

# **CONSUMER SWITCHING BEHAVIOR FROM ONLINE BANKING TO MOBILE BANKING**

Chian-Son Yu  
Shih Chien University  
No.70, Dazhi St., Zhongshan Dist., Taipei City 104, Taiwan  
csyu@g2.usc.edu.tw

## **ABSTRACT**

Through investigating factors that influence consumers to make a transition from online to mobile banking, this empirical study shows that relative attitude and relative subjective norm positively motivated respondents to switch from Internet to mobile banking while relative perceived behavior control deterred respondents from transitioning. Empirical results also demonstrated that Internet banking is superior to mobile banking in terms of consumer relative compatibility, self-efficacy, resource facilitating conditions, and technology facilitating conditions. Meanwhile, mobile banking emerged as superior to Internet banking for other constructs. By adding a comparative concept into an extended decomposed theory of planned behavior (DTPB) model, this study may expand the applicable domain of current social psychology theories from the adoption of single products or services to the choice between competing products or services that achieve similar purposes and functions.

**Keywords:** Online Banking, Mobile Banking, Decomposed Theory of Planning Behavior, Technological Service

## INTRODUCTION

Internet banking and mobile banking are generally perceived as forms of electronic banking that achieves similar purposes (Laforet & Li, 2005; Laukkanen, 2007; Mintel Market Research Report, 2010; Mobile Banking Association, 2009 & 2011; Sripalawat et al., 2011; Suoranta & Mattila, 2004). However, people access Internet banking via computers connected to the Internet, whereas people access mobile banking via wireless devices (Riquelme & Rios, 2010). Suoranta and Mattila (2004) observed that people frequently choose mobile banking because they favor mobility. Singh et al. (2010) discovered that time-critical customers consider the always-on functionality the most essential feature that attracts them to use mobile banking. By contrast, Koenig-Lewis et al. (2010) noticed that people consider Internet banking the cheaper channel for using banking services. Natarajan et al. (2010) found that Internet banking has substantial advantages in terms of usefulness and purpose and as such, it attracts customers to use online banking services.

As Scornavacca and Hoehle (2007) argued, Internet banking and mobile banking are two alternative channels for banks to deliver services and for customers to acquire services. Several studies (Dasgupta et al., 2011; Koenig-Lewis et al., 2010; Natarajan et al., 2010; Riquelme & Rios, 2010; Scornavacca & Hoehle, 2007;; Singh et al., 2010) reported that Internet banking and mobile banking may differ in channel characteristics and customer preferences. This provides the motivation for this study, which investigates consumers' switching behavior from online to mobile banking. That is, this study aims to understand why certain customers switch from online to mobile banking while others do not (these customers prefer online banking to mobile banking).

The literature review indicated that numerous studies have comprehensively investigated the adoption of a single online or mobile banking, but studies on consumers' switching from online to mobile banking are scant. Similarly, the literature revealed that the adoption of a single technology-enabled service or product has been widely investigated over the past three decades. Conversely, research on consumers' switching behavior from one technology-enabled service or product to another is rare. Therefore, research on consumers' switching behavior between technology-enabled products (i.e., Kindle Fire versus Nook Simple Touch) or services (i.e., online banking versus mobile banking) is critical and deserves more attention. The extensive literature review on consumers' switching behavior also indicated that the earliest research on consumer switching behavior was conducted by Keaveney (1995). Since then, studies investigated

consumers' switching behavior (Bansal & Taylor, 1999; Clemes et al., 2010; Ganesh et al., 2000; Keaveney & Parthasarathy, 2001; Lopez et al., 2006; Mavri & Ioannou, 2008; Roos, 1999; Roos & Gustafsson, 2011; Shin & Kim, 2007; Wieringa & Verhoef, 2007) to help managers and researchers understand this behavior in service industries; however, these studies focused on switching from one provider to another rather on switching between competing services that achieve similar purposes.

In addition, the third impetus for this study was that major social psychology theory-based studies focused almost entirely on the adoption of a single service or product. By adopting a comparative concept with an attempt to build on current social psychological theories, this study may expand the applicable domain of these theories from the adoption of single products or services to the choice between competing products or services that achieve similar purposes and functions. Accordingly, the rest of the paper is organized as follows. Section 2 reviews the related literature, Section 3 paves a theoretical basis and presents the research structure, and Section 4 addresses how to measure constructs and develop a valid questionnaire. The sampling, the profile of respondents, reliability, validity, and hypothesis examination are described in Section 5. Finally, a summary of the main findings, implications, and the limitations of research are discussed in Section 6.

## LITERATURE REVIEW

The literature review indicated that what motivates consumers to transfer from one technology or service to another is rare, but few studies have studied consumer preference between two or three alternatives, such as self-service banking channels (Curran & Meuter, 2005), instant messaging services (Lin et al., 2006), and Web application platforms (Lin et al., 2011). Of these few studies, the theory of planned behavior (TPB) has widely been used to investigate consumers' choice behavior among several non-technology services or alternatives (Berg et al., 2000; Candel & Pennings, 1999; Dabholkar, 1994; Laroche & Sadokierski, 1994). By contrast, the technology acceptance model (TAM) was only employed by Curran and Meuter (2005) to explore consumers' selection behavior among ATM-banking, tele-banking, and online banking. Lin et al. (2006), who utilized the TPB and the relative comparative concept to explore consumers' choices between ICQ and MSN, were the first to add the comparative concept to current social psychological theories. Lin et al. (2011) further applied the extended TPB with the relative comparative concept to project involving the choice between Java

and Microsoft. Recently, Yu (2013) used the relative comparative concept and TPB with two economic effects to explain consumers' switching behavior from online to mobile banking.

By analyzing customer perceptions of online and mobile banking during twenty in-depth interviews with bank customers, Laukkanen (2007) found notable differences in location-free access to the service and the display of the banking device. Through analyzing 2,675 customers from a large Finnish bank, Laukkanen and Pasanen (2008) found that users of Internet banking and mobile banking differ demographically in age and gender. By surveying consumers in Singapore and Thailand, Riquelme and Rios (2010) and Sripalawat et al. (2011), respectively, reported similar findings, indicating that consumers had their own preferred channels (branch banking, ATM, Internet banking, Tele-banking, and mobile banking) when accessing banking services.

Acknowledging the limitations of Internet banking as opposed to widespread cell phone penetration, Dasgupta et al. (2011) observed that the emergence of mobile banking may give banks a favorable commercial opportunity to provide services to rural people who are unable to access the Internet. Considering the large penetration of mobile phones, Cruz et al. (2010) suggested that banks have exceptionally large potential to offer mobile banking services to people living in remote villages where computers connected to the Internet are few. By integrating transition cost and network externality into TPB, Yu (2013) concluded that regular online and mobile banking customers have significant and different perceptions of perceived attitude, perceived behavior control, and network externality.

The above conclusions and observations might explain why Sadi et al. (2010) distinguished mobile commerce from other forms of electronic commerce. Furthermore, Riquelme and Rios (2010) argued that the main customer segments of mobile and Internet banking might be dissimilar while Dasgupta et al. (2011) contended that early mobile banking users might not be current Internet banking users. Literature review revealed that Internet and mobile banking customers differ in many aspects, demographic characteristics, and lifestyles and have different perceptions of Internet and mobile banking. Thus, the existing studies motivated this research to explore the factor that influence people to transition from online banking to mobile banking.

