

# Managing Service Quality of Self-Service Technologies to Enhance e-Satisfaction in Digital Banking Context

## *The Roles of Technology Readiness and Perceived Value*

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**Keywords:** Service Quality, e-Commerce, Self-Service Technology, Digital Banking, Service Operations.

**Abstract:** Perceived service quality, value, and customer satisfaction have long been regarded as the most important research topics in services marketing and service operations literature. Although the self-service technologies (SSTs) are deliberately designed to improve quality and contain necessary information to serve customer needs, service quality of SSTs (SQ-SSTs) has not yet been well achieved up to standards of performance. By integrating the self-service technology adoption and technology acceptance models, this study address SQ-SSTs by empirically testing a comprehensive model that capture the comprehensive model of SQ-SSTs to predict e-satisfaction in the context of digital banking in Thailand. The results show that technology readiness (TR) has the influence on SQ-SSTs, which in turn improve e-satisfaction. The study also found that even though SQ-SSTs can positively influence e-satisfaction, perceived value partial mediates the link between SQ-SSTs and e-satisfaction. The findings contribute to the literature in information system and service marketing by highlighting a key mechanism through which firms can enhance service quality of self-service technologies (SQ-SSTs) and e-satisfaction. Managers may therefore particularly wish to consider technology readiness and customers' perceived value when trying to offer SSTs.

## 1 INTRODUCTION

Perceived service quality, value, and customer satisfaction have long been regarded as the most important research topics in services marketing and service operations literature (Cronin et al., 2000). This development does not only have an effect on brick and mortar stores, but also in an electronic commerce (e-commerce) context. Most often, although the self-service technologies (SSTs) are deliberately designed to improve quality and contain necessary information to serve customer needs, service quality of SSTs (SQ-SSTs) has not yet been well achieved up to standards of performance. As a consequence, a lack of SQ-SSTs, which in sequence negatively affects customer satisfaction in an e-commerce business (i.e., e-satisfaction), ultimately leads to unfavourable economic performance. While many firms invested heavily in SSTs, most have also failed to reap the anticipated SQ-SSTs and e-satisfaction (Colla and Lapoule, 2012).

These findings have sparked interest in how firms can successfully and effectively increase SQ-

SSTs in order to enhance e-satisfaction and maximize benefits in e-commerce activities (Mohammadi, 2015). The goal of this study is to expand the understanding of how managers can effectively develop and manage SSTs to enhance customer e-satisfaction, particularly in the digital banking context. This study defines digital banking as “an internet portal to both online and mobile banking, through which customers can use different kinds of banking services”. It mainly focuses on SSTs in the banking industry whereby customers fulfil their transactions without any interaction with, or assistance from, bank employees. For example, customers in the banking industry can check their account balance on their mobile phone or PDA, make a loan payment at an ATM, and open a new account at a self-service terminal. Banking SSTs can help customers to produce and consume services from the banks without direct personal contact with any representatives (Meuter et al., 2000; Martins et al., 2014). This study initially develops a theoretical model and then constructs the hypotheses. A report of the empirical study follows this and the paper

concludes with a discussion of the implications of the findings and future research.

## 2 THEORETICAL BACKGROUND AND RESEARCH HYPOTHESES

The theoretical model of this research has established on both SST adoption model and some specific applications of technology acceptance model (TAM). The application of TAM model establishes the theoretical background to explain the effects of technology readiness (TR), service quality of self-service technologies (SQ-SSTs), and perceived value on e-satisfaction. In addition, the SST adoption model is used to capture the antecedents and consequences of service quality to predict e-satisfaction in the self-service technology context. This study argues that TR is the driver that can enhance SQ-SSTs. Some SSTs do not successfully gain adoption with an acceptable service quality because service providers do not take into consideration that customer participation through TR is involved, according to the SST adoption model.

Furthermore, while the direct impacts of SQ-SSTs on e-satisfaction have been previously studied (Lin and Hsieh, 2006), the indirect effect is currently less understood. Baron and Kenny (1986) recommend the introduction of a mediator when such a strong relationship between the predictor and criterion variable exists. With regard to the importance of perceived value and service quality in the context of SSTs, it might be reasonable to analyse the possibility that perceived value intervenes between SQ-SSTs and e-satisfaction to gain deeper insights into how the mediating effect exists. The hypothetical relationships illustrated in the model are further explained in the next sections.

