

TABLE OF CONTENTS

List of Figures.....	ii
List of Tables.....	ii
English Abstract	iii
CHAPTER ONE: INTRODUCTION.....	3
1.1 Background.....	3
1.2 Research Motivations and Objectives	4
CHAPTER TWO: LITERATURE REVIEW	6
2.1 Theory of Planned Behavior.....	6
2.2 Self-service technologies (SSTs).....	11
2.2.1 KIOSK	14
2.3 Customer readiness and SST	16
2.4 Facilitating Conditions	20
CHAPTER THREE: METHODOLOGY	25
3.1 Research Framework and Hypothesis Development.....	25
3.1.1 Intention to use SST	25
3.1.2 Customer Readiness	26
3.1.3 Facilitating Conditions	27
3.2 Research Operational Definition.....	27
3.3 Questionnaire Development	28
3.4 Measurement.....	30
3.5 Research Methodology	30
CHAPTER FOUR: ANALYSES.....	31
4.1 Sample and Data Collection	31
4.2 Confirmatory Factor Analyses.....	33
4.3 Descriptive Statistics and Correlation for all Variables	35

4.4 Results.....	35
4.4.1 Paired sample T-test	37
CHAPTER FIVE: DISCUSSION	38
CHAPTER SIX: CONCLUSIONS	40
6.1 Limitations and directions for future research.....	40
6.2 Implications for Practice.....	40
REFERENCES.....	42
APPENDIX A	50
APPENDIX B	55



CHAPTER ONE: INTRODUCTION

1.1 Background

Year by year it is more common to see people everywhere making use of different electronic and technological products, the way in which customer perform many everyday activities, such as shopping online or TV and banking through internet has changed dramatically over the past decade. This change has occurred mainly through the development of self-service technology formats which enable customers to perform services themselves quickly and conveniently (Dabholkar, 2001). Researches that promoted a greater understanding and high priority of influences that motivate current and potential customers of using self-service technology (Dabholkar, 2000).

Theoretically-based empirical research on self-service technology has focused primarily on factors associated with self-service technology. For instance, researchers (Langeard et al., 1981; Davis et al., 1989; Dabholkar, 1996) had found ease of use and fun to be important determinants factors in evaluating self-service technology like touch screens used for placing orders. Furthermore, Dabholkar (1996) also found control and waiting time will influence customers' trial of SST, and, as a result, be satisfied. Such developments are changing the way service firms and customer interaction, and are raising many new research issues for investigation.

Other empirical research on self-service technology has concentrate on characteristics of users versus nonusers. Most of this research has focused on demographics (e.g. Langeard et al., 1981; Meuter, 2003). Another characteristic that has been considered is the need for interaction with a service employee (e.g. Bateson, 1985; Dabholkar, 2000; Curran et al., 2003) whereas the extant research has opened the way to examine self-service technology underlying customer attitudes (e.g. Curran et al., 2003; Weijters et al., 2007).

Researchers found that prevailing models or theories on customer behavior on utilizing self-service technology, i.e. Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM) which have weakness on contradiction about low variance explanatory power and instable moderating variables (Sheeran, 2002). Research result was therefore impacted and cannot provide researchers clear understanding about complexity and dynamics of customer behavior pattern.

In addition, researchers seldom consider influence of environment conditions and service people on customer behavior of SST usage.

Although these studies are heading the research in the right direction, there has been a lack of a broad conceptual framework to study the readiness of customer for using self-service technology except Meuter et al., (2005), who mentioned individual and innovative characteristics of customer in general of trying to use new self-service technology. Further, not many theoretical frameworks had been developed to longitudinal study about the relationship of intention and actual usage of self-service technology.

1.2 Research Motivations and Objectives

Self-service technologies have essentially replaced the interaction between employees and customers, due to the growth of technology applications in the retailing environment such as information Kiosks, pay at the pump and package tracking and so on. Besides, self-service technology can strengthen the lack of employee service and have the service heterogeneity and persistence, it is critical for academic researchers to understand customer usage and perceptions of these technologies, however, besides the successful experience of ATM, not all customers like to use SSTs or are ready to use these technologies.

It is important to understand how factors related to customer readiness, and situational factors can influence the link between the intention and real SST use. In some cases, even if customers have favorable attitudes and highly intentions toward using SST, their intentions will be modified due to miserable reason, and the trial of using SST. Although their findings are meaningful, actual SST usage behavior is still inconclusive. Paschal (2002) argued that prevailing models or theories (e.g., Theory of Reasoned Action, Technology Acceptance Model) on SST usage behavior produce some contradictions, such as low variance explanatory power and unstable moderating influences. If any one of them occurs, research findings will be biased and readers will be difficult to understand the dynamics (or complexity) of SST behavior pattern. Existing theories and guidelines have paid little attention to conduct an in-depth theoretical examination regarding the non negligible “gap” between behavioral intention and actual behavior (Dabholkar, 1996; Bitmer and Meuter, 2000; Sheeran, 2002; Ajzen, 2009).

Ajzen (2005) mentioned that intentions and perceptions of behavioral control are often found to be the main effects on behavior, but in fact have no significant

interaction between them. Ajzen (2009) also argued that intention on one hand tends to be overestimated in its certain role to perform expected behavior, and on the other hand, it tends to be underestimated in its ability to predict undesirable behavior. Accordingly, we would like to propose a theoretical model to resolve such an ambiguous (or unstable) relationship between behavioral intention and actual behavior.

In order to consolidate aforementioned relationship, it is necessary to understand how factors related to customer readiness and situational factors (e.g., environmental conditions and service provider) that influence the causal relationship between behavioral intention and SST actual usage. A review of previous studies offers no model to represent the readiness of customers for using SST. The only exception in studying SST usage may be attributed to Meuter et al. (2005) in which individual and innovative characteristics were used to explain the adoption of SST. However, their findings do not resolve the problem of the intention-actual gap as we mentioned. The purpose of this study is to develop a conceptual framework that incorporates aspects of theory of planned behavior and facilitating conditions to provide a deeper understanding of the relationship between behavioral intention and SST usage, using customer readiness as a moderator. It should be noted that users' one-time usage behavior may be different from their continued usage behavior. Although SST adoption has received considerable attention in prior studies, the subsequent temporal effects are still unclear. To the best of knowledge, our study is one of first studies using longitudinal approach to narrow such a gap between behavioral intention and SST actual usage. We outline our research purposes as follows:

- (1) To investigate the moderating effect of customer readiness on SST usage behavior.**
- (2) To examine the impacts of facilitating conditions on behavior intention and actual usage of SST.**

CHAPTER TWO: LITERATURE REVIEW

The purpose of this study is to find the customer readiness of using self-service technology. This chapter will present a background of the theory of planned behavior, especially the relationship between behavior intention and use behavior and the perceived behavior control; an introduction to the customer readiness and the antecedent predictor of customer readiness, facilitating conditions and a survey of some empirical studies that looks for the intention of using self-service technology, and discussion of their strengths and weaknesses. The chapter will describe all the different variables of the proposed model, and at the same time the justification for the adoption of the research model were presented.

This chapter is divided into different sections and contains the following: (1) the Theory of Planned Behavior (TPB); (2) Self-service technology and KIOSK; (3) Customer Readiness and SST; and (4) Facilitating Conditions.

2.1 Theory of Planned Behavior

Understanding the behavior of individuals had always been a concern for social researchers. The theory of reasoned action (TRA) and the theory of planned behavior (TPB) were widely accepted and often used for explaining individuals' behavior (Oh et al., 2003). TRA was a widely studied model from social psychology which concerned with the determinants of consciously intended behaviors (Davis et al., 1989). According to TRA, a person's performance of a specified behavior was determined by his or her behavior intention to perform the behavior, and behavior intention was jointly determined by the person's attitude and subjective norm concerning the behavior in question.

The theory of planned behavior extended the theory of reasoned action by adding perceived behavioral control as a factor that can influence intentions and behaviors (Ajzen, 1985, 1991). Perceived behavioral control was defined as "the perceived ease or difficulty of performing the behavior of interest" (Ajzen, 1991, p.183). The focus was on the customer's beliefs and attitudes (Guevara, 2008). The behavioral Intention to use was a measure of the likelihood that a person will adopt the application, whereas the technology acceptance model (TAM) used

actual usage to represent a self-report measure of time or frequency of adopting the application (Davis et al., 1989), as shown in Figure 2-1.

