A Study of Self-serviced Online Banking System: the Role of Quality and Commitment-Assurance

Completed Research Paper

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ABSTRACT

Self-serviced online banking system (OBS) has transformed the banking services to 24hrs/7days available online. The importance of online banking service and its impacts on users and the banking industry have been widely discussed. However, the retention of loyal users in the sense about how to motivate light users to become heavy users and its link with the confirmation of OBS quality are overlooked. This paper introduces information system (IS) success factors and the concept of commitment assurance to empirically investigate OBS users’ continued to use intentions. Results reveal that OBS system and service qualities are significantly important as they are antecedences of OBS user satisfaction. Heavy users show their self-interests in maintaining good relationship with the bank and the differences between heavy and light users are confirmed. Discussions and suggestions for promoting online banking service are given.

Keywords

Online banking service, information system success, service quality, commitment assurance.

INTRODUCTION

It is suggested that banks should ensure people to continue to use online banking services as there are a number of benefits, such as saving costs of hiring staff in the physical banks, or higher customer satisfaction (Aladwani 2001; Angelakopoulos and Mihiotis 2011). However, banks need to determine how to retain customers (Vatanasombut, Igbaria, Stylianou and Rodgers 2008; Angelakopoulos and Mihiotis 2011). Previous studies reveal that extrinsic motivations as perceived usefulness and satisfaction influence people’s decisions about whether to continue utilizing online banking services (Grabner-Kräuter and Faullant 2008; Al-Somali, Gholami and Clegg 2009). However, OBS quality (information system success factors in terms of information/system/service qualities) and the intrinsic motivations of commitment assurance (as it is noted important in relationship marketing strategy) (Heinrich, Zellner and Leist 2011; Park, Lee, Lee and Truex 2012) could be related to user behavior in continue utilizing OBS. However, there is no full examination that involves these variables has been conducted. Therefore, this study is the first attempt to empirically investigate influences of OBS system characteristics of quality, extrinsic motivation (perceived usability, OBS satisfaction) and intrinsic motivation (commitment assurance) on users’ intentions to continue utilizing the OBS. Next section of this paper documents the theoretical background. The research model and hypotheses are presented in section 3. Research methodology is described in section 4. Results of data analysis are presented in section 5. The main contributions and suggestions for promoting OBS are given in the last section.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Bhattacherjee (2001a) proposes an information system (IS) continuance model by extending expectation-confirmation theory in modeling post-acceptance IS user behavior. It is addressed that by investigating the factors that are associated with IS continuance intentions, it reveals the true factors of IS success that depends on continued use rather than first-time use (Bhattacherjee, Perols and Sanford 2008). Constructs of perceived usefulness and system satisfaction are noted been associated with user behavior in continuing utilizing IS (Bhattacherjee 2001ab). Related research investigates cases of the
continued involvement of open-source software developers (Wu, Gerlach and Young 2007), mobile Internet services (Thong, Hong and Tam 2006) and web-based learning systems (Liao, Palvia and Chen 2009). For OBS adoption, it is argued that relationship commitment should be taken into consideration to keep customers (Vatanasombut et al., 2008). The concept of commitment is initially been proposed as an important variable in relationship marketing based on commitment-trust theory (Morgan and Hunt 1994). It is conceptualized that commitment assurance as occurring when an exchange partner puts forth maximum efforts to maintain a valued relationship with another party. In the domain of B2C relationship marketing, commitment assurance has been denoted as essential in building customer loyalty (Eastlick, Lotz and Warrington 2006). Heinrich et al. (2011:221) define the sense of commitment with respect to customer relationship as of being emotionally obligated towards and closely connected with a reference object due to a feeling of moral gratitude or due to common attitudes and standards. This notion also gains the consensus in case of IT services (Park et al., 2012). Importance of trust and its relation to commitment (Flohl and Treiblmaier, 2006; Mukherjee and Nath, 2003) and customer trusting intentions (Yousafzai, Pallister, and Foxall 2005; Luo, Li, Zhang and Shim 2010) are documented in OBS literature, but there are limited findings revealed with respect to the association of commitment assurance to OBS continuous-adopting behavior. This notion also has been agreed by Hoehle, Scornavacca and Huff (2012). As researchers acknowledge two distinct types of commitment as one is emotional in nature and the other one is more economic in its structure (Evanschitzky, Iyer, Plassmann, Niessing and Meffert 2006). This study focuses on the affective and continuance dimension in terms of users’ interests in maintaining relationship with the bank via the usage of OBS. Also, this study takes the basis as OBS adoption intention can be contributed by bank loyalty in physical settings. However, the issue of switch from physical to virtual bank is beyond the main scope of this study. This study focuses on how IS-supported OBS can enhance customer retention which performs on continued to use OBS intentions.