### 2.1 Technology Readiness as an Antecedent to Service Quality of SSTs

Technology readiness (TR) identifies the ability of each person to adopt the new technologies to achieve goals in life. Technology can create both a positive and negative impact because of an effect of TR on belief and behavior of both customers' direct and indirect technology usage. Parasuraman (2000) indicates that there are four dimensions of TR, including both positive and negative feelings of technology usage. Optimism is a positive relationship to technology. The customer believes that the

technology can be controlled and is flexible to use, convenient, and effective (Parasuraman, 2000). Innovativeness is also a positive factor that represents the willingness of a person to use new technology. Discomfort is described as the perceived lack of control and a feeling of being overwhelmed by technology. Finally, insecurity is the result of a lack of trust in technology and its ability to work properly (Parasuraman, 2000). A customer with optimism and innovativeness and little discomfort and insecurity is more likely to use a new technology, including SSTs.

According to Lin and Hsieh (2006), TR is an important driver of SQ-SSTs. That is to say, the higher the technology readiness, the higher the perceptions of service quality will be when using SSTs. Chen et al. (2009) also pinpoints that SST service providers should stimulate the positive drivers of TR in order to attain business goals for satisfying customers and increasing benefits. TR is able to lessen the difficulty of service delivery by mitigating the difficulty in evaluating outcomes. In addition, Vize et al. (2013) found a significant role played by TR in customers' perceptions about the level of SQ-SSTs (i.e., web-based solutions). So it can be expected that higher levels of TR will lead to the customer viewing the quality of the services received from the SSTs as higher. This study may surmise that when customers use SSTs, the TR (i.e., negative or positive feeling) will influence service quality of SSTs with the encounter. This suggests that:

H1: Technology readiness positively influences service quality of SSTs

### 2.2 Service Quality of SSTs and e-Satisfaction

According to Anderson and Srinivasan (2003), satisfaction is the overall subsequent psychological state following the appraisal of the consumer experience against prior expectations. In the e-commerce context, Wang et al. (2001) propose a construct called, "customer information satisfaction" (CIS) for web sites that market digital products and services. They define CIS as a summary affective response of varying intensity that follows consumption, and is stimulated by focal aspects of sales activities, information systems (websites), digital products/services, customer support, after-sales service, and company culture. Similarly, Anderson and Srinivasan (2003) defines e-satisfaction as consumers' judgment of their internet retail experience compared to their experience with other online or traditional retail stores.

Drawing on insights from the literature on

determinants and consequences of SST use (Chen et al., 2009), this study further suggests investigating the SQ-SSTs as a determinant of e-satisfaction. This is further supported by research on service quality, in particular online service quality (Lee and Yang, 2013). The preceding studies support the notion that favourable service quality leads to high customer satisfaction. The justification of this relationship is that satisfaction is an affective reaction. Hence, satisfaction is a post consumption experience, which compares perceived quality with expected quality. Similar to the previous literature cited above, this study views service quality of SSTs as an antecedent to e-satisfaction. Thus, in keeping with the above argument, this hypothesis was developed:

H2: Service quality of SSTs is positively associated with e-satisfaction.

### **2.3 Effects of Perceived Value on e-Satisfaction**

In the online service quality literature, empirical evidence shows that customer perceived value leads to e-satisfaction (Hsu et al., 2013). Customers' perception of service value is closely related to their awareness of the exceptional value they have received from a service exchange with a service provider, and how customer e-satisfaction reflects the customer's overall feeling derived from that value. In a customer-technology interaction context, these are the consequences of the perception of customer value received from the SSTs. Prior studies have shown that perceived value has a significant effect on user satisfaction in the context of e-commerce (Chiu et al., 2009). Shamdasani et al. (2008) also confirmed that perceived value plays a particularly important role in influencing satisfaction in the context of self-service internet technologies. The hypothesis is thus derived as follows.

H3: Perceived value is positively associated with e-satisfaction.

