

Customers' Adoption of Internet Banking Service: An Empirical Examination of the Theory of Planned Behavior in Yemen

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Abstract

The explosion of Internet usage and the great funding initiatives in electronic banking have taken the attention of researchers towards Internet banking. At the beginning, the conventional focus of Internet banking research has been on technological infrastructure, but this is now shifting to user-focused research. Although millions of dollars have been paid to invest in the Internet banking services, reports have shown that potential users may not use these services. A great deal of research has been conducted in various countries to determine the factors that influence acceptance of Internet banking. However, these studies have not taken into account emotional dimension that related to individuals' technology readiness. In addition, there is still very few research has been conducted on the Internet banking in Arab countries in general, and Yemen, in particular. Therefore, this study attempts to fill this gap via applying the theory of planned behavior (TPB) in developing countries (i.e., Yemen). Based on a sample of 1286 bank customers, structural equation modeling was applied to data analysis. The results strongly support the TPB model. Attitude, subjective norm and perceived behavioral control have a significant positive effect on individuals' intention to adopt the Internet banking service.

Keywords: *Internet banking, Consumer behavior, Theory of planned behavior, Structural equation modeling.*

1. Introduction

Internet banking is defined as "the use of the Internet as a remote delivery channel for banking services, and an Internet bank is defined as a bank that offers (web-based) transactional services" (Gopal akrishnan, Wischnevsky and Damanpour 2003, p. 413). Internet banking offers customers the advantages of lower costs, location and time convenience, and the ease and speed of completing transactions. Banks achieve lower costs, customer responsiveness and satisfaction. The benefits of Internet banking cannot be achieved unless customers use the bank website and its associated capabilities. Technology acceptance has become a critical issue in the business world today, specifically with respect to Internet banking. Without customer acceptance, the efforts by banks to move to the web will not be successful and other outlets of service (such as online brokerage firms and Internet portals) will reap the significant benefits of Internet banking. The technology acceptance domain is a well-researched area in the information systems area. Several models and theories exist that try to predict human behavior. The research in the technology

acceptance area has concentrated on "usage" or "intention touse" as the ultimate dependent variable. Although Internet banking services have been widely adopted in various developed countries, consumers' adoption of Internet banking service in developing countries has been slower than anticipated. There is a limited empirical research on Internet banking services in developing countries (Abu Shanab, Pearson, & Setterstrom, 2010; Al-Gahtani, 2011; Nasri & Charfeddine, 2012). Yemen as one of the developing countries has faced the same problem (limited studies on IB services). Although operating banks in Yemen have spent a huge amount of money to provide a high quality of IB service, customers still reluctant to use this service (Alhariry, 2007; Zolait, 2011). There is a clear need to investigate the factors that influence customers' intention to adopt the Internet banking service so that banks can better formulate their marketing strategies to increase this service usage in the future. This study aims to investigate factors that influence behavioral intention to use Internet banking services with a focus on individuals' perceptions of factors that may influence individuals' behaviour intention (i.e., attitude, subjective norm, and perceived behavioral control). This research begun with an overview of the theoretical background, followed by research model and hypotheses regarding the adoption of internet banking in Yemen. The study then describes data and methods and concludes with results and discussion followed by conclusions and limitation and future research.

2. Theoretical Background

A great deal of research has been conducted to determine factors that influence the adoption of information technology (IT). Due to a lack of grounded theory in the IT field, researchers have turned to models that have been developed in other areas as a foundation for their research. In the case of predicting an individual's intention to adopt IT, information systems (IS) researchers have borrowed intention models from social psychology as the foundation for their research (Harrison, Mykytyn, & Riemen schneider, 1997). For instance, well-established and robust intention models such as the theory of planned behavior (Ajzen, 1991) have been widely used to explain and predict the intention to adopt IT.

2.1 Theory of Planned Behavior (TPB)

The theory of planned behavior (TPB) is an extension of the theory of reasoned action (TRA), which adds a construct that integrates the difficulty or ease of performing a behavior. Perceived behavioral control (PBC) emerged as a strong predictor of intention, which out performed attitudes and subjective norm. Ajzen reasoned his extension to the TRA as to the TRA's limitations in dealing with behaviors over which people have incomplete volitional control (Ajzen, 1991). Perceived behavioral control is based on Bandura's work of perceived self-efficacy, and related to one's judgment of how well he/she can execute a course of action required to deal with a specific situation. Ajzen (1991) proposed that behaviors are influenced by individuals' confidence in their ability to perform the behavior. Based on this concept, Ajzen proposed two concepts: first, PBC and intention

will influence behavior, and second PBC, norms, and attitudes will directly affect intention. Based on a review of a set of studies that were related to the TPB, Ajzen concluded that the new construct provided a significant improvement when compared with the TRA. The following figure 1 depicts the theory and its components.

