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## Technology and social anxieties, attitudes and behavioral intentions of Singaporeans towards using self-service technology (SST)

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TECHNOLOGY AND SOCIAL ANXIETIES, ATTITUDES AND  
BEHAVIORAL INTENTIONS OF SINGAPOREANS TOWARDS  
USING SELF-SERVICE TECHNOLOGY (SST)

by

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A professional paper submitted in partial fulfillment  
of the requirements for the

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## PART ONE

### *Introduction*

The interactions between customers and service organizations, known as service encounters, have generally been between front-liner and consumers. Gradually however, these encounters are changing with the introduction of self-service facilities that are quickly replacing service staff. The use of self-service technology has seen an incredible amount of growth globally over the last few years. Self-service technologies are currently being used in more diverse ways for new services than once thought possible. The expenditure on self-service kiosks is expected to rise by 88% and the dollar value of transactions taking place through self-service technology should exceed 1.3 trillion by 2007 (Avery, 2007).

Consequently, self-service technology is affecting today's service encounters. This has come about as a result of innovations in modern technology and increased labor cost (Dabholkar & Bagozzi, 2002; Honebein & Cammarano, 2005). The possible reduction in human contact may affect consumer commitment and satisfaction, making it indispensable to examine self-service technology usage, particularly in the long-term (Beatson, Lee, & Coote, 2007).

The area of self-service technology has recently drawn much attention from not only practitioners but also academic researchers who are trying to understand how consumers interpret a self-service experience (Curran, Meuter, & Surprenant, 2003; Dabholkar & Bagozzi, 2002; Kincaid & Baloglu, 2005; Meuter, Bitner, Ostrom & Brown, 2005). Essentially there have been more qualitative studies on self-service technology experiences to determine what factors influence a satisfactory or

unsatisfactory experience, and relatively fewer quantitative studies to support why consumers use self-service technology over a full-service option.

At present, there is a lack of empirical data about the attributes of self-service technology that will draw customers away from a full-service option and encourage them to become partial employees by using a self-service technology to facilitate a service transaction. Conversely, understanding the attributes of self-service technology that discourage customers from staying with a self-serve option is also extremely important. Therefore, comprehension of the positive and the negative elements of self-service technology can provide insights into customers' attitude and intentions to use self-service technology.

#### *Purpose*

The purpose of this professional paper was to study the attributes of technology and social anxieties, attitudes and behavioral intentions of Singaporeans towards using self-service technology. As there has been little, if any, academic research conducted in Singapore on self-service technology, this study seeks to initiate the process of filling this vacuum. To support the research, a qualitative study using focus groups was used to investigate the area of interest in self-service technology.

By the end of the study, hospitality practitioners in Singapore can have a better appreciation of the issues and attributes facing them pertaining to the handling of self-service technology within their own sectors. On a wider context, the additional information made available, can help them make informed decisions for or against the implementation of self-service technology programs.

#### *Justification*

The proposed study intends to make a noteworthy contribution to both the



hospitality industry as well as the academic fraternity. Self-service technology is slowly but surely affecting the service encounter. Service organizations need to keep updated on consumers' response to self-service technology. Appreciating the impact of technology and social anxieties on consumer-organization interactions has significance for both conventional services as well as business-to-business environment (Meuter, Ostrom, Roundtree, & Bitner, 2000). Technological improvements are likely to result in continuously changing consumer-organization interactions.

It is beneficial for service marketers and researchers to understand what potential impact these self-service technology facilities have on consumers' assessments of their interactions with the service organisation, and how this may influence consumers' future intentions to use the firm. Most research on service interactions investigates services delivered by front-line staff. Given that self-service technology alters the dynamics of the service encounter, its impact needs to be explored further in depth.

### *Constraints*

This section examines the constraints of the research study. Some are self-imposed while others are externally imposed and beyond the control of the researcher. Ideally, a longitudinal study would have been best but time and cost constraints limit such feasibility. Besides, longitudinal studies are limited in their ability to capture a large sample (Weiss & Heide, 1993).

Under the constraint of time, only a qualitative approach has been adopted for this paper. It would have been ideal to integrate a quantitative approach to the study using a survey instrument for a stronger analysis. Such a two-prong approach provides additional benefits such as greater accuracy and increased confidence in the findings

(Brewer & Hunter 1989; Jick, 1979).

For this qualitative study, the best method was found to be the focus group. The selection of members was based on purposive sampling, that is to say, “the sample is not specified; rather those included in the sample are selected on the basis of the interviewer's experience with previous focus groups” (Zikmund, 2003, p. 382). Hence those who volunteered to be part of the focus group may not necessarily be a true representation of the Singapore population.

Previous research has shown that technology and social anxieties are not the only attributes why a consumer would or would not choose a self-service option over a full-service option (Curran et al., 2003; Yen, 2005). For the sake of this study, however, only a limited number of attributes and dimensions were considered, mainly for practical reasons, and also to reduce the complexity of the study.

## PART TWO

### *Introduction*

Part One provided a synopsis of the overall research area under discussion. It plainly stated the purpose of this study by highlighting its significance to the hospitality industry. For validity and reliability purpose, the researcher made mention of a number of constraints pertinent to the research.

Part Two will fundamentally examine the research carried out thus far on self-service technology via a comprehensive review of the existing literature. This is followed by defining and describing all the attributes and relationships that play a significant role in a proposed conceptual framework.

### *Self-Service Technology - Definition*

Self-service “is a service produced entirely by the customer without any direct involvement or interaction with the firm’s employees” (Bitner, Ostrom, & Meuter, 2002, p. 96). A self-service technology is defined “as any technological interface that enables customers to produce a service independent of direct service employee involvement” (Meuter, Ostrom, Roundtree, & Bitner, 2000, p. 50).

More self-service technology applications are appearing across the hospitality industry slowly replacing the full-service options. This include many different types of interfaces such as direct Internet-based/ online interfaces (Internet shopping, E-commerce), telephone-based technologies (interactive voice response systems, flight information, phone banking), interactive free-standing kiosks (self-scanning supermarket checkouts, car rental kiosk, hotel check-out kiosk, airline check-in kiosk), and video or compact disc technologies introduced to keep up with the increasing needs

of the hospitality sector. The recent growth in self-service technology, especially in the hospitality industry, has progressed from conventional low contact service such as filling the car with petrol to high contact services such as hotel check-out (Dabholkar & Bagozzi, 2002). Table 1 shows the matrix representing the different types of self-service technology available on the market.