### **2.4 Effects of Service Quality of SSTs on Perceived Value**

The previous literature suggests that customers generally acknowledge service value through a desired purpose or goal achieved. Holbrook (2006) define customer perceived value as an interactive relativistic preference experience that involves an interaction between an object and a subject. According to Chang and Wildt (1994), customer

perceived value is a critical factor influencing customer retention and purchase intention.

SSTs mean a technology interface that enables customers to access a service independently of direct service employee involvement. The service providers can offer SSTs to enrich customers' experience, reduce employee related expenses, and keep up with technological advancement. SQ-SSTs can impact on perceived value. For example, Ho and Ko (2008) found that SQ-SSTs have a strong relationship with perceived value. Perceived value increases when an SST can enrich customers' experience (e.g. functionality, convenience, enjoyment, security, design, customization, and assurance) of using SSTs. Customers perceive a value of using SSTs through a learning curve associated with a satisfying encounter with the technology. The benefits the customers enjoy include ease of using the SSTs, avoiding interaction with service employees, time and cost savings, the capability of SSTs to immediately solve problems, and how SSTs live up to the customers' expectations. If customers agree with the benefits and advantages from their perceived service quality of a SST, they will develop a favourable attitude and will be likely to perceive a higher level of value evaluation. Therefore, the following hypothesis is suggested.

H4: Service quality of SSTs is positively associated with perceived value.

### **2.5 The Relationship between Service Quality of SSTs, Perceived Value and e-satisfaction**

Prior literature suggests that SQ-SSTs do not necessarily lead to performance in the form of e-satisfaction; many firms that have invested heavily in SSTs have failed to experience the benefits. This study therefore argues that SQ-SSTs influence e-satisfaction when customers perceive the value evaluation of the SSTs. Lin et al. (2006) identified a direct relationship between SQ-SSTs and e-satisfaction. However, it is found that the indirect effect is currently less understood. Without taking perceived value into account, the predictive power of SQ-SSTs on e-satisfaction is questionable. SQ-SSTs are expected to explain both perceived value and e-satisfaction directly; in addition to its influence on e-satisfaction through perceived value as a mediator. Note that this evidence supports the argument of the importance of the measurement of perceived value in conjunction with the measurement of satisfaction by Oh (2000) and Chen (2008). Instead of the direct effect, SQ-SSTs might have an indirect effect on e-

satisfaction through perceived value. Since previous studies have not tested this indirect relationship properly. Therefore, the following hypothesis is suggested.

H5: Perceived value mediates the relationship between service quality of SSTs and e-satisfaction.

### 3 RESEARCH METHODOLOGY AND ANALYSIS

#### 3.1 Sample and Data Collection

An online survey was used to collect data using the context of digital banking in Thailand. The people who use digital banking are the targeted research subjects. The respondents who have a complete digital banking experience on both online and mobile banking, not just interaction with the website were selected using a convenience sampling method. Therefore, all samples were expected to be collected from the online survey and sought to generate 500 respondents. The survey was kept running continuously for three weeks for the first round, and for another two weeks for the second. Final figures were 149 responses from the first batch of questionnaire collection, and 73 additional responses from the second. Finally, this study achieved a total of 222 returned responses.

The demographic characteristics of the respondents included in this research are shown in Table 1.

Table 1: Respondent characteristics.

Respondent profile	Number	Percentage (%)
<b>Digital banking type</b>		
Internet banking	140	63
Mobile banking	82	37
<b>Gender</b>		
Male	91	41
Female	131	59
<b>Education level</b>		
Post graduate	76	34
Graduate	144	65
Other qualifications	2	1

A non-response bias test was conducted using the extrapolation method suggested by Armstrong & Overton (1977). The t-test results show no significant differences ( $p < 0.05$ ) indicated no differences between the early and late respondents. Thus, the sample appears to be free of non-response bias issues.