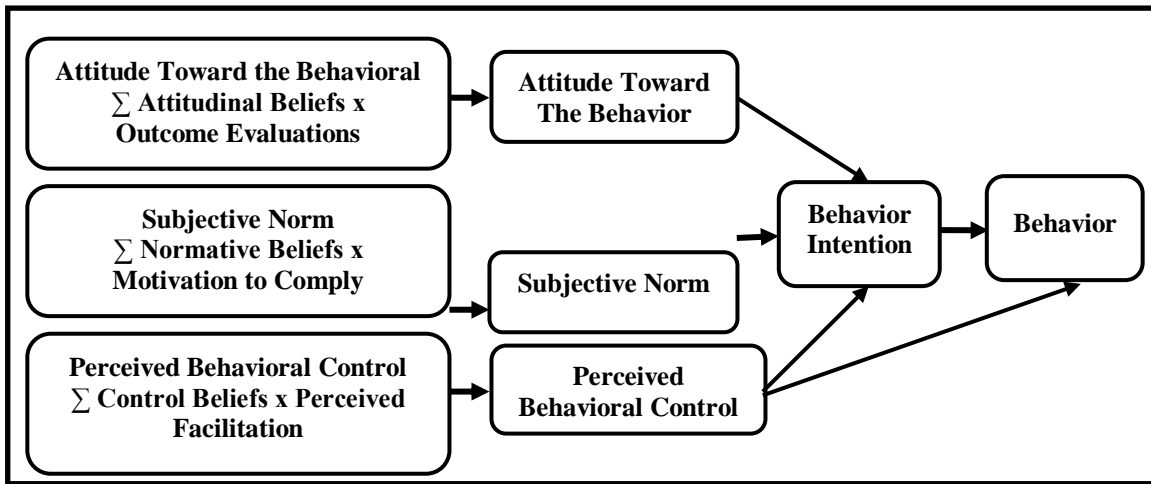


Figure 1: Theory of Planned Behavior (TPB)

Due to the TPB model added perceived behavioral control, several researchers indicated that TPB has a better prediction power of individuals' behavior than TRA model. Adding perceived behavioral control lead to increase TPB's explanatory power (Ajzen, 1991; Cheung, Chan & Wong, 1999; Maden, Ellen & Ajzen, 1992). Other searchers have noted that the TPB included variables, which omitted in TAM that may be important predictors of IT/IS usage (Mathieson, 1991). A considerable amount of literature has been published about using TPB model as a framework or extended it by added other variables. Several studies have used TPB to determine influencing factors on acceptance of new technology such as;WAP (Hung, Ku & Chang, 2003),mobile services (Nysveen, Pedersen &Thorbjensen, 2005),Internet bookstore (Wu, 2006), online shopping (Hsu,Yen, Chiu & Chang, 2006), electronic commerce (Nasco, Toledo &Jr, 2008; Hajjha&Hajjhashemi, 2008; Chang,Chin, Lin &Tzeng, 2009; Crespo and Bosque, 2010), mobile payment, Yan,Md Nor, Abushanab, &Sutanonpaiboon, 2009), e-trading (Lee, 2009), electronic-tax payment (Ramayah,Mohd, Jamaludin& Ibrahim, 2009), e-auction (Gumussoy &Calisir, 2009), online class (Lee, 2010).TPB has been also successfully applied in the Internet banking domain in predicting individuals' intention and behavior usage toward Internet banking services (e.g.,George, 2004; Jaruwachirathanakul& Fink, 2005; Liao,Palvia, & Chen, 2009;Gopi&Ramayah, 2007; Lee, 2009; Md Nor &Zainal, 2009; Shih, 2007;Yaghoubi&Bahmani, 2011).

3. Research Model and Hypotheses

As a general theory, TPB does not specify the particular beliefs that are associated with any particular behavior, so determining those beliefs is left to the researcher's preference. This study examined factors that influence individuals' behavioral intention to use Internet banking. The research analyses the predictor variables of planned behavior between1286customers at four banks that provide the Internet banking service in the Republic of Yemen. Understanding the relative importance of predictor variables (such as attitude towards the behavior, subjective norms and perceived behavioral control) that lead to the desired behavior helps banks' managers to formalize marketing strategies, which encourages customers to use the Internet banking service. According to TPB, behavioral intention is determined by three factors,

i.e., attitudes toward the behavior, are informed by beliefs needed to engage in the behavior (Ajzen, 1991), subjective norm, the social pressures to perform or not to perform the behavior and perceived behavioral control, refers to people's perceptions of their ability to perform a given behavior (Ajzen, 1991). TPB has been applied to a wide variety of behaviors to different kinds of technology over the years, in various developed countries. Little research exists; however, that considers individuals' behavioral intentions in developing countries when an individual performs financial transaction over the Internet. Therefore, this study applied TPB in Yemen to determine factors that influence individuals' intention to adopt internet banking. The research model is shown in Figure 2.