RESEARCH HYPOTHESES

In an effort to add remarks to the body of research, we propose a conceptual model to examine the impacts of user satisfaction (as impacted by IS success factors in terms of information quality, system quality and service quality), perceived usefulness and commitment assurance on OBS continuance intentions (Figure 1). As discussed earlier, the focus of this study is to investigate the link between the precedents of leading users to continue to use OBS in terms of combining extrinsic (perceived usefulness and OBS service satisfaction) and intrinsic factors (commitment assurance). The importance of OBS satisfaction for continuing utilizing the OBS has been noted (Sanchez-Franco, 2009). However, we are interested to know the impact of commitment assurance in terms of users’ self-interests in maintaining relationship with banks via self-serviced OBS. By doing so, this will expand our understandings of OBS post-adoptive behavior and know the link between IS characteristics based on IS success model (DeLone and McLean 2003) and motivations of users based on IS continuance model (Bhattacherjee 2001ab; Bhattacherjee et al. 2008) and commitment-trust theory (Morgan and Huant, 1994) to OBS continuance intentions. These models can be logically linked due to point that banks offer self-serviced OBS over the Internet and users’ adoptive behavior should both been influenced online (the utilization of OBS)and offline (relationship maintenance with the bank). The individual constructs will be discussed with the related hypotheses will be justified in the followings.

![Figure 1. Research Model](image-url)
OBS Quality

The importance of quality in business has often been discussed. However, it is argued that researchers should develop an appropriate scale contextually when referring to quality because quality means different things to different people in different contexts (Chang, Li, Hung and Hwang 2005). In IS domain, DeLone and McLean (2003) state that IS quality is considered as meeting a customer’s expectations of the product or service being delivered. As well, there are six dimensions been proposed to measure IS adoption, they include system quality, information quality, service quality, user satisfaction, IS use, and net benefits. The model has been empirically applied and tested in cases of a knowledge-sharing system (Lin 2008), an Internet tax-filing system (Chang et al. 2005; Wu and Wang 2006), an eGovernment system (Wang and Liao 2008), and an enterprise resource planning (ERP) system in high-tech companies (Chien and Tsaur 2007). For the case of the mobile banking system, Lee and Chung (2009) modified this model to study how IS quality is related to trust and customer satisfaction. Their results show that information quality and system quality are related to trust and customer satisfaction; while service quality is found to be associated with user satisfaction (Chien and Tsaur 2007; Wang and Liao 2008). Therefore, the following hypotheses are proposed:

H1a: OBS information quality is positively associated with system satisfaction.
H1b: OBS system quality is positively associated with system satisfaction.
H1c: OBS service quality is positively associated with system satisfaction.

OBS Continuance Intentions

Bhattacherjee et al. (2008) propose an IS continuance model by extending expectation-confirmation theory in modeling post-acceptance IS user behavior. They propose that perceived usefulness, confirmation and satisfaction indirectly and directly affect IS continuance intention. Several studies empirically validate the IS continuance model and highlight the importance of perceived usefulness and satisfaction (Hong et al. 2006; Kim and Han 2009). Studies conducted by Al-Somali et al. (2009) and Sanchez-Franco (2009) show that perceived usefulness and customer satisfaction have positive relationships with the attitude toward online banking usage. Therefore, the following hypotheses are proposed:

H2: Perceived usefulness is positively associated with intention to continue to use OBS.
H3a: Satisfaction is positively associated with intention to continue to use OBS.