#### 3.2 Measurement Validity and Reliability

As depicted in Appendix A, all measures of key constructs were adapted from existing literature. Items were translated and formulated; measuring the constructs in the conceptual model. In some cases, the wording had to be modified slightly to suit the current research context. The researcher also independently back-translated the wording between English and Thai to ensure a high translation quality. With the intention of evaluating whether the dimensions of SQ-SSTs are suitable for the particular context, this researcher conducted interviews with five experts (e.g., practitioners and academicians) who have knowledge of SSTs in the digital banking environment. Based on the experts' opinions, the constructs that are considered appropriate to measure service quality of self-service technologies (SQ-SSTs) were selected. This is to be composed of five constructs: functionality (FUC) (Lin and Hsieh, 2006; Lin and Chang, 2011), convenience (CON) (Lin and Hsieh, 2006; and Lin and Chang, 2011), enjoyment (ENJ) (Lin and Hsieh, 2006; Lin and Chang, 2011), assurance (ASS) (Lin and Hsieh, 2006; Lin and Hsieh, 2011), and security (SEC) (Lin and Hsieh, 2006; Lin and Chang, 2011).

To assess technology readiness (TR), the thirty six items scale developed by Parasuraman (2000) was reviewed, but a more parsimonious scale was further adopted following Meuter et al. (2000) and Vize et al. (2013) to measure TR relating to four first-order constructs: optimism (OPT), innovativeness (INN), insecurity (INS), and discomfort (DIS). Perceived value and e-satisfaction are first-order constructs. The item scales for perceived value were adapted from Zeithaml et al. (2001) and Shamdasani et al. (2008), and e-satisfaction adapted from Anderson and Srinivasan (2003). All measures used a 5-point Likert-type scale anchored on 1= very strongly disagree and 5 = very strong agree for all measurement items, except insecurity and discomfort dimensions (reverse scale).

The convergent validity of the scales were assessed using the method suggested by Fornell & Larcker (1981). Confirmatory factor analysis (CFA) was performed to purify the measurement items. The CFA results for all constructs showed that all of the measurement models had acceptable fit indices, such as comparative fit index (CFI), incremental fit index (IFI), and the Tucker Lewis index (TLI). All fit indices were well above the recommended value of 0.90, proving the unidimensionality of the constructs. Furthermore, the standardized coefficients for all

variables were large ( $\geq 0.5$ ) and significant at  $p < 0.01$  (all t-values are larger than 3). Therefore, all items were significantly related to their underlying theoretical constructs, providing further evidence of convergent validity.

An analysis of second-order models for TR and SQ-SSTs provided empirical justification for combining constructs OPT, INN, INS, DIS, FUC, ASS, CON, ENJ, and SEC into aggregates. Fit indices for all two second-order models are satisfactory. All measurement variables are significantly related to constructs ( $p < 0.01$ ) while the standardized loading ranges from 0.60 to 0.68.

A composite reliability (CR) score and average variance extracted (AVE) were calculated to test for construct reliability (Fornell and Larcker, 1981) for all measurement scales and constructs in the final measurement model. Since the composite reliability scores ranged from 0.74 to 0.89 for all variables and were well above the cut-off values (above 0.7). The same can be said for AVE where values for all latent variables exceed 0.50. All exceed the cut-off value (0.50). It is thus to be concluded that all theoretical constructs exhibited acceptable psychometric properties. The list of measurement items for all constructs appears in Appendix A.

For each of the dependent and independent variables, this study conducted discriminant validity checks. The results confirmed discriminant validity among the constructs because all three Chi-square differences between the fixed and free solutions in Chi-square were statistically significant at a level of  $p \leq 0.01$ , providing evidence of discriminant validity.

## 4 RESULTS

As shown in Table 2, the hypothesized model is tested employing structural equation modelling (SEM) using AMOS. The overall fit of the model is acceptable ( $\chi^2 = 118.78$ ,  $df=69$  ( $p$ -value=0.00),  $\chi^2/df=1.72$ ,  $GFI=0.93$ ,  $AGFI=0.90$ ,  $NFI=0.92$ ,  $CFI=0.96$ ,  $RMSEA=0.057$ ,  $RMR=0.022$ ). An analysis of second-order models for TR and SQ-SSTs provided empirical justification for combining constructs OPT, INN, INS, DIS, FUC, ASS, CON, ENJ, and SEC into aggregates. All the hypothesized paths are also supported. TR has a positive impact on SQ-SSTs ( $\beta=0.83$ ,  $p < .01$ ), supporting H1. The effect of SQ-SSTs on e-satisfaction ( $\beta=0.64$ ,  $p < .01$ ) is found to be significantly positive as well (H2). The path between perceived value and e-satisfaction ( $\beta=0.35$ ,  $p < .01$ ) is found to be significant, supporting H3.