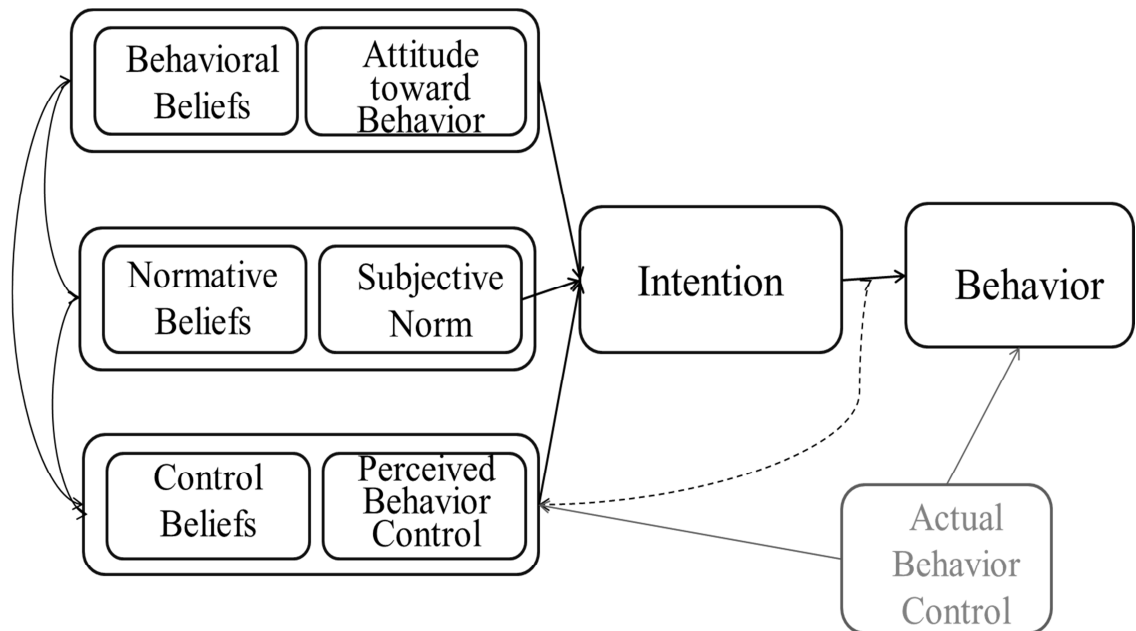


Figure 2-1 Theory of Planned Behavior

Due to the reason that we want to discuss the relationship between intention and behavior, we would like to focus on the perceived behavioral control of individual and its mediate possibility which will discuss later, and all the definition and determined factors concerning about the Theory of Planned Behavior are showed in Table 2-1. In addition, Ajzen (2009) also argued the ambiguous relationship between intention and action, he thought intentions tend to overestimate readiness to perform desirable behaviors and underestimate readiness to perform undesirable behaviors.

“Although there is good evidence from prior studies to suggest that formation of implementation intentions can increase vigilance for critical situational cues and can thus speed up responses in the presence of these cues, it is not at all clear that these features are essential for implementation intentions to be effective”

Table 2-1 Theory of Planned Behavior (Ajzen, 2005)

Factors	Definition	Base on
Attitude	The degree to which	Determined by the total set of

toward a behavior	performance of the behavior is positively or negatively valued	accessible behavioral beliefs linking the behavior to various outcomes and other attributes
Subjective norm	The perceived social pressure to engage or not to engage in a behavior	Determined by the total set of accessible normative beliefs concerning the expectations of important referents
Perceived behavioral control	People's perceptions of their ability to perform a given behavior	Determined by the total set of accessible control beliefs
Intention	An indication of a person's readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior	Based on attitude toward the behavior, subjective norm, and perceived behavioral control, with each predictor weighted for its importance in relation to the behavior and population of interest
Behavior	Manifest, observable response in a given situation with respect to a given target	A function of compatible intentions and perceptions of behavioral control

Ajzen (2005) defined perceived behavioral control as people's perceptions of their ability to perform a given behavior. Perceived behavioral control is determined by the total set of accessible control beliefs, i.e., beliefs about the presence of factors that may facilitate or impede performance of the behavior. Specifically, the strength of each control belief is weighted by the perceived power of the control factor. To the extent that it is an accurate reflection of actual behavioral control, perceived behavioral control can be used to predict behavior together with intention. Intention is an indication of a person's readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior.

According to the TPB, behavior is function of compatible intentions and perceptions of behavioral control and is determined by motivation and ability (Kwong and Lee, 2002). Behavior is the manifest, observable response in a given situation with respect to a given target. Single behavioral observations can be aggregated across contexts and times to produce a more broadly representative measure of behavior. "Because many behaviors pose difficulties of execution that may limit volitional control, it is useful to consider perceived behavioral control in addition to intention" (Ajzen, 2008). In the TPB, behavior is a function of

compatible intentions and perceptions of behavioral control. Conceptually, perceived behavioral control is expected to moderate the effect of intention on behavior, such that a favorable intention produces the behavior only when perceived behavioral control is strong.

Behavioral intention

Consistent with the underlying theory for all of the intention models discussed in our research, we expect that behavioral intention will have a significant positive influence on technology usage (Sheeran, 2002). In the context of customer intention to use SST, it is related to customer readiness such as role clarity, motivation and ability which will discuss later to perform the behavior, for example, if two customers have equally strong intentions to use SST, the customer who has more ability is more likely to actually use SST. Typically, adopting a new SST requires that customer change their behavior, but people might not do this easily. They must be “aware” of the service and understand the benefits to them of trying it (Meuter, 2002).

Previous research on the adoption of computer technology has shown that perceived ease of use and fun influence usage intentions (Davis, Bagozzi, and Warshaw 1989, 1992). Many historically research has developed the attitude sight of SST using, we conclude some researchers as shows in Table2-2.

Table 2-2 Attitude and Intention relate to SST.

Author	Objective	Factors influence attitude and intention
Dabholkar and Bagozzi (2002)	To investigate the moderating effects of consumer traits and situational factors on the relationship within a core attitudinal model for TBSS	Ease of Use Performance Fun Consumer Traits and Situational Factors as moderator
Dabholkar et al. (2003)	To investigate consumer reasons for both using and avoiding self-scanning checkouts	Perceived faster Perceived offering great control Perceived more reliable Perceived easier to use Perceived more

		enjoyable
Curran and Meuter et al. (2005)	To focus on the examination of factors that influence consumer attitudes toward and adoption of self-service technologies	Ease of Use Usefulness Need for interaction Risk
Oyedele and Simpson (2007)	Empirically test the possible effects of control-related customer difference variables on the decision to use self-service technology	Locus of control Autonomy Self-efficacy Technology anxiety Time pressure
Weijters et al. (2007)	Identify a process model to understand the antecedents and consequences of SST usage by customer in an in-store retail setting	Perceived usefulness Perceived ease of use Reliability Fun
Ho and Ko (2008)	To investigate whether self-service technology can enhance customer value (CV) and customer readiness (CR) in customer' continued use of Internet banking.	Perceived ease of use Perceived usefulness Perceived costs saved Perceived self-control
Reinders et al. (2008)	To develop a conceptual model to investigate the negative impact of forcing consumers to use Technology-based self-service.	Forced use of TBSS Previous experience Interaction with an employee
Marler et al. (2009)	To examine factors than enhance user acceptance of Employee SST both before and after implementation	Perceived Resources Attitude toward ESS Subjective Norms
Chen et al.(2009)	To develop an integrated model designed to predict and explain an individual's continuous use of SSTs	Technology readiness (TR), technology acceptance model (TAM), and theory of planned behavior (TPB).
Collier and Sherrell (2010)	To explore how control and trust and convenience perceptions influence customers' utilitarian (speed of transaction) and hedonic (exploration) motivations for using an SST.	Perceived Control Trust in service provider Perceived Convenience Perceived Value Exploration Satisfaction

		Speed of transaction
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Unfortunately, to the best of our knowledge, a review of previous studies offers no model that explains the reasons of why customer intent to or not intent to adopt SSTs. Nevertheless, most studies (except for Meuter et al. (2005) and Dabholkar et al. (2003)) had not focused on investigating post usage behavior of SST. Further, only few studies address the behavioral gap of using SST we mentioned earlier. It is therefore essential to have a research to narrow this gap (Sheppard et al. 1988; Sheeran 1989, 2002). As Ajzen (2009) said:

“The present study also found that conscientiousness, an individual difference variable, may play an important part in explaining the gap between behavioral intention and actual behavior”

Venkatesh et al. (2008) proposed three limitations between behavioral intention and system use, mentioned behavioral intention does not represent the external factors and has limited predictive and explanatory ability to deal with uncertainty and unforeseen events between the time intention is formed and behavior performed, furthermore, behavioral intention is limited in its ability to predict behaviors that are not completely within an individual’s volitional control. Therefore, again, proved there are something missing when mention to intention and actual usage.

2.2 Self-service technologies (SSTs)

“It is no exaggeration to say that someone is using a form of self-service technology every minute of every day, virtually everywhere. In countries around the globe, individuals are getting cash from ATMs; using information kiosks to view gift registries and learn which wine will complement their meal; ordering a pastrami on rye (light mustard); printing out a boarding pass at the airport; checking into their hotel via interactive touch screens; and using self-checkout terminals to complete their shopping trips at supermarkets, mass merchants and specialty stores. “

- NCR Marketing Literature, Retailers Rely on the Self-Service Leader

Self-service technology (SST), defined as technological interfaces that aided customer in generating service without direct involvement from the service

company's employee (Meuter et al., 2000), are widely deployed for customer service delivery now and customers are providing more and more of their own service. Moreover, to a large extent are the days of full-service anything (Meuter et al., 2002). Self-service technologies gave customers more convenience and efficiency than interacting with personnel face-to-face. In brief, this is an epoch that self-service technology prevails.

In implanting self-service technology, many service firms hoped to offer better service to customer. Dabholkar (1996) proposed that speed, control, reliability, ease of use, and enjoyment were all important attributes to customer in evaluating and using self-service technology. When mentioned to the customer satisfaction about self-service technology, Meuter (2000) had proposed a qualitative methodology to provide insight into the nature of the phenomenon under investigation, and to generalize some points toward satisfy and dissatisfy customer about self-service technology. Dabholkar et al. (2003), further underlying the motivation and behavior related to self-scanning in retailing and some factors driving preference or avoidance of self-scanning checkouts include attributes of self-scanners, customer differences and situational influences. Table 2-3 showed the prior research about SST which presented after the year 2000.

Researchers had classified the different usage of SST (see Table 2-3), and based on different demographic characteristics (e.g. Langeard et al., 1981; Meuter, 2003), most of them focused on the service quality and the relationship between the attitude technology acceptance model (TAM) and the behavior intention toward using SST, although it was the growing part of using SST, like the use of ATM, self-service check-out and check-in technologies, in-store kiosk and so on, however, not all consumers choose to use the new technologies nor do all consumers see these changes as improvements in Taiwan, thus, we still have many angels to discuss and to enhance the customer intention to use SST.

