

Reduction in Resistance to Self-Service Technology Adoption

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Abstract

With the high global competitiveness in many industries, self-service technologies (SSTs) in the context of service provision are recognized as more effective and important technologies to minimize investment costs and maximize service quality. By means of reviewing and integrating literature in several fields, the paper attempted to provide an understanding of this relationship in terms of the links between SST characteristics, consumer technology readiness, social pressures, and SST adoption. Eight hypotheses from a conceptual model developed to predict and explain consumer intentions towards SST usage were tested. Through structural equation modeling, findings significantly supported all hypotheses. The impacts of SST characteristics, consumer technology readiness, and social pressures on SST adoption were confirmed. Besides the empirical confirmation of the hypotheses given, finally, there were several practical implications for service marketers and future research directions for scholars.

Keywords: Self-service technologies, Technology readiness, Social pressures

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1. Introduction

Self-service technologies (SSTs) have been prevalently applied in many industries, including airline, banking, travel, hotel, financial, and retailing since the automated teller machines (ATMs) were introduced several decades ago. Today, not only can common SSTs provide a variety of self-services, including automated hotel checkout, flight ticket checkouts at kiosks or online, internet shopping, paying bills online, banking via ATMs, and self-scanning checkouts at grocery or discount stores, to consumers (Bitnet et al., 2002; Elliott et al., 2008), but can also produce the tremendous economic value. Lee and Greg (2010), for example, point out that in North America the dollar value of self-services was up to \$525 billion in 2007. The authors further predict that the dollar value of self-checkout transactions in North America will reach around \$1.9 trillion by 2012.

Self-service technologies (SSTs) refer to technological interfaces enabling consumers to become service co-producers rather than only service receivers (Meuter et al., 2005). Not only do SSTs shift a traditional service pattern that completely separates production and consumption, but also change the role and the behavior of consumers. For companies, not only can SSTs enhance competitiveness of organizations (Cunningham et al., 2009), but can also maximize service quality to consumers (Weijters et al., 2007). Like companies, consumers can also obtain benefits from SSTs, including employee mood avoidance, service demand fluctuation, time and money savings, reduction in dependency on time and location, quick responses to complaints, a more consistent service, and without human employee contact (Weijters et al., 2007).

As previously described, SSTs can provide benefits to companies and consumers, but there is a great challenge of overcoming the resistance to SST adoption in handling transactions between service providers and consumers (Cunningham et al., 2009), because shifting existing habits and a traditional service pattern of consumers results in the most prominent obstacle getting consumers to adopt SSTs for the first time (Elliott et al., 2008; Meuter et al., 2005). Based on the technology acceptance model (TAM) by Davis (1989), perceived ease of use and perceived usefulness are identified as significantly influencing intentions of technology users. This is because the easier and the more useful a technology, the higher the degree to which this technology is accepted (Davis, 1989). However, the two determinants insufficiently lead consumers to adopt SSTs, because of involving in information privacy and security of consumers (Featherman et al., 2010; Tsai & Yeh, 2010). During the process of self-checkout transactions, for example, consumers need to list individual sensitive information (e. g. credit card number, social security number, telephone number, and addresses) on the Websites or at kiosks. Therefore, SST adoption involves in safety issues



(Featherman et al., 2010; Laukkanen et al., 2008; Tsai & Yeh, 2010). Research on SSTs indicates that Asian consumers are less likely to use internet banking, due to lack of adequate security and privacy (Elliott et al., 2008). Therefore, a deeper understanding of the possible relationship between SST characteristics and SST adoption is needed.

In the technology context, TAM was originally developed to predict and explain the technology-adopting behavior of individuals at work environment, but TAM is unable to fully predict the intended technology-usage of individuals in marketing settings (Lin et al., 2007). This is because individuals in marketing settings are not mandated to use a technology by organizational objectives and may be freer to select numerous available alternatives. To fully explain SST adoption of consumers in marketing settings, consumer propensity to use SSTs should be addressed (Lin et al., 2007; Parasuraman, 2000; Xu, 2007). Among many models, technology readiness (TR) by Parasuraman (2000) appears to be the most widely cited to explain consumer propensity to accept technology-based products or services. Consequently, the present study attempts to explain consumer intentions towards SST adoption through TR. Finally, the social contagion theory addresses the important role of social pressures in influencing innovation usage. This is because individuals exposing to their social environment more likely develop their beliefs, attitudes, and behaviors consistent with those of their social environment (Scott, 2005). However, relatively few studies have addressed social pressures in SST adoption (Shi et al., 2008). Therefore, an understanding of the possible links between social pressures and SST adoption is needed.