Supporting H4, SQ-SSTs has a positive effect on perceived value ( $\beta=0.85$ ,  $p < .01$ ).

Table 2: Direct and indirect effect.

DV	IV	Standardized coefficient			Hypothesis
		Direct	Indirect	Total	
SQ-SSTs	TR	0.83**	N/A	0.83	H1: Supported
Per	SQ-SSTs	0.85**	N/A	0.85	H2: Supported
E-sat	Per	0.35**	N/A	0.35	H3: Supported
	SQ-SSTs	0.64**	0.30**	0.94	H4: Supported

\*\*  $p < 0.01$

Note: TR = Technology readiness; SQ-SSTs = Service quality of self-service technologies; Per = Perceived value; E-sat = e-satisfaction; DV = Dependent variable; IV = Independent variable

The relationship between SQ-SSTs and e-satisfaction is assumed to be a mediation effect due to the effect of perceived value, in addition to the direct effect. SEM can be the method preferred for mediation analysis (Frazier et al., 2004). The path coefficient generated by SEM provides an indication of relationships and can be used similarly to the traditional regression coefficients (Gefen et al., 2000). Recently, scholars indicated that the use of SEM bootstrap method can enhance the stability of the test results (Cheung and Lau, 2008). When using the bootstrap method, the mediating effect exists if the estimate of indirect effect reached statistical significance and confidence interval does not contain zero. The results shown in Table 2 reveal that the estimate of indirect effect (0.30) reached the .01 level of significance (i.e., 99% confidence interval ranged between 0.13 and 0.64 does not contain zero). The result indicates that perceived value demonstrated mediation effect between SQ-SSTs and e-satisfaction. In sum, a partial mediation has been proven. Therefore, the result supports H5.

## 5 DISCUSSION

Despite the fact that a significant amount of research in SQ-SSTs has been conducted in recent years, understanding both the antecedent and the consequence of SQ-SSTs within the same study remains a challenge for researchers. Additionally, studies to explain how TR facilitates SQ-SSTs and e-satisfaction are rarely undertaken. This also holds particularly true for e-satisfaction for SSTs in the digital banking setting. To better understand the relationship between SQ-SSTs and e-satisfaction, this paper has tested the mediating mechanism of

perceived value. From a survey of digital banking users in Thailand, evidence has been obtained to support our hypotheses.

The findings contribute to the literature in three important ways. First, this study confirms that TR can enhance SQ-SSTs. Based on this aspect, the phenomenon of how TR can increase the level of SQ-SSTs in the digital banking context has been investigated in Thailand. By studying the role of TR on SQ-SSTs, this study helps to clarify how firms can successfully and effectively increase SQ-SSTs and maximize benefits of e-commerce activities through TR. In support of previous research (Vize et al., 2013), this study confirms the positive relationship between TR and SQ-SSTs. Concurrent with the self-service technology (SST) adoption model, the result implies that the use of SSTs extends beyond the availability of infrastructure. In fact, it is about the willingness of customers to engage in online transactions when they believe that the technology can be controlled and is flexible and easy to use, convenient, and effective.

Secondly, this study has deliberated the theory of the self-service technology (SST) adoption model proposed by Bitner et al. (2000). As an extension, this study has particularly developed and tested a more comprehensive theoretical model to highlight both the antecedent and the consequence of SQ-SSTs and contributes to the service marketing/operations as well as information system research by empirically illustrating how TR enables SQ-SSTs, which in turn improves e-satisfaction. Specifically, on the one hand, this study shows that TR can be an important antecedent to SQ-SSTs. On the other hand, it also demonstrates that e-satisfaction can be an important consequence of the latter (Kassim and Abdullah, 2010). These results accord with a technology acceptance model and service marketing literature. To gain insights from the business, for example, customers of Bangkok Bank Limited (BBL) faced online banking service disorder, problems in using the SMS banking service, leading to a low level of e-service quality and satisfaction. As a result, BBL realized there was a significant customer technology readiness by educating customers how to use the online service from the bank. BBL also created a user-friendly and responsive online banking service experience for the customers and provides training for employees to increase customer's e-satisfaction.