Table 2-3 Researchers about SST

Author	Angles of using SST	Classify	Sample use
Meuter et al. (2000)	SST classify	Customer satisfying incident and dissatisfying incidents	823 incidents of on line questionnaire
Anselmsson (2001)	Perceived service quality	Customer characteristics	Grocery and library self-scanning in

			Sweden
Bobbitt and Dabholkar (2001)	Integrating attitudinal theories toward SST	Theory of reasoned action, Influence of category-based Affect, Theory of planned behavior, Theory of trying and other external influences	Overall theories about SST
Meuter et al. (2002)	Satisfaction and dissatisfaction with SSTs.	Benchmarked successful SSTs	Qualitative interviews and survey research
Meuter et al. (2003)	Technology anxiety and experience	Individual difference Demographics, technology anxiety	Awaiting flights at a major southwestern airport
Dabholkar et al. (2003)	Customer attitude	Customer motivation and behavior with a choice situation	Self-scanning in retailing
Meuter et al. (2005)	Customer readiness	Individual differences, innovative characteristics and customer readiness with a choice situation	Telephone-based SST, internet ordering system
IMBM (2006)	Attitude toward SST	Customer perspective	Online stock trading
Oyedele and Simpson (2007)	Control-related customer difference variables	Situational factors such as locus of control, autonomy, time pressure, technology anxiety and Self-efficacy	College students in southern regional university,

SST classify

There was no complete classification of self-service technologies until Meuter et al. (2000) proposed a broad range of SST applications for customers. According to Meuter (2000), there were many types of SSTs use, some of which were widely used new and some of which were still in their infancy of use. For instance, bill

paying, frequently asked questions, and delivery tracking as customer services; to order, buy, and exchange resources as transaction process without any direct interaction with employees and to learn, receive information, train themselves as self-help, thus, through different kinds of interface like telephone/interactive voice response, online, interactive kiosks, and video/CD and so on. Table2-4 described the example across the purposes and types of SSTs interfaces using.

Table 2-4 SST type (Meuter et al., 2000)

Interface	Telephone/ interactive voice response	Online /internet	Interactive kiosks	Video/CD
Purpose				
Customer Service	Telephone banking Flight information Order status	Package tracking Account information	ATMs Hotel checkout	N/A
Transactions	Telephone banking Prescription refills	Retail purchasing Financial transactions	Pay at the pump Hotel checkout Car rental	N/A
Self-help	Information telephone lines	Internet information search Distance learning	Blood pressure machines Tourist information	Tax preparation software, Television/ CD-based training

*Video/CD is typically linked to other technologies to provide customer service and transactions.

2.2.1 KIOSK

Due to the literature we discussed before, SST classify included interactive kiosk, and we found there was no distinction in evidence concerning SST and kiosk. In this research, we would like to discuss classify of kiosks.

KIOSK

We first introduce the name of “KIOSK”, which was of Persian origin, referred to an object that acted as a shadow or shade-maker. Some vendors operated from kiosks, selling small, inexpensive consumables such as newspapers, magazines, lighters, maps, cigarettes, and confections (<http://www.wikipedia.org/>). Today's kiosks brought together the classic vending machine with high-tech communications and complex robotic and mechanical internals (see Figure 2-2).

Such interactive kiosks could include self-checkout lanes, e-ticketing, information and way finding, and vending.

As kiosk usage became more prevalent, the categorization of usage was likely to expand. Kiosk usage had been explored and categorized by a few researchers, the most recent by Rowley and Slack (2003), who split usage into four main functions while some kiosks may only include one of these functions, others may incorporate all four.

Currently the key functions of kiosks are (1) As an information tool (to promote products and inform customer of their use); (2) As an interactive shopping tool (both to provide and receive information from the customer) that improves upon the shopping experience for the browser; (3) As a transactional tool (to deliver a service and make a sale); (4) As a relational tool (to develop and reinforce the relationship between the retailer and the customer) (Serby and Mallick, 2007).



Figure 2-2 Sample of kiosks
(Source: <http://kioskmarketplace.com/>).

Self-service/Interactive kiosk

The first self-service, interactive kiosk was developed in 1977 at the University of Illinois at Urbana-Champaign by a pre-med student, Murray Lappe. Lappe's kiosk, called The Plato Hotline allowed students and visitors to find maps, directories, extracurricular activities and courses (www.arcdesignconsulting.com). Early interactive kiosks sometimes resembled telephone booths, but could also be used while sitting on a bench or chair. Interactive kiosks were typically placed in high foot traffic settings such as hotel lobbies or airports.

The self-service kiosk first came to prominence with the photo kiosk machines from Kodak (over 120,000 currently installed) and adoption by consumers coupled with advanced technologies such as touch-screens, allowing users to perform any number of possible transactions. The method of input was a keyboard, touch-screen, or both. Some kiosks included card readers, ticket and receipt printers, bill and coin depositors, robotic product arrays and other more complex mechanical devices. Integration of technology allowed kiosks to perform a wide range of functions, evolving into self-service kiosks (Aho.D, 1994). In 2008, the emphasis was on terminals that almost always were connected to the internet and were providing access to a customized, unattended version of some sort of application often in conjunction with local devices such as credit card readers, bar code scanners, receipt printers, and more and more identification devices including biometrics (www.wikipedia.org/).

2.3 Customer readiness and SST

Rogers' (2003) innovation diffusion theory (IDT) was a well-known and widely used theory to explain the process by which an innovation was introduced to members of a social system over time. Innovation diffusion theory had been used to explain factors that affected an individual's decision to adopt, reject, or use a technology innovation in a wide variety of industries, contexts, and disciplines including information systems, marketing, and logistics (Lippert and Forman, 2005). Rogers (2003) identified five characteristics of an innovation: relative advantage, compatibility, complexity, trialability and observability.

Research had shown that individuals differed a lot in terms of their readiness to trust another party (Deutsch, 1960). Cultural factors had also been reported to shape people's trust attitudes and behaviors (Jarvenpaa and Tractinsky, 1999). Several studies had examined the role that individual differences played in the adoption of new technologies (e.g. Dabholkar, 1992; Venkatesh, 2000; 2003).

Potential customer of an SST who did not understand what to do were unlikely to try the SST, and due to the reason that customer may had a choice between interpersonal and SST delivery options, they were sufficiently motivated to produce a service independently (Meuter et al., 2005). Desirability was positively related to customer propensity to use self-service technologies as motivations, thus, without motivation to perform, it was unlikely that a customer will use an SST. It had also been proposed that perceived confidence in the ability to engage in a task influences behavior within computer-mediated environments (Hoffman and Novak,

1996). Ability related to have the necessary skills and confidence required to perform a task (Jones, 1986; Meuter et al., 2005). When people believe that they are incapable of performing a task, they will not engage in the behavior, even if they acknowledged that it is a better alternative (Seltzer, 1983).

Previous research had revealed significant effects of both intrinsic and extrinsic motivation on behavioral intention to use technologies (Davis et al., 1992), while intrinsic motivation referred to “the pleasure and inherent satisfaction derived from a specific activity,” and extrinsic motivation related to “the drive to perform a behavior to achieve specific goals/rewards” (Venkatesh 1999, p. 240).

Meuter et al. (2005) defined customer readiness as “a condition or state in which a consumer is prepared and likely to use an innovation for the first time”, in his study, customer readiness can be conceptualized as role clarity, motivation which including intrinsic and extrinsic motivation, and ability, as Table 2-5 showed. Furthermore, the antecedent predictors like innovativeness and individual characteristic which had been discussed by Meuter, such as compatibility, observability, complexity, relative advantage, triability, perceived risk related to innovativeness and inertia, technology anxiety, need for interaction with employee, previous experience about SST, and demographics related to individual differences, all these characteristics positively and negatively influence the readiness of customer and the trial of SST (See Figure 2-3).

Table 2-5. Customer Readiness (Meuter et al., 2005)

Classify	Definition		Factors relating to SST
Role clarity	The customer’s knowledge and understanding of what to do		Participation
Motivation	Desire to receive reward which can be departed to intrinsic and extrinsic motivation, perceiving a benefit to performing the behavior	Intrinsic motivation	Participation Accomplishment feeling Prestige Personal growth Pleasure
		Extrinsic motivation	Self-interest Price discount Time saving Customer saving (cost, money and effort)

Ability	Possessing the required skills and confidence to complete the task	Necessary skill Perceived confidence Self-efficacy
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Mention, in our research, we were not going to study the antecedents of characteristics, but just discussed the factors definitions that Meuter did not mention in her paper. Table 2-6 showed the collected result of antecedents of innovativeness and individual differences of customer readiness.