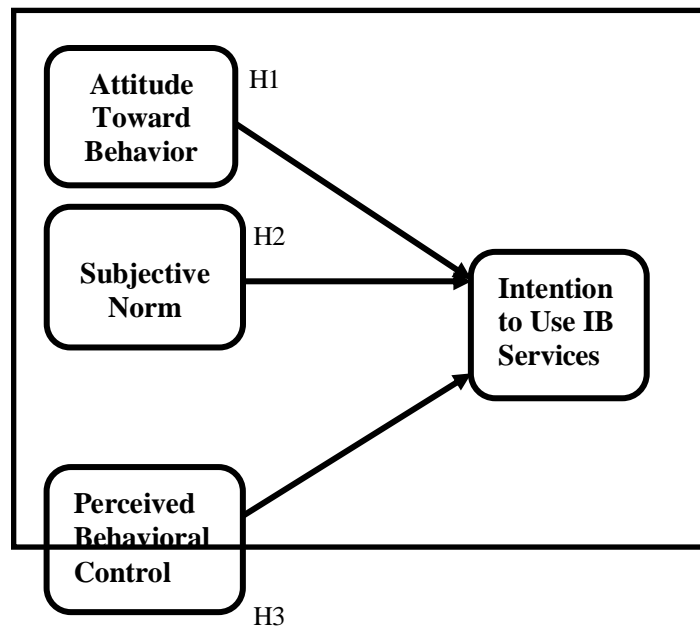


Figure 2: The Proposed Model

3.1 Attitude

It is defined as Individuals' positive or negative feeling associated with performing a specific behavior. Ajzen and Fishbein (1980) suggest that people form beliefs about an object by associating it with various characteristics, qualities and attributes. Because of these beliefs, they acquire favorable or unfavorable attitudes toward that object depending on whether they associate that object with positive or negative characteristics. These beliefs may be attained by direct observation, obtaining information from outside sources, or generated through an inference process. Some beliefs persist, others do not. The challenge is when one tries to change a perceived attitude (Bagozzi & Dabholkar, 2000; Doll & Ajzen, 1992). Several past studies found a significant direct relationship between attitude and intention to use Internet banking (e.g., Agarwal et al., 2009; Al-Majali & Nik Mat, 2010; Jaruwachira thanakul & Fink, 2005; Md Nor, Abu Shanab & Pearson, 2008; Lee, 2009;). Based on the above explanations the following hypothesis is formulated:

H1: Attitude about Internet banking positively affects the intention to use the technology.

3.2 Subjective norms

Subjective norms refer to an individual's perception of whether people who are important to him or her think that he or she should or should not perform the behavior in question (Ajzen & Fishbein, 1980). They are the function of how an individual's referent others (e.g., family & friends) view the regarding behavior and how motivated the individual is to comply with those beliefs (Ajzen & Fishbein, 1980). It is assumed that subjective norm is determined by the total set of accessible normative belief concerning the expectations of important referents (Ajzen, 1991). This suggests that a person will feel social pressure to perform a behavior if he or she is motivated to comply with individuals or groups or believes that the behavior will be approved by significant others. According to Doll and Ajzen (1992) subjective norms also influence behavioral choices. They argue that beliefs pertinent to the social expectations of significant others such as parents, spouses, friends, peer group, etc., as well as the individuals' reluctance to comply with those significant others affects behavioral choices (Park, 2000; Smith & Terry, 2003). In this connection, the researcher assumes that the people's choices are influenced by their beliefs about how significant others will view their decisions to engage, or not engage, in particular activities. Based on above discussion, the following hypothesis is formulated:

H2: Subjective norm positively affects the intention to use Internet banking.

3.3 Perceived behavioral control

Perceived behavioral control is defined as an individual's confidence that he or she is capable of performing the behavior (Ajzen, 2006). The perception of volitional control or the perceived difficulty towards the behavior will affect intent (Chang, 1998). Unless control over a behavior exists, intentions will not be sufficient as the predictor of the behavior (Sahni, 1994). Factors such as skills, abilities, time, and requisite information play a significant role in predicting and performing the behavior. The significant and positive effect of perceived behavioral control on individuals' behavioral intention has been supported by many studies in the Internet banking domain (e.g., Al-Majali and Nik Mat, 2010; Jaruwachirathanakul and Fink, 2005; MdNor and Pearson, 2006). Based on the above explanations the following hypothesis is formulated:

H3: Perceived behavioral control positively affects the intention to use Internet banking.