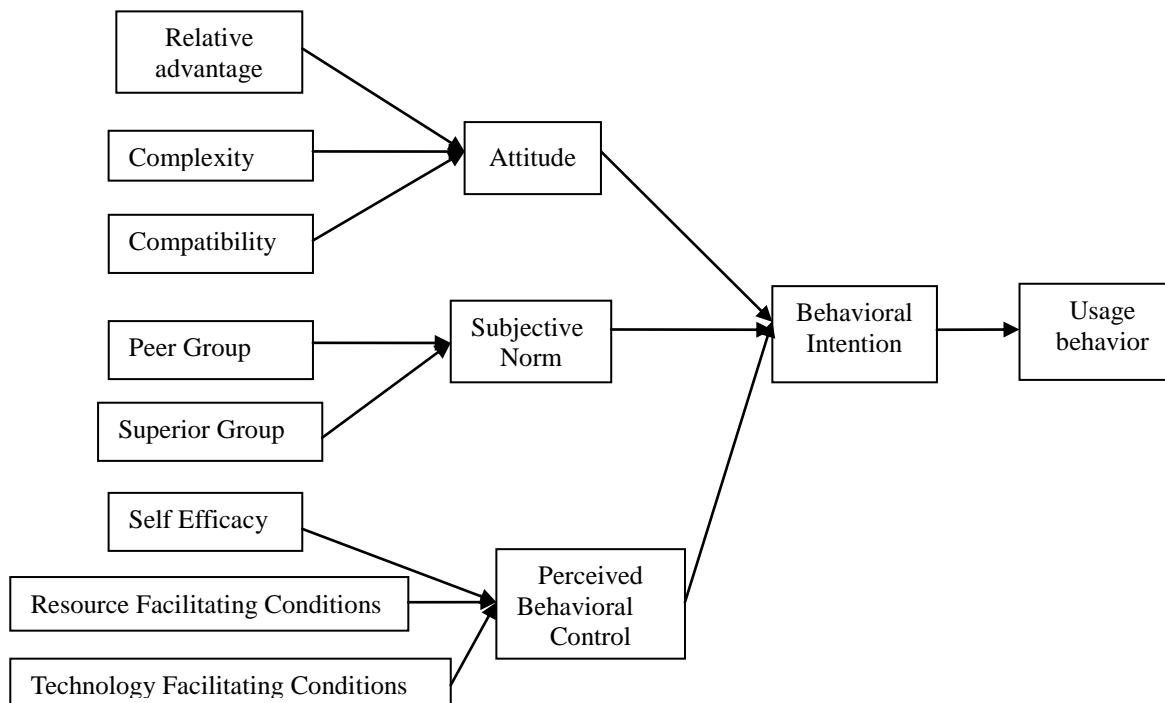
## THEORETICAL BASES AND RESEARCH HYPOTHESES

Although factors that motivate consumers to transfer from one technological service or product to another have rarely been studied, the literature review showed that this study is not unique. Among the few studies investigating the selection between several alternatives, Laroche and Sadokierski (1994), Dabholkar (1994), Candel and Pennings (1999), Berg et al. (2000), Lin et al. (2006 and 2011), and Yu (2013) applied TPB to explore choice behavior between two or three services while only Curran and Meuter (2005) chose TAM to explore the consumer selection between competing alternatives. In contrast to the TAM, which assumes that perceived usefulness and perceived ease-of-use are always the primary determinants of adoption decisions, the TPB treats beliefs as situation-specific. That is, the TPB requires explicit behavioral alternatives to ensure high specificity, whereas the TAM does not (Mathieson, 1991). Therefore, TAM limits researchers to capture respondents' explicit comparison of competing alternatives (Muthithcharoen et al., 2011).

Given that the TPB has been shown to be more effective in predicting the factors that influence consumers to make choices between competing alternatives, this study employed the decomposed TPB (DTPB) and the relative comparative concept as a theoretical basis to investigate what influences people to make a transition from online to mobile banking. DTPB was presented by Taylor and Todd (1995) who contended that there were two important research approaches to understanding what affects people to adopt an innovation. One is intention-based research and the other is innovation diffusion based research. Intention-based research uses BI to predict the adoption behavior and focuses on identifying the determinants of intention, such as attitudes, social influences, and facilitating conditions (Taylor & Todd, 1995).

Innovation diffusion based research uses individual innovation diffusion characteristics to predict the adoption of behavior and focuses on user characteristics, innovative characteristics, information resources, and communication channels. By adopting the concept of innovation diffusion theory to decompose TPB, Taylor and Todd (1995) decomposed the structure of attitudinal belief into three dimensions of relative advantage, complexity, and compatibility, decomposed the structure of normal belief into peers group and superiors groups, and decomposed the structure of control belief into self-efficacy, resource facilitating conditions (RFC), and technology facilitating conditions (TFC). A review of literature on DTPB (Puschel et al., 2010; Shih & Fang, 2004; Taylor & Todd, 1995) indicates that the explanatory power of DTPB is higher than

that of pure TPB. DTPB also provides better diagnostic values compared to original TPB and greater insights into what influences individuals to adopt an innovation. However, due to the parsimony of TPB, extant literature consists of fewer DTPB-based studies than TPB based studies. The major reason may be that the decision about which model to use involves a trade-off between research parsimony and research depth (Taylor & Todd, 1995).



**Figure 1 The Decomposed TPB (Taylor and Todd, 1995)**

Based on the above literature and in accordance with the DTPB research structure, as depicted in Figure 1, this study employs a relative comparative concept to posit the following hypotheses:

- H1:** Perceived relative BI significantly influences people to transition from online to mobile banking;
- H2:** Perceived relative attitude significantly influences individual relative BI;
- H3:** Perceived relative SN significantly influences individual relative BI;
- H4:** Perceived relative PBC significantly influences individual relative BI;
- H5:** Perceived relative advantage significantly influences individual relative attitude;

- H6:** Perceived relative complexity significantly influences individual relative attitude;  
**H7:** Perceived relative compatibility significantly influences individual relative attitude;  
**H8:** Peer group significantly influences individual relative SN;  
**H9:** Superior group significantly influences individual relative SN;  
**H10:** Perceived relative self-efficacy significantly influences individual relative PBC;  
**H11:** Perceived relative RFC significantly influences individual relative PBC; and  
**H12:** Perceived relative TFC significantly influences individual relative PBC.

### **QUESTIONNAIRE DEVELOPMENT AND DATA COLLECTION**

In accordance with the above DTPB research structure and hypothesis, the literature on the adoption of Internet banking and mobile banking has been extensively reviewed. Accordingly, factors used and assessed may vary among authors but the core implications behind these factors are similar and can be classified into constructs of DTPB. Moreover, given that the research is based on DTPB and the relatively comparable concept, this study operationalized the construct of actual behavior by asking respondents to indicate their agreement with statement “I currently use mobile banking rather than Internet banking” on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Similarly, items assessing relative complexity, relative compatibility, peer group, superior group, self-efficacy, relative RFC, relative TFC, relative attitude, relative SN, relative PBC, actual behavior, and relative BI were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The items are tabulated in the Appendix. The first section of the questionnaire contained 37 questions assessing respondents’ constructs, and the second section contained 7 questions. Since this study presumes that consumers access Internet banking before mobile banking, the first question asked respondents whether they preferred online banking to mobile banking. If they responded “yes”, the questionnaire was regarded as a valid. The remaining six questions collected respondents’ basic data.

Compared with the huge literature focused on the adoption of single online or mobile banking, this work is still a pioneer study of using the relative comparative assessment to examine what motivates individuals to transition from online to mobile banking. Consequently, two focus-group discussions involving e-banking executives and scholars were conducted to check and reword the questionnaires. After ensuring that the questionnaire reflects the research purpose and that items load highly on their

corresponding factors, a pre-testing with twenty respondents was performed to ensure that the questionnaire was clear and understandable.