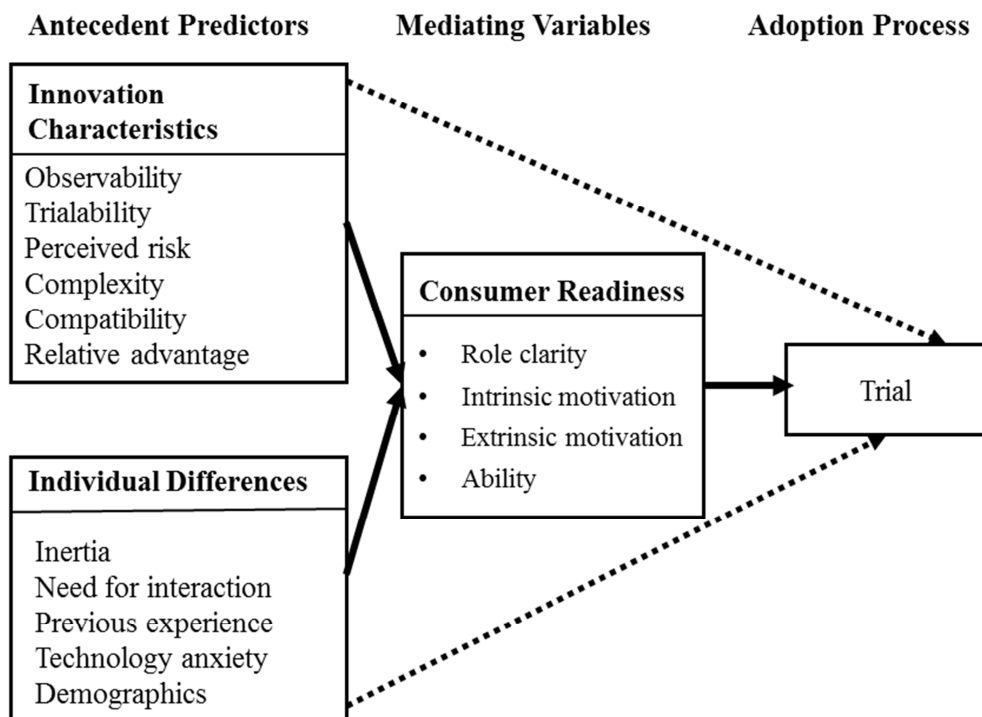


Figure 2-3 Customer Readiness (Meuter et al., 2005)

Many innovation factors were relevant to prior studies (See Table 2-6). Although these factors (except demographics) were not the major focus of our study, they could serve as a basis for our further discussion.

Most academics and practitioners agreed that demographic, education level, economic, and other personal factors, largely beyond the control and influence of the marketer, had a major effect on customer behavior and purchasing decisions (Harrell and Franzier, 1999). In marketing, people tend to view customer demographics with the intention of having a complete understanding of the potential customer (Hawkins, et al., 2004). Moreover, Meuter et al. (2003) had explored about Technology Anxiety (TA) which was distinct from Technology readiness and was found to be a better predictor of SST usage than demographic

characteristics (Moore and Benbasat, 1991; Rogers, 2003).

**Table 2-6. Antecedent Predictors of Customer Readiness
(Meuter et al., 2005; this research)**

Innovativeness	Definition	Influence on SST(+/-)	Citation
Compatibility	The degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters	Positive	Moore and Benbasat 1991, p.195; Rogers ,2003
Observability	The degree to which the results of an innovation are observable to others	Positive	Moore and Benbasat 1991, p.195; Rogers ,2003
Complexity	The degree to which an innovation is perceived as being difficult to understand and use	Negative	Moore and Benbasat 1991, p.195; Thompson et al. 1991, p.128; Rogers , 2003
Relative advantage	The degree to which using an innovation is perceived as being better than using its precursor	Positive	Moore and Benbasat 1991, p.195; Rogers, 2003
Triability	The degree to which an innovation may be experimented with before adoption	Positive	Moore and Benbasat 1991, p.195; Rogers ,2003
Perceived risk	Customer uncertainty about the loss and the degree to which performance uncertainty and psychological concern regarding other's opinions	Negative	Kleijnen ,2001; Lee and Allaway, 2002

	about one's decision are attributed to innovation.		
Individual differences	Definition	Influence on SST(+/-)	Citation
Inertia	The resistance of mass, to a change in its state of motion	Negative	Gremler, 1995
Technology anxiety	The fear, apprehension and hope people feel when considering use or actually using technology	Negative	Meuter and Bitner , 1997; Parasuraman , 2000
Need for interaction	The desire to retain personal contact with employee during service encounters.	Negative	Dabholkar, 1992
Previous experience	The extent to which the individual has engaged in the behavior.	Positive	Dabholkar, 1992
Demographics	Such as age, sex, education, and income	N/A	N/A

2.4 Facilitating Conditions

Gerht et al. (1991) suggested that individual traits alone may not explain customer behavior and that situational factors should also be examined. Relat to the control structures which influence perceived behavioral control (PBC), namely facilitating conditions and self-efficacy (Ajzen, 1985). Key facilitating conditions are the money, time or technologies that are needed to make use of the innovation. In essence, the absence of facilitating resources represents barriers to usage and may inhibit the formation of intention and usage; however, the presence of facilitating resources may not, per se, encourage usage (Taylor and Todd, 1995).

Mention to facilitating conditions in e-marketplaces, there were researchers defined about the concept (see Table 2-7), some have mentioned about the trust and e-marketplaces relationship toward FC, however, in our study, we tried to focus on the environment impact on customers of using SST, therefore, we excluded the resource and compatibility effect but concentrate on the help of other people in specific environment.

Triandis (1980) defined facilitating conditions as “objective factors, ‘out there’ in the environment that several judges or observers can agree make an act easy to do” (p. 205), and these factors directly impact both behavioral intention and the resulting behavior (See Table 2-7). Triandis also stated that behavior cannot occur if objective conditions in the environment prevent it. For example, returning items purchased online is facilitated when no fee is charged to return the item. In an IS context, “provision of support for customer of PCs may be one type of facilitating conditions that can influence system utilization” (Thompson et al. 1991, p. 129).

Facilitating conditions are factors in the environment that influence a person’s desire to perform a task (Teo, 2009). There were many situational factors that can have an indirect effect through perceived behavioral control on customer behavior related to SST use. Specifically, situational factors related to intention and SST use are both relevant for this context, which can cause customer to behave in a manner that influence the intention and real SST use, and therefore need special consideration in our research (Bobbitt and Dabholkar, 2001). Specifically, facilitating conditions were found to have a positive effect on attitude towards computer use and to identify as having an effect on infusion or adoption of a number of new information system innovations (Lu, 2003).

Table 2-7. Definition of Facilitating Conditions

Year	Author	Definition
1980	Triandis	Objective factors ‘out there’ in the environment, that several judges or observers can agree make an act easy to do
1994	Thompson et al.	Objective factors that make an act easy (or difficult) to do
1995	Taylor and Todd	Depart facilitating conditions as two dimensions constructs, one relating to resource factors such as time and money called resource facilitating conditions and the other relating to technology compatibility issues called facilitating conditions that may constrain usage
2003	Venkatesh et al.	The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system
2005	Ratnasingham et al.	Institutional trust with four sub concepts, IT connectivity, standards, security, and uniform product descriptions in B2B e-marketplaces

2009	Teo	Factors in the environment that will impudence a person's desire to perform a task
2010	Lin	The extent to which an individual believes that environmental infrastructures exist to prop his or her leisure activity participation

Since Social cognitive theory (SCT) (Bandura, 1986) taught that people are driven by three types of interacting determinants: personal factors, behavior and environment or situation, and Dabholkar and Bagozzi (2002) found situational factors important in moderating customer use of SST delivery options. Further, Meuter et al. (2003) found that customers' usage rate of SSTs varied by situation, in this research, personal factors and behavior will be excluded in facilitating conditions. The rationale of this assertion is two folds: (1) the personal factors and behavior will conflict and overlap with the customer readiness, which concerned individual factors, (2) this research tries to separate behavior and environment moderating affect during the research.

Facilitating conditions (in this study, support for SST use), however, are originally viewed as external controls related to the environment (Triandis, 1980) and originally provide two dimensions: resource factors (such as time and money needed) and technology factors regarding compatibility issues that may constrain usage. The argument is that when all other things are equal, behavioral intention and IT usage would be expected to be less likely as less time and money are available and as technical compatibility decreases (Taylor and Todd, 1995).

In the context of customer's willingness to adopt interactive Kiosk, we considered facilitating conditions as additional construct that are believed to include the availability of training and provision of support. The influence of beliefs about technical support (facilitating conditions) would be less for experienced customers than for inexperienced ones (Thompson et al., 1994).

Venkatesh et al.(2003) conceptualized and operationalized facilitating conditions by integrating constructs from prior theories—that is, perceived behavioral control from the theory of planned behavior (Ajzen 1991; Mathieson 1991) and facilitating conditions from the model of personal computer utilization (Thompson et al. 1991, 1994) to redefine facilitating conditions as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. Though Venkatesh found that when both performance expectancy constructs and effort expectancy constructs are present,

facilitating conditions become non-significant in predicting intention and Thompson (1991) found that poor facilitating conditions inhibit initial use (see Table 2-8), we still take facilitating conditions into consideration.

Based on the discussion in this section, we based on the theory of planned behavior to our model of SST use behavior as follows, these prior results implied that perceived external conditions exert a direct influence on behavior, thus the presence or lack of external facilitating conditions in a customer environment will directly influence SST use. We presumed that facilitating conditions will influence both the behavioral intention and use behavior.