As discussed above, the purpose of this study is to empirically test and validate the model (Figure 1) of consumer SST adoption for based on the combination of SST characteristics (perceived risk, perceived ease of use, and perceived usefulness), consumer TR, and three social pressures (coercive, normative, and mimetic forces). The following section reviews the integrated model and develops hypotheses from it. The structure equation modeling (SEM) is used to test the model, and then empirical findings are explained. Implications for research and practice are also discussed and further expected to lead service providers to strategy formulation and marketing policy decisions for SST design and introduction. Finally, limitations and future research in this study are provided.

2. Literature Review

2.1 SST characteristics

Technology acceptance of an individual is hypothetically determined by his or her voluntary intentions towards adopting a technology (Davis, 1989). Failure to provide motivating factors of adoption to users will result in technology resistance (Davis, 1989; Ram & Sheth, 1989). Evidence evinces that consumer resistance to an innovation is caused by



functional and psychological barriers (Ram & Sheth, 1989). Not only are functional barriers linked to innovation characteristics, but are also categorized into the risk barrier, the value barrier, and the usage barrier (Laukkanen et al., 2008; Ram & Sheth, 1989).

2.2.1 Perceived risk

In order to avoid identity theft and the selling of transmitting personal confidential information (e. g. credit card number), personal awareness of risk discourages an individual from SST acceptance (Elliott et al., 2008; Laukkanen et al., 2008). Therefore, individual perception of risk is one of key determinants in SST adoption (Laukkanen et al., 2008; Meuter et al., 2005;). Perceived risk (PR) is defined as the overall amount of uncertainty perceived by a consumer in a particular purchase situation (Pavlou, 2003). Under uncertain or ambiguous circumstances, PR will evoke psychological anxiety and may negatively affect consumer decision-making process (Featherman et al., 2010; Ranaweera et al., 2008). Evidence also illustrates that PR leads consumers to create an unwillingness to adopt online service transactions (Featherman et al., 2010; Tsai & Yeh, 2010). Not only can PR cause threatened feelings and anxiety, and an increase in psychological and learning costs, but can also result in resistance to innovations (Stone & Grønhaug, 1993). In the context of SST adoption, lacking face-to-face interactions or unfamiliarity with characteristics of a SST leads consumers to increase risk perceptions and involve potential costs (e.g. safety, learning, and changes in behavior) (Broekhuizen & Huizingh, 2009; Featherman et al., 2010), and further reduce motivation and the likelihood of SST trial (Elliott et al., 2008). Therefore, we hypothesize:

H₁: Perceived risk will negatively impact consumer intention towards SST adoption.

2.2.2 Perceived usefulness

Perceived usefulness (PU) refers to an individual's subjective awareness of monetary and performance value of a technology (Davis, 1989; Ram & Sheth, 1989). A considerable increase in job performance from technology usage leads an individual at the workplace to lean towards accepting a technology. Similarly, if the technology in market settings offers superior performance-to-price compared to alternative, it is worthwhile for consumers to change their ways performing tasks (Laukkanen et al., 2008). In the context of SST adoption, PU is defined as the degree to which individuals believe that using a technology will not only increase job related productivity, performance, effectiveness, or profitability, but also reach time and money savings and eventually enhance living quality (Davis, 1989; Wu & Wang, 2005). Previous empirical studies indicate that PU is a significant determinant of user acceptance and adoption (Lin et al., 2007; Wu & Wang, 2005). However, the impact of PU on SST usage must be replicated and reconfirmed in the conceptual model. Therefore, the hypothesis is framed as follows:



H₂: Perceived usefulness will positively impact consumer intention towards SST adoption.

2.2.3 Perceived ease of use

Perceived ease of use (PEOU) is defined as the extent to which an individual believes that using a technology or system will be free from effort (Davis, 1989). Earlier research on technology acceptance suggests that PEOU is commonly identified as a key determinant in the successful introduction of a technology (Lin et al., 2007; Wu & Wang, 2005). Lacking ease-of-use of an innovation or increasing the complexity of usage interface results in individual resistance to this innovation (Ram & Sheth, 1989; Wu & Wang, 2005). In the context of SST usage, PEOU is also a potential catalyst to increasing the likelihood of SST usage (Wu & Wang, 2005). However, a complicated, inconvenient, and difficult SST is perceived to discourage consumers from adopting the SST (Laukkanen et al., 2008; Meuter et al., 2005). Therefore, we hypothesize:

H₃: Perceived ease of use will positively influence consumer intention towards SST adoption.

Prior studies also suggest that not only can PEOU have a direct effect on intention, but can also have an indirect effect on intention via PU (Lin et al., 2007; Wu & Wang, 2005). Moreover, PEOU is identified as a determinant of PU. This is because the easier a technology is to use, the more useful it can be (Davis, 1989). In the context of SST adoption, the ease-of-use of a SST may make the benefits (usefulness and value of the SST) more apparent to consumers (Eastlick, 1996). Therefore, the hypothesis is framed as follows:

H₄: Perceived ease of use will have a positive impact on perceived usefulness.