Table 1

*Self-Service Technology - Categories and Examples of Use*

	Purpose			
	Telephone/Interactive Voice Response	Online/Internet	Interactive Kiosks	Video/CD
Customer Services	Telephone banking Flight information Order status	Package tracking Account information	ATMS Hotel checkout	
Transactions	Telephone banking Prescription refills	Retail purchasing Financial transactions	Pay at the pump Hotel checkout Car rental	
Self-Help	Information telephone lines	Internet information search Distance learning	Blood pressure machines Tourist information	Tax preparation software Television/CD-based training

Note. From "Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters," by Meuter et al., 2000, *Journal of Marketing*, 64(3), p. 52.

Some of these self service technology-based offerings are new while others have been around for a while and most consumers are aware of them. As services are intangible, consumers are constantly searching for concrete evidences in every interaction they have with an organization. Therefore, consumers would have prejudgments about any new offerings based to existing attitudes and experiences, which can range anything from favourable to unfavourable. An early, well-known adopter of a technology-based self-service option was the automated teller machine (ATM) in the early 1980s. Today, self-service technology is challenging the notion that services marketing is essentially only a feature of human interaction.

*Self-Service Technology - Profiling Users*

Profiling the typical Singaporean self-service technology user increases our understanding of their behavior as consumers. Dabholkar & Bagozzi (2002) have classified self-service technology users using three categories, namely, personality traits, psychographic profiles, and demographic factors. Based on demographic factors, studies have shown that educated, affluent, young males are typically the most likely to engage in self-service technology than any other demographic group (Bateson, 1985).

*Self-Service Technology - Challenges*

According to Bitner (2001), the challenges facing self-service technology is not about the introduction of technology but about getting consumers to use this technology. It has to be provided at an appropriate level to ensure consumers accept the self-service option thus ensuring its continual survival. A recent study showed that almost half of all dissatisfying self-service incidents were a result of technological problems (Meuter et al., 2000). Hence, the use of technology-based services can be a double-edged sword for many hospitality organizations that want to pass on the benefits of added control to the consumer but also take into account the level of chaos that it can create in the service experience (Mick & Fournier, 1998). Understanding these social and technical repercussions is of utmost importance to hospitality managers.

With the increased emphasis in self-service technology, there is an essential need to understand how and why consumers decide to change their behavior and use a self-service option. Academic researchers have also noted that understanding the motivating forces that promote or inhibit a consumer to use a self-service technology is of high priority (Dabholkar, 2000).

Just as with any service that has a degree of uncertainty and is hard to evaluate

beforehand, consumers are often hesitant in adopting new services (Zeithaml, 1981). This slow adoption of self-service technology can be extremely frustrating for service providers who have invested heavily in self-service technology but are not seeing any significant reduction in labour costs. It is in the best interest of managers to promote a quick adoption of a self-service option to avoid further costs. Bertagnoli (2004) noted that most self-service providers expect to regain their capital investment within the first year of operations.

Managers of hospitality organizations have realized the importance of capitalizing on their hidden asset in a service exchange, that is, the consumer. Enrolling consumers as “partial employees” simply results in a win-win situation for both the services providers and the consumers (Bateson, 1985). While the service provider reduces labour costs, the consumer enjoys more flexibility and control over a service experience. When replacing human interaction with technology, service providers are asking consumers to acquire new knowledge skill sets, accept behavioral change and to take responsibility for their own personal satisfactory (Lee & Allaway, 2002).

Taking into account the amount of time and effort needed to put into practice and run a self-service technology, managers have to proactively seek to understand the fundamentals that persuade consumers to consider a particular self-serve option. Conversely, managers need to factor in the reasons why consumers do not use a particular self-service option. Therefore, understanding consumers’ behaviour patterns can lead to the financial success of any organization.

#### *Self-Service Technology - Singapore Hospitality Industry*

One of the biggest supporters of self-service technology usage in Singapore is the government (McQuivey, n.d.; Shameen, 2004). This is especially so because the

government and service industry professionals here acknowledge the high cost of local labor. There have been many calls for self-service technology projects to be driven at the national level as an industry-wide initiative, so that the benefits can be shared at a superior level and across the value chain, making Singapore an attractive destination for tourists. These initiatives hope to eventually benefit the entire local hospitality industry.

One such collaboration is the RFID Hospitality Management Systems (Rhymes) Centre, led by educational institution Ngee Ann Polytechnic and mobility solutions provider Symbol Technologies, touted to be the first of its kind in Asia. Other collaborative partners from the industry involved in Rhymes include the hotel chain Millennium & Copthorne Hotels and Sun Microsystems (Yeo, 2006). Some of its initial projects include implementing a self-service check-in and check-out system using RFID cards, designed to eliminate queuing time for regular hotel guests. Also, Rhymes is looking into developing a baggage management system that uses RFID tags to track guest luggage deposited at the hotel. This system aims to not only identify luggage more easily, but also prevent unauthorized removal of luggage.

The Singapore National Library Board (NLB), Singapore Land Transport Authority (LTA), and Singapore Airport Terminal Services (SATS) are examples of other governmental statutory boards that have demonstrated using RFID technology to provide self-service opportunities for both the public and private sectors (O'Connor, 2006; Shameen, 2004). LTA introduced the world's first Electronic Road Pricing system (ERP) in 1998 using RFID. It is an automated toll-collection system used to manage and control vehicular traffic in and out of the city center. In the same year, the NLB initiated tagging all their library books with RFID to automate the entire book

borrowing and returning process, thus speeding the procedure for sorting and getting the books back to their original shelves.

As a leading convention destination, Singapore has long used RFID technology to trace its delegates around the city (Shameen, 2004). Due to the proactive stand of the Singapore government and local hospitality industry players, Singaporeans are regularly exposed to a wide array of self-service technologies. It is, therefore, timely for more hospitality players to make the strategic move towards self-service in anticipation of the booming hospitality and tourism industry which looks to expand yet further with the opening of Singapore's two Integrated Resorts in 2009 (Singapore Tourism Board, 2007).

Up till date there has been limited qualitative or quantitative research carried out in Singapore pertaining consumers' attitude towards and intention to use self-service technologies in the hospitality industry (Murphy, Tan, & Rahman, 2002; RFID Journal, n.d.; Toh, Khan, & Lim, 2001). Without the availability of tangible secondary data, it is difficult from a research point-of-view to arrive at any significant conclusion regarding the changing face of customer service in the local hospitality industry due to the usage of self-service technology. Therefore, such a study is long in the waiting.

### *Construct Measures*

According to Zikmund (2003, p. 294) a construct or concept is "a generalized idea about a class of objects, attributes, occurrences, or processes." An operational definition is important as it clearly provides a concept of the activities and operations it intends to measure. It specifies what the researcher has to do to measure the concepts under inspection. Keeping this in mind, the following section defines and analyzes several constructs (predictors and moderators) under examination.