Table 2-8. Review of prior FC research

Year	Author	Facilitating conditions
1991	Thompson et al.	To find out technical support factors that will influence personal computers for PC use.
2002	Dabholkar and Bagozzi	To find situational factors in moderating customer use of SST delivery options
2006	Rensel et al.	To develop a model of transactional Web site use in public environments that incorporates the physical and virtual computer environments associated with publicly accessible computers.
2005	Ratnasingam et al.	To analyze the impact of facilitating conditions on institutional trust toward a successful participation in e-marketing places.
2005	Lu et al.	To examine the impact of facilitating conditions as the leverage manipulator of perceptual beliefs such as wireless Trust toward the wireless mobile environment.
2008	Venkatesh et al.	To employ behavioral intention, facilitating conditions and behavioral expectation as predictors to provide a better understanding of system use.
2010	Collier and Herrell	To explore the impact of convenience, the authors analyze how the facilitating conditions of time and location accessibility influence customers' evaluation of a self-service experience
2010	Liang et al.	To explore team climate has a significant impact on both performance expectancy and facilitating conditions.
2010	Tibenderana et	To develop the Service Oriented Unified Theory of

	al.	Acceptance and Use of Technology (SOUTAUT) model and use facilitating conditions as one of factor to explains the use of e-library services.
2010	Lin	To examine that facilitating conditions are positively related to leisure activity participation and suggests the direct role in influencing participants' decision in joining leisure activities

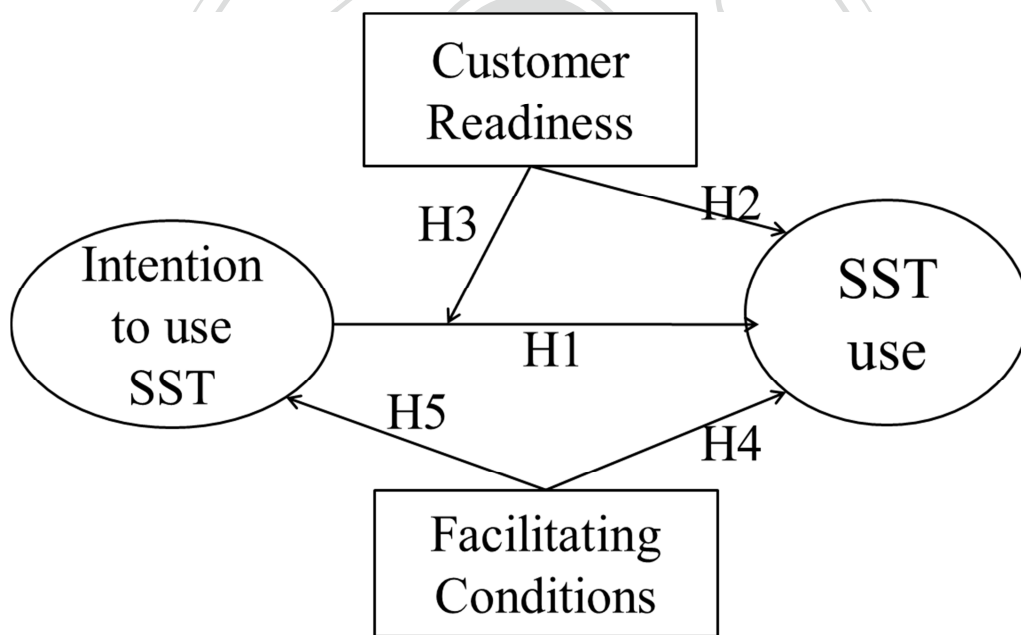


CHAPTER THREE: METHODOLOGY

3.1 Research Framework and Hypothesis Development

This study integrated TPB with moderators (i.e., customer readiness) and facilitating conditions to propose a model of SST usage. The model was similar in spirit to Meuter's (2003) formulation of the SST adoption process in which he integrated diffusion of innovation theory and motivation theory to formulate a model of SST adoption process. Following the same line of thought, we considered *role clarity*, *motivation* and *ability* as indicators of Customer Readiness.

With response to research objectives, we proposed a theoretical framework that illustrates our hypothesis among constructs, see Figure 3-1.



* SST = Self-Service Technology

Figure 3-1 Research framework

3.1.1 Intention to use SST

According to well-established theories in IS and social psychology, behavioral intention, which performed as an important causal predictor of behavior that

mediates the influence of various beliefs and external variables (e.g., individual characteristics, system characteristics, etc.) on behavior (Davis et al. 1989; Sheeran 2002). Further, as Ajzen (2009) said, “The present study also found that conscientiousness; an individual difference variable may play an important part in explaining the gap between behavioral intention and actual behavior”, Venkatesh (2003) also mentioned that behavioral intention does not represent the external factors and has limited predictive and explanatory ability to deal with uncertainty and unforeseen events between the time intention is formed and behavior performed. Furthermore, behavioral intention is limited in its ability to predict behaviors that are not completely within an individual’s volitional control. Therefore, something is missing between intention and actual usage that worth investigating. Further, behavioral intention had been empirically demonstrated to be an important determinant of many behaviors, including system use.

Consequently, individual’s intention to use SST can be referred to “an indication of a person's readiness to first and continue usage of SST.” Accordingly, the first hypothesis of this study is:

H1. Intention to use SST will have a direct influence on SST use.

3.1.2 Customer Readiness

Using the TPB as a basis to our framework of customer readiness of using SST, we noted that there was missing gap between behavioral intention and usage (Sheeran 2002; Ajen, 2009). Based on the literature review, Meuter et al. (2005) defined customer readiness as “a condition or state in which a consumer is prepared and likely to use an innovation for the first time,” in his study, customer readiness can be conceptualized as role clarity, motivation which including intrinsic and extrinsic motivation, and ability. Further, perceived behavioral control (Ajen, 2005) can be defined as “people's perceptions of their ability to perform a given behavior. Therefore, the readiness of customers will influence the decision of using SST.

Conceptually, perceived behavioral control is expected to moderate the effect of intention on behavior, such that a favorable intention produces the behavior only when perceived behavioral control is strong. Consistent with these findings, in our study, we discussed the relationship between intention and actual usage behavior which could also be tested in our research, besides, we would like to address the gap between each one using customer readiness as a moderator, and thus, the second and

third hypotheses of this study are:

H2. *Customer readiness will have a direct influence on SST use.*

H3. *The relationship between intention and SST use will be moderated by customer readiness.*

3.1.3 Facilitating Conditions

Based on the discussion in this section, the theory of planned behavior to our model of SST use behavior as follows, these prior results implied that perceived external conditions exert a direct influence on behavior, thus the presence or lack of external facilitating conditions in a customer environment will directly influence SST use. We presumed that the relationship between intention and behavior will contingent upon the strength of facilitating conditions (either positive or negative). We further consider facilitating conditions will influence the willingness intention and decision of using SST. Consequently, in general, the fourth and fifth hypotheses of this study are:

H4. *Facilitating conditions will have a direct influence on SST use.*

H5. *Facilitating conditions will have a direct influence on intention to use SST.*

3.2 Research Operational Definition

In this study, customers who have experiences in using ticket vending machine were selected as our participants. Table 3-1 summarizes the operational definitions of research constructs. Minor revisions of these constructs were performed in order to meet our research context.

Table 3-1 Research Operational Definition

Variable	Operational Definition
Customer readiness	A condition or state in which a consumer is prepared and likely to use an innovation for the first time
Role clarity	The customer's knowledge and understanding of what to do
Intrinsic motivation	The pleasure and inherent satisfaction derived from a specific activity

Extrinsic motivation	The drive to perform a behavior to achieve specific goals/rewards
Ability	Possessing the required skills and confidence to complete the task
Facilitating conditions	Objective factors, 'out there' in the environment that several judges or observers can agree make an act easy to do
Behavioral intention	An indication of a person's readiness to perform a given behavior
SST use	A function of compatible intentions and perceptions of behavioral control

3.3 Questionnaire Development

Although measurement items were adapted from literature, a pre-test was conducted to achieve certain level of face validity. The pre-test involved eight participants (one MIS expert, two doctoral students, and five graduate students) who were familiar with the ticket vending machine. They were asked to provide comments with an eye on eliminating redundant or unrelated items.

According to the literature review, we developed questionnaire questions by prior researchers (Meuter et al., 2005) referred to customer readiness and facilitating conditions were adapted from Taylor and Todd (1995), Thompson et al. (1991) and Venkatesh et al. (2003); behavioral intention were adapted from James and Matthew (2005). Finally, the actual usage was adapted from Rensel et al. (2006). A six-point Likert scale was employed, to indicate a degree of agreement or disagreement with each of several items (Menezes and Elebert, 1979; Hair et al., 2003). All the questionnaire items and the constructs were listed in Table 3-2.

Table 3-2 Questionnaire development

Item	Questions	Resource
Role clarity		
Role1	I feel certain about how to effectively use the SST.	Meuter et al.(2005)
Role2	I know what is expected of me if I use the SST.	
Role3	The steps in the process of using the SST are clear to me.	

Intrinsic motivation		
Intri1	Using the SST would provide me with personal feelings of worthwhile accomplishment.	
Intri2	Using the SST would provide me with feelings of enjoyment from using the technology.	
Intri3	Using the SST would provide me with feelings of independence.	
Intri4	Using the SST would satisfy my personal needs.	This research
Intri5	Using the SST would allow me to feel innovative in how I interact with a service provider.	Meuter et al.(2005)
Intri6	Using the SST would allow me to have increased confidence in my skills.	
Extrinsic motivation		
Extri1	Using the SST would provide me with added convenience.	Meuter et al.(2005)
Extri2	Using the SST would provide me with economic benefits.	This research
Extri3	Using the SST would allow me to order a refill more quickly.	Meuter et al.(2005)
Extri4	Using the SST would allow me to order a refill whenever I want.	
Extri5	Using the SST would provide me more control over the refill ordering process.	
Extri6	If I tried to use the SST, my prescription would be ordered successfully.	
Ability		
Ab1	I am confident in my ability to use the SST.	Meuter et al.(2005)
Ab2	Using the SST is well within the scope of my abilities.	
Ab3	My past experiences increase my confidence that I will be able to successfully use the SST.	
Facilitating conditions		
FC1	Specialized instruction concerning the system was available to me.	Thompson et al. (1991, 1994);
FC2	A specific person (or group) is available for assistance with system difficulties	Venkatesh et al. (2003)
FC3	There will not be enough computers for everyone	Taylor and Todd

to use in the CRC.		(1995)
Intention to use SST		
INT1	I intend to use the SST in the future.	James and
INT2	I predict I would use the SST in the future.	Matthew, (2005)
INT3	I plan I would use the SST in the future.	
Actual usage of SST		
Use1	How many times have you used the SST?	Rensel et al
Use2	How often do you use the SST?	(2006)
Use3	Have you ever successful tried the SST?	
*the SST in this study means Taiwan High Speed Rail Company's ticket vending machine		

3.4 Measurement

The research framework was conceptualized in terms of several dimensions described in last chapter. To ensure the content validity of the scales, the items selected must represent the concept about which generalizations were to be made. Respondents will be asked to describe how often they use each of the kiosk options or never used, also, respondents will be asked to rate each item on a six-point Likert scale, where 1 meant “strongly disagree” and 6 meant “strongly agree”, to indicate a degree of agreement or disagreement with each of several items (Menezes and Elebert, 1979; Hair et al., 2003). For further clear the item, Table 3-2 showed the measures for each dimension and all items provided in the referenced studies.