2.2.4 Consumer propensity towards SST usage: Technology readiness

The technology readiness index (TRI) by Parasurman (2000) is a multifaceted framework adopted to describe differences in consumer beliefs about technology in general. Different personal traits will lead to different individuals' beliefs about various aspects of technology acceptance (Walczuch et al., 2007; Xu, 2007). TRI is a robust psychometric tool measuring an individual's propensity towards technology usage, but it is unable to illustrate his or her competence in using a technology (Walczuch et al., 2007).

Not only is technology readiness (TR) defined as "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work" (p. 308), but is also viewed as an overall state of mind resulting from a gestalt of mental enablers and inhibitors that collectively determine a person's predisposition to use new technologies (Parasuraman, 2000). Based on personal openness to technology, TR construct comprises four sub-dimensions, including optimism, innovativeness, discomfort, and insecurity. Optimism



refers to a positive view of technology and a belief in increased control, flexibility, and efficiency in home life and at work due to technology, whereas innovativeness is a tendency to be a technology leader. Discomfort is a perception of lacking control over technology and a feeling of being overwhelmed by it, whereas insecurity involves in distrusting technology and skepticism about its ability to work properly. In the context of technology usage, therefore, optimism and innovativeness are drivers, while discomfort and insecurity are inhibitors (Parasurman, 2000).

Prior empirical studies on technology-based services suggest that individuals with higher TRI are more likely to accept and adopt SSTs, while ones with lower TRI are less likely to do so (Lin et al., 2007; Parasurman, 2000). However, results of the study by Lin et al. (2007) reveal that TR has no direct impact on intentions towards using a specific e-service. To bridge this gap, therefore, the next hypothesis is framed as follows:

H₅: Consumers' technology readiness propensities will have a positive impact on their intentions towards SST adoption.

2.2.5 Social pressures

Based on the social contagion theory, beliefs, attitudes, and behaviors of social actors (e.g. individuals, groups, and organizations) are consistent with those of other actors (e.g. family and peers for individuals, customers, suppliers, partners, and competitors for companies). This is because social actors always incline to share similar notions with other actors surrounding them and further develop direct social networks (Ajzen, 1991; Burt, 1987). Three social pressures (coercive, normative, and mimetic) originated from the institutional theory attending to the deeper and more resilient aspects of social structure (DiMaggio & Powell, 1983; Scott, 2005). Not only can the institutional theory posit that various networks and interactions built up in institutions shape beliefs, attitudes, and behaviors of social actors, but can also address that social ties (e.g. networks and interactions) play a pivotal role in explaining social actors' attitudes and behaviors toward innovation adoption (Scott, 2001). A number of studies have addressed the institutional theory at the organizational level, but relatively little research has contributed to the individual level (Shi et al., 2008). In essence, early institutional theory and analyses in economics field were applied at the individual level (Scott, 2001). Research on the technology acceptance also suggests that the institutional theory can explain and predict consumer intentions towards technology usage (Shi et al., 2008).

2.2.6 Coercive pressures

Coercive pressures are defined as formal or informal pressures to make social actors comply with the requested attitudes, behaviors, and practices, due to feeling pressured to do so by other more powerful actors in their social environment (DiMaggio & Powell, 1983). On



one hand, evidence illustrates the positive impact of coercive pressures from organizations on technology adoption (Mohamad & Ismail, 2009). On the other hand, the impact of coercive pressures at the individual level on individual technology usage is unobvious (Shi et al., 2008). This is because individuals in marketing settings are not forced to use a technology by competitors, suppliers, government agencies, or professional regulatory bodies. However, consumers in marketing settings may still face coercive pressures from service provision and operating strategies (e. g. minimizing costs and maximizing service quality) of companies to adopt SSTs. For example, banks ask their customers to fulfill some financial transactions (e. g. mortgage and loan) through internet service (Shi et al., 2008). Based on previous studies, therefore, we hypothesize:

H₆: Greater coercive pressures will positively influence consumers' intentions towards SST adoption.

2.2.7 Normative pressures

Unlike coercive pressures, normative pressures are defined as pressures to make social actors voluntarily, but not consciously, copy or imitate attitudes, behaviors, and practices representing the only way to do things (DiMaggio & Powell, 1983; Scott, 2005). Previous studies also suggests that social actors always unconsciously copy a certain action taken by a large number of other actors, because the action taken by most actors for a long time is taken for granted and legitimized, not by any powerful actors (Ajzen, 1991; Burt, 1987; Liao et al., 2007). In the context of SST adoption, to avoid dissonance and to comply expectations, normative pressures may lead individuals without SST usage to accept SSTs, when most people important to them think they should do so (Shi et al., 2008). Therefore, we hypothesize:

H₇: Greater normative pressures will positively influence consumers' intentions towards SST adoption.