*Technology anxiety*

The self-service literature currently has very few studies that actually discuss the concept of how consumers' anxiety impacts the service experience. Technology anxiety is the “degree to which individuals are not comfortable to use technology influencing both self-service technology usage and the experience of using a self-service technology” (Meuter, Ostrom, Bitner, & Roundtree, 2003, p. 899). Wikipedia (2007) refers to it as technostress which “is the negative psychological link between people and the introduction of new technologies.” Psychological stress can manifest itself physically with symptoms like “irritability, headaches, mental fatigue, depression, nightmares, panic, resistance, and a feeling of helplessness.”

On the flip side, Parasuraman (2000) conceptualized technology readiness as the propensity to embrace technology and would be expected to influence the predisposition to the use new technologies. Opposite to technology readiness is computer anxiety which is defined as “the fear, apprehension and hope people feel when considering use or actually using computer technology” (Igbaria & Parasuraman, 1989, p. 374). Studies have shown that computer anxiety is in fact a fairly common occurrence (Cambre & Cook, 1985). A study in America found that 55% suffer from some degree of technophobia (Williams, 1994), while other studies contend that millions of American workers (Craig, 1994) and one-third of college students (DeLoughry, 1993) suffer from some form of computer-related anxiety.

*Social Anxiety*

Social anxiety can be defined as “the discomfort that is connected with the awareness of other people's evaluation of oneself as a social object” (Fenigstein, Scheier, & Buss, 1975, p. 522). With self-service technology, this type of anxiety can

occur when others are watching you perform the service or are waiting in line for you to finish your service transaction. The presence of other customers around a self-service technology can create a feeling of social anxiety for potential users (Hui & Bateson, 1991). Consumers are likely to resist using new technology that they are unfamiliar with if social pressures exist.

Meuter et al. (2003) found that technology anxiety had a significantly negative impact on overall satisfaction, repeat usage, and word of mouth in a self-service experience. Dabholkar and Bagozzi (2002) found that social anxiety moderated the relationship between ease of use and attitude towards using a self-service technology and between fun and attitude toward using a self-service technology.

Along with technology anxiety, social anxiety is an equally relevant concern for consumers. Consumers of a self-service application are often watched by others who are waiting in line and do not want to look foolish in front of others. A customer's heightened sense of anxiety can lower the perceived rewards of using the technology. There is also the social anxiety of a customer-induced failure that will cause excess waiting and subsequent failures with others who are waiting to use the self-service technology after you.

#### *Self-Service Anxiety*

Understanding how both social and technology anxieties influence consumer evaluations can be extremely helpful in promoting and encouraging consumers to use a self-service application. Current studies in self-service technology have examined technology (Meuter et al., 2003) and social anxiety (Dabholkar & Bagozzi, 2002) independently, but no study has looked at both types of anxiety in a single setting. Anxiety in a self-service experience is definitely a combination of both social and

technology anxieties.

Therefore, self-service anxiety can be defined as the fear and apprehension of using technology to execute a service along with the perceived social pressures of performing the service. Users of self-service technology can not only feel anxiety from the technical aspects of using the technology, but also the social aspects of performing the service in the presence of others. This study proposed that social anxiety and technology anxiety are formative constructs to the larger construct of self-service anxiety. Unlike a reflective construct which causes a change in its measures, a formative construct causes a change to a higher order construct. Therefore it is also proposed that as a consumer's self-service anxiety increases, the relationship between the perceived value of the service and their attitudes toward using a self-service technology will be weakened.

Proposition 1: Consumers with self-service anxieties (both technology anxiety and social anxiety) will affect their attitude towards using a self-service technology.

#### *Previous Experience with Technology*

A consumer's previous experience with technology can have a profound impact on whether a consumer adopts or fails to use a self-service technology. Previous research has shown that prior experience with related products can be a determinant for consumers' early adoption of a new innovation (Gatignon & Robertson, 1991). Specifically in the area of information technology, numerous studies have shown that previous experience of the consumer will impact the degree of acceptance (Jiang, Hsu, Klein, & Lin, 2000; Thompson, Higgins, & Howell, 1994; Venkatesh, 2000). Likewise, research in self-service technology has shown that familiarity with technological products will influence a consumer's attitude toward a self-service experience (Curran

et al., 2003; Dabholkar, 1992).

As consumers gain more knowledge of a specific technology it will take on a moderating role whereby, evaluations are adjusted to reflect the perceived interaction during the service experience. When consumers are faced with unfamiliar technology, evaluations of ease of use and functionality will be based or anchored on their general knowledge of technology. In a self-service experience, the more previous experience that a consumer has with technology, the stronger the relationship will be between the above determinants and attitude. Based on the above discussion the following proposition was offered.

Proposition 2: Consumers with previous experience with technology may change the direction and/or magnitude of the relationship between self-service anxiety and their attitude towards using a self-service technology.

*Need for Human Interaction*

Need for Human Interaction is a construct defined as “the desire for human contact by the consumer during a service experience” (Dabholkar, 1996, p. 27). Some consumers actively seek out human interaction in a service experience and are not receptive to interacting with a machine. Alba, Lynch, Weitz, and Janiszewski (1997) suggest that the choice of retail format is often determined by a consumer's need for social interaction.

A consumer who has a strong desire for human interaction will probably not use any self-service technology and thus avoid such applications in a retail banking environment (Bateson, 1985; Dabholkar, 2000; Prendergast & Marr, 1994).

Researchers have also suggested the use of machines and technology can create dissatisfaction by dehumanizing the interaction (Breakwell, Fife-Schaw, Lee, &

Spencer, 1986). Forman and Sriram (1991) posited that some consumers satisfy psychological needs by socially interacting with service employees and perceive automation technology in services as a threat. Ledingham (1984) argued increased time savings could not compensate for the loss of social interaction with some consumers.

As more and more research is being performed on self-service technology, we are slowly realizing that some consumers simply prefer the personal touch to a high tech service (Dabholkar, Bobbitt & Lee, 2003; Walker, Craig-Lees, Hecker, & Francis, 2002). However, recent research has shown that some consumers in fact choose to use self-service options in order to avoid interacting with service providers or other customers (Meuter, Ostrom, & Roundtree, 1999). Whether consumers prefer or try to avoid human interaction in a service experience is going to have an impact on the service experience. Therefore, it is expected that differing levels of need for interaction will directly impact the likelihood of a consumer utilizing a self-service technology delivery option. As a result, the following proposition was put forth:

Proposition 3: Consumers with a need for human interaction may change the direction and/or magnitude of the relationship between self-service anxiety and their attitude towards using a self-service technology.