3.5 Research Methodology

PLS method

The Partial Least Squares (PLS) method is an efficient statistical regression technique and a variance-based analysis technique which can be used to relate several response variables to several explanatory variables. And the PLS method aims to identify the underlying factors, or linear combination of the explanatory variables, which best model the response variables (Urbach and Ahlemann, 2010). This research uses the PLS method to test its hypotheses. Based on the Ordinary Least Squares (OLS) algorithm, this technique analyzes empirical data with insufficient supporting theories and little available information (Wold, 1979; Real, Leal and Roldan, 2006)...

CHAPTER FOUR: ANALYSES

This chapter shows the empirical results. The first section is the descriptive analysis of the respondents, which include the data collection and the result of the measurement variables. The second and third section is the reliability test of the measurement scales and the results of confirmatory factory analysis, correlation, and internal consistency analysis are presented. The last section presents the results of regression analysis to evaluate the factors influencing actual use behavior and also perform paired t-test to double confirm the enhance of customer readiness level.

4.1 Sample and Data Collection

Longitudinal studies will acquire through a web-based data collection that allow for quick and efficient collection of responses from a sample of customers. Tan and Teo (2000) suggested that online survey has several advantages over traditional paper-based survey; it has lower cost, rapid response, and no geographical limitation.

Self-service technology becomes a popular tool to differentiate oneself in the market and it now still has the issue of low utility rate by customers. In our study, one specific ticket vending machine in Taiwan High Speed Rail Company (THSRC) was selected as our research SST, since the utility rate for ticket vending machine is just 19.2% in August, 2010 (<http://www.insightxplorer.com/>) and we tried to collect data in two stages to see if customer readiness can truly lead to usage intention as well as actual use (Figure 4-1).

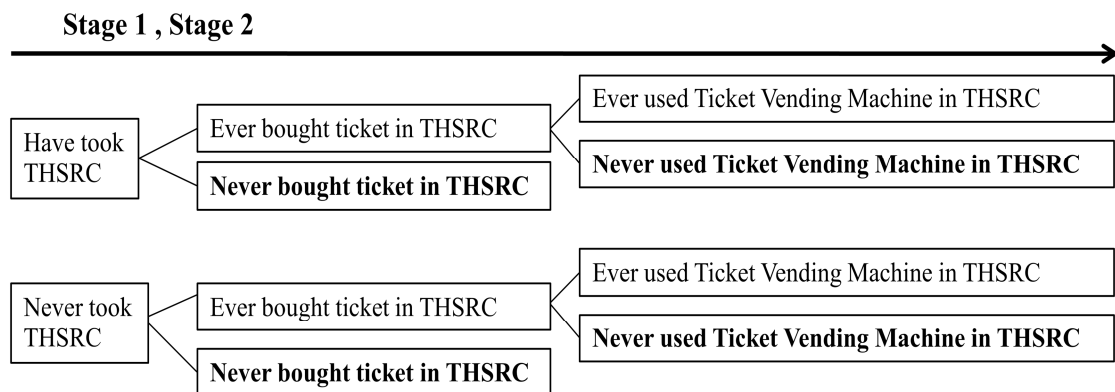


Figure 4-1 Research target subject (in bold)

We set up two-stage online questionnaires which were hosted by GEBRC lab in National Chengchi University (<http://www.gebrc.nccu.edu.tw/hbsst/>). Stage 1 survey started from January 2010 for two weeks, we advertised an announcement on a very heavy traffic BBS (<telnet://ptt.cc>) in Taiwan to call for participants. Besides, for customers' better reading situation, we converted the questionnaire into Chinese version and emphasized the SST we were going to study is THSRC's ticket vending machine (see Appendix A).

The exclusion of 72 invalid questionnaires resulted in a total of 2,318 valid ones. Among them, 1,520 of respondents were experienced users (i.e., who have experience in using ticket vending machine), whereas 798 respondents were inexperienced users. These inexperienced users were thought to be valuable to our research, because of our research purpose. We therefore invited them to participate in our second-stage survey. After seven months (August, 2010), the second-stage survey was conducted. Similar to the first-stage survey, we sent an invitation via email to those prospective participants based on the email addresses that were recorded by the first-stage database. At the end of the survey, a total of 356 respondents were collected. During the past seven months, 131 of them have bought the tickets from the SST and thus turned into experienced users, whereas 225 of them did not buy any tickets from the SST and should be seemed as inexperienced users as the stage 1.

Consequently, those 131 experienced users (i.e., never used in January but have used the SST during the two-stage survey) are eligible to our longitudinal analysis. Among the usable samples, the web-based sample of respondents was comprised of slightly more males (59.4%) than females (40.6%). Most of them (57%) are in the 24 to 28 year age group, while 37.2% of them are in 19 to 23. As for occupations, 58.5% of them were students, while the rest of them (41.5%) were white-collars.

Table 4-1 Demographic Profile of Samples. Sample size n=131

Category	Personal information	%	N
Gender	Male	59.4	78
	Female	40.6	53
Living area in Taiwan	North area	70	91
	Central area	15	20
	South area	14.5	19
	East area	0.5	1

Age	Under 18	1.4	2
	19-23	37.2	49
	24-28	57	74
	29-35	3.9	5
	36-42	0.5	1
Occupation	Student	58.5	77
	White-collar	41.5	54
Education	College	47.8	63
	Graduation	52.2	68
Income	100,001 ~ 20,000	61.4	81
	20,000 ~ 40,000	30	39
	40,000 ~60,000	7.7	10
	Over 100,000	0.9	1

In the context, we also asked those inexperienced users why they did not use ticket vending machine; we conclude those reasons as customers in THSRC used to buying tickets by service encounters and on-line ticket booking and they do not want to wait, ticket vending machine seems not easy to use, inconvenient by using credit card, too lazy to learn how to use, friends help to buy tickets, etc. Further, those inexperienced users who did not take THSRC before just because they thought tickets are too expensive and inconvenience to take THSRC, etc.

4.2 Confirmatory Factor Analyses

Confirmatory factor analyses (CFAs) which were performed to assure the construct validity of the scales and measure statistical procedure identified the reliabilities of the individual scale items for each construct, providing the statistical justification for dropping those items that do not meet accepted guidelines and the analysis accounts for measurement error.

In the measurement model, the PLS model also creates weights and loadings, in which weights are for explaining the formative indicators and loadings are for explaining the reflective indicators (Chin, 1998). With regard to the measurement model, we began assessing the individual item reliability.

The confirmatory factor analysis was done on measures of the seven attributes, the alpha coefficients of each scale ranged from 0.628 to 0.938; the results of CFA

for all variables were represented in Table 4-2 which with greater than 0.6 factor loading were retained. It also shows the descriptive statistics including means, standard deviation. All exceed the criteria of 0.5 showing that the measurement has good reliability (Nunnally, 1967). This study generated the measures from important academic journals, this shows that the measures of this study have content validity.

Table 4-2 Summary of construct loadings and reliability

Factors	Items	Loading	Mean	S.D.	AVE	Composite reliability	Cronbach's Alpha
Role clarity	Role1	0.858	4.86	0.59	0.85	0.838	0.788
	Role3	0.841					
Intrinsic motivation	Intri1	0.873	4.32	0.70	0.832	0.918	0.865
	Intri2	0.872					
	Intri3	0.888					
	Intri4	0.694					
	Intri5	0.817					
Extrinsic motivation	Extri1	0.758	4.83	0.61	0.8	0.896	0.848
	Extri2	0.778					
	Extri3	0.824					
	Extri4	0.853					
	Extri6	0.758					
Ability	Ab1	0.835	4.97	0.57	0.848	0.9	0.789
	Ab2	0.918					
	Ab3	0.843					
Facilitating Conditions	FC1	0.842	4.79	0.61	0.743	0.707	0.749
	FC2	0.628					
Intention to use SST	Int1	0.87	3.74	0.45	0.887	0.977	0.847
	Int2	0.938					
SST use	Use1	0.861	1.86	0.51	0.771	0.742	0.740
	Use2	0.668					

Hair et al. (2006) recommended an acceptance level of 0.7 for the composite reliability. As summarized in Table 4-2, the composite reliability values of all constructs range from 0.707 to 0.977 in our model were greater than 0.70 suggested by Bagozzi and Yi (1988) and meet this criterion. For convergent validity, two criteria should be met as suggested by Fornell and Larcker (1981). First, all of the

factor loadings should not only be significant but also exceed 0.5. Second, average variance extracted (AVE) of each construct should exceed the variance due to measurement error for that construct (i.e., AVE should be greater than 0.5). As listed in Table 4-2, most items exhibited loadings greater than 0.6 within their respective constructs. The values for average variance extracted from each construct (ranging from 0.743 to 0.887) also exceeded the threshold level (0.5) and all item loadings ranging from 0.628 to 0.938 are significant at the five-percent significance level, indicating convergent validity.

4.3 Descriptive Statistics and Correlation for all Variables

Discriminant validity evaluated the extent to which a construct and its indicator variables differed from another construct and its indicator variables (Bagozzi, Yi, and Phillips, 1991). The square root of the AVE should be greater than the correlations between the construct and other constructs. Table 4-3 presents the correlations among constructs, with the square root of the AVE on the diagonal. The correlation between each pair of constructs was less than the corresponding square root of average variances extracted (diagonal values), providing evidence of discriminant validity.