2.2.8 Mimetic pressures

Mimetic pressures occur when social actors believe that only following or imitating actions taken by successful and high-status actors (e.g. celebrities, politicians, and entrepreneurs) will yield positive outcomes (Shi et al., 2008). Moreover, individuals in an institutional environment are apt to seek behavioral patterns of successful and high-status people and then voluntarily, consciously copy or adopt the same actions taken by them, because individuals think this imitation will lead to their better performance (DiMaggio & Powell, 1983; Shi et al., 2008). In the SST adoption context, however, findings of an empirical study by Shi et al. (2008) indicate that mimetic pressures have no impact on internet bank adoption. However, evidence of mimetic change in many studies examining adoption of new technology-based products and services illustrates that most consumers, especially for



teenagers, adopt products or services endorsed by celebrities (Shi et al., 2008). This is because individuals may imitate attitudes and behaviors of actors whom they adore. Based on previous discusses, therefore, we hypothesize:

H₈: Greater mimetic pressures will positively influence consumers' intentions towards SST adoption.

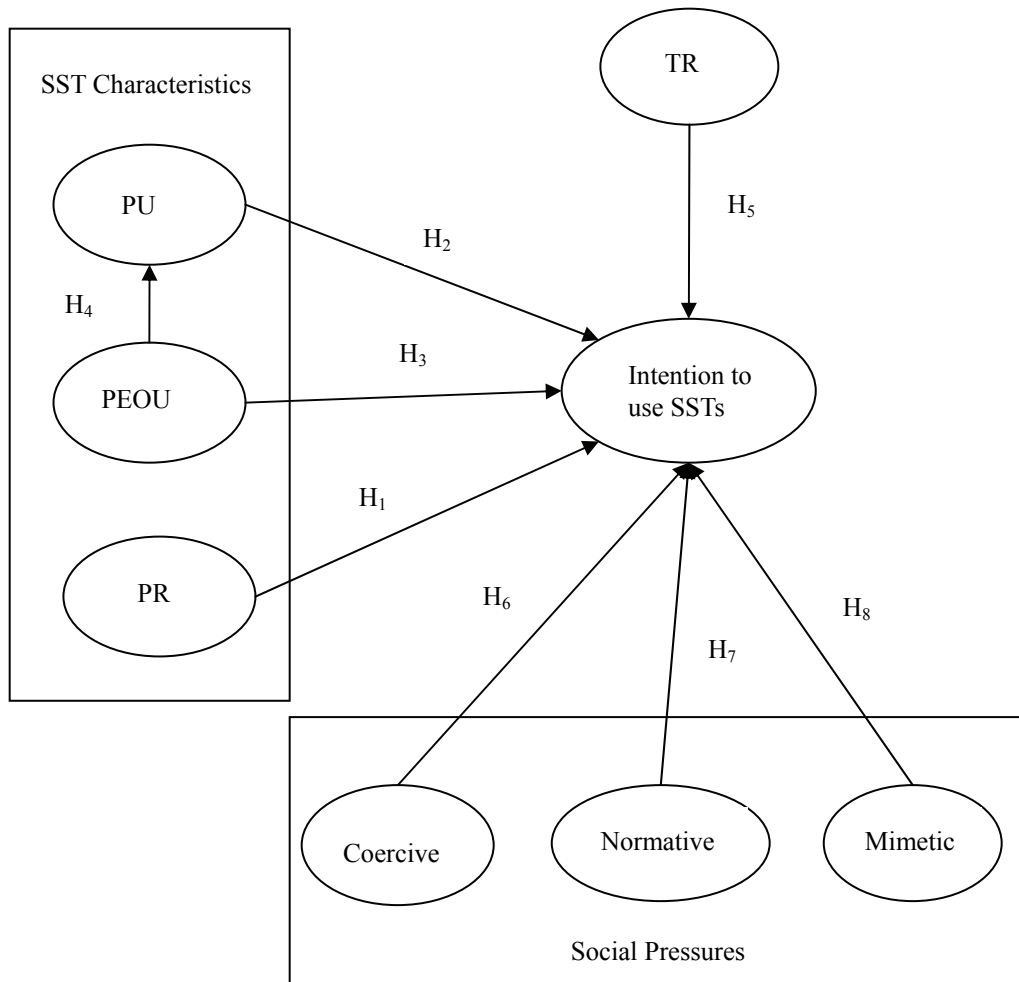


Figure1. The Conceptual Model

3. Methodology

Based on previous studies, constructs in the conceptual model (Figure 1.) are perceived as important determinants of SST adoption. A 62-item questionnaire is employed to measure the constructs. Of the 62 items, eight items by Davis (1989) are slightly reworded to measure perceived ease of use and perceived usefulness, whereas four items by Broekhuizen and Huizingh (2009) are slightly adapted to measure perceived risk. The full 36-item TRI scales



by Parasuraman (2000) are employed to measure the four sub-dimensions of TR (i.e. 10 items for optimism, 7 items for innovativeness, 10 items for discomfort, and 9 items for insecurity). Nine items by Shi et al. (2008) are adapted to measure the three social pressures (i.e. 3 items for normative, 3 items for coercive, and 3 items for mimetic). Five items for intention to use SST are adapted from David (1989). Furthermore, the 36 items for TRI are measured on 5-point Likert scales, while the other 26 items are measured on 7-point Likert scales. The questionnaire is also pilot-tested using undergraduate business students with SST experiences. The feedback from the pilot test is used to improve the readability of the questionnaire.