Commitment assurance in online banking

Commitment assurance is noted in the domain of relationship marketing and been proposed as the foundation of the commitment-trust theory (Morgan and Hunt 1994). This concept has been applied to test in cases of securing loyalty in service relationship (Evanschitzky et al. 2006), inter-organizational relationship management (Geyskens, Steenkamp, Scheer, and Kumar 1996), B2C customer relationship (Eastlick et al. 2006), not-for-profit sector (MacMillan, Money, Money and Downing 2005) and online game community (Park and Chung 2011). Our study defines this construct as what customer perceive in terms of the perceived responsibility to maintain the commitment and relationship with the bank in this case. Measures include the perceived benefits and worthwhile in remaining loyal with the bank in terms of adopting the OBS they offer. For OBS post-adoptive behavior, Vatanasombut et al. (2008) initially proposes an OBS continuance model by extending the commitment-trust theory. However, they only highlight the relationship between relationship commitment and trust to customer retention in online banking industry. This study argues that the commitment assurance can also contribute to IS continuance intention. Also, it is noted that satisfaction contributes to the relationship commitment (Abdul-Muhmin 2005). Therefore, the following hypotheses are proposed:

H3b: Satisfaction is positively associated with OBS commitment assurance.
H4: Commitment assurance is positively associated with OBS continuance intentions.
Differences between heavy and light users

It is argued that the model used for IS usage and impact across different users, could result in new insights (Gefen and Straub 1997; Karahanna, Agarwal and Angst 1999). As it is addressed earlier that we aims at investigating the influence of commitment assurance in respect to customers’ behavior in adopting OBS and test its relation based on IS continuance model. By comparing the behavior between loyal customers as heavy users who make good use of OBS and light users, it can assist us to gain detailed information about what should be conducted in promoting this type of self-service. Similar studies have been proposed in the case of online shopping (Chiou and Pan 2009) and potential users and repeated users in mobile banking (Lin, 2011). Studies have revealed that price/value has a stronger effect on overall satisfaction of light shoppers, while trust has a stronger effect on overall satisfaction of heavy shoppers in online shopping. In the case of mobile banking, ease of use has a stronger effect on the adoptive attitude of potential users, while competence has a stronger effect on the adoptive attitude of repeated users. Therefore, the following hypotheses are proposed:

H5: The strength of the relationship of perceived usefulness toward continuing to use the OBS differs between heavy and light users.

H6: The strength of the relationship of satisfaction toward continuing to use the OBS differs between heavy and light users.

H7: The strength of the relationship of commitment assurance toward continuing to use the OBS differs between heavy and light users.

RESEARCH METHODOLOGY

Measurement Development

All measurement items are adapted from the relevant literature and refined in accordance with the domain of online banking. A pre-test of a questionnaire was performed, by involving two experts in finance and two experts in MIS to ensure its logical consistency, ease of understanding, correct wordings and sequence of items. A semantic differential was used to measure the satisfaction of utilizing online-banking services, ranging from unsatisfied to satisfied, poor to excellent, low quality to high quality, and low standard to high standard. For constructs of information quality, system quality, and service quality, commitment assurance, perceived usefulness and continuance intention that are ranged from strongly disagree (1) to strongly agree (5).

Survey administration

We solicited the help of major banks that have long offered online banking services in Taiwan. The banks, which wished to remain anonymous, distributed the questionnaires randomly for their customers who are experienced OBS users. When the survey was completed, 198 valid questionnaires were collected out of 300 (66% of valid rate) after delete the incomplete ones and the same sample size between groups of heavy and light users. These two groups of users are identified based on their OBS usage frequency (heavy users are identified as they use the OBS at least once per day based on their self-declarations; otherwise, the subjects are identified as light users). Overall, the respondents have high level of educational background, providing them with the required computer literacy needed for utilizing the OBS. The collected data is believed to be representative to the group of frequent OBS users (Suh and Han 2002; Vatanasombut et al. 2008).