*Personal Innovativeness in Information Technology*

Personal innovativeness in information technology (PIIT) is defined as “the willingness of an individual to try out any new information technology” (Agarwal & Prasad, 1998, p. 206). PIIT is a domain specific construct that specifically looks to understand consumers' desire for change or something new in the field of technology. The current research in information technology has provided evidence that PIIT significantly influences a consumer's adoption decision of a particular technology

(Thatcher & Perrewe, 2002). A consumer is more likely to try or adopt a new technology if he or she has a high level of personal innovativeness in information technology.

Personal innovativeness in information technology relates directly to consumers' attitudes and feelings of trying new information technology. Using PIIT in a self-service context will allow for a more specialized understanding of how an individual's innovative behaviour impacts self-service technology usage. Other than online studies, PIIT has not been extended into other self-service settings. Based on the above discussion the following proposition was offered.

Proposition 4: Consumers with personal innovativeness in information technology may change the direction and/or magnitude of the relationship between self-service anxiety and their attitude towards using a self-service technology.

#### *Attitude-Intentions Relationship*

An attitude is defined as “the psychological tendency to evaluate a particular entity with some degree of favour or disfavour” (Eagly & Chaiken, 1993, p. 1). There is substantial theoretical support for the proposition that consumer attitudes have a direct relationship with intentions (Davis, Bagozzi, & Warshaw, 1989; Fishbein & Ajzen, 1975). Previous research in self-service technology has also found a significant relationship between a customer's attitude toward using a self-service technology and their intentions. In the self-service studies of fast food kiosks (Dabholkar, 1996; Dabholkar & Bagozzi, 2002; Kincaid & Baloglu, 2007), a positive relationship was found between self-service technology attitudes and intentions. Similarly, Curran et al.'s (2003) self-service banking study found a positive and significant relationship between consumers' attitudes and intentions to use a self-service technology.

Consumers who use a self-service technology are going to form an attitude about their experience, whether good or bad. These attitudes will then influence a customer to continue or reject using the technology. The attitude of the consumer will often act as a driver of customer intentions (Bobbitt & Dabholkar, 2001; Dabholkar & Bagozzi, 2002). Based on the above discussion the following proposition was offered.

Proposition 5: Consumers attitudes towards using self-service technology may affect their behavioral intentions to use self-service technology.

*Proposed Conceptual Framework*

To fully appreciate why consumers use or did not use a self-service option, a proposed conceptual framework was constructed based on the literature reviewed. The framework proposed to explore the concept of self-service anxiety and its role in influencing self-service technology attitudes. The framework assessed the relationships between customers' self-service anxiety (technology and social anxieties) with their intention to use (behavioral intention) towards using self-service technology. Previous studies have examined the different types of anxieties in a self-service context, but no one study had looked at what was collectively termed self-service anxiety, which encompass both, technological anxiety and social anxiety. The examination of this concept will increase our knowledge of how self-service anxiety influences consumers' attitude and how it subsequently impacts their decision to use self-service technology.

In addition, the proposed model considered three psychological factors, or moderators, that may influence the relationship between self-service anxiety and consumers attitudes, namely: previous experience with technology, the need for human interaction, and personal innovativeness in information technology. Knowledge about these attributes should also provide further understanding about the nature and strength

of the relationships between these psychological determinants and customer judgments. The study presented five in total listed in Appendix A.

Figure 1 diagrammatically details these conceptualizations and relationships and how they may ultimately influence customers' intentions to use self-service technology.

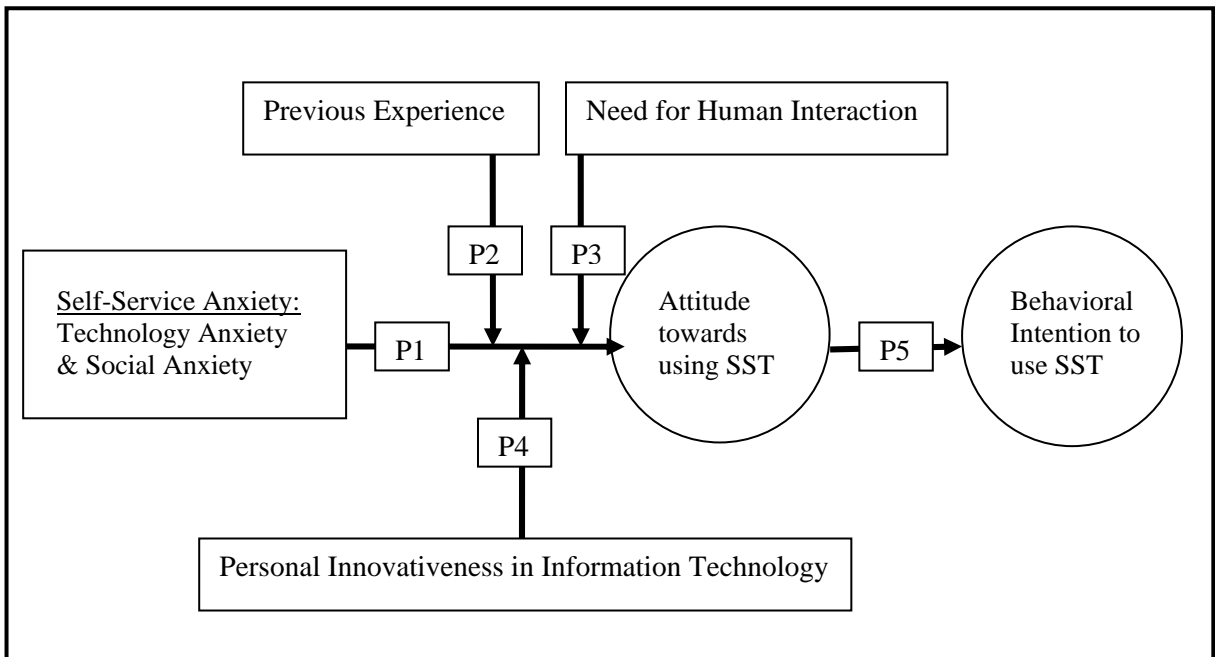


Figure 1. Proposed Conceptual Framework



## PART THREE

### *Introduction*

This section describes the qualitative research method used by the researcher. It was hoped that such a method along with the extant literature presented in the previous section would collectively give credence to the research topic.