3.1 Data collection and sample characteristics

Based on the study by Im et al. (2003), senior undergraduate and graduate students majoring in business are chosen as survey subjects in this study due to age, regular Web users, and homogeneity. Data collection is via a paper-based methodology. Before mailing 1000 questionnaires to the business colleges in the universities in the middle part of Taiwan. After one and half months of data collection, 300 questionnaires are returned. However, due to having 78 incomplete questionnaires, the final number of usable questionnaires is 218, for a response rate of 21.8%. Of the 218 participants, 129 (59.2%) are female and 89 (40.8%) are male. The average age and income of the 218 participants is 28.9 years and about NT 24,037.

4. Data analysis and Results

Reliability of the instrument was assessed with Cronbach alpha. Results illustrated an alpha coefficient of .86 for PEOU, .89 for PU, .74 for PR, .84 for optimism, .70 for innovativeness, .74 for discomfort, .82 for insecurity, .70 for coercive, .86 for normative, .78 for mimetic, .92 for intention to use. That is, the internal consistency and stability of the instrument was accepted (Nunnally, 1978). All subsequent data analyses were conducted through AMOS version 18. To establish construct validity, convergent validity and discriminant validity were assessed through the confirmatory factor analysis (CFA) before examining the conceptual model. Results indicated an adequate model fit ($\chi^2 / df = 2.003$, $p = .85$, GFI = .98, AGFI = .92, RMSEA = .032). It was found that standardized factor loadings of all items measuring the same constructs were over .70 and significantly related ($p < .001$), whereas correlation values of all items measuring different constructs were significantly low and from .00 to .62. Therefore, convergent validity and discriminant validity were established (Hair et al., 2006).

Next, the conceptual model was assessed by examining the path coefficients (the β weight values) and R^2 values. All path coefficients and t -statistics for hypothesized relationships were calculated through Maximum Likelihood in AMOS. Results of hypothesis testing were statistically significant and presented in Figure 2. On further examining the path



coefficients, it was found that the β weight from PR to intended usage of SSTs ($\beta = -.13, p < .05$) provided support for H₁. H₂ and H₄ were supported due to significant coefficients to intention via PEOU and PU ($\beta = .87$ and $.45$, respectively; $p < .001$). H₃ was also supported because of significant coefficients from PEOU to intention ($\beta = .03, p < .05$). The total effect of PEOU on intention was $.42$. As shown in Figure 2, TR and three social pressures (coercive, normative, and mimetic) significantly positively impacted intention to use SSTs ($\beta = .11, p < .05$; $\beta = .28, p < .001$; $\beta = .14, p < .05$; and $\beta = .14, p < .05$, respectively). Therefore, findings provided support for H₅ to H₈. Moreover, not only did the R^2 values of $.76$ and $.63$ indicate 76.0% of the variance in PU and 63.0% in intention to use SSTs explained by the model, but also provided evidence in support of the conceptual model.