Third, in line with some specific applications of the technology acceptance model (TAM) suggested by Davis et al. (1989), the study suggests that SQ-SSTs influence e-satisfaction when customers perceive the value evaluation of the SSTs. The result

of the Sobel test supports the partial mediation effect of perceived value on the link between SQ-SSTs and e-satisfaction. By including perceived value as the mediator, the effect of SQ-SSTs on e-satisfaction is reduced, while the effect of the perceived value remains significant. Even when firms increase the level of TR, customers' perceived value is still a requirement to maximize e-satisfaction.

As a mediator, perceived value helps to explain why many firms that have invested heavily in SSTs have failed to fully experience the benefits of these investments. Thus, a further conclusion is that SQ-SSTs' influence e-satisfaction when customers perceive the value of the SSTs. As a result, firms need to design ways for customers to capture the added value of using SSTs so that they are able to agree with the benefits and advantages from the perceived service quality of a SST; then they will develop favourable attitudes toward SSTs. This issue was well articulate by one of the bank managers interviewed in this study. The manager stated, "Generally, customers will consider SSTs as an attractive alternative if it is both perceived and believed to be easy to use. The high share of both online and mobile banking users indicate a high affinity toward technology, which matches the appreciation of the SSTs and the positive evaluation of its ease of use. Thus, the convenience should be advertised to increase willingness in the first-time user. In addition, customers will be satisfied with internet banking when they perceive that it is beneficial for them". As discussed above, it provides further insights on the mediating effect of perceived value on the relationship between SQ-SSTs and e-satisfaction. This finding also underscores the importance of customers' perceived value for implementing SSTs.

The findings of this study also have implications for business practitioners. First of all, our results found that TR has a significantly positive effect on SQ-SSTs and in turn can improve e-satisfaction. This finding should encourage managers to increase TR for SST implementation so as to enhance this aspect of development. Second, this study found that perceived value partially mediates the relationship between SQ-SSTs and e-satisfaction. This can highlight a key mechanism through which firms can enhance e-satisfaction. Managers may therefore particularly wish to consider customers' perceived value when trying to offer SSTs. Thus, the most important influencing factor for the usage of such a SST is the real value added that customers can perceive. Moreover, care should be taken to facilitate customers to believe that SSTs can be controlled and are flexible to use, convenient, and effective. Thus,

the findings offer insights to managers in e-commerce service marketing on how to manage SST usage to maximize the benefits accruing from customers' perceived value.

## 6 LIMITATIONS AND FUTURE RESEARCH

This empirical study has several limitations. First, the research results were obtained from a single service industry (digital banking). Thus, caution must be exercised when generalizing the findings. Measuring the role of TR plays in SQ-SSTs and e-satisfaction across other service industries, building on the extant technology acceptance model framework and its extensions, could also yield valuable results. Second, this study did not incorporate the effects of cultural differences on e-satisfaction in the proposed model. Further research should focus on developing a richer model that incorporates additional constructs such as cultural difference and their interaction as well as where they fit into the model. Finally, this study mainly discusses the influence of TR on customers' perceptions. It focuses on SSTs in the banking industry, where customers fulfill their transactions without any interaction with, or assistance from, bank employees.

### Appendix A. Measurement Items

#### Optimism (OPT)

- OPT1. Technologies (of SSTs) make you feel more efficient in business.  
OPT2. You find you are doing more activities now with technologies (of SSTs) than a couple of years ago.  
OPT3. You like the idea of doing business via technologies (of SSTs) because you are not limited to regular business hours.

#### Innovativeness (INN)

- INN1. In general you are among the first of your friends to acquire new technologies (SSTs) when it appears  
INN2. You keep up with the latest technological (SSTs) developments in your areas of interest.  
INN3. You find you have fewer problem than your friends in making technologies (SSTs) work for you.