**Table 1 The Profile of Valid Respondents**

		Number of Respondents	Percentage
Gender	Male	173	51.8%
	Female	161	48.2%
Age	Less than 20-year-old	11	3.2%
	20-25 years old	91	26.2%
	25-30 years old	83	23.9%
	30-35 years old	72	20.7%
	35-40 years old	54	15.6%
	40-45 years old	23	6.6%
	above 45 years old	13	3.7%
Occupation	Government/Military	16	4.6%
	Culture/Media/Education	22	6.3%
	Bank/Finance/Insurance	41	11.8%
	ICT/Electronics	75	21.6%
	Construct/Manufacturing	34	9.8%
	Bio Industry/Hospital	13	3.7%
	General Service	49	14.1%
	Student	90	25.9%
Others	7	2.0%	
Education	Senior High Diploma	35	10.5%
	Associate Bachelor Degree	42	12.6%
	Bachelor Degree	199	59.6%
	Master Degree	52	15.6%
	Ph.D. Degree	6	1.8%
Monthly Income	Less than NT\$ 20,000	121	36.2%
	NT\$ 20,000 - 30,000	54	16.2%
	NT\$ 30,000 - 40,000	61	18.3%
	NT\$ 40,000 - 50,000	32	9.6%
	NT\$ 50,000 - 60,000	31	9.3%
	NT\$ 60,000 - 70,000	12	3.6%
	Over NT\$ 70,000	23	6.9%

Considering the research effectiveness in terms of time, manpower, and limited funding, this study posted questionnaires on several popular websites. To diversify respondents, the survey was posted on various online communities to attract various participants completing the survey. After discarding invalid and incomplete



questionnaires, this study collected 347 valid responses during one-month online survey from mid December 2011 to mid January 2012. Table 1 lists the participants' demographics, indicating that 173 (51.8% of the 347 valid samples) participants were male and 161 (48.2%) were female. Of all online respondents, 3.2% were younger than 20 years old, 26.2% were 20-25 years old, 23.9% were 25-30 years old, 20.7% were 30-35 years old, 15.6% were 35-40 years old, 6.6% were 40-45 years old, and 3.7% were older than 45 years of age. Around 77% of respondents had a bachelor degree or higher, 25.9% were students, and 70.7% had average monthly incomes below NT\$ 40,000.

### **DATA ANALYSIS AND HYPOTHESIS EXAMINATION**

AMOS 18.0 was used to validate the 13 constructs, as depicted in Fig. 1, via confirmatory factor analysis (CFA). The psychometric properties of the research model were examined in terms of reliability, convergent validity, and discriminant validity. As suggested in the literature (Lee et al., 2009; Yu, 2011), Cronbach's alpha was used to assess the reliability, factor loadings, composite reliability. The average variance extracted (AVE) was used to assess the convergent validities while the discriminant validity was assessed by examining whether the squared roots of AVE exceeded the correlations between all possible pairs of latent variables.

As shown in Table 2, all factors in the measurement model had adequate reliabilities and convergent validities in that all Cronbach's alpha values and factor loadings were greater than 0.7, the composite reliabilities exceeded acceptable criteria of 0.6, and the AVEs were greater than the threshold value of 0.5 in all cases. In Table 3, all square roots of AVE are shown diagonally and correlations between constructs off-diagonally, indicating that all correlations were higher than corresponding AVEs, supporting the discriminant validity.

As suggested by literature (Bagozzi and Yi, 1988 and 2012; Arbuckle, 2009), the degree of fit of the overall research model was examined using Chi-square over degree of freedom ( $\chi^2/df$ ), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normalized fit index (NFI), non-normalized fit index (NNFI), comparative fit index (CFI), incremental fit index (IFI), root mean square residual (RMSR), and root mean square error of approximation (RMSEA). Since all computed figures from the study exceeded the recommended acceptance levels (i.e.,  $\chi^2/D.F \leq 3.0$ ,  $GFI \geq 0.8$ ,  $AGFI \geq 0.8$ ,  $NFI > 0.9$ ,  $NNFI > 0.9$ ,  $CFI > 0.9$ ,  $IFI > 0.9$ ,  $RMSA \leq 0.1$ , and  $RMSEA \leq 0.08$ ), the goodness of fit between the proposed model and the observed data was verified.

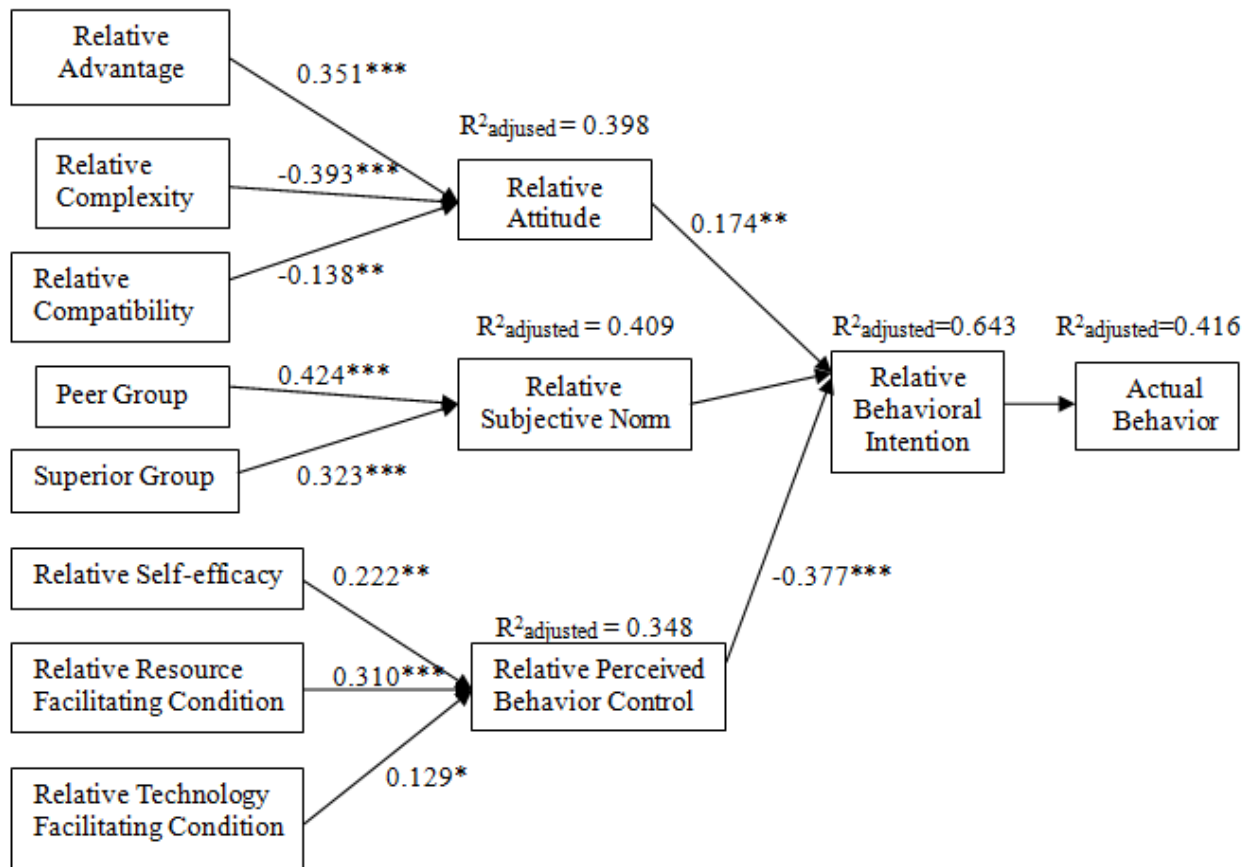
**Table 2 Reliability and Validity Examination of the Constructs**