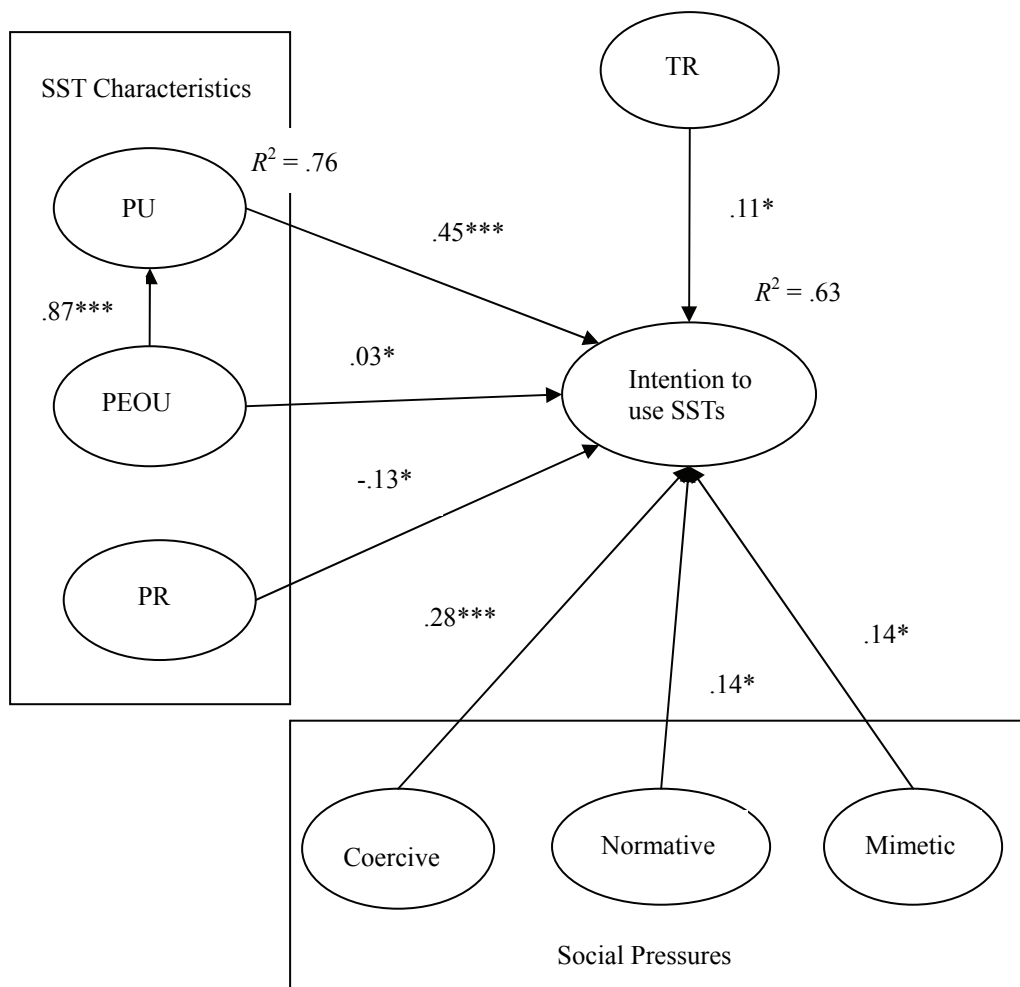


Figure2. The β weight and R^2 values of multiple regression for the Conceptual Model (* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$)



5. Conclusions and Discussion

This study examines the impact of determinants (SST characteristics, consumer propensity, and social pressures) on SST adoption by applying TAM, perceive risk theory, TRI, and institutional theory. The analysis results draw some conclusions. First, due to H₁ statistically supported ($\beta = -.13^*$), the result provides evidence for the hypothesized negative impact of PR on intended usage of SSTs. That is, high PR may affect consumer evaluations and usage of a SST. Consumers with more perceptions of risk on SSTs psychically resist SST acceptance and adoption. This is because consumer assessments of risk perceptions on SSTs are higher than those of risk perceptions on traditional services. This study is consistent with studies by Featherman et al. (2010); and Tsai and Yeh (2010). Second, evidence that H₂ to H₄ are supported reconfirms PU as a critical determinant of intention to use SSTs and PEOU with both a direct effect ($\beta = .03^*$) and an indirect effect through PU ($\beta = .39^{***}$) on intention to use SSTs. Especially, an indirect effect of PEOU through PU on SST usage is much stronger than a direct of PEOU on SST usage. This may be because consumers not just focus on ease-of-use of a SST, but they also pay more attention on usefulness or values (potential benefits) of the SST. This finding also validates TAM as relevant research model in the content of SST adoption. This finding also confirms the study by Lin et al. (2007). Third, the result of H₅ statistically supported ($\beta = .11^*$) illustrates that consumers with higher TR more likely predispose to SST adoption than ones with lower TR do so. In the study by Lin et al. (2007), however, TR has no direct impact on SST usage. However, TR has an indirect effect through PEOU and PU on SST adoption. Therefore, the impact of TR on SST usage is still identified. Based on the results of H₆ to H₈ supported, fourth, it is evident that three social pressures are key determinants of SST adoption, even though mimetic pressures in the results by Shi et al. (2008) have no impact on intended usage of online banking service. These findings further shed light on that individuals in a social environment are always influenced by other social actors (peers, friends, family, and successful and high-status person). Based on 63.0% of the variance in intended usage of SSTs, finally, these determinants in the model can take account into consumer assessments of SST adoption.

5.1 Practical implications

SSTs recognized as one of technologies in service provision can not only provide cost reduction and service quality improvement for companies, but can also provide the afforded convenience and time savings for consumers. However, there is a great challenge of overcoming the resistance to SST adoption in handling transactions between service providers and consumers (Cunningham et al., 2009; Tsai & Yeh, 2010). Analysis of the data in this study also provides practical implications for service providers. Featherman et al. (2010)



further suggest that enhancing perceived corporate credibility and image of SST providers are able to lead consumers to reduce risk perceptions on SST usage. This is because consumers always believe that a good firm can make more efforts to deliver what consumers need and want.