#### Insecurity (INS)

- INS1. You do not consider it safe giving out a credit card number over a technology (SSTs).  
INS2. You do not consider it safe to do any kind of financial business online (SSTs)  
INS3. You worry that information you send over the business online (SSTs) will be seen by other people.  
INS4. You do not feel confident doing business with a place that can only be reached online (SSTs).

#### Discomfort (DIS)

- DIS1. Technical support lines are not helpful because they don't explain things in terms you understand.  
DIS2. The hassle of getting new technologies (SSTs) work for you usually makes it not worthwhile.  
DIS3. With new technologies (SSTs), you often risk paying a lot of money for something that is not worth much.  
DIS4. When you get technical support (of SSTs) from a provider of a service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do.

#### Functionality (FUC)

- FUC1. You can get your service done with the SSTs in a short time.  
FUC2. Using the SSTs require little effort.  
FUC3. The service process of the SSTs is clear.

#### Convenience (CON)

- CON1. The SSTs has operating hours convenient to customers.  
CON2. This site has customer service representatives available online (of SSTs)  
CON3. It is easy and convenient to reach the company's SSTs

#### Enjoyment (ENJ)

- ENJ1. The operation of the company's SSTs is interesting.  
ENJ2. You feel good being able to use the SSTs.  
ENJ3. The company's SSTs have interesting additional functions  
ENJ4. The company's SSTs provide you with all relevant information.

#### Assurance (ASS)

- ASS1. The company providing the SSTs is well-known.  
ASS2. The company providing the SSTs has a good reputation.

#### Security (SEC)

- SEC1. You feel like your privacy is protected with the company's SSTs.  
SEC2. The company's SSTs have adequate security features.  
SEC3. You feel safe in your transactions with the company's SSTs.  
SEC4. It does not share your personal information with other company's database.

#### Perceived value (PER)

- PER1. In general, the overall value you get from using this company's SSTs is worth your time and effort.  
PER2. What you gained from company's SSTs is more than what you have to give up.  
PER3. You value SSTs greatly.

#### E-satisfaction (E-sat)

- E-SAT1. Based on all of your experiences with SSTs of this company, you feel very satisfied.  
E-SAT2. Your choice to use service in this company's SST was a wise one.  
E-SAT3. Overall, you are satisfied with your decision making to use the SST service in this company.

## REFERENCES

- Anderson, R.E., Srinivasan, S.S., 2003. E-satisfaction and e-royalty: A contingency framework. *Psychology and Marketing*, Vol. 20, No.2, pp. 123-130.
- Armstrong, J.S. and Overton, T.S., 1977. Estimate nonresponse bias in mail survey. *Journal of Marketing Research*, Vol. 14, pp. 396-402.
- Baron, R.M., Kenny, D.A., 1986. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, Vol. 51, No.6, pp. 1173-1182.
- Bitner, M.J., Brown, S.W., Meuter, M.L., 2000. Technology infusion in service encounters. *Journal of Academy of Marketing Science*, Vol. 28, No.1, pp. 138-149.
- Chen, C., 2008. Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers: Evidence from Taiwan. *Transportation Research Part A*, Vol. 42, pp. 709-717.
- Chen, S.C., Chen, H., Chen, M., 2009. Determinants of satisfaction and continuance intention toward self-service technologies. *Industrial Management and Data Systems*, Vol. 109, No. 9, pp. 1248-1263.