Table 4-3 Descriptive Statistics and Correlation

Constructs	Role clarity	Intrinsic	Extrinsic	Ability	Facilitating conditions	Intention to use SST	SST use
Role clarity	0.850						
Intrinsic	0.698	0.832					
Extrinsic	0.703	0.707	0.800				
Ability	0.846	0.554	0.779	0.848			
Facilitating conditions	0.663	0.455	0.472	0.687	0.743		
Intention to use SST	0.614	0.481	0.709	0.719	0.605	0.887	
SST use	0.285	0.189	0.288	0.379	0.213	0.246	0.733

* Diagonal elements (in bold) are the square root of the average variance extracted (AVE). Off-diagonal elements are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements.

4.4 Results

Table 4-4 shows the summary of the structural model resulting from the PLS analysis. This table sets out the explained variance by model (R^2), the standardized

path coefficients (β), and t-values observed with the level of significance achieved from the bootstrap approach. To discuss the moderating effect of customer readiness on the intention behavior and actual usage behavior relationship, the table also lists the results of with/without moderating effect (Appendix B shows the result of moderating effect)

In relation to the intention and SST usage in this model, the results showed that customer readiness had a significant effect on SST use ($\beta=0.135$, $p<0.001$) and facilitating conditions also had a significant effect on SST use ($\beta=0.338$, $p<0.1$), supporting hypotheses H2 and H4 (as illustrated in Figure 3-1). The results also showed that facilitating conditions had a significant, direct influence on intention to use SST ($\beta=0.379$, $p<0.001$), hypothesis H5 supported. Moreover, intention had a readiness moderate influence ($\beta=0.251$, $p<0.001$), hence, H3 were supported. As expected, the link between intention and use will be moderated by customer readiness ($\beta=0.39$, $p<0.001$). Unfortunately, intention to use SST has no direct effect on use ($\beta= 0.029$) under no moderating circumstance, but have direct effect on moderating effect, hence, H1 only supported in moderating model (Table 4-4).

Table 4-4 Effects on intention and SST use

Effects on intention and SST use		Path coefficients (β) t-value (bootstrap)		Variance explained (R^2)	
		Non-moderating Model	Moderating Model	Non-moderating Model	Moderating Model
<u>Intention to use SST -> use (H1)</u>		0.029 (1.638)	0.251*** (2.518)	<u>0.143</u>	<u>0.144</u>
Customer readiness-> use (H2)		0.357*** (6.792)	0.135*** (6.541)		
Customer readiness * Intention to use SST (H3)			0.39*** (3.994)		
Facilitating conditions	Use (H4)	0.140* (1.843)	0.338* (1.818)		
	Intention (H5)	0.19*** (7.316)	0.379*** (6.477)		
<u>SST use</u>				<u>0.169</u>	<u>0.240</u> (ΔR^2)

*** $p<0.001$; ** $p<0.05$; * $p<0.1$ (two-tailed).

As hypothesized we proposed, the moderating effects of consumer value

orientations (effect size=0.071) have a significant change in ΔR^2 (0.093), and thus confirming H4 and H5 (as illustrated in Figure 3-1). It is important to note that a small to moderate effect size (0.02~0.15) does not necessarily imply an unimportant influence (Carte and Russell, 2003). This is because the full model resulted in largely higher standardized beta coefficients in comparison with the reduced model. Furthermore, the path coefficients have dramatically difference (0.029~0.251), we still believe the SST use has enhanced after customer readiness moderating effect. As all the analysis result, we conclude the hypothesis testing outcome in Table 4-5.

Table 4-5 Hypothesis testing

	Hypothesis	Outcome
H1	Intention to use SST will have a direct influence on SST use.	Only supported in moderating model
H2	Customer readiness will have a direct influence on SST use.	Supported
H3	The relationship between intention and SST use will be moderated by customer readiness.	Supported
H4	Facilitating conditions will have a direct influence on SST use.	Supported
H5	Facilitating conditions will have a direct influence on intention to use SST.	Supported

4.4.1 Paired sample T-test

In order to examine the effect of Customer readiness level on the two-stage survey, the T-test was adopted to compare the pre and post tests of two groups. The results of these tests are displayed in Table 4-6. The results show that the customers who have experienced during the six months (stage 2) are higher than inexperienced stage (stage 1). A paired samples T-test successes to reveal a statistically reliable difference between the mean number of non-user (M = 2.76, s = 0.58) and user (M =4.19, s = 0.89) siblings that the CR construct have, $t(131) = -16.069, p < .01$.

Table 4-6 Paired Sample T-test

	Paired Differences					t	df
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower	Upper		
CR- CR_use	-1.43321	1.02085	.08979	-1.60966	-1.25675	-16.069	130

CHAPTER FIVE: DISCUSSION

Fickel(2000) and Pujari(2004) had mentioned about self-service technology : "Have it your way.", "Help yourself." These were the battle cries from the front lines of today's customer service campaigns. Therefore, we would like to investigate these conditions with customer readiness and the environment effect

.To minimize the gap between behavioral intension and usage, we tried to collect longitudinal data and analysis, to find out what condition to make customers who wanted try SST, but did not actually try, and those who had used SST before but their actually continue usage of SST. We expected that the behavioral intention definitely will be moderated by customer readiness and facilitating conditions and will have directly effect on behavioral intention and actual usage. The result will be used to validate our proposed framework for customer readiness of using SST fit.

This study presented and validated a multi-facet model to evaluate the relationship among customer readiness, facilitating conditions, intention and behavior. As with any study, this research is subject to limitations, and our findings should be interpreted in light of them. With empirical analysis, this research had found several implications and limitations as followings.

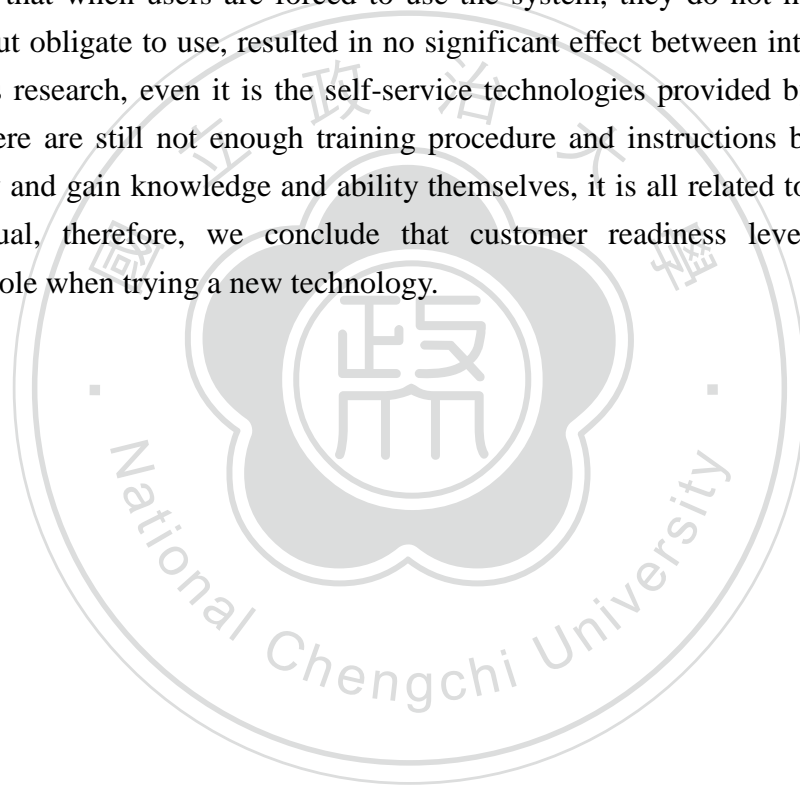
First, the link from intention to use became significant after customer readiness construct moderate effect. As expected, the results suggest that Customer Readiness is higher among users as opposed to non-users of SST and could moderate the gap between intention and actual usage, which means there is truly a missing gap from intention to use, based on Ajen's (2009) research, again, we believe that there are other factors which could also effect and enhance the relationship.

Second, we used Meuter's (2005) theory of customer readiness, which had strong effect on actual use of SST, which means people who have clear role clarity, intrinsic motivation, extrinsic motivation and ability will have impact on SST trial, highly readiness can have effect on people's decision of trying SST.

Third, constructed framework of this study fits the research topic and it is suitable to explain and evaluate the behavior intention of customer when using SST, which means facilitating conditions can also influence the behavior intention and also actual usage, the environmental conditions such as service's provider's instruction and atmosphere can have effect on behavior intention more than actual trial, we can conclusion that facilitating conditions first have influence on user's

mind whether to try, then depends on each user's readiness, to actually trial. Further, according to the consequences of direct and indirect influence between facilitating conditions and SST use behavior, the direct effect of FC on USE is lower than its indirect effect on USE via INTENTION, this represents that facilitating conditions, for instance, the support by specific person and specialized instruction can be seen as a motivator to the relationship between intention and use.

Last, H1 (intention to use) only supported in moderating model, this probably means customers have to ready enough, for example, having enough knowledge, ability and fully motivation, then customers will actually use the specific technology. Besides, some researches especially for banking or enterprise information systems also stated that when users are forced to use the system, they do not have highly intention but obligate to use, resulted in no significant effect between intention and use. In this research, even it is the self-service technologies provided by THSRC, perhaps there are still not enough training procedure and instructions but rely on users to try and gain knowledge and ability themselves, it is all related to readiness of individual, therefore, we conclude that customer readiness level play an important role when trying a new technology.