Second, TAM validated in this study identifies PEOU and PU as critical determinants of SST usage. Therefore, service providers have to simplify technological interfaces as well as provide a clearer and more readable manual for this SST usage to consumers. Moreover, SST providers should make more efforts to let consumers understand the potential benefits (perceived usefulness and values) from SST adoption because an indirect effect of PEOU through PU on intention to use SST is far stronger than a direct effect of PEOU on SST usage. For example, consumers can get in-depth understanding of benefits from SST usage through advertisement or training activities by SST providers. As shown in Figure 2, third, TR can be considered as the critical psychological process of consumer assessments on SST adoption. It is recommended that SST providers should place more emphasis on individual indigenous differences by building “the psychographic profile” of their consumers (Lin et al., 2007: 652). Based on the combination of consumer readiness and system characteristics (PEOU and PU), SST providers can more effectively and efficiently segment their target consumers from markets and directly communicate with them. Fourth, SST providers can take advantage of social pressures to make potential consumers jump onto the SST bandwagon (Shi et al., 2008). This can also shed light on why individuals with low TR always adopt an innovation due to social pressures. The significant impact of coercive on SST usage provides a suggestion that SST providers may offer services available or incentives (e.g. promotion, coupon, and discount) only on the internet or the technological interfaces to their consumers.

Regarding normative pressures, SST providers can build a data base of SST users and then create normative expectations through the data (Shi et al., 2008). To be specific, research on subjective norm suggests that word-of-mouth among peers, family, and friends has the significant effect on consumer intentions towards SST adoption in the pre-consumption stage (Liao et al., 2007). SST providers also prompt loyalty of their consumers and further create new consumers through the word-of-mouth of old consumers. Due to the positive effect of mimetic pressures on SST adoption, it is recommended that the high profiles of SST users are able to influence SST usage of others with lower profiles. Through a mouthpiece of successful and high-status actors (e.g. celebrities, politicians, and entrepreneurs), therefore, not only can SST providers keep the current consumers, but can also entice potential consumers to jump onto the SST bandwagon. As shown in Figure 2, finally, the findings illustrate that the effect of coercive on SST usage is stronger than the effect of normative and mimetic on SST usage. It is recommended that exerting coercive pressures are more efficient than exerting the two others.



5.2 Limitations and Direction of Future Research

The present study significantly contributes to rich insights of TAM and TR in service provision and the institutional theory at the individual level by proposing the combination of SST characteristics, consumer technology readiness, and the institutional theory to predict and explain consumer intentions towards SST adoption. However, there are several limitations in the study. First, a lower response rate and the target sample involves only in university students, even though they are considered as accepted survey respondents in academic research. Therefore, findings and conclusions of the study may not be generalized for other user groups. That is, the external validity of the study is limited. Second, due to having 62 items in the questionnaire and similarity in the content between items, respondents may be confused and lose their patience. Moreover, the fact that SSTs involve in a variety of technological interfaces (internet-based interfaces and non-internet-based interfaces) is unable to lead respondents to fully reflect their technology readiness.

Based on the identification of these limitations, this study also provides direction for future research. To validate generalization of the conceptual model, first, future studies may survey other users in different geographies and manage to increase a response rate. Because individuals have different TRI based on different technology-based products and services, second, future studies may focus on only one of SSTs in order to get in-depth understanding of consumer readiness. Finally, prior studies illustrate that determinants leading consumers to adopt SSTs in the pre-consumption stage may not have the significant effect on consumer assessments of SST adoption in the post-consumption stage (Liao et al., 2007). To enhance robustness of the study, therefore, future studies may explore a richer set of variables to predict and explain consumer intended usage of SSTs in the post-consumption stage.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Bitner, M. J., Ostrom, A. L., & Meuter, M. M. (2002). Implementing successful self-service technologies. *Academy of Management Executive*, 16(4), 96-108.
- Broekhuizen, T., & Huizingh, E. K. R. E. (2009). Online purchase determinants: Is their effect moderated by direct experience? *Management Research News*, 32(5), 404-457.
- Burt, R. S. (1987). Social contagion and innovation: Cohesion versus structural equivalence. *American Journal of Sociology*, 92(6), 1287-1335.
- Cunningham, L. F., Young, C. E., & Gerlach, J. (2009). A comparison of consumer views of traditional services and self-service technologies. *Journal of Services Marketing*, 23(1),



11-23.

- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational field. *American Sociological Review*, 48(2), 147-160.
- Elliott, K. M., Meng, J., & Hall, M. C. (2008). Technology readiness and the likelihood to use self-service technology: Chinese vs. American consumers. *Marketing Management Journal*, 18(2), 20-31.
- Eastlick, M. A. (1996). Consumer intention to adopt interactive teleshopping. working paper, Marketing Science Institute, Cambridge, MA, 96-113.
- Featherman, M. S., Miyazaki, A. D., & Sprott, D. E. (2010). Reducing online privacy risk to facilitate e-service adoption: the influence of perceived ease of use and corporate credibility. *Journal of Services Marketing*, 24(3), 219-229.
- Hair, J. F. Jr., Black, W. C., Babin, B. J., Anderson, R. E, Tatham, R. L. (2006). *Multivariate Data Analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Im, S., Bayus, B. L., Mason, C. H. (2003). An empirical study of innate consumer innovativeness, personal characteristics, and new-product adoption behavior. *Journal of the Academy of Marketing Science*, 31(1), 61-73.
- Laukkanen, P., Sinkkonen, S., & Laukkanen, T. (2008). Consumer resistance to internet banking: postponers, opponents and rejecters. *The International Journal of Bank Marketing*, 26(6), 440-455.
- Lee, H., & Greg, B. (2010). *Market Study: 2010 North American Self-Checkout Systems*. Franklin, TN: IHL Group.
- Liao, C., Chen, J. L., & Yen, D. C. (2007). Theory of planning behavior (TPB) and customer satisfaction in the continued use of e-service: an integrated model. *Computers in Human Behavior*, 23(6), 2804-2822.
- Lin, C.-H., Shih, H.-Y., & Sher, P.-J. (2007). Integrating technology readiness into technology acceptance: the TRAM model. *Psychology & Marketing*, 24(7), 641-657.
- Meuter, M. L., Bitner, M. J., Ostrom, A. L., & Brown, S. W. (2005). Choosing among alternative service delivery modes: An investigation of customer trial of self-service technologies. *Journal of Marketing*, 69(2), 61-83.
- Mohamad, R., & Ismail, N. A. (2009). Electronic commerce adoption in SME: the trend of prior studies. *Journal of Internet Banking and Commerce*, 14(2), 1-16.



- Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Parasuraman, A. (2000). Technology Readiness Index (TRI): a multiple-item scale to measure readiness to embrace new technologies. *Journal of Services Research*, 2(4), 307-320.
- Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7(3), 101-134.
- Ram, S., & Sheth, J. N. (1989). Consumer resistance to innovations: the marketing problem and its solutions. *The Journal of Consumer Marketing*, 6(2), 5-14.
- Ranaweera, C., Bansal, H., & McDougall, G. (2008). Web site satisfaction and purchase intentions: impact of personality characteristics during initial web site visit. *Managing Service Quality*, 18(4), 329-348.
- Scott, W. R. (2001). *Institutions and Organizations* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Scott, W. R. (2005). Institutional theory: contributing to a theoretical research program. In K. G. Smith, & M. A. Hitt (Eds.), *Great minds in management: the process of theory development* (pp. 460-484). Oxford, UK: Oxford University Press.
- Shi, W., Shambare, N., & Wang, J. (2008). The adoption of internet banking: an institutional theory perspective. *Journal of Financial Services Marketing*, 12(4), 272-286.
- Stone, R. N., & Grønhaug, K. (1993). Perceived risk: further considerations for the marketing discipline. *European Journal of Marketing*, 27(3), 39-50.
- Taylor, J. W. (1974). The role of risk in consumer behavior. *Journal of Marketing*, 38(2), 54-60.
- Tsai, Y.-C., & Yeh, J.-C. (2010). Perceived risk of information security and privacy in online shopping: a study of environmentally sustainable products. *African Journal of Business Management*, 4(18), 4057-4066.
- Walczuch, R., Lemmink, J., & Streukens, S. (2007). The effect of service employees' technology readiness on technology acceptance. *Information and Management*, 44(2), 206-215.
- Weijters, B., Rangarajan, D., Falk, T., & Schillewaert, N. (2007). Determinants and outcomes of customer use of self-service technology in a retail setting. *Journal of Service Research*, 10(1), 3-21.
- Wu, J.-H., & Wang, S.-C. (2005). What drives mobile commerce?: An empirical evaluation of the revised technology acceptance model. *Information and Management*, 42(5), 719-729.



Xu, D. J. (2007). The influence of personalization in affecting consumer attitudes toward mobile advertising in China. *The Journal of Computer Information Systems*, 47(2), 9-19.



降低消費者使用自助式科技服務的抗拒

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摘要

由於高度的全球化競爭下，自助式科技服務(SSTs)已被認為是一種更有效及更重要的科技在降低投資成本與極大化服務品質。藉由文獻探討，本研究企圖瞭解SSTs特性、消費者科技準備度、社會壓力與SSTs使用之間的關係。8個假設源自於概念性模型被設計去預測與解釋消費者使用SSTs的傾向。透過結構方程模式分析，所有的假設均獲得支持。最後，再根據研究結果，本研究也提供實務上的建議與未來的研究方向。

關鍵字：自助式科技服務(SSTs)、科技準備度、社會壓力