Construct	Items	Factor Loadings	Cronbach's Alpha	Composite Reliability	AVE
Relative Advantage	RA1	0.791	0.882	0.853	0.659
	RA2	0.921			
	RA3	0.819			
Relative Complexity	RCPX1	0.853	0.895	0.898	0.746
	RCPX2	0.945			
	RCPX3	0.786			
Relative Compatibility	RCPA1	0.897	0.907	0.911	0.774
	RCPA2	0.962			
	RCPA3	0.769			
Peer Group	PG1	0.842	0.856	0.866	0.686
	PG2	0.935			
	PG3	0.708			
Superior Group	SG1	0.921	0.889	0.894	0.740
	SG2	0.909			
	SG3	0.739			
Relative Self-efficacy	RSE1	0.846	0.907	0.909	0.770
	RSE2	0.959			
	RSE3	0.822			
Relative Resource Facilitating Conditions	RRFC1	0.832	0.884	0.887	0.724
	RRFC2	0.891			
	RRFC3	0.828			
Relative Technology Facilitating Conditions	RTFC1	0.775	0.708	0.791	0.706
	RTFC2	0.881			
	RTFC3	0.706			
Relative Attitude	RAT1	0.841	0.826	0.830	0.633
	RAT2	0.813			
	RAT3	0.820			
Relative Subject Norm	RSN1	0.938	0.925	0.937	0.767
	RSN2	0.924			
	RSN3	0.897			
Relative Perceived Behavioral Control	RPBC1	0.875	0.895	0.892	0.724
	RPBC2	0.921			
	RPBC3	0.845			
Relative Behavioral Intention	RBI1	0.852	0.893	0.895	0.748
	RBI2	0.928			
	RBI3	0.866			

**Table 3 Discriminant Examination of the Constructs**

	RA	RCPX	RCPA	PG	SG	RSE	RRFC	RTFC	RAT	RSN	RPBC	RBI
RA	0.812											
RCPX	-0.616 **	0.864										
RCPA	-0.477 **	0.492* *	0.880									
PG	0.377* *	-0.437 **	-0.098	0.828								
SG	0.338* *	-0.468 **	-0.060	0.782* *	0.860							
RSE	-0.450 **	0.314* *	0.015	-0.349 **	-0.311 **	0.877						
RRFC	-0.343 **	0.394* *	0.034	-0.205 **	-0.282 **	0.781* *	0.851					
RTFC	-0.306 **	0.465* *	0.030	-0.255 **	-0.332 **	0.559* *	0.650* *	0.840				
RAT	0.627* *	-0.669 **	-0.291 **	0.394* *	0.378* *	-0.439 **	-0.382 **	-0.350 **	0.796			
RSN	0.374* *	-0.378 **	0.083	0.727* *	0.605* *	-0.350 **	-0.351 **	-0.259 **	0.408* *	0.876		
RPBC	-0.409 **	0.476* *	0.030	-0.355 **	-0.356 **	0.481* *	0.592* *	0.278* *	-0.455 **	-0.376 **	0.851	
RBI	0.517* *	-0.565 **	-0.304 **	0.631* *	0.592* *	-0.457 **	-0.585 **	-0.283 **	0.344* *	0.604* *	-0.642 **	0.865

Following the empirical analysis of the data collected from 347 respondents, Figure 2 reveals that relative BI significantly influenced individual behavior. Moreover, relative attitude, SN, and PBC significantly influenced BI. Additionally, relative advantage, complexity, and compatibility significantly influenced relative attitude. Peer group and superior group influenced the relative SN, and relative self-efficacy, RFC and TFC influenced relative PBC. The generated  $R^2_{\text{adjusted}}$  were 0.416, 0.643, 0.398, 0.409, and 0.348 for actual behavior, relative BI, relative attitude, relative SN, and relative PBC, respectively. The empirical results supported the proposed model structure in predicting and explaining what encourages or discourages consumer transition from online to mobile banking.



**Figure 2 Path Coefficients with  $R^2_{adjusted}$  Values for the Research Model**

As noted, traditional studies on the adoption of single technology or service have often indicated that the coefficients between constructs in DTPB model are all positive. When the relative comparative assessment was employed in this work, the generated path coefficients between relative complexity and relative attitude, relative compatibility and relative attitude, and relative BI and relative PBC were -0.393, -0.138, and -0.377, respectively. Because relative advantage and relative complexity significantly influenced the relative attitude at  $p < 0.001$  and relative compatibility influenced the relative attitude at  $p < 0.01$ , this study identified the negative coefficient between relative complexity and relative attitude, suggesting that respondents believed that using mobile banking was not complicated and even easier than using Internet banking.

Similarly, by carefully analyzing respondents' assessments of relative compatibility, the negative coefficient between relative compatibility and relative may have emerged because respondents may have been accustomed to using banking services over the Internet rather than through mobile devices. That is, respondents were required to make fewer changes and spend less time and money on Internet banking compared to mobile banking. This phenomenon reveals that the current state of consumer living and working habits or environments still favors Internet banking over mobile banking.

According to respondents' assessments, Internet banking exceeds mobile banking in relative compatibility, whereas mobile banking surpasses Internet banking in relative complexity and advantage. Regarding relative attitudes evaluated by respondents, encouraging influences were exercised by relative advantage and complexity (in which mobile banking was superior to Internet banking) and discouraging influences were exercised by relative compatibility (in which Internet banking was superior to mobile banking). These findings may explain why the path coefficient between relative BI and relative attitude was only 0.174 at a significant level of  $p < 0.01$  instead of  $p < 0.001$ .

When compared with findings derived from the analysis of the relation between relative attitude and other constructs, relative PBC showed similar results. Looking at Table 4, the correlations between relative BI and other four constructs (relative PBC, self-efficacy, RFC and TFC) were all negative. Using drill-down analysis, the mean values of relative BI, PBC, self-efficacy, RFC and TFC were 3.96, 2.43, 2.81, 1.97, and 2.25, respectively, on the five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Since Figure 2 shows negative path coefficient between relative PBC and relative BI, this study interpreted that although online banking was assessed superior to relative PBC, self-efficacy, RFC and TFC, respondents still expressed willingness to transition from online to mobile banking. Additionally, almost all DTPB-based studies on the adoption of mobile banking have indicated that cell phone use was increasing, contrary to our expectations, while mobile banking use was decreasing (Brown et al., 2003; Shih & Fang, 2004; Puschel et al., 2010). This is consistent with recent industry reports (Mobile Banking Association, 2009 & 2011; Mintel Market Research Report, 2010) and recent literature on the adoption of mobile banking (Sadi et al., 2010).

Through the above analysis, this study found that respondents had more confidence, capability, and resources to use banking services through the Internet rather than mobile devices. This result could have emerged for several reasons: (1) the penetration rate of cell phone is extremely high, but many people had not yet started using smart phone

during the survey period; (2) the cost of using web-based services through the Internet is much lower than through mobile devices because the telecommunication industry is monopolized by a single company in Taiwan; (3) the quality of 3G performance is poor, since the Taiwanese public frequently complains about it; and (4) the schedule for constructing and completing 4G infrastructure in Taiwan is far behind that seen in other major countries (i.e., the United States, the United Kingdom, Germany, Japan, Korea, Singapore, and Nordic countries).

However, caution must be exercised in explaining the figures derived through this work because approximately 74% of respondents in the study were younger than 35 years old. Furthermore, 77% had a bachelor degree or higher, and 70.7% had average monthly incomes below NT\$ 40,000. Based on these figures, young and highly educated consumers may use mobile phones frequently, which may explain why respondents believed that using mobile banking is not difficult and even easier than using Internet banking. Likewise, low- to medium-income consumers may have tighter budget, which may explain why respondents feel that using wireless banking services or mobile device to access banking services is more expensive than using Internet banking. Moreover, concerning the difference between Taiwan and other countries, the cost of surfing wireless network and using wireless services in Taiwan is relatively high because of the monopoly of telecommunication industry and licenses. Thus, this study is merely a starting point, and more elaborate studies are needed (especially conducted in other countries) to ascertain the above phenomenon.