DATA ANALYSIS
Analysis method

This study uses structural equation modeling (SEM) implemented using partial least squares (PLS) for data analysis. SEM can be used to analyze all of the paths in one analysis (Komiak and Benbasat 2006). PLS is a latent structural equation modeling technique that utilizes a component-based approach to do estimation (Karahanna, Agarwal, and Angst 2006). This technique provides the analysis of both a structural model (assessing the relationships among theoretical constructs) and a measurement model (assessing the reliability and validity of measures).

Measurement model

The measurement model was assessed for the two subgroups. All constructs in the model satisfied the requirements for reliability (composite reliability (CR) greater than 0.70) and discriminant validity (average variance extracted greater than 0.50 and square root of AVE greater than each correlation coefficient). Also, the discriminant and convergent validity are examined (Chin, 1998). To satisfy the requirements, each indicator should load higher on the construct of interest than on any other latent variable. For subgroup analysis, the items should also load and cross-load consistently across samples (Chung and Kwon 2009). The results demonstrate adequate discriminant and convergent validity in accordance with these requirements. (CI: Continued to use OBS intention (CR=0.957), CSA: Commitment Assurance (CR=0.925), IQ: Confirmation of OBS quality in terms of information quality (CR=0.907), PU: Perceived usefulness (CR=0.879), SAT: OBS service satisfaction (CR=0.948), SYQ: Confirmation of OBS quality in terms of system quality (CR=0.924), SQ: Confirmation of OBS quality in terms of service quality (CR=0.922)).

MODEL TESTING RESULTS

The research model is evaluated as the method suggested by Chin (1998). To evaluate the structural models’ predictive power, the R² values for predicting users’ continuance intentions were obtained. The R² value indicates the amount of variance explained by the exogenous variable (Barclay et al. 1995). By applying the bootstrapping technique (N=500), the path estimates and t-statistics were calculated for the hypothesized relationships in the full samples. (Table 1). OBS system quality and service quality are positively associated with system satisfaction (H1b: path coefficient =0.260, p<0.001, H1c: path coefficient = 0.405, p<0.001); perceived usefulness, OBS service satisfaction and commitment assurance are associated with continued to use OBS intentions (H2: path coefficient =0.306, p<0.001, H3a: path coefficient = 0.432, p<0.001, H4: path coefficient =0.178, p<0.05). As well, OBS service satisfaction is associated with commitment assurance (H3b: path coefficient =0.476, p<0.001). Therefore, the relationship between OBS service satisfaction, perceived usefulness and commitment assurance to continue to use OBS intentions are validated.

<table>
<thead>
<tr>
<th>Path</th>
<th>Full Samples (N=198)</th>
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<tbody>
<tr>
<td></td>
<td>Path coefficient</td>
<td>t-value</td>
<td></td>
</tr>
<tr>
<td>H1a: IQ -&gt; SAT</td>
<td>0.065</td>
<td>1.086</td>
<td></td>
</tr>
<tr>
<td>H1b: SYQ -&gt; SAT</td>
<td>0.260</td>
<td>4.871 ***</td>
<td></td>
</tr>
<tr>
<td>H1c: SQ -&gt; SAT</td>
<td>0.405</td>
<td>7.366 ***</td>
<td></td>
</tr>
<tr>
<td>H2: PU -&gt; CI</td>
<td>0.306</td>
<td>4.125***</td>
<td></td>
</tr>
<tr>
<td>H3a: SAT -&gt; CI</td>
<td>0.432</td>
<td>6.116 ***</td>
<td></td>
</tr>
<tr>
<td>H3b: SAT -&gt; CSA</td>
<td>0.476</td>
<td>9.449 ***</td>
<td></td>
</tr>
<tr>
<td>H4: CSA -&gt; CI</td>
<td>0.178</td>
<td>2.530 *</td>
<td></td>
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<tr>
<td>R² = 47.9%</td>
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* p <0.05, **p<0.01, ***p<0.001

Table 1. Results of Path Analysis
Cross-subgroup Comparison – Heavy Users versus Light Users