There are numerous qualitative methods at the disposal of the researcher (e.g., focus groups, personal interviews, participant observations, and critical incident techniques). It is essential to choose the best method to address the needs of the research taking into account available resources and time (Zikmund, 2003).

### *Justification*

There were numerous reasons for considering a qualitative study of this nature. Firstly, there has been little, if any, academic research to examine Singaporeans' attitudes and intentions towards technology-based options. Qualitative research is important for theory development particularly in areas that are new and under-researched. Therefore such a method is viewed as an ideal starting point for any future research using quantitative measures. When qualitative findings are used in combination with quantitative studies it essentially beefs up any fundamental study (Brewer & Hunter 1989).

For this professional paper, a total of two focus groups were arranged. The key reason of using focus groups was to provide people an opportunity to interact verbally, through a facilitator, about their perceptions and viewpoints pertaining to the subject at hand. In the focus groups, Singaporean consumers were asked to provide their firsthand account of experiences in support for or against the research concern. Interestingly, the

group discussions brought forward several new elements not previously considered.

The successful execution of any focus group is depended upon having an excellent facilitator to lead the discussion, recruiting the right participants, and providing a favourable platform to discuss a thought-provoking topic. This technique allowed the researcher to explore, probe, and conduct a detailed examination of the research topic.

### *Methodology*

The qualitative methodology required convening two focus groups to provide insights into Singaporeans' appreciation of self-service technology. The purpose of the first one was to appreciate the general sentiments toward self-service technology among Singaporean consumers.

The second focus group was to probe further and examine the relationship of the various attributes and linkages proposed in the conceptual framework. This is to concentrate on the primary purpose of the research study at hand. As a qualitative research technique, it has to be noted that any conclusion arising from the discussions can't be statistically representative of the population from which it was taken (Eisenhardt, 1989).

### *Sample Selection*

A main proviso for selecting the focus group members was to gather those with varied exposures to self-service technologies in terms of familiarity, knowledge, and usage. Adult students pursuing a part-time diploma at a local education institute were invited to participate. Their demographic breakdown was:

Group size: 12 participants

Age range: 19 to 46 years old (median age of 32)

Gender: 5 males and 7 females  
Education: Cambridge 'O' levels to degree  
Nationality: Singaporeans

### *Qualitative Results Discussion*

This section provides a summary of the outcome based on the two focus groups conducted. It is written using a report format which makes it easier to understand and interpret the responses. In the best interest of the research it was decided that the same group of participants be made available at both the first and the second focus group sessions. This allowed for continuity as there was no need to re-explain the fundamentals of the study over again. In any case, the two focus sessions were to look at very different perspectives relating to self-service technology.

### *Focus Group One Facilitator's Report*

Date: July 2, 2007  
Time: 4.00 pm – 5.15 pm  
Venue: SIRS Conference Room  
Facilitator: Researcher

### *Opening*

The facilitator opened the discussion by providing an overview of the focus group objectives and functions. This incorporated stating some ground rules, establishing discussion timelines, and allowing for individual introductions. The group members were told to "feel free to agree, disagree, or ask questions to each other relating to the subject being discussed."

### *Activity One*

The objective of Activity One was to get a quick gauge from the group

members if they truly comprehend what are self-service technologies by citing accurate examples.

*Participants' responses:*

1. Vending machines for drinks/snacks
2. Self-guided tour with headphones (e.g., in a museum)
3. Self-service option of mailing a package at the post office
4. Airline check-in kiosk
5. Electronic Road Pricing system (ERP)
6. EZ-Link card for seamless travel on Mass Rapid Transit (MRT) and public buses
7. Self-scanning supermarket checkouts
8. Internet E-commerce purchase from home or cybercafé
9. Self-service petrol stations/ pay at the pump
10. Interactive voice response/information systems
11. Coin operated weighing machine
12. Self-service digital photograph machines
13. Hotel check-out kiosk
14. Automatic Teller Machine (ATM)

It was discovered that many of the participants had a narrow perspective of what self-service technology included. Some disagreed that purchasing from home via E-commerce should be considered self-service technology because there is no substitute for it in terms of full-service. Until someone raised the fact that telemarketers are a full-service alternative to the Internet, that everyone agreed.

*Activity Two*

Two flip charts were pasted on the wall. One had '*Self-service technology is Good because ...*' and the next had '*Self-service technology is Bad because ...*' The group members were split into two groups and told to catalogue and comment what they thought was good and what was bad about self-service technologies.

*"Self-service technology is Good because ..."*

1. Better quality of life
2. Take advantage of available new technology
3. Compatibility with modern way of life
4. Advantageous as no need to contend with service provider's behavior/mood
5. Provide opportunity for observability
6. Easily accessible
7. Provide trialability
8. Provide convenience
9. Many functionality
10. Speed of transaction due no need to physically queue up at service counters
11. Some self-service technology provide ease of use
12. Customers have perceived control over the transaction

*"Self-service technology is Bad because ..."*

1. Security concern
2. Perceived to be expensive as have to pay for cost of technology used
3. Complexity of technology used
4. Perceived risk that things can go irreversibly wrong

5. Have to resort to trial and error to fully appreciate the benefits
6. Anxiety if no previous experience with the self-service technology
7. Need for lengthy interaction
8. Inflexible and limited capability
9. Lost the human touch/personal touch
10. Customers generally fear the unknown

*Discussion*

The above activity laid down the foundation for further comments on self-service technology. The focus group members then had to answer the following questions:

1. What are some of the 'heartaches' or benefits you encountered when using self-service technology?
2. Given a choice would you prefer a self-service technology option or a full-service option?
3. Has self-service technology made a significant impact in the way Singaporeans perceive customer service especially in the hospitality industry?
4. Do you think self-service technology is here to stay or only a phase companies/businesses are going through?

*Some of the participants' interesting responses:*

1. There is no turning back the hands of time; machines will take over all our mundane tasks. Technology will run our lives, hopefully for the better.
2. There are many occasions when I really want to speak to another fellow

human being regarding my concerns and not some silly machine cannot talk resolve my problems.

3. Introduction of self-service technology in the long-run will take away service jobs in Singapore resulting in more retrenchment. We should not encourage too much self-service technology.
4. Companies/businesses are using self-service technology to cut corners in providing quality service because labor is expensive in Singapore. They are more interested in saving cost.
5. Technology is leading the way in the implementation of self-service technology and not the need for quality customer service.
6. The convenience, ease of use or type of self-service technology introduced is critical for the right branding/image for companies/businesses.
7. Excellent customer service can still be provided using self-service technology provided there are no breakdowns in the new technology used.
8. Companies/businesses should provide both options so that they can target a wider customer market in Singapore.
9. Self-service technology is the future of customer service in Singapore and there is no turning back.
10. Companies/businesses should provide proper instructions on how to use newly installed self-service technology instead of letting customers face problems.
11. More suitable for younger Singaporeans or "techies" who benefit as they

are more comfortable with the technology and mechanics of how it works. It is not meant for older consumers.