In a study conducted by Brown et al. (2003) conducted in South Africa, even though respondents were young, educated, and more affluent, only 5.7% had used mobile banking. Brown et al. (2003) did not explore the actual behavior for using mobile banking, but confirmed that the DTPB model was superior to TRA and TPB models for predicting and explaining intentions to use mobile banking. However, the DTPB research structure employed in Brown et al. (2003) explained only 38% of the variance in intention to use mobile banking. In a study conducted by Shih and Fang (2004), although their DTPB model was able to explain 66% of the variance in intention to use mobile banking, their model explained only 23% of the variance in actual mobile banking use. They also concluded that the relative advantage and complexity substantially influence attitude but that compatibility did not have any salient affect on attitude. Furthermore, only self-efficacy was shown to significantly influence PBC. Facilitating conditions, on the other hand, did not play a salient role. This study's findings are different from those

reported by Shih and Fang (2004) partly because our study focused on the transition from Internet to mobile banking while Shih and Fang's study focused on the adoption of mobile banking.

Recently, Puschel et al. (2010) divided respondents into mobile banking users and nonusers and found that their DTPB model explained 69% and 22% of the variance in intention to use mobile banking for mobile banking nonusers and users, respectively. Regarding mobile banking nonusers, Puschel et al. (2010) discovered that attitude and SN significantly influenced the intention, whereas PBC did not. Furthermore, compatibility significantly influenced attitude while TFC and self-efficacy significantly affected PBC. Their empirical results revealed that considerations of lifestyle compatibility resulted in reluctance to use mobile banking, which is similar to findings of this study.

For mobile banking users, Puschel et al. (2010) reported that attitude, SN, and PBC significantly influenced intention to use mobile banking. Based on their findings, Puschel et al. (2010) concluded that their DTPB model was useful for predicting intention (possible future behavior). As commented by Puschel et al. (2010), compatibility with lifestyle is a crucial factor in determining mobile banking use because mobile banking is a personal matter. The results of this study support this argument. However, they did include actual behavior of using mobile banking into their DTPB model.

In contrast to the above DTPB-based studies, the present empirical DTPB study was based on the relative comparative concept, and it considered both intention to use and actual behavior of using mobile banking. The results indicated that the presented model could effectively predict and explain both intention and actual behavior regarding the transition from Internet to mobile banking. In a study on the adoption of a single service (mobile banking),  $R^2_{BI}$  and  $R^2_{AB}$  were 0.66 and 0.23, respectively (Shih & Fang, 2004); in the present study,  $R^2_{BI}$  was 0.641 and  $R^2_{AB}$  was 0.416. Therefore, the proposed research structure based on 347 responses was empirically verified to forecast what encourages or discourages consumer transition from Internet to mobile banking.

## **IMPLICATIONS, CONCLUSIONS AND LIMITATIONS**

By employing DTPB and the relative comparative concept to develop a research structure that would identify what prompts consumer to transition from Internet to mobile banking, this empirical study shows that relative attitude and relative SN positively motivated respondents to switch from Internet to mobile banking while relative PBC deterred respondents from transitioning. The empirical results also demonstrated that

Internet banking is superior to mobile banking in terms of consumer relative compatibility, self-efficacy, RFC, and TFC while mobile banking is superior to Internet banking for other constructs.

Regarding relative attitude and its antecedents and consequences, the computed results reveal that mobile banking is inferior to Internet banking only in relative compatibility. Therefore, this study suggests that banks implement rewarding or bonus program and experiential marketing or “trying out” strategies to attract potential customers. In other words, banks are suggested to offer free mobile banking trials to potential customers, offer potential customers incentives (i.e., cash, gift vouchers or transaction fee discount), or build a program/scenario that motivates potential customers to freely use mobile banking for a certain period. The main idea behind these suggestions is to increase people’s willingness and push them to take actions to try mobile banking. Once consumers are accustomed to mobile banking, their lifestyle would gradually evolve and become compatible with mobile rather than Internet banking (particularly, technologies in mobile 4G wireless communication have rapidly advanced in 2010s).

Regarding relative SN and its antecedents and consequences, Figure 2 shows that peer group and superior group significantly influence relative SN and that relative SN plays a salient role in influencing people to transition from the Internet to mobile banking. The results generated in this study indicate that mobile banking is superior to Internet banking in terms of peer group, superior group, and relative SN. This phenomenon demonstrates that the public views mobile banking as an inevitable future trend, which may explain why the average assessment of relative BI is high. Accordingly, this empirical study would recommend that banks should implement celebrity or testimony marketing strategies to reinforce the positive and trendy image. That is, banks may invite popular sport star, respected national figure, successful businesspeople with positive image, or scholars with good reputations to introduce the advantages and benefits of mobile banking or simply recommend mobile banking to the public. These strategies would be useful because both peer group and superior group significantly influence relative SN and relative SN substantially affects relative BI, which significantly influences actual behavior.

Aside from improving relative attitude and SN, the empirical results would also suggest that banks should put more efforts on relative PBC because it discourages respondents from transitioning from the Internet to mobile banking, whereas the relative attitude and SN encourage this transition. Given that relative self-efficacy, RFC, and TFC



significantly influences relative PBC, this study would suggest that banks re-evaluate current strategies to improve these factors in potential customers. Since mobile banking involves wireless communication, Internet services, mobile devices, and banking services, it becomes important to re-evaluate how mobile banking can work in conjunction with these main determinants more efficiently and cost effectively to increase relative self-efficacy, RFC, and TFC in potential and current customers.

However, improving 3G communication quality, building 4G communication services, and providing affordable smart phones depends on the government, cell phone suppliers, and telecommunication service providers. Consequently, banks are suggested to find other approaches through which to increase relative PBC to attract potential mobile banking users. For example, banks can offer new mobile banking members a free smart phone on an installment plan, allow customers using mobile banking to accumulate bank customer bonus points that could be used to pay telecommunication service fees, provide customers valued-added wireless services when they pay a certain membership fee, and construct 4G environments within bank branches or ATM.

Concerning the factors that influence individuals' decision to switch from Internet to mobile banking, this study concluded that relative SN and PBC play the most salient roles in determining whether people transfer from Internet to mobile banking. Referring to Shih and Fang (2004), they concluded that attitude and PBC significantly influenced BI but SN did not exercise any substantial influence on BI. Furthermore, Figure 2 shows that relative advantage and relative complexity significantly influence respondents' relative attitude and that relative compatibility significantly affects respondents' relative attitude. According to Shih and Fang (2004), however, relative advantage and complexity affected significantly only attitude. In addition, Shih and Fang (2004) found that self-efficacy affected significantly only PBC, whereas the results of the present study illustrated that the relative RFC, self-efficacy, and TFC (in the order of their influential power) significantly affected PBC.

The variance in actual behavior explained by relative BI was only 0.416 lower than expected. Therefore, based on the hypotheses that BI and PBC together rather than BI alone predict and explain only actual behavior, as suggested by Lin et al. (2006 & 2011) and recent literature (Macredie & Mijinyawa, 2011), this research employed the linear regression technique to examine the joint influence of relative BI and relative PBC on actual behavior. After running SPSS, the empirical results showed that the variance in actual behavior explained by both relative BI and PBC was 0.673, higher than 0.416

explained by relative BI alone. This result implies that a link should be added between relative PBC and actual behavior. As a result, the revised DTPB may be able to predict and explain the individual actual transition behavior from Internet to mobile banking more effectively. Besides, when comparing Table 1 with Appendices A and B, it is shown that the security, risk, trust, privacy, credibility, and confidence are not taken into the presented research structure.

Based on the above discussions, this study has some theoretical implications. First, the crucial factors in adoption of a single service or technology and in the transition from one service/technology to another may differ. Second, the influential power or weight of salient factors that affect the adoption of single service or technology and the transition from one service/technology to another may also vary. Third, a connection between relative PBC and actual behavior may be added into DTPB model to predict more effectively actual transition behavior from one service/technology to another one that achieves similar functions and purposes. Fourth, huge studies based on social psychology theories, such as TAM, TPB, or their variations, focused on the adoption of single service or product has caused these types of studies to become overflow and fully mature. By adding a relatively comparative concept into an extended TPB model, this study may expand the domain of current social psychology theories from the adoption of single product or service to the choice between competing products or services.