4. Methodology

4.1 Instrument Development

The instrument was designed to include a two-part questionnaire. Accordingly, the first part is basic information. It was used to collect basic information about the respondents' characteristics, including gender, age, education, occupation, monthly income, Internet banking knowledge and Internet awareness. The second part of the questionnaire includes the constructs of attitude, subjective norm, perceived behavioral control and intention to adopt Internet banking. Items to measure behavioral intention, attitude, subjective norm and perceived behavioral control were generated based on the procedures suggested by Ajzen and Fishbein (1980), Md Nor and Pearson (2008), containing five items for intention and four items for each of attitude, subjective norm and perceived behavioral control. All items designed based on seven-point Likert's scales, ranging from "disagree strongly" (1) to "agree strongly" (7).

4.2 Participants and Data collection

Participants in the study banks' customers who have never used the Internet banking service at four banks that provide the Internet banking service in Yemen. A personally-administered questionnaire method was employed for the survey. The questionnaire was distributed at four banks in Yemen. A total of 1500 questionnaires were distributed in this study. Assigned counter staffs requests the customer to response to the questionnaires and collects them immediately before the customers leave the bank. Using these procedures, 1446 questionnaires were returned, indicating a 96.4 percent rate of return. The final count for this study was 1286 cases after excluding incomplete questionnaires, responses from users of Internet banking, missing data and outliers. Sample demographics are depicted in Table 1.

5. Data Analysis and Result

5.1 Confirmatory Factor Analysis (CFA)

The CFA measurement model estimation is the first step of Structural Equation Modelling (SEM). The CFA determines whether the number of factors and the loadings of items on them conform to what is expected based on the pre-established theory of scale assessment. The SEM techniques were used to perform the CFA. The AMOS software 18.0 was used to calculate whether or not the proposed factor solutions and the model fit the data. Structural equation modeling (SEM) is considered a family of statistic models that looks for details concerning the relationships among multiple variables (Hair, Black, Basin, & Anderson, 2010). A confirmatory factor analysis (CFA) is first used to confirm the factor loadings of four constructs (attitude, subjective norm, perceived behavioral control and intention).

We assessed the overall goodness-of-fit using fit Indices (e.g., the ratio of X^2 to degrees-of-freedom (df), Goodness-of-fit index (GFI), Normed fit index (NFI), Incremental fit index (IFI), Tucker-Lewis index (TLI), Comparative fit index (CFI) and Standardized root mean square residual (SRMSR). The initial confirmatory factor analysis showed an acceptable overall model fit. As shown in Table 2 all fit indices for the measurement model have achieved a good fit. These findings suggest that the measurement model fit the sample data well (Byrne, 2008; Kline, 2005; Tabachnick and Fidell, 2001).

The reliability and discriminant validity of the constructs were assessed by Cronbach alpha, composite reliability and average variance extracted, respectively, as shown in Table 3. A common approach to measuring reliability is Cronbach coefficient alpha. Some guidelines in the literature are offered: a reliability coefficient of around 0.90 can be considered "excellent", values of around 0.80 as "very good," and values of around 0.70 as "adequate", depending on the questions (Kline, 2005). However, a coefficient alpha is not evidence that a set of measures is unidimensional (Nunnally & Berstein, 1994). Thus, we performed additional analyses in order to gain deeper and more comprehensive insights into the number of items used to measure the constructs. Since the coefficient alpha weights all items equally, it is therefore more appropriate to use alternatives, which calculate composite reliability based on individual item loading standardized regression weights (Fornell & Larcker, 1981; Hulland, Chow & Lam, 1996). Table 3 shows the composite reliability for each construct is similar to that of Cronbach's alpha, except that it also takes into account that actual factor loadings rather than assuming that each item is equally weighted in the composite load determination. According to the above discussion, it can be concluded that the reliability and convergent validity are established for this study.

Discriminant validity assesses the extent to which a concept, and its indicators differ from another concept and its indicators (Bagozzi, 2007). According to Hair et al. (2010) the correlations between items in any two constructs should be lower than the square root of the average variance shared by items within a construct. As shown in Table 4, the square root of the variance shared between a construct and its items was greater than the correlations between the construct and any other construct in the model, satisfying Hair's et al. (2010) criteria for discriminant validity. All diagonal values exceeded the inter-construct correlations. In brief, the measurement model demonstrated adequate reliability and validity.

5.2 Structural Model

In the second step of structural equation modelling (SEM), path analysis was used to test structural model. Reviewing the fit statistics of the structural model in Table 2, we noted that all the fit statistics indicated a