CHAPTER SIX: CONCLUSIONS

6.1 Limitations and directions for future research

Unavoidably, this research has few limitations that can be discussed and taken into consider in future research:

The facilitating conditions have widely range, in this research, we focus on the outside environment and instruction by service provider and machine, nevertheless, there are still outside factors which can have impact on the motivation and readiness of customers, for instance, the waiting time, the place where ticket vending machine placed, etc. Outside factors can not only effect the intention of use but also prove the ability and knowledge of users and lead to actual use.

Though we just investigated the case of ticket vending machine in Taiwan High Speed Rail Company, there are still many types of new SSTs to study: Kiosks in retailing store, tour-guide kiosk, and so on. Further, not only self-service technology can be implied into the intention and actual use behavior but also web-related technology and so on. Depending on what kind of industries and different technologies the research study involves in, the results may be different. Besides, customers who have already enough knowledge and ability of using specific SST, we can also consider the continue usage behavior and other factors who will influence usage intention.

Additionally, since we used the moderation perspective of perceived behavior control and hypothesize that behavioral intention and actual usage of SST will be moderated by customer readiness, the variation of moderating effect can be future research topics; there are still other factors which can be tested in our final survey, for instance, technology readiness, interaction readiness. Discussing the effects between various factors on customer behavior should be researchable.

6.2 Implications for Practice

The factors investigated encompass perceived attributes of the customer readiness and facilitating conditions in terms of related behaviors and demographics. The study provides meaningful strategic implications for retailers as well as

advances theory in service marketing about individuals that can be applied to a host of other service industries where self-service technology options are offered or being considered.

This study explored the specific ticket vending machine in Taiwan High Speed Rail Company (THSRC). We therefore generated some insights for THSRC's managers:

- (1) This study helps augment earlier studies developed to understand the importance of examining consumer readiness in the context of the specific situation of using self-service technology, especially when deploying new SSTs.
- (2) Customers with different degrees of readiness, capacity or willingness to embrace new technologies reflect their different degrees of knowledge, control or comfort toward new technologies, it is possible that customers will be frustrated in self-service technology settings, also, it is reasonable that customers with different degrees of readiness toward technology might reinforce or weaken their value or satisfaction resulted from their readiness and environment conditions. Customer with low CR can be trained or giving more detailed instruction to have ability and knowledge of self-service technology and by adding coupon and more fun into kiosk to inspire customer motivation.
- (3) As for companies, if marketers can be innovative in providing more functional tools that enables the customer more engage in the situation (e.g. by viewing 3-D lodging options, seat self-selection service), they maybe more motivation to use the SST and turn the experience such as word-of-mouth and continue use that can make the SST more benefit, not just the by-product in store or anywhere.
- (4) When customers interact with a self-service technology at the first time, the encounter plays an important role to the impression of a customer. While customers have additional encounters with the technology, the customers will hold a lasting impression of the first contact interaction. Therefore, the design and management of the service delivery system is an important issue for firms. Furthermore, since the utility of using ticket vending machine is still low, the managers of THSRCs should encourage their employees to have rapport relationships with customers and know what their customers need. Moreover, users who answered the questionnaires also argued about the useless and quality of ticket vending machine such as credit card limitation problem and coin charge problem, thus, providing questionnaires to customers after using the technology to maintain the service quality and continue usage of self-service technology.

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APPENDIX A

以顧客準備度探自助服務科技之使用意圖與實際使用之關係

親愛的先生、小姐：您好

我們是『政治大學資訊管理研究所』的師生，目前正在進行「自助服務科技之使用意圖與實際使用之關係」之縱時研究，本問卷大約需要花您 5分鐘的時間，懇請您撥冗回答此份問卷；問卷內容不牽涉您個人的私密資料，您的回答對本研究將有莫大的助益與影響，希望您能表達真實的想法與意見，調查結果僅供學術研究使用，您所填答之任何資料將不對外公開，敬請安心作答。此外，請您於填完問卷後，再填入您的相關聯絡方式，以供中獎通知之用，絕對不作其它用途。最後，感謝您熱心的協助與支持，並敬祝您

身體健康 萬事如意

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【台灣高鐵自動售票機(kiosk)介紹】

目前高鐵的購票方式分為：網路訂票、窗口購票、自動售票機購票以及自動語音訂位服務，其中高鐵自動售票機為客戶可以自助完成購票之自助服務科技，如下圖所示。



F1. 請問您是否搭乘過高鐵？/ 請問您過去半年內(一月至今)是否搭乘過高鐵？

- 1 是。
2 否。

F2. 請問您是否曾於高鐵購票或網路訂票？

- 1 是。
2 否。

F3. 請問您是否曾經使用過高鐵自動售票機購票？

- 1 是。
2 否。

USE1. 請問您過去使用高鐵自動售票機的次數大約為？

- 0次 1-5次 5-10次 11-15次 16-20次 21次以上

USE2 請問您至今使用高鐵的自動售票機的頻率大約為？

- 半年以上一次 半年一次 每月一次 每周一次 每天一次

USE3. 請問您較常使用何種方式購票？

- 網路訂票 窗口訂票 自動售票機訂票 自動語音訂位服務

NEVER1. 請問您尚未使用過自動售票機之原因為何？

- 不知道高鐵自動售票機 不會使用 不想用 其他

NEVER2. 假設您需於高鐵購票，請問您希望使用何種方式購票？

- 網路訂票 窗口訂票 自動售票機購票 自動語音訂位服務

本問卷以高鐵自動售票機為例，請照實回答，謝謝。

第一部分 顧客準備度

此部份乃欲瞭解您對於自助式多媒體機的準備程度與 <u>角色定位</u> ，請依您個人感受進行回答。		非常不同意	不同意	略為不同意	略為同意	同意	非常同意
1.	我確定該如何有效地使用高鐵自動售票機	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
2.	如果我使用高鐵自動售票機，我知道我需要做甚麼	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
3.	我非常清楚知道使用高鐵自動售票機的流程	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
此部份乃欲瞭解您對於自助式多媒體機的準備程度與 <u>內在動機</u> ，請依您個人感受進行回答。		非常不同意	不同意	略為不同意	略為同意	同意	非常同意
4.	使用高鐵自動售票機可以使我覺得很有成就感	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
5.	使用高鐵自動售票機可以使我覺得很快活	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
6.	使用高鐵自動售票機可以使我覺得很獨立自主	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
7.	使用高鐵自動售票機可以滿足我個人的需求	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
8.	使用高鐵自動售票機可以使我與機器互動時覺得很創新	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
此部份乃欲瞭解您對於自助式多媒體機的準備程度與 <u>外在動機</u> ，請依您個人感受進行回答。		非常不同意	不同意	略為不同意	略為同意	同意	非常同意
9.	我認為使用高鐵自動售票機能夠更快速地完成交易	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6

10. 我認為使用高鐵自動售票機能夠在任何時間內完成交易	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
11. 如果我使用高鐵自動售票機，我的交易會被成功地處理	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
12. 使用高鐵自動售票機讓我覺得更方便	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
13. 使用高鐵自動售票機使我能夠獲得經濟利益	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
14. 使用高鐵自動售票機使我更能掌控交易流程	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6

此部份乃欲瞭解您對於自助式多媒體機的準備程度與能力，請依您個人感受進行回答。

	非常不同意	不同意	略為不同意	略為同意	同意	非常同意
15. 我對於使用高鐵自動售票機的能力很有信心	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
16. 使用高鐵自動售票機是非常適合我的能力範圍	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
17. 我過去的經驗使我增加了對於成功地使用高鐵自動售票機的信心	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6

第二部分 促成條件

此部份乃欲瞭解您認為對於使用自助式多媒體機時之促成條件，請依您個人感受進行回答。

	非常不同意	不同意	略為不同意	略為同意	同意	非常同意
18. 我認為我可以容易地得到對於高鐵自動售票機的使用說明	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
19. 我認為服務人員可以解決我在使用高鐵自動售票機時所遭遇的問題	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
20. 我認為高鐵裡沒有足夠的高鐵自動售票機供使用者使用	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6

第三部分 使用意圖

此部份乃欲瞭解您認為對於使用自助式多媒體機時之使用意圖，請依您個人感受進行回答。	非		略			非
	常	不	為	略	同	常
	不	同	不	為	同	同
	同	意	同	同	意	意
	意		意	意		意
21. 未來我有使用高鐵自動售票機的意願	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
22. 我預測未來我會使用高鐵自動售票機	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
23. 我計劃未來我會使用高鐵自動售票機	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6

第四部分 個人基本資料

24. 目前居住縣市：
1 北部地區 2 中部地區 3 南部地區 4 東部地區 5 離島
25. 性別：
1 男 2 女
26. 年齡：
1. 20 歲以下 2. 21-30 歲 3. 31-40 歲
4. 41-50 歲 5. 51 歲以上
- 27 職業：
1. 學生 2. 公營事業 3. 學術教育 4. 新聞媒體
5. 金融保險 6. 交通運輸 7. 電信通訊 8. 資訊電腦
9. 製造業 10. 服務業 11. 醫療衛生 12. 工程建築
13. 貿易製造業 14. 百貨超商 15. 飯店旅遊 16. 娛樂傳播
17. 政府機關 18. 其他
28. 最高教育程度或現在正就讀於：
1. 國中以下 2. 高中(職) 3. 大學(專科) 4. 研究所以上
29. 每月可支配所得：
1. 20000 元以下 2. 20001~40000 元
3. 40001~60000 元 4. 60001~80000 元
5. 80001~100000 元 6. 100001 元以上
30. 感謝您的填答，請務必留下您的聯絡方式，以供日後長期間卷與抽獎使用
E-mail: _____
手機： _____ (可答可不答)

~問卷到此結束，請確認是否有遺漏之處，非常感謝您的填答~

APPENDIX B