The differences between heavy users and light users are examined through multi-group analysis with t-statistics as proposed by Henseler et al. (2009), that is, by statistically comparing each path coefficient for heavy users with the corresponding path coefficient for light users (Chin 1998). This statistical comparison test was performed in accordance with that suggestions made by Lin (2011: 257) and Sia et al. (2009: 512). Results are presented in Table 5. It reveals that there are statistical differences of behavior between the two groups of users. Cross-reference with the results depicted earlier (Table 2), it is found that these two groups of users perceive usefulness (t_{stat}=-4.477, HU path coeff.=0.212; LU path coeff.=0.426), service satisfaction (t_{sat}=3.060, HU path coeff.=0.420; LU path coeff.=0.278) and commitment assurance (t_{sat}=3.331, HU path coeff.=0.215; LU path coeff.=0.069) to continue to use intention differently. It is noted that perceived usefulness impacts on OBS continued to use intentions greater among light users (t value=-4.477). Therefore, the difference between heavy and light users are confirmed.

<table>
<thead>
<tr>
<th>Path</th>
<th>Heavy users</th>
<th>Light users</th>
<th>Statistical comparison of paths (t-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H5: PU -&gt; CI</td>
<td>0.212 0.09</td>
<td>0.426 0.09</td>
<td>-4.477***</td>
</tr>
<tr>
<td>H6: SAT -&gt; CI</td>
<td>0.420 0.09</td>
<td>0.278 0.08</td>
<td>3.060**</td>
</tr>
<tr>
<td>H7: CSA -&gt; CI</td>
<td>0.215 0.08</td>
<td>0.069 0.11</td>
<td>3.331***</td>
</tr>
</tbody>
</table>

Table 2. Comparisons Between Heavy and Light Users

CONCLUSION

Findings and implications

This study reveals that OBS characteristics in terms of system and service quality are associated with maintaining user satisfaction, while user satisfaction can be one of the determinants of continuance intention. This contradicts with the findings proposed by Herington and Weaven (2007) who declare that online service quality has no impact on e-trust and customer relationship. Our study presents new findings that the concept of characteristics of IS usage should not be overlooked in maintaining customer loyalty. As virtual bank offers a channel to communicate with customers via providing major banking services online, our results promote the idea that banks should take IS characteristics of system and service qualities into consideration. This can be done by efficiently responses to user requests, securing data transfer and protecting customer personal data, etc.. Furthermore, our study also reveals that perceived usefulness, satisfaction and commitment assurance can explain 47.9% of the variance in users’ continuance intention. This reveals that IS success and continuance model, as well as confirmation-trust theory can be integrated to understand the user behavior of online self-service technology. These echo the notions suggested by Bhattacherjee (2001) and Floh & Treiblmaier (2006) but extends their studies by introducing the concept of commitment assurance which can be regarded as a non-monetary value (Heinrich et al. 2011) in the perspective of online relationship banking (Mukherjee and Nath, 2003). The concept of commitment assurance coincide with the idea of relational commitment (Rusbult, 1983) that represents an individual’s internal representation of dependence on an established relationship and that characterized by an individual’s intrinsic motivation to persist in a long-term relationship (Agnew et al., 1998). This notion has been empirically proven influential among participants in the case of virtual communities (Chiu et al., 2006) and online knowledge-sharing behavior (Huang et al., 2009). It is proposed that people committed to developing long-term relationship with others are more likely to invest in efforts that are specific to the exchange relationship (Gundlach et al., 1995). Therefore, banks should not only offer incentives to attracting new users in adopting OBS but maintain the shared value and trust between the bank and the customer. As Morgan and Hunt (1997: 25) define that shared value as ‘the extent to which partners have beliefs in common about what goals, and policies are important or unimportant, appropriate or inappropriate, and right wrong’. Also, the importance of trust is well documented in relevant...
literature (Mukherjee and Nath, 2003). By doing that, users may consider OBS usage as their routine monetary-dealing plan and receiving the benefits offered by OBS. Also, it is feasible to advise banks to adopt the online social network, as online discussion forum, Facebook, Google plus, etc., for disseminating banking information and having direct communication with customers. As their importance has been proven in commercial industry (Jing and Xie, 2011), there should not be the exception in banking industry.

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