However, the present study has also certain limitations. First, given that using only respondents' demographics information to conduct analysis may yield cursory findings and simplistic profile and that these findings may lead to the stereotypical imaginings and understandings, respondents' psychographic and socio characteristics might need to be surveyed and applied in future research frameworks. Identifying the lifestyle patterns of respondents is quite useful, especially when designing technology-enabled services and products.

Second, this study considered only two scenarios, as described in Yu (2013). However, scenarios in the actual market can be substantially more complex. For instance, some consumers may incompletely or partially switch from one service (e.g., online banking) to another (e.g., mobile banking), resulting in using both, depending on situations. This incomplete switching can represent a third scenario, which appears to be particularly common. Furthermore, Riquelme and Rios (2010) and Dasgupta et al. (2011) indicated that the primary customers using mobile and online banking might be dissimilar, and that early adopters of mobile banking might not originate from online banking

customers. This implies that potential customers might decide to adopt mobile banking without comparing services with Internet banking, representing a fourth scenario. Therefore, this study is merely a pioneer work. Further studies containing more scenarios are required to assert the findings and support the theoretical implications.

Third, given that the existing literature on the adoption of single technology or service considers the security, risk, trust, privacy, credibility, and confidence as very important factors, trust or security concerns should be included in the future study. Fourth, to enhance the validity and generalization of this empirical study, future studies should be conducted in different countries or cultures. Fifth, due to the rapid advances and convergences in information and communication technology over the past decade, the influence of Internet and mobile communications has become more significant and has markedly affected the methods with which banks deliver services to their customers as well as the way people use banking services. Therefore, future studies may further divide banking services into basic service, valued-added services, and profitable services. Thereafter, further studies could utilize the research structure presented herein to examine and clarify the role of service and to find clues concerning the factors that motivate people to transition from basic service to advanced or profitable services.

Sixth, by employing the relative comparative concept and DTPB as a research framework, this work empirically investigated factors that influence consumers to transition from Internet to mobile banking. Consequently, this empirical study may offer clues to assist banks in designing services or marketing strategies to capture target customer sectors as well as advance current theoretical knowledge of factors that motivate consumers transfer from one technology or service to another. However, caution is required when generalizing the findings to other countries or developing elaborate business and marketing strategies for other technologies or services.

### **ACKNOWLEDGEMENTS**

This paper is supported by National Science Council of The Republic of China under Contact Number: NSC 98-2416-H-158-003.

### **REFERENCES**

- Amin, H., Hamid, M.R.A., Lada, S., & Anis, Z. (2008). The adoption of mobile banking in Malaysia: The case of Bank Islam Malaysia Berhad. *International Journal of Business and Society*, 9(1), 43-53.

- Arbuckle, J.L. (2009). *AMOS 18 User's Guide*. Amos Development Corporation: Crawfordville, NJ.
- Bagozzi, R.P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74-94.  
<http://dx.doi.org/10.1007/BF02723327>.
- Bagozzi, R.P., & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science*, *40*(1), 8-34.  
<http://dx.doi.org/10.1007/s11747-011-0278-x>.
- Bansal, H.S., & Taylor, S.F. (1999). The service provider switching model (SPSM): A model of consumer switching behavior in the service industry. *Journal of Service Research*, *2*(2), 200-218. <http://dx.doi.org/10.1177/109467059922007>.
- Berg, C., Johnson, I., & Conner, M. (2000). Understanding choice of milk and bread for breakfast among Swedish children aged 11-15 years: An application of the theory of planned behavior. *Appetite*, *34*(1), 5-19. <http://dx.doi.org/10.1006/appe.1999.0269>.
- Brown, I., Zaheeda, C., Douglas, D., & Stroebel, S. (2003). Cell phone banking: predictors of adoption in South Africa – an exploratory study. *International Journal of Information Management*, *23*(1), 381-394.  
[http://dx.doi.org/10.1016/S0268-4012\(03\)00065-3](http://dx.doi.org/10.1016/S0268-4012(03)00065-3).
- Candel, M.J.J.M., & Pennings, J.M.E. (1999). Attitude-based models for binary choices: A test for choices involving an innovation. *Journal of Economic Psychology*, *20*(2), 547-569. [http://dx.doi.org/10.1016/S0167-4870\(99\)00024-0](http://dx.doi.org/10.1016/S0167-4870(99)00024-0).
- Chan, S.C., & Lu, M.T. (2004). Understanding Internet banking adoption and use behavior: A Hong Kong perspective. *Journal of Global Information Management*, *12*(3), 21-43. <http://dx.doi.org/10.4018/jgim.2004070102>.
- Clemes, M.D., Gan, C., & Zhang, D. (2010). Customer switching behavior in Chinese retail banking industry. *International Journal of Bank Marketing*, *28*(7), 519-546.  
<http://dx.doi.org/10.1108/02652321011085185>.
- Cruz, P., Neto, L.B.F., Munoz-Gallego, P., & Laukkanen, T. (2010). Mobile banking rollout in emerging markets: Evidence from Brazil. *International Journal of Bank Marketing*, *28*(5), 342-371. <http://dx.doi.org/10.1108/02652321011064881>.
- Curran, J.M., & Meuter, M.L. (2005). Self-service technology adoption: Comparing three technologies. *The Journal of Services Marketing*, *19*(2), 103-113.  
<http://dx.doi.org/10.1108/08876040510591411>.

- Dabholkar, P.A. (1994). Incorporating choice into an attitudinal framework: Analyzing models of mental comparison processes. *Journal of Consumer Research*, 21(1), 100-118. <http://dx.doi.org/10.1086/209385>.
- Dasgupta, S., Paul, R. & Fuloria, S. (2011). Factors affecting behavioral intentions towards mobile banking usage: Empirical evidence from India. *Romanian Journal of Marketing*, 3(1), 6-28.
- Ganesh, J., Arnold, M.J., & Reynolds, K.E. (2000). Understanding the customer base of service providers: An examination of the differences between switchers and stayers. *Journal of Marketing*, 64(3), 65-87. <http://dx.doi.org/10.1509/jmkg.64.3.65.18028>.
- Guriting, P. Chunwen, G., & Ndu, N.N.O. (2007). Computer self-efficacy levels, perceptions and adoption of online banking. *International Journal of Services Technology and Management*, 8(1), 54-74. <http://dx.doi.org/10.1504/IJSTM.2007.012218>.
- Gurting, P., & Ndubisi, N.O. (2006). Borneo online banking: Evaluating customer perceptions and behavioral intention. *Management Research News*, 29(1), 6-15. <http://dx.doi.org/10.1108/01409170610645402>.
- Hernandez, J.M.C., & Mazzon, J.A. (2007). Adoption of Internet banking: Proposition and implication of an integrated methodology approach. *International Journal of Bank Marketing*, 25(2), 72-88. <http://dx.doi.org/10.1108/02652320710728410>.
- Jaruwachirathanakul, B., & Fink, D. (2005). Internet banking adoption strategies for a developing country: The case of Thailand. *Internet Research*, 15(3), 295-311. <http://dx.doi.org/10.1108/10662240510602708>.
- Karjaluoto, H., Mattila, M., & Pento, T. (2002). Factors underlying attitude formation towards online banking in Finland. *International Journal of Bank Marketing*, 20(6), 261-272. <http://dx.doi.org/10.1108/02652320210446724>.
- Keaveney, S.M. (1995). Customer switching behavior in service industries: An exploratory study. *Journal of Marketing*, 59(2), 71-82. <http://dx.doi.org/10.2307/1252074>.
- Keaveney, S.M., & Parthasarathy, M. (2001). Consumer switching behavior in online services: An exploratory study of the role of selected attitudinal, behavioral, and demographic factor. *Academic of Marketing Science*, 29(4), 374-390. <http://dx.doi.org/10.1177/03079450094225>.

