studies found that consumers characterized by having a high need for interaction will steer clear of using technology while consumers characterized by having low need for interaction will embrace such options (Dabholkar and Bagozzi, 2002). Kang and Ridgway (1996) argued that since older people are especially prone to feel loneliness and depression, they tend to seek social stimulation in service provider by interacting with business employees. Therefore, the older a person gets, the more likely that he/she has a high need for human interaction.

Another possible connection between need for interaction and age is the decrease interest in learning how SST works and coherently reduce motivation sample it (Langeard *et al.*, 1981; Dabholakr, 1996). As many older people believe that they are "too old" to learn how to use new technologies, their dependence or preference for human interaction increases. Their "lower" level of self-efficacy coherently increases their risk perception of independently carrying out the task. Therefore, a consumer who has a high requirement for personal interaction minimizes the need to sample the SST facilities (Langeard *et al.*, 1981; Bateson, 1985; Dabholkar, 2000; Meuter *et al.*, 2000).

This indicates that the consumer characteristic 'need for interaction' has a strengthening effect on the relationship between the consumer behavior intention and the self-service technology adoption. Because of the absence of physical contact with employees of the service providers in self-service technology adoption environment, these associations have to be stronger for consumers having high need for interaction to develop positive feelings towards self-service technology adoption.

Inertia also hinders behavioral changes and hence leads to hesitancy in attempting to try out new service options (Aaker, 1991; Gremler, 1995; Heskett, Sasser and Hart, 1990). Owing to the investment in time and energy when using a new SST (Gremler, 1995; Olshavsky and Spreng, 1996), certain consumers do not wish to spend their effort to change something that they are used to. Therefore, this may influenced their seek values of using the SST – such as ease of use, usefulness and secure/privacy.

The findings of our study shows that personal traits are an important construct influencing consumers' intention to use SST through users seek values. Similarly with demographic characteristics, our findings demonstrate that personality traits of consumers in Saudi Arabia share similar traits of their counterparts from the more advanced Western economies. Finally, these findings confirm the Dabholkar and Bagozzi's (2002) contention that personal traits are the core of developing consumer attitudes and behavioral intentions.

6.5.4 Users Seek Values – Mediating Influence

The main hypothesis of this study proposed that user seek values mediates the relationship of the exogenous factors (comprising of the personality traits and the demographic characteristics) and the endogenous factors (Consumer intention to use SST). Based on the results of the structural equation modeling in chapter four, it showed that the proposed relationship is significant. Therefore, with reference to the study first hypothesis:

Hypothesis 2: Users seek values mediates the relationship between the consumers' individual characteristics and their intention to use SST.

The results of our study provides support to our earlier argument about the "limitations" of the technology acceptance model (TAM) where the model has no construct which represents an overall estimation of the adoption object (Kim et al., 2007). The model explains technology adoption behaviour with only two factors namely ease of use and usefulness. The relationship between the value that is/are seek by the user and adoption intention has never been examined before (Kim et al., 2007) although there is a strong empirical support that value affects perceptual intention to use (Sweeny, Soutar and Johnson, 1997).

Our study provides support that there are proliferations of values that consumers seek in adopting a particular form of technology. Based from our findings, it is evident that there are other "significant" values which were not covered or investigated in previous studies. For instance, although our findings demonstrated that "Ease of Use" and "Usefulness" continue to be an important element or value seeks by customers in adopting SST; "Time convenience" is the most dominant value.

Therefore, while it is important that the service provider's SST is easy to use and offers numerous benefits, it is of paramount importance that it should provide a time convenience – meaning that it gives a time advantage over personal or current service operations. While the findings of the importance of time convenience value seem predictable, it demonstrates that in deciding between the choices of personal service over SST, the ability of the SST facility to offer time advantage is the determining factor.

The importance of time convenience has been noted by previous scholars in determining the intention to use SST. Bateson (1985) stated that speed is an important determinant of preference for self-service in general. Correspondingly, Meuter *et al.* (2005) acknowledge that one of the important values of SSTs identified by consumers is that it "saved time". In addition, Dalbolkar, Bobbit and Lee (2003) study also identified that speed is the predominant reason for consumers who choose the self-scan option within the grocery retailing industry. Dabolkar *et al.* (2003) study collaborates the earlier study by Anselmsson (2001) that identifies speed is the important determinant in self-scanning option.

The findings of time convenience or speed in the consumer intention to use SST facilities demonstrates the universality of the consumer seek value. This is an interesting discovery since Saudi Arabia is a country which has the traits of a polychronic time culture (Hall, 1976). A culture which is deeply steeped in tradition and relationships rather than in executing tasks. This culture has a much less formal perception of time - to the extent that Cohen (2004) notes that "the traditional societies of polychronic time culture have all the time in the world".

We argue that the "contradiction" in the Saudi Arabian users seek values and their polychronic time culture illustrates that "these SST adopters" may not share the traditional views of their local cultures where maintaining relationships is more important than getting things done on-time. A plausible example of this phenomenon could be due to the nature of their occupation or their personality traits.

Based from the descriptive characteristics, it can be observed that the majority of the respondents are "middle level" managers who either work for the government, private or running their own business. In general, these individuals are normally busy running their daily occupational duties in addition to doing their own "chores". Therefore, their appreciation of time is more distinct and different than their counter parts in other job positions. On the same note, this "segment" represents the same characteristics of the users of SSTs on a global perspective.

With regards to the two "established" users seek values identified in this study namely usefulness and ease of use; the findings revealed that they were consistent to be significant factors. Our study mirrors the results of previous scholars which are ease of use (Curran and Meuter, 2005; Timmor and Rymon, 2007) and usefulness (Lin *et al.*, 2007; Walker and Johnson, 2006) that were found to be among the main factors of consumer intention to use SST. This shows that the constructs are empirically reliable and valid where it explains the various types of technology adoption in numerous economies (countries) and in different context (multiple industries).

Coherently, these two users seek values which are ease of use and usefulness have also been conceptualized and studied from various perspectives by previous researchers. The constructs which have been viewed from the consumer perceived benefits perspective Al-Ashban and Burney (2001); Bouwman *et al.*, (2009); Chang and Samuel (2004), organization motivation perspective (Matilla, 2006; Daniel 1999), technology attributes perspective (Anselmsson 2001; Berry *et al.*, (2002); Burke (2002), and from the perspective of distribution channel (e.g. Thornton and White 2001; Mols 2001; and Black

et al. 2002) continuously draw a significant findings towards the "consumers" intention to use technology. Probably, a meta-analysis of studies done in all these perspectives could carry out to provide further evidence of the constructs universal aspects in explaining the technology adoption phenomenon.

An equally important user seeks values that influence customer intention to use SST is that the facility is secure and ensures customer privacy. We believe this forth value identifies by the customer "sums up "the "main" core values seen as important in their consideration of adopting SST. "Easy to use" SST facilities that are "useful" are the "pillars" that deliver the ultimate value of "time convenience" to the user. However, to reduce potential risk and encourage trial, the overall "foundation" of the SST facilities is it must be secure and ensures privacy.

Our argument is based on the study conducted by Curran and Meuter (2005) which revealed that the online banking adoption was more affected by the consumer's risk perceptions compared to its usefulness or ease of use. Thus, based on the findings, it can be concluded in part by the statement that SST adoption entails two elements namely the adoption of service technology and the adoption of self-service concept (Bobbitt and Dabholkar, 2001). The following figure illustrates our "metaphor" of the four user seek values.

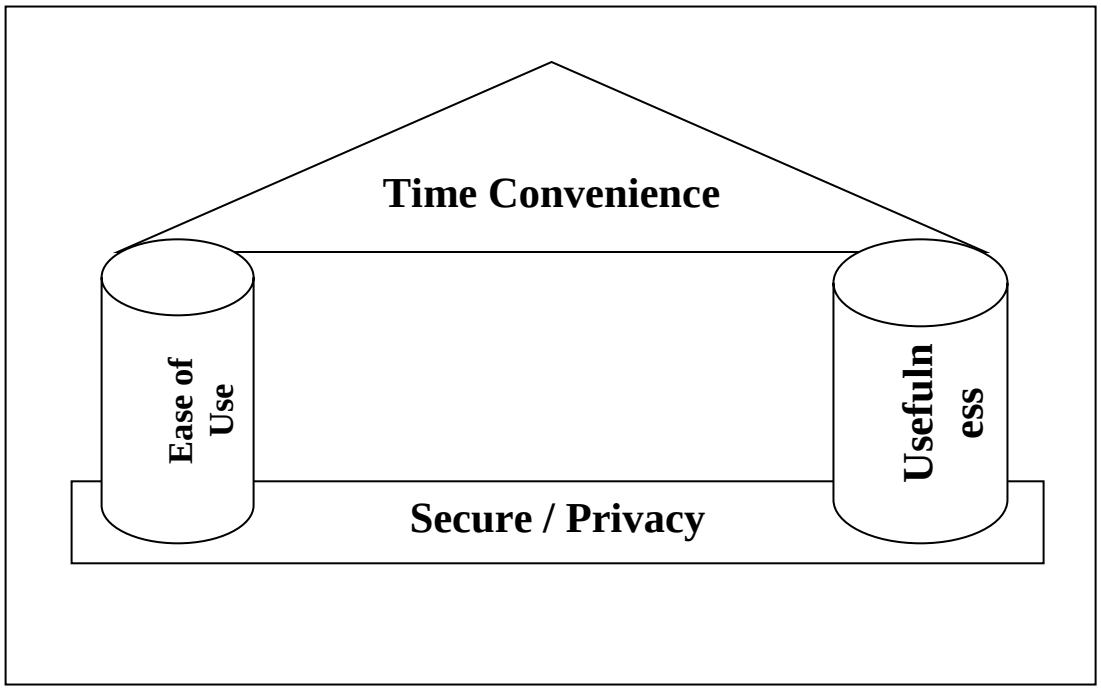

Figure 6.1
Prime Users Seek Values of SST

Bateson (1985) was one of the earlier scholars who found that self-service consumers preferred increased control in their transaction. A stream of researchers later showed that control was indeed an important aspect of self-service adoption although it did not received the same attention as the other determinants such as ease of use and usefulness (Dabolkar, 1996; Hoffman and Novak, 1996). A quantitative study by Dalbolkar, Bobbit and Lee (2003) found that among the reason for liking the self-scan option was control. Her study corroborates the study done earlier by Lee and Allaway (2002) which identify control as an important determinant for user intention to use SST. Wang, Harris and Patterson (2012) argued that the aim behind the introduction of self-service is not totally the replacement of traditional personal service, but it is the provision of an option and a sense of control, and thereby enhance the overall customer experience (Salomann *et al.*, 2006).

Therefore, the "final" users seek value of security and privacy act as the foundation for these three users seek values. These prime values which are time convenience, ease of use, usefulness and secure/privacy are "distinct" values that the users seek in SST facilities. Therefore, business or service providers have to ensure that these values are met and "visible" or "tangible" in place before any consumer would consider trying or adopting SST.

On the same note, these values seem to mirror Rogers' (1983) innovation attributes namely relative advantage, compatibility, trialability, observability, and complexity. On the basis of our findings, the values seek by consumers are time convenience which the SST provides a *relative advantage* over personal or traditional counter service. Consequently, the SST ought to be easy to use which fits the innovation attributes of *complexity, observability* and enables *trialability*.

Meanwhile, usefulness value mirrors the innovation attributes of *relative advantage*. Finally, in fulfilling the security/privacy values, the SST attributes should be *compatible* with existing security and privacy measures of the service provider's policy in delivering the service. SST should not compromise any security or privacy concerns over speed, simplicity (ease of use) and features (benefits).

Our argument that these four users seek values "sums up" the main values before customers considering trying or adopting SST is based on Rogers (1983) assertion that the attributes of an innovation explained 49 to 87 per cent ofthe variance in the adoption rate. Additionally, the findings of Völlink *et al.* (2002) revealed that not all attributes are relevant to the potential adopter at the same time.

We concur with the argument by Plouffe, Vandenbosch and Hulland (2001) that stated thedecision making about a technology adoption is a stepwise process in which a certain innovation attribute/s - is / are critical access before the user decides to continue or discontinue the assessment of an innovation. This is because just as users seek values, the perceived characteristics of an innovation may be viewed as cognitive indices/beliefs reflected in the attitude towards innovation (Rosenberg and Hovland, 1960; Le Bon and Merunka, 1998).

Therefore, following our argument, time convenience, ease of use, usefulness and secure/privacy are cognitive indices reflected in the consumers "obligatory values" of SST before it can be consider for trying or adopting the facilities. While Rogers' (1983) attributes of innovation explains the "values" from the technology perspective, our users seek values explain values from the user perspective themselves. Hence, whatever values that the technology hopes to offer, it must meet the needs of the user seek values to increase its chances of being adopted.

Subsequently, the next users seek values such as autonomy; service ubiquity and enjoyment are values which are "complimentary" that users look for in their effort to adopt SST. These values are not "prerequisite" values that users aspire when contemplating to use SST. However, these values are seen as "auxiliary" or "augmenting" what personal or current counter service could not offer over SST. Hence, it enhances the "desire" to use SST over current methods of service delivery. For instance, by conducting their own transactions over SST, it enhances the value of autonomy to determine their own outcome.

The autonomy value builds upon the control value where a user that is able to control his or her task "expected" that he has the autonomy to determine how the transaction should be carry out without the interference of a service provider. Consequently, their ability to conduct the transaction autonomously is extended by the service ubiquity which enables the user to carry out their tasks anytime and anywhere. Coherently, carrying out these generally "mundane" tasks is alleviated since it is "fun" to do it yourself. The inter-relation or correlations of user seek values is illuminated through the confirmatory factor analysis where these values "covariate" with each other.

Subsequently, users seek values of service ubiquity which reflects that SST can be conducted anywhere and anytime can be argued as part of a subset of the usefulness value. Our argument echoes Wang, Harris and Patterson (2012) similar argument that the "other" SST characteristics are attributes that are no more than a subset of Rogers innovation attributes of usefulness. Therefore, future studies could incorporate this factor into the usefulness factor in operationalizing the construct. Based on our argument, the usefulness construct could actually be a higher order construct where values such as service ubiquity and effectiveness form the lower order values.

Finally, the user seek value of enjoyment has been proved in the past as an important factor in influencing consumer intention to use SST. Curran and Meuter (2007) and Weijters *et al.* (2007) are among the recent researchers that identified enjoyment as a factor that influence consumer intention to use SST. Their studies corroborate a "consistent" finding from previous study which stated that customers also enjoy SST interaction (i.e. Dabholkar, Bobbit and Lee, 2003). Despite the consistency of this

finding to prior findings, the enjoyment value is the least "importance" values seek by the users of SST.

The findings of our study in terms of the "ranking of importance" of users seek values highlights our proposition of incorporating an "exhaustive" list of user values. When these value are "put to test", although the enjoyment value continues to be a significant factor that influence consumer intention to use SST, it turns out to be the least seek value. Based from the respondents' characteristics of our sample which comprises of "middle level" managers who either work for the government, private or running their own business, it may sound "silly" that doing this mundane "chores" is fun.

A sensible explanation is that users may find that having the ability to control the transactions which is relatively easy and much more "superior" or fast in what was previously thought as "complex" transactions such as banking, flight check-in or reservations is actually "cool". The ability to do all these transactions "better" than the service provider's personal counters service increases one's confidence and "efficacy". Consequently, users feel its "cool" for having able to "beat" the current system.

Our inclusion of consumers seeks values in linking the construct towards the intention to use self-service technology is an important contribution. This is because; the basic and common assumption in examining consumer behaviour is value maximization. If the SST could not meet these values seek by the consumers, it is probable that the SST would not be able to get the adoption that it's expected. Hence, this approach is a novel approach in understanding consumers' adoption of self-service technology.

6.5.5 Consumer Intention – SST Adoption

As we have lucidly argued in the problem statement, most prior studies have focused only on behavioral intentions to adopt SST rather than the actual behavior of adopting SST (Curran *et al.*, 2003; Dabholkar, 1996; Dabholkar and Bagozzi, 2002). Davis (1989) suggested that behavioral intention to use IT could well and accurately predicts actual IT use.

Their argument is based on the Theory of Reasoned Action (TRA) which justifies how intentions could predict the consumer behavior in using or adopting the technology (Fishbein and Ajzen, 1975; Sheppard, Hartwick and Arshaw, 1998; Korzaan, 2003; Karahanna, Straub and Chervany, 1999). Due to the "straightforward" conclusion of consumer intention as "actual" adoption, numerous technology acceptance studies favored this argument (e.g., George, 2002; Horton, Buck, Waterson, and Clegg, 2001; So, Wong, and Sculli, 2005; Venkatesh, Morris, Davis, and Davis, 2003).

Nevertheless, we have decided to prove this relationship empirically instead of completely relying on theoretical assumptions. In addition, our study is also in response to the "over-emphasis" of using consumer intention to represent actual adoption (Wang, Harris and Patterson, 2012). In our study, the analysis of the relationship of customer intention and actual adoption was done through structural equation modeling (SEM) using the AMOS software as well as WarpPLS. The results from both SEM analysis showed that the relationship was significant at $\beta = 0.56$ (AMOS) and $\beta = 0.55$ (WarpPLS). Our findings confirmed the arguments by scholars (e.g. Davis, 1989; So, Wong, and Sculli, 2005; Venkatesh, Morris, Davis, and Davis, 2003) which argued that

customer intention actually predicts customer adoption. Therefore, it can be argued that by having customer intention to use SST in the theoretical framework is suffice.

On the other hand, our analysis showed that there is a possible "relationship" between users seeks value and customer actual intention. In the model analysed by AMOS, the results revealed a significant association between the two constructs although with a low β of 0.19. However, when the model was analysed using WarpPLS, it did not appeared to be significant. The results essentially demonstrated our argument that users seek values mediated the relationship between consumer traits (demographic characteristics and personality traits) and behavior intention. The findings corroborated the findings of our moderated relationship analysis using SEM.

In actual fact, the non-significance relationship of users seeks values and SST adoption actually makes more sense. This is because; a user who seeks the values in adopting a particular SST would be more likely to have an intention to try SST facilities before continuingly adopting the product. On most occasions, the initial trial of a new SST is a critical step in the adoption process in that it helps shape a customer's future behavior (Bhattacherjee and Premkumar, 2004; Eriksson and Nilsson, 2007).

Therefore, rather than influencing the adoption, users seek value would actually influence adoption intention. Our argument is also based upon Rogers's innovation decision process where the "adoption" stage is a stage that the adopter has surpassed the "confirmation" stage and "regularly" adopt the technology.

6.6 Summary of the Structured Equation Modeling Results

In general, our study has succeeded in meeting all the specified research objectives and tested the proposed research hypothesis. We have provided details explanations and implications with regards to the significant relationships of the specific constructs and plausible reasons on the non-significant relationships. The findings of our study are based on rigorous procedures that ensure the reliability, validity and generalizability. For the purpose of clarity, the following table summarizes the findings of this study based on the proposed research hypothesis.

Table 6.1
Results of Model Validation Using SEM

Hypothesis	Statement	Result
1	Consumer characteristics influence users seek values.	Significant
1 (a)	Demographic factors which are age, gender, education, and income influence users' seek values.	Significant
1 (b)	Personality traits which are self-efficacy, inertia, and need for interaction influence users seek values.	Significant
2	Users seek values mediates the relationship between the consumers' individual characteristics and their intention to use SST	Significant
2 (a)	Users seek values mediates the relationship between users' demographic characteristics and their intention to use SST.	Significant
2 (b)	Users seek values mediates the relationship between users' personality traits and their intention to use SST.	Significant
3	Users seek values influence consumers' intention to use SST.	Significant
4	Consumer intention to use SST influences their adoption of SST.	Significant
5	Consumer intention to use SST mediates the relationship between users seek values and their SST adoption.	Significant

6.7 Implications of the Study

We believe this study contributes to a more in-depth understanding of the factors leading to the adoption of self-service technology facilities in the Saudi Arabian context. As described earlier, the Middle-Eastern region is a developing market characterized by an increasing population and a significant economic influence that is expected to further grow in the near future. Due to the rising service costs and higher customer expectations in this part of the continent, the factors influencing consumer adoption of technology should be determined in differing cultures.

Although there have been many studies in the past that determines to investigate the factors that leads towards the SST adoption, most of these studies are conducted in the developed economy. In addition, as we have clearly argued in the earlier chapter of this thesis, this study is an early attempt that proposes the user seek value construct incorporated in the TAM model. The following sections will discuss the implications of this study in terms of practical and theoretical standpoint.

6.7.1 Managerial and Practical Implications

The findings of the study highlighted several managerial implications. Initially, the results showed that consumers in general are open to new technologies. However, to encourage trial and their intention to use these SST facilities, service providers need to develop effective ways of spreading the user seek values aspire by the would-be consumers that the SST facilities provide. For instance, in promoting SST facilities such as airport/hotel check-in, payment kiosks, purchasing or booking kiosk, business

providers need to make it clear that the facilities saves time (quick), easy to use, useful while do not compromise their security and continue to maintain their privacy. This can be done by creating awareness or even a campaign of the values offered by SST.

As the study empirically provided the evidence on consumer demographic and personality traits – managers could capitalize this information in implementing specific segmentation strategies. There is obviously a clear linkage between education background, income and self-efficacy. By having the right exposure and a clear positioning of what the SST facilities offers, business providers are able to change their "habitual" behaviour by aligning their value expectations.

Surveys conducted at airports for instance showed that fear of missing the flight is a major concern for passengers with 44 per cent placing 'loss of time' as their top reason for stress at the airport. Consequently, this scenario is shared with other similar situations in other service industry such as banking or retailing where waiting is the main "activity" endures by the customers.

Therefore, to alleviate passenger or consumer stress, business providers could invest in relevant SST facilities that would be able to reduce waiting times at airports or other similar like situations. Consequently, the time advantage of these SST facilities should be greatly highlighted. In addition, the SST should be easy-designed to help increase the consumer's intention to use it.

Based on the consumer "dependency-efficacy" construct, it was obvious that the likelihood for the user to adopt the SST facilities increases when help is available.

Therefore, managers have an opportunity to increase utilization of the SST facilities by having an employee stand by and offer to actively help users learn how to use it (as banks did years ago when the ATM was first introduced). The "training programs" could help users perceive using the SST facilities as comfortable as the programs allow users to overcome the psychological barriers (Agarwal and Prasad, 1999).

In addition, offering customer-friendly detailed instructions (e.g. voice instruction) could be also effective when a contact employee is not available. At the same time, the SST machines should be designed to be easily understood and operated for consumers. Easy-designed SSTs will help increase consumer intention to use these facilities.

Finally, while SST facilities such as kiosks will continue to play a significant role for activities such as passenger check-in; other functionality offered by these machines remained to be underutilized. Therefore, it is pertinent that either an "optimum" number of the SST functionalities are offered to increase efficiencies or develop effective ways of spreading the advantages they offer.

6.7.2 Theoretical Implications

To begin with, based on our existing knowledge this study is one of the earliest attempts to investigate consumer adoption of self-service technology across multiple industries and across various SST platforms. As we have pointed out in the earlier chapter of this thesis, a majority of studies conducted previously where either focus on a specific industry or a specific SST (Al-Ashban and Burney, 2001; Black *et al.*, (2002); Bouwman *et al.*, (2009); Byun (2007).

This specific focus has contributed to the inconsistencies of the findings of the SST adoption studies in addition to the external validity issues. This study therefore rectifies the limitations of the current literatures by having a comprehensive representation of the service industry and meets the requirements of external validity which qualifies for generalization of the findings.

Second, we argued that although the technology acceptance model (TAM) receives widespread acceptance by technology adoption scholars where the model was used as the theoretical research framework in past studies, it "misses" the true "reason" of adoption as well as being too simplistic. Curran and Meuter (2005) and Gefen *et al.* (2003) argued that in TAM, system usage, predicted by perceived ease of use and perceived usefulness, fails to explain SST adoption fully. We explained that customer value has become increasingly important to marketing researchers in their studies, emerging as a *key* determinant of consumer decision-making and behavior (Sheth, Newman, and Gross, 1991; Bolton and Drew, 1991).

However, TAM has no construct which represents an overall estimation of the adoption object (Kim *et al.,* 2007). The relationship between value and adoption intention has never been examined before (Kim *et al.*, 2007). This study consequently responds to the call by Zu, Sangwan and Lu (2010) calls for an in-depth study of the "value driven" triadic relationship among consumer, value and behavior.

Therefore, the study findings add to the literature dedicated to technology adoption by enhancing the TAM model through the addition of an important construct. In addition, it

tested scientifically the robustness of the TAM model and its ability to use in different context (multiple industries).

Coherently, this study contributes to the theory by developing the "newly" established user seek value construct. This study argues and demonstrates that the construct differentiates from the existing construct of perceived benefits, perceived value or relative advantage (Roger's innovation attributes). In addition, the construct was tested and proved to be reliable and valid through the stringent analysis of confirmatory factor analysis.

The user seek value construct developed in this study comprises of a wide ranging values that compliments TAM's model that consist only ease of use and usefulness. Hence, the current study provides more detailed reasons for consumer intention to use SST facilities.

It may be argued that a single construct of consumer seek values may not fully explain consumer adoption intention of SST. It is thus significant for a service company to comprehend the situations under which customers would use self-service option as compared to the personal service option.

Wang, Harris and Patterson (2012) argued that actual behavior is not determined by behavioral intentions alone and the customer intention-actual adoption link is expected to vary across situations, suggesting the existence of potential situational moderator factors.

Another contribution of this study is proving the relationship between customer intention to use SST and the actual adoption of SST. As highlighted in the research problem, most

prior studies have focused on behavioral intentions rather than actual behavior (Curran *et al.*, 2003; Dabholkar, 1996; Dabholkar and Bagozzi, 2002).

Although this relationship, grounded in the Theory of Reasoned Action (TRA) proposed by Ajzen and Fishbein (1980) and Fishbein and Ajzen (1975), is a well investigated in literature, the risk of concentrating on behavioral intentions rather than actual behavior is that intentions do not always result in action.

Meuter *et al.* (2005) has called for researchers to carry out SST adoption research to go beyond emphasizing attitudes and intentions and concentrate on the actual adoption behavior. Hence, the findings of our study provide the much needed evidence of the proposed relationship which makes our model more relevant to the real world.

Finally, the factors that impact consumer acceptance and SST adoption have been examined in various parts of the world. As for the user's acceptance of self-service technology in the developing economies, little is known about the consumer's adoption in the Arab world (Al-Ashban & Barney, 2001). Verhage, Yavas, and Green (1990) advised global marketers to be cautious in acknowledging theories that are evidenced to be successful in their home markets. There are only few researchers that examined the factors influencing customer's behavior in adopting technology in the context of Saudi Arabia (Al-Somali *et al.*, 2002).

Therefore, this research adds to the theory by "confirming" the universality and applicability of the general TAM model in testing SST adoption in the context of multiple

industries within the developing economies of the Arab world – specifically Saudi Arabia.

Our study fills the gap of the much needed studies in this part of the continent to validate the findings of previous studies and disperse the myths associated with consumers in this part of the world. This can be seen that while there are variations in the context of which the technology adoption researches were conducted in various parts of the world, the users seek values and behaviour of Saudi Arabian consumers shared similarities with their counter parts in the developed or more advance economies.

6.8 Study Limitations

Having discussed the theoretical and managerial implications along with the detailed discussion of our findings, it remains to acknowledge limitations of the study. The present study while providing invaluable information is not free from limitations. Like all research, this study has some weaknesses and the above conclusions and contributions should be considered in light of these limitations.

First, although this study makes every attempt to have an even number of gender distribution in the sample, the data analyzed in this study are based on a male dominated sample (67 percent). Although the item (gender) was dropped due to a low coefficient during the analysis in the measurement model, it would be interesting to find out the influence of gender as past studies have shown that the male gender is more inclined to adopt technology related facilities.

Therefore, it is interesting and pertinent that future research in this environment (Saudi Arabia) consider getting an even number of gender for the related issue like ours. Although it is an accepted fact that it is difficult to get the response from the female gender, future researchers need to draft a plan to resolve this problem.

Second, the respondents to the surveys comprise a convenience sample of customers who patron the service providers where the SST facilities are station. Therefore, the selected sample may not represent the larger population. Although the sample of this study represents the pattern of the general population, future studies should take consideration the non-probability issues. Finally, although the study comprises of all the SST facilities within the services sector, it did not able to highlight the adopter rates within the industry for instance banking and finance, tourism and retailing.

6.9 Future Research

Owing to the exploratory nature of the present research, there are countless of extension opportunities for researchers. First, futures studies may examine other antecedent's factors that may relate to the user seek value in adopting the SST facilities. In addition, special care should be taken to replicate the demographic issues further, given that this study failed to provide support in linking the factor with user seek value. Coherently, Wikstrőm and Normann (1994) argued that value is a cognitive construct that differs between customers and cultures (Assael, 1995) in various times (Ravald and Gronroos, 1996; and Sanchez *et al.*, 2006).

Therefore, it is interesting to investigate the user seek value of the consumers in their intention to use SST in different parts of the world. The outcome of future studies may also validate the results in our study and it would be beneficial for business providers to come up with appropriate segmentation strategy that target these users based on their user seek values.

Studies carry out within the airline industry for instance showed that passengers want seamless processing across all self-service channels, whether mobile phone, kiosk or the website. Travelers show no significant preference for any particular channel, indicating a desire to use the most appropriate channel, depending on circumstance and location. Hence, future research may focus on investigating consumers' decision to use the self-service machine based on their part of the "journey" process regardless of their "industry".

A lucid example would be the tourism industry where tourist goes through various components of the journey such as transportation, accommodation and the tourism spots. Within the components itself, for instance airline industry, what would be the tourist choice in whether to use SST facilities during the searching and booking stage, check-in and bag drop, transfer process and so on.

Another spin-off research prospect that could be derived from this study is to examine the "affects" of offering the SST facilities towards the overall service. Although self-service technologies have been widely installed throughout the globe, little research has been conducted to know whether or not they provide sufficiently high-quality service for consumers.

Ultimately, do the consumers adopting this service satisfy with the services provided with these SST facilities? If one were to compare with the services provided by the SST facilities and counter services, which alternatives would be viewed as offering quality services and consequently higher customer satisfaction.

Weijters *et al.*, (2007) argued the primary cause of poor adoption rates of SST adoption within the retail sector is due to the lack of understanding regarding consumers' assessments associated with the post-usage of SST such as satisfaction. Therefore, this is an important issue because in the effort of service providers to reduce their operating costs, consumers may be subjected to a poorer quality of services and hence lowers satisfaction which may harm the organization in the long run.

Finally, current surveys show that 90% or over of airline passengers consistently carry a mobile device with them. Analysts contended that five years from now, 'digital travelers' will have on-demand access to various mobile enabled services, providing travelers with a more proactive role while traveling. Hence, future studies could investigate the likelihood of consumers in choosing these emerging sales channels and processes such as mobile and social media that are deem to have a significant impact on future growth of direct sales.

6.10 Summary and Conclusion

This study extends the continuing number of researches carried out on the adoption of self-service technology among consumers. Shady (2012) for instance carried out a meta-analysis on technology adoption research from over 100 over articles. Although there

have been a proliferation of research on technology adoption per se, the subject remains an important area of research inquiry in marketing and continues to draw attention from senior academicians as well as new researchers.

This chapter discusses and elaborates the findings of our study based on our initial conceptual framework. In summarizing this chapter, we would like to argue that our study differs to the previous studies in various aspects.

To start with, unlike previous studies, we begin our inquiry by asking the "needs" of the customer itself. We proposed that to seek the factors that influence the adoption of SST, we need to ask what are the values seek by the customers themselves. Fickel (2000) and Pujari (2004) argued that predicting what will appeal to customers is tricky. Therefore, when it comes to accurately determining what customers want, there are no suitable authorities than the customers themselves. Hence, it is important that customers obtain their desired service, the way they need it.

This differs with the previous studies where consumers are merely receiving the values "offered" by the service providers. In other words, the consumers are merely playing a passive role in the "set-up" of the SST facilities. Therefore, instead of "limiting" the choices of the values "offered" by SST, our study determines the "dominant" values seek by consumers in the SST. Our analysis proves that our conceptualization of the proposed construct was statistically valid and distinct. In addition, we have added to the theory of the mediating role of the user seek values towards the intention to use SST.

Based on the user seek values, the study highlights the ranking in terms of importance to consumers: time convenience, ease of use, usefulness, secure/privacy, autonomy, service ubiquity and enjoyment. These factors have been proved significantly to influence consumer intention to use SST. On the antecedents of user seek values, consumer demographic characteristics of age, income and education and consumer personality of self-efficacy, efficacy dependency and need for interaction have shown to influence the user seek values.

Although various scholars have acknowledged the "absolute" linkage between customer intention to use SST and customer adoption of SST, there is limited empirical evidence linking this construct. Simply assuming that intention is parallel to actual adoption is grossly incorrect. The findings of our study have shown that the relationship is strong and positive.

This study contributed to the technology adoption literature by utilizing the TAM model and incorporating the value construct. In addition, the study comprises of a multitude of industries and types of SST facilities. On one point, the study corroborates previous studies on the relationship of the proposed framework and the response of the respondents in Saudi Arabia resembles the attitude and behaviour of a global "village".

More importantly, the study provided service providers in Saudi Arabia with rich data about the behaviour of the Saudi consumers regarding the values they have that could lead to more SST adoption. This is very critical for these organizations as they could direct their marketing strategies based on their consumers' values rather than assuming what these consumers desire. It is hoped that such findings would enhance the quality of

the services provided by the Saudi service companies which would in turn reflect on the life of the Saudi consumers.

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