12. Some companies/businesses only offer self-service technology and do not offer the option of personalized full-service, e.g., booking an online ticket with a low-cost airline.

13. Because there are so many types of self-service technology in Singapore it is hard to say generally which one we like and don't like.

*Focus Group Two Facilitator's Report*

Date: November 16, 2007  
Time: 5.00 pm – 6.30 pm  
Venue: SIRS Conference Room  
Facilitator: Researcher

*Opening*

The facilitator welcomed the 12 focus group members back again highlighting the reason for the second gathering and the desired outcomes. Similarly, this was shared while reinforcing the importance of keeping to the timeline. The group members were again told to be sincere and honest in their responses, as there were no right or wrong answers but only individual perceptions and viewpoints.

*Activity One*

For Activity One, each of the participants was given 3 short sticks with picture faces on them: One picture showed a happy face (agree), another a sad face (disagree), while the third had a neutral face (neither agree nor disagree). The objective of this activity was for the participants to show the facial image which they felt was the most appropriate response to the questions asked. The participants were given a few seconds



to think about their answer before revealing their decision at the same time. This was done to ensure that the participants were not influenced by the others and that it was their own personal point of view. After which the facilitator requested the group members to explain why they chose that particular selection.

In order to limit any biases, questions were asked based on reliable and valid information drawn from the literature review. In addition, questions were phrased both positively and negatively to prevent and detect respondent acquiescence.

*Discussion Questions Set A*

This activity laid down the foundation for further discussion on the usefulness of the conceptual framework of the self-service technology. The participants were prompted with questions on issues of how they perceived technology anxiety:

1. If you heard about a new technology, would you look for ways to experiment with it?
2. Among your friends, would you be the first to try out new information technologies?
3. In general, are you hesitant to try out new information technologies?
4. Do you like to experiment with new information technologies?
5. Are you confident to learn technology-related skills if given the opportunity?
6. Do you have difficulty understanding most technological matters?
7. Are you apprehensive about using technology?
8. When given the opportunity to use technology, do you fear that you might damage it in some way?
9. Are you confident of your ability to interpret technological output?

The following questions were asked about the consumers' social anxiety using self-service technology and whether there may be any bearing on the higher construct of self-service anxiety.

1. Do you become very anxious if others are watching you use an SST?
2. Do you feel uncomfortable in using an SST if there are people waiting in line behind you?
3. Do you like interacting with the employees who provide services?
4. Is personal attention by service employees important to me?
5. Does it bother you to use a machine when you could talk to a person instead?
6. Does personal contact with a customer service employee make completing a financial transaction enjoyable to you?

*Discussion Questions Set B*

During this section, the participants were asked about their previous experiences with technology in general:

1. Do you commonly use many types of self-service technologies when dealing with other businesses?
2. Do you have much experience with self-service technology?
3. Do you often use self-service technology to accomplish your tasks?

*Discussion Questions Set C*

During this phrase, the participants were asked about their need for human interaction as opposed to using non-human interaction like self-service technology:

1. Overall, do you feel anxious about using SST?
2. In general, do not feel comfortable using SST?

3. Are you often afraid of making a fool of yourself using SST?
4. Do you worry very little about what others may think of you while you are using a self-serve option?

*Discussion Questions Set D*

For the final set of questions in Activity One, the participants were asked about their personal innovativeness in information technology:

1. Does technological terminology sound like confusing jargon to you?
2. Do you avoid technology because it is unfamiliar to you?
3. Are you able to keep up with important technological advances?
4. Do you hesitate to use technology for fear of making mistakes you cannot correct?

*Activity Two*

For the second activity, the facilitator progressed to ask the group several questions about their attitudes towards self-service technology and their intentions to use such a facility in the near future. These questions are to gauge their level of commitment and penchant for self-service options thus evaluating the viability of the proposed framework of the study. The first question they had to respond to was: How would you describe your attitude towards using a hospitality self-service technology in the coming two weeks? The focus group members were shown four bipolar adjectives and asked for their opinion reflecting their attitudes between the two bipolar adjectives.

The four bipolar adjectives used were bad – good, pleasant – unpleasant, harmful – beneficial, and favorable – unfavorable. These were deliberately alternated from positive to negative to prevent and detect respondent acquiescence. Interestingly, for all four scales, majority of the group members selected the positive end, that is,

good, pleasant, beneficial, and favourable.

The next question asked was to find whether the group members had any intention to use a self-service facility in the near future. The question they responded to was: How likely would you use a hospitality self-service technology in the coming two weeks? The three bipolar adjectives used were very unlikely – very likely, impossible – possible, not probable – very probable.

Overall, the group members responded in a rather unique non-committal fashion. The adoption behavior was lukewarm, meaning only about a half said they would use a hospitality self-service technology in the coming two weeks.

### *Conclusion*

The goal of this professional paper was to explore customers' intentions to use self-service technology and what attributed to the actual experience to influence a consumer's decision to use such technology in the future. Understanding customers' evaluation of anxiety of using a self-service experience was at the heart of this project. Predictors and moderators were proposed in a simple framework and reviewed to determine what areas consumers were concerned about in a self-service transaction.

This study investigated how both technology and social anxiety values, components of self-service anxiety, influenced a consumer's attitude about self-service technology and ultimately his or her intentions to continue using such technology in the future. Within this section, a discussion for managerial implications is presented, along with a detailed description of the study limitations and recommendation for future research.

For this study, a total of one predictor and three moderators were used. The predictor was self-service anxiety, which is the collective term used for both

technology anxiety and social anxiety. The three moderators were - previous experiences with self-service technology, need for human interaction, and personal innovativeness in information technology.

This study attempted to qualitatively measure consumers' perceptions of how user friendly self-service technology compared with traditional employee-driven service process. The results of the study found that Singaporean consumers were concerned with technological ease of use and how it greatly influenced their overall anticipated anxiety with the self-service experience. Having self-service technology that is easy to use increases consumers' effectiveness as well can prevent frustration and dissatisfaction from a consumer who did not understand how to use the technology or may have an apparent fear of any new technology.

Traditionally, hospitality providers and retailers who implement self-service technology rarely provide consumers with any formal training or direction on how to use the newly installed technology. Consumers are often asked to "find their own way" through the technology to complete a transaction. One of the key successes with self-service technology is that it must be easy to use regardless of the technical experience of the consumer. Using touch screen formats, visual pictures, and great animation can be effectively used to teach consumers how to use the technology.