- Khraim, H.S., Shoubaki, Y.E., & Khraim, A.S. (2011). Factors affecting Jordanian consumers' adoption of mobile banking services. *International Journal of Business and Social Science*, 2(20), 96-105.
- Koenig-Lewis, N., Palmer, A., & Moll, A. (2010). Predicting young consumers' take up of mobile banking services. *International Journal of Banking Marketing*, 28(5), 410-432. <http://dx.doi.org/10.1108/02652321011064917>.
- Kolodinsky, J.M., Hogarth, J.M., & Hilgert, M.A. (2004). The adoption of electronic banking technologies by US consumers. *International Journal of Bank Marketing*, 22(4), 238-259. <http://dx.doi.org/10.1108/02652320410542536>.
- Laforet, S., & Li, X. (2005). Consumers' attitudes towards online and mobile banking in China. *International Journal of Bank Marketing*, 23(5), 362-380. <http://dx.doi.org/10.1108/02652320510629250>.
- Laroche, M., & Sadokierski, R. (1994). Role of confidence in a multi-brand model of intentions for a high-involvement service. *Journal of Business Research*, 29(1), 1-12. [http://dx.doi.org/10.1016/0148-2963\(94\)90022-1](http://dx.doi.org/10.1016/0148-2963(94)90022-1).
- Lassar, W.M., Manolis, C., & Lassar, S.S. (2005). The relationship between consumer innovativeness, personal characteristics, and online banking adoption. *International Journal of Bank Marketing*, 23(2), 176-199. <http://dx.doi.org/10.1108/02652320510584403>.
- Laukkanen, T. (2007). Internet vs. mobile banking: Comparing customer value perceptions. *Business Process Management Journal*, 13(6), 788-797. <http://dx.doi.org/10.1108/14637150710834550>.
- Laukkanen, T., & Pasanen, M. (2008). Mobile banking innovators and early adopters: How they differ from other online users? *Journal of Financial Services Marketing*, 13(2), 86-94. <http://dx.doi.org/10.1057/palgrave.fsm.4760077>.
- Lee, E.J., Kwon, K.N., & Schumann, D.W. (2005). Segmenting the non-adopter category in the diffusion of Internet banking. *International Journal of Bank Marketing*, 23(5), 414-437. <http://dx.doi.org/10.1108/02652320510612483>.
- Lee, H.J., Lim, H., Jolly, L.D., & Lee, J. (2009). Consumer Lifestyles and adoption of high-technology products: A case of South Korea. *Journal of International Consumer Marketing*, 21(3), 153-167. <http://dx.doi.org/10.1080/08961530802153854>.

- Lin, J., Chan, H.C., & Wei, K.K. (2006). Understanding competing application usage with the theory of planned behavior. *Journal of the American Society for Information Science and Technology*, 57(10), 1338-1349. <http://dx.doi.org/10.1002/asi.20453>.
- Lin, J., Chan, H.C., & Wei, K.K. (2011). Understanding competing application platforms: An extended theory of planned behavior and its relative model. *IEEE Transactions on Engineering Management*, 58(1), 21-35. <http://dx.doi.org/10.1109/TEM.2010.2060727>.
- Lopez, J.P.M., Redondo, Y.P., & Oliván, F.J.S. (2006). The impact of customer relationship characteristics on customer switching behavior: Differences between switchers and stayers. *Managing Service Quality*, 16(6), 556-574. <http://dx.doi.org/10.1108/09604520610711909>.
- Luarn, P., & Lin, H.H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior*, 21(3), 873-891. <http://dx.doi.org/10.1016/j.chb.2004.03.003>.
- Macredie, R.D., & Mijinyawa, K.M. (2011). A theory-grounded framework of open source software adoption in SMEs. *European Journal of Information Systems*, 20(2), 237-250. <http://dx.doi.org/10.1057/ejis.2010.60>.
- Mathieson, K. (1991). Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173-191. <http://dx.doi.org/10.1287/isre.2.3.173>.
- Mavri, M., & Ioannou, G. (2008). Customer switching behavior in Greek banking services using survival analysis. *Managerial Finance*, 34(3), 186-197. <http://dx.doi.org/10.1108/03074350810848063>.
- Mintel Market Research Report (2010). *Online and Mobile Banking in the United States 2010*, 15(November), 15.
- Mobile Banking Association (2012, January 20). *Mobile banking overview*. Retrieved from <http://www.paymentsnews.com/2009/01/mobile-marketing-association-publishes-mobile-banking-overview.html>.
- Mobile Banking Association (2012, February 6). *Mobile banking overview*. Retrieved from <http://pdfcast.org/download/mobile-banking-overview-na.pdf>.
- Muthitcharoen, A., Palvia, P.C., & Grover, V. (2011). Building a model of technology preference: The case of channel choices. *Decision Science*, 42(1), 205-237.

<http://dx.doi.org/10.1111/j.1540-5915.2010.00306.x>.

- Natarajan, T., Balasubramanian, S.A., & Manickavasagam, S. (2010). Customer's choice amongst self service technology (SST) channels in retail banking: A study using analytical hierarchy process (AHP). *Journal of Internet Banking and Commerce*, 15(2), 1-16.
- Ndubisi, N.O., & Sinti, Q. (2006). Consumer attributes, system's characteristics and internet banking adoption in Malaysia. *Management Research News*, 29(2), 16-27. <http://dx.doi.org/10.1108/01409170610645411>.
- Puschel, J., Mazzon, J.A., & Hernandez, J.M.C. (2010). Mobile banking: Proposition of an integrated adoption intention framework. *International Journal of Bank Marketing*, 28(5), 389-409. <http://dx.doi.org/10.1108/02652321011064908>.
- Qureshi, T.M., Zafar, M.K., & Khan, M.B. (2008). Customer acceptance of online banking in developing economics. *Journal of Internet Banking and Commerce*, 13(1), 1-9.
- Riquelme, H., & Rios, R.E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing*, 28(5), 328-341. <http://dx.doi.org/10.1108/02652321011064872>.
- Roos, I. (1999). Switching processes in customer relationships. *Journal of Service Research*, 2(1), 68-85. <http://dx.doi.org/10.1177/109467059921006>.
- Roos, I., & Gustafsson, A. (2011). The influence of active and passive customer behavior on switching in customer relationships. *Managing Service Quality*, 21(5), 448-464. <http://dx.doi.org/10.1108/09604521111159771>.
- Sadi, A.H.M.S., Azad, I., & Noorudin, M.F. (2010). The prospects and user perceptions of m-banking in the sultanate of Oman. *Journal of Internet Banking and Commerce*, 15(2), 1-11.
- Scornavacca, E., & Hoehle, H. (2007). Mobile banking in Germany: A strategic perspective. *International Journal of Electronic Finance*, 1(3), 304-320. <http://dx.doi.org/10.1504/IJEF.2007.011501>.
- Shih, Y.Y., & Fang, K. (2004). The use of a decomposed theory of planned behavior to study Internet banking in Taiwan. *Internet Research*, 14(3), 213-223. <http://dx.doi.org/10.1108/10662240410542643>.
- Shih, Y.Y., & Fang, K. (2006). Effects of network quality attributes on consumer adoption intentions of Internet Banking. *Total Quality Management and Business Excellence*, 17(1), 61-77. <http://dx.doi.org/10.1080/14783360500249661>.