- Cheung, G.W., Lau, R.S., 2008. Testing mediation and suppression effects of latent variables: Bootstrapping with structural equation models. *Organizational Research Methods*, Vol. 11, No.2, pp. 296-325.
- Chiu, C., Chang, C., Cheng, H., Fang, Y., 2009. Determinants of customer repurchase intention in online shopping. *Online Information Review*, Vol. 33, No. 4, pp. 761-784.
- Colla, E., Lapoule, P., 2012. E-commerce: exploring the critical success factors. *International Journal of Retail and Distribution Management*, Vol. 41, No.11, pp. 842-864.
- Cronin, J.J., Brady, M.K., Hult, G.T., 2000. Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of Retailing*, Vol. 76, No. 2, pp. 193-218.
- Davis, F.D., Bagozzi, R.P., Warshaw, P.R., 1989. User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, Vol. 35, No.8, pp. 982-1003.
- Fornell, C., Larcker, D.F., 1981. Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, Vol. 18, No.3, pp. 382-388.
- Frazier, P.A., Tix, A.P., Barron, K.E., 2004. Testing moderator and mediator effects in counseling psychological research. *Journal of Counseling Psychology*, Vol. 51, No.1, pp. 115-134.
- Gefen, D., Straub, D., Boudreau, M.C., 2000. Structural equation modeling and regression: guidelines for research practice. *Communications of the Association for Information Systems*, Vol. 4, No.7, pp. 1-77.
- Ho, S., Ko, Y., 2008. Effects of self-service technology on customer value and customer readiness: The case of internet banking. *Internet Research*, Vol. 18, No. 4, pp. 427-446.
- Holbrook, M.B., 2006. Consumption experience, customer value, and subjective personal introspection: An illustrative photographic essay. *Journal of Business Research*, Vol. 59, No. 6, pp. 714-725.
- Hsu, M.H., Chuang, L.W., Chiu, S.P., 2013. Perceived quality, perceived value and repurchase decision in online shopping context. *Applied Mechanics and Materials*, Vol. 311, pp. 43-48.
- Kassim, N. and Abdullah, N.A., 2010. The effect of perceived service quality dimensions on customer satisfaction, trust, and loyalty in e-commerce setting: a cross cultural analysis. *Asia Pacific Journal of Marketing and Logistics*, Vol. 22, No. 3, pp. 351-371.
- Lee, H., Yang, K., 2013. Interpersonal service quality, self-service technology (SST) service quality and retail patronage. *Journal of Retailing and Consumer Service*, Vol. 20, No. 1, pp. 51-57.
- Lin, J.S., Chang, H., 2011. The role of technology readiness in self-service technology acceptance. *Managing Service Quality*, Vol. 21, No.4, pp. 424-444.
- Lin, J.S., Hsieh, P., 2006. The role of technology readiness in customers' perception and adoption of self-service technologies. *International Journal of Service Industry Management*, Vol. 17, No.5, pp. 497-517.
- MacKinnon, D.P., Lockwood, C.M., Hoffman, J.W., West, S.G., Sheet, V., 2002. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, Vol. 7, pp. 83-104.
- Martin, C., Oliveira, T., Popovic, A., 2014. Understanding the internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*, Vol. 34, No.1, pp. 1-13.
- Meuter, M.L., Ostrom, A.L., Roundtree, R.I., Bitner, M.J., 2000. Self-service technologies: understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, Vol. 64, No. 3, pp. 50-64.
- Mohammadi, H., 2015. A study of mobile banking loyalty in Iran. *Computer in Human Behavior*, Vol. 44, No.1, pp. 35-47.
- Oh, H., 2000. Diner's perceptions of quality, value and satisfaction. *Cornell Hotel and Restaurant Administration Quality*, Vol. 41, No.3, pp. 58-66.
- Parasuraman, A., 2000. Technology readiness index (Tri): A multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, Vol.2, No.4, pp. 307-320.
- Shamdasani, P., Mukherjee, A., Malhotra, N., 2008. Antecedents and consequences of service quality in consumer evaluation of self-service internet technologies. *The Service Industry Journal*, Vol. 28, No.1, pp. 117-138.
- Vize, R., Coughlan, J., Kenedy, A., Ellis-Chadwick, F., 2013. Technology readiness in a B2B online retail context: An examination of antecedents and outcomes. *Industrial Marketing Management*, Vol. 42, pp. 909-918.
- Wang, Y., Tang, T. and Tang, J.E., 2001. An instrument for measuring customer satisfaction toward web site that market digital products and services. *Journal of Electronic Commerce Research*, Vol. 2, No. 3, pp. 89-102.
- Zeithaml, V.A., Parasuraman, A., Malhotra, A., 2001. Service quality delivery through web sites: A critical review of extant knowledge. *Journal of Academy of Marketing Science*, Vol. 30, No.4, pp.362-375.