Hospitality managers and retailers need to set up the design so that it is free of both mental and physical stress. For example, in grocery stores, heavy items might need to be picked up and scanned over a bar code reader. This exertion of physical effort might preclude some consumers who do not want or are not physically able to exert such effort. Therefore, self-service technology must be concerned with how easy it is to use from both a mental and physical perspective.

An outcome of this study was that the take up rate for self-service technology was directly related to the benefits or utility received in the hospitality setting. Consumers who have had no previous experience with such technology found it hard to use and ultimately preferred the more traditional full-service encounters. They rated the human contact highly compared to the alternative of struggling through a self-service technology by themselves without any support from a company's employees.

This professional paper found consumers' need for human interaction to be rather high and thus resulting in a negative attitude amongst the focus group members. Consumers who preferred to talk to an employee during a service transaction were not ideal candidates for taking up a self-service experience. These consumers had rated the hedonic aspect of the service experience negatively, ultimately leading to a negative attitude towards self-service technology. These results concur with previous research done that consumers basically still welcome the interaction of another fellow human when looking for service (Schuman, 2005).

Overall from this study, one can conclude that self-service technology is here to stay for the long-haul, spreading across the different hospitality sectors. Our shopping patterns will never be the same ever since the introduction of the ATM, online banking, Amazon.com, and eBay. These new channels have empowered the consumer to take care of their own financial and shopping needs. The hospitality industry has not been far behind adapting and adopting fast to meet the many challenges of implementing self-service technology. It is crucial that the self-service option be convenient and easy to use so that there is functionality, speed of transaction, and perceived control. The focus group has reaffirmed that self-service is what many consumers want to see based on their answers in the focus group.

*Managerial Implications*

From a managerial perspective, this study can give hospitality managers in Singapore an idea of what local consumers really want with regards to the development and implementation of self-service technology. Today's managers are spending more and more resources on self-service technology in the hope of achieving monetary savings by reducing their long-term labor cost (Honebein & Cammarano, 2005). It is estimated that revenues could hit \$454 billion by 2008 just from the introduction of self-service technology (Schuman, 2005).

By understanding which factors actually promote or hinder consumers desire for using a particular technology, managers can make adjustments in the technology to meet the changing needs of their consumer base. The reality is that many managers rush to implement the technology without truly understanding their customer base and attitudes toward its self-service technology. This often leads to frustration whenever customers refuse to use the new technology despite the heavy sunken cost. Managers need to be aware that consumers value both the utility of the service and the enjoyment of the self-service experience.

If hospitality managers cannot get their customers to try and adopt the technology, it would be a waste of financial resources from the organization. Hence, hospitality managers need to better understand and appreciate what makes a consumer want to use self-service technology in order to implement technology that can have a lasting impact on the company.

Based on the comments made during the second focus group, it would seem that the participants were more or less split with regards to their tolerance of self-service anxiety. One thing that was sure was their desire for technology that was easy to use,

convenient and adaptable to suit their changing needs as consumers.

For those focus group participants that have a do-it-yourself attitude and enjoy interacting with the technology, management needs to facilitate this enjoyment by providing a favourable conducive environment to allow them to interact with the technology (Honebein & Cammarano 2005). Some participants, on the other hand, have no desire to use this technology. Based on their comments during the focus group discussions, they were apprehensive, hesitant to try or experiment with any new technology. To win this pool of consumers over, management can offer incentives, discounts and special offers to motivate them to try,

There are also several participants that claim that they feel uncomfortable using self-service technology in public if there is a waiting line behind due to social anxiety. This is especially common in Asian countries like Singapore, where people are culturally more self-conscious of what others may think of them. Hospitality management can overcome this by providing self-service stations, i.e., hotel checkout kiosk, in private areas away from public-eye or is special booth with one-way mirrors. For newer technology type self-service, management can allocate trained staff to provide hands-on assistance during the initial installation and implementation to help build consumer confidence.

Lastly, management needs to provide self-service technology that is flexible enough to handle numerous different needs. This was reinforced by the comments made by the focus groups in this study, which noted how the functionality of a technology influenced or hindered their self-service experience. An inconvenient location or a service design that created a distracting environment can obstruct consumers from using the technology. Although not part of the proposed framework, it



was found that consumers highly valued convenience of using the technology and need to take steps to promote convenience by extending the hours of operation or creating an environment that is conducive to initiating a self-service transaction.

One final point that managers need to be aware of with regards to self-service technology is the opportunity to use this technology to manage lower profitability groups. Younger consumers, who are usually more technically savvy, might prefer to interact with self-service technology. The younger members of the focus group predictably revealed that personal innovativeness in information technology, or the degree one is willing to try a new information technology had a relationship with the hedonic aspects of a self-service experience which ultimately will influence attitudes and intentions toward using the technology.

Commercial banks encourage college students, who are typically not their best customers, to use self-service technology such as ATMs to make deposits and withdrawals. Self-service technology can be an attractive alternative to managing consumer groups that provide little revenue and profitability to the company. Encouraging these consumers to take more of a partial employee role offsets some of the costs in servicing this lower profitability group. The key for managers is to make sure that the self-service technology is readily available at a wide variety of times and is reasonably easy to use.

Though self-service technology may be an attractive option for lower profitability groups, managers of hospitality operations need to seriously consider if sacrificing the human interaction and dedicated service for highly profitable groups would drive this segment of consumers to a competitor before trying to implement self-service technology.

*Recommendations for Future Research*

The literature review has provided a well-rounded overview of the research carried out so far in relation to the impact on consumers. It was found however that there is still a significant break to appreciating the true attributes of self-service usage particularly in the local Singapore context. Such a gap can only be filled through further quantitative research.

Specifically, the literature reviewed has also shown that there is an apparent lack of understanding of the various aspects of anxieties pertaining to consumers' adoption of new technology. Till date there has not been any studies conducted to explore self-service anxiety (social and technology anxieties) as a whole on consumer behavior in a self-service setting. For this reason, this paper had proposed a conceptual model to explore the determinants and moderators of consumer attitudes and behavioral intentions towards using self-service technology.

There are numerous other areas in self-service research that still need to be addressed. Little is known about how the different types of self-service technology influence a consumer's decision to take on a partial employee role during a transaction. Some self-service technology could be considered public self-service technologies, in which the technology is in a public place where consumers have the ability to interact with other patrons during the process, e.g., self-scanning checkout in supermarkets. Some self-service technologies could be considered private, where no interaction takes place between other patrons and could lead to lower social anxiety, but at the same time a higher level of technical anxiety, e.g., online check-in. In a public self-service technology, consumers can receive impromptu help from other patrons, whereas in a private self-service technology the consumer usually has no assistance from other

individuals.