- Shin, D.H., & Kim, W.Y. (2007). Mobile number portability on customer switching behavior: In the case of the Korean mobile market. *The Journal of Policy, Regulation and Strategy for Telecommunications, Information and Media*, 9(4), 38-54. <http://dx.doi.org/10.1108/14636690710762129>.
- Singh, S., Srivastava, V., & Srivastava, R.K. (2010). Customer acceptance of mobile banking: A conceptual framework. *SIES Journal of Management*, 7(1), 55-64.
- Sripalawat, J., Thongmak, M., & Ngramyarn, A. (2011). M-banking in metropolitan Bangkok and a comparison with other countries. *The Journal of Computer Information Systems*, 51(3), 67-76.
- Suoranta, M., & Mattila, M. (2004). Mobile banking and consumer behavior: New insights into the diffusion pattern. *Journal of Financial Services Marketing*, 8(4), 354-366. <http://dx.doi.org/10.1057/palgrave.fsm.4770132>.
- Taylor, S., & Todd, P.A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, 6(2), 144-176. <http://dx.doi.org/10.1287/isre.6.2.144>.
- Venkatesh, V., & Zhang, X. (2010). Unified theory of acceptance and use of technology: U.S. vs. China. *Journal of Global Information Technology Management*, 13(1), 5-27.
- Wang, Y.S., Wang, Y.M., Lin, H.H., & Tang, T.I. (2003). Determinants of user acceptance of Internet banking: An empirical study. *International Journal of Service Industry Management*, 14(5), 501-519. <http://dx.doi.org/10.1108/09564230310500192>.
- Wieringa, J.E., & Verhoef, P C. (2007). Understanding customer switching behavior in a liberalizing service market. *Journal of Service Research*, 10(2), 174-186. <http://dx.doi.org/10.1177/1094670507306686>.
- Yaghoubi, N.M., & Bahmani, E. (2010). Factors affecting the adoption of online banking: An integration of technology acceptance model and theory of planned behavior. *International Journal of Business and Management*, 5(9), 159-165.
- Yang, A.S. (2009). Exploring adoption difficulties in mobile banking services. *Canadian Journal of Administrative Sciences*, 26(2), 136-149. <http://dx.doi.org/10.1002/cjas.102>.
- Yu, C.S. (2011). Construction and validation of an e-lifestyle instrument. *Internet Research*, 21(3), 214-235. <http://dx.doi.org/10.1108/10662241111139282>.
- Yu, C.S. (2013). What influences people to transfer from one technological service to

another: Examples of online and mobile banking. *Journal of Information Management*, 20(2), 219-251.

## APPENDIX

### The items of the scale used to assess constructs

Construct	Corresponding Items	Items Sources
<b>Relative Advantage</b>	RA1. Using mobile banking is more time-efficient than Internet banking; RA2. Using mobile banking is less restricted by location than Internet banking; RA3. Using mobile banking makes life more convenient than Internet banking.	Shih and Fang (2004 and 2006), Lee et al. (2005), Hernandze and Mazzon (2007), Yang (2009), Puschel et al. (2010), Khraim et al. (2011), Lin et al. (2011)
<b>Relative Complexity</b>	RCPX1. Learning to use mobile banking is more difficult than learning to use Internet banking; RCPX2. The mobile banking interface is more complicated than the Internet banking interface; RCPX3. Mobile banking services is not easier to use than Internet banking services.	Gerard and Cunningham (2003), Shih and Fang (2004), Ndubisi and Sinti (2006), Cruz et al. (2010), and Khraim et al. (2011)
<b>Relative Compatibility</b>	RCPA1. Using mobile banking requires less change to my original habits than using Internet banking; RCPA2. I spend less time accustoming myself to mobile banking than to Internet banking; RCPA3. Using mobile banking requires less money than using Internet banking.	Gerard and Cunningham (2003), Kolodinsky et al. (2004), Shih and Fang (2004), Puschel et al. (2010), Koenig-Lewis et al., (2010), Khraim et al. (2011), Lin et al. (2011)
<b>Peer Group</b>	PG1. Most of my peers have switched from Internet banking to mobile banking; PG2. Most of my peers think that I should switch from Internet banking to mobile banking; PG3. Most of my peers think that the current trend is moving from Internet banking to mobile banking.	Karjaluoeto et al. (2002), Chan and Lu (2004), Shih and Fang (2004), Laforet and Li (2005), Amin et al. (2008), Riquelme and Rios (2010), Puschel et al. (2010), and Sripalawat et al. (2011)

**The items of the scale used to assess constructs (Cont.)**

<b>Construct</b>	<b>Corresponding Items</b>	<b>Items Sources</b>
<b>Superior Group</b>	SG1. Most management-level personnel at my workplace have used mobile banking instead of Internet banking;	Karjaluoto et al. (2002), Laforet and Li (2005), Lassar et al. (2005), Shih and Fang (2006), Suoranta and Mattila (2004), Amin et al. (2008), Riquelme and Rios (2010), Puschel et al. (2010), Sripalawat et al. (2011)
	SG2. Most of my close friends and relatives have used mobile banking instead of Internet banking;	
	SG3. Most celebrities I respect have used mobile banking instead of Internet banking.	
<b>Relative Self-efficacy</b>	RSE1. I am more capable of using mobile banking than Internet banking;	Wang et al. (2003), Chan and Lu (2004), Shih and Fang (2004), Laforet and Li (2005), Lassar et al. (2005), Guriting and Ndubisi (2006), Hernandez and Mazzon (2007), Guriting et al. (2007), Sripalawat et al. (2011), Dasgupta et al. (2011), Khraim et al. (2011)
	RSE2. I feel more confident using banking services on mobile devices than on the Internet;	
	RSE3. In contrast to Internet banking, I need less instruction to use mobile banking.	
<b>Relative RFC</b>	RRFC1. It does not cost me anything to use mobile banking instead of Internet banking;	Taylor and Todd (1995), Jaruwachirathanakul and Fink (2005), and Lin et al. (2006 and 2011)
	RRFC2. It does not burden me to use mobile banking instead of Internet banking;	
	RRFC3. It does not need additional resources to use mobile banking instead of Internet banking.	
<b>Relative TFC</b>	RTFC1. I use mobile devices (such as cell phones) to access banking services more frequently than the Internet;	Taylor and Todd (1995), Jaruwachirathanakul and Fink (2005), and Lin et al. (2006 and 2011)
	RTFC2. I am more familiar with using mobile devices than the Internet to access banking services;	
	RTFC3. Using mobile devices is more important than using the Internet to access banking services.	

**The items of the scale used to assess constructs (Cont.)**

<b>Construct</b>	<b>Corresponding Items</b>	<b>Items Sources</b>
<b>Relative Attitude</b>	RAT1: I think using mobile banking is better than using Internet banking; RAT2: Using mobile banking instead of Internet banking is a wise idea; RAT3: I like using mobile banking rather than using Internet banking.	Yaghoubi and Bahmani (2010), Sripalawat et al. (2011), Puschel et al. (2010), Riquelme and Rios (2010)
<b>Relative SN</b>	RSN1: People important to me think that I should use mobile banking rather than Internet banking; RSN2: People close to me think that using mobile banking instead of Internet banking is better for me; RSN3: Most people in my social network think that it is better to use mobile banking instead of Internet banking.	Karjaluoto et al. (2002), Chan and Lu (2004), Shih and Fang (2004), Laforet and Li (2005), Amin et al. (2008), Riquelme and Rios (2010), Puschel et al. (2010), and Sripalawat et al. (2011)
<b>Relative PBC</b>	RPBC1: I have more capabilities to use mobile banking than Internet banking; RPBC2: I have more resources to use mobile banking than Internet banking; and RPBC3: I have more knowledge to use mobile banking than Internet banking;	Yaghoubi and Bahmani (2010), Sripalawat et al. (2011), Puschel et al. (2010), Riquelme and Rios (2010)
<b>relative BI</b>	RBI1. I prefer using mobile banking to Internet banking; RBI2. I will use mobile banking more often than Internet banking; and RBI3. I am willing to recommend mobile banking to others rather than Internet banking.	Venkatesh and Zhang (2010), Luarn and Lin (2005), Sripalawat et al. (2011)