The type of self-service technology, whether public or private, can also influence a consumer's value judgment. With a private self-service technology, consumers feel little to no social anxiety and can take their time understanding the functions of the technology. In contrast, public self-service technologies can create a sense of anxiety with others watching you perform the service which can detract from the enjoyment of using the technology.

The type of self-service technology can also influence the utility of the technology. In a public setting, a self-service failure creates a ripple effect where consumers waiting in line are now further delayed slowing down the process and effectiveness of using this option. Private self-service technologies, such as the internet, are usually not susceptible to this type of ripple effect when a failure occurs. Understanding the differences between public and private self-service technologies can have a tremendous impact in the adoption of the technology. It's clear that there is not a one size fits all approach to implementing self-service technology and understanding the difference between public and private self-service technologies can be a fruitful area of research in the future.

Another interesting area of research is the issue related to consumers' motivation for using self-service technology. Regardless if the technology is public or private, some self-service technologies are more hedonically oriented, such as a self-guided tour in a museum with headphones compared to the utilitarian based self-service option of mailing a package at the post office. In these two instances, the consumer has very different motivations for using the technology and would require a unique approach to promote consumer adoption. A self-service option in the post office might

promote the aspect of speed and convenience, where the self-guided tour is not concerned with speed, but the enjoyment of the process for the consumer. The setting of a self-service technology is an area that needs to be further researched to determine how these different value judgments influence consumers' intentions to use the technology as well as what dimensions or variables have a stronger influence depending on the motivations and function of the self-service technology. Carroll and McKendree's (1987) research states that many consumers are motivated to learn a new technology "by doing it themselves" rather than being shown by someone how to use it or learning through an online tutorial. Giving formal directions is not always the only answer to a complicated self-service technology.

The research in self-service technology also needs to explore how organizations can recover from a self-service failure. Without the physical presence of an employee, how do consumers react whenever there is a system failure? Does the consumer blame themselves for the failure if it is customer induced, or is it the retailer's fault regardless of the reason? How do retailers recover from such failures? Does it entail compensation or is completing the transaction enough? Are consumers tolerant of occasional technical failures? These are all questions that need to be further explored in order to retain customers when a failure occurs. With self-service technology, it is inevitable that the technology will need maintenance and at times be unavailable for consumer use. Managers of self-service applications need to be aware of what is required to make the customer satisfied after a self-service failure.

Along with this idea, further research needs to be performed on switching intentions of consumers with self-service technology. The idea of defection to another competitor verses the disadoption to a full service option is an area that managers and

academics know little about in a self-serve context. What makes a consumer defect to a competitor's self service technology versus just using the full service option? The area of service recovery and switching intentions in self-service technology is a promising venture for future research.

Another possible future study is to conduct this same research in several other countries other than Singapore. This will allow the researchers to make generalizations about the propensity of different cultures in their take-up rate for self-service technology.

Finally, the idea of convenience needs to be further researched in self-service technology. The proposed model did not account for the construct of convenience and how it impacts consumer attitudes toward using self-service technology. Additional research can determine what aspects of convenience do consumers' value along with how this idea of convenience influences overall perceptions of self-service technology. Do consumers value the convenience of the technology from a standpoint that it reduces waiting time or is it a matter of flexibility in initiating a transaction or the combination thereof? Is it obvious that consumers' perception of convenience is a driving factor in using self-service technology? Exploring this topic in the future would shed some light on how to get consumers to try, adopt and use self-service technology. Hence a comparative study between the notion of convenience and the notion of anxiety can be considered.

#### *Limitations*

There are some important limitations associated with this study. Firstly, due to the nature of the qualitative research, focus group respondents tend to provide a middle answer leading to methodological concerns whenever preference uncertainty is present.

Dhar and Simonson (2003) noted that whenever respondents have preference uncertainty in regards to an item they will usually choose the neutral option or sit on the fence resulting in distorted data.

Another key limitation of the study is the small sample size used for the focus groups. Twelve participants may be ideal for a qualification study but too small to generalize the results to the entire Singapore population. Having a larger number of respondents through a quantitative study would help to provide important results. Such a study would empirically test the various predictors and moderators of the proposed framework using a survey instrument. This would allow for appropriate data collection and analysis by means of a larger sampling group that is more representative of the population being studied. Although there are advantages to survey research, there are also significant limitations using such a methodology. Causal relationships cannot be established definitively; rather the conclusions are based on correlational relationships. Survey research allows the possibility of uncontrolled extraneous constructs to influence a relationship.

Secondly, survey research utilizing standardized questionnaires may cause the researcher to miss what is most important to a respondent. To limit this concern, pretesting and qualitative focus groups were conducted in order to ensure the survey focuses on key factors associated with the adoption decision relating to self-service technologies. Thirdly, the survey approach typically utilizes self-report data through the completion of a paper and pencil survey instrument. Unfortunately, self-report data are subject to potential problems such as social desirability bias. In order to limit these biases, existing scales with established reliability and validity should be used to test the constructs. In addition, both negatively and positively phrased questions to be used to

prevent and detect respondent acquiescence.

The lack of variance in the construct of self-service anxiety was another weakness of the study. Further testing of self-service technology in widely different areas might produce fruitful results on how anxiety, both social and technical, influence consumers decision to use a self-service option.

Lastly, the proposed model was a simplistic approach to rationalize the purpose of the study. One has to wonder if the conceptual development was lacking or if the setting chosen for this study was unique and produced results atypical of other self-service technology. Additional research is needed to determine if other self-service technology would fit this conceptual model or if a revised conceptualization is needed to fully explain consumers' behaviors with self-service technology.

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Appendix A:

List of Propositions

- Proposition 1 : Consumers with self-service anxieties (both technology anxiety and social anxiety) will affect their attitude towards using a self-service technology.
- Proposition 2 : Consumers with previous experience with technology may change the direction and/or magnitude of the relationship between self-service anxiety and their attitude towards using a self-service technology.
- Proposition 3 : Consumers with a need for human interaction may change the direction and/or magnitude of the relationship between self-service anxiety and their attitude towards using a self-service technology.
- Proposition 4 : Consumers with personal innovativeness in information technology may change the direction and/or magnitude of the relationship between self-service anxiety and their attitude towards using a self-service technology.
- Proposition 5 : Consumers attitudes towards using self-service technology may affect their behavioral intentions to use self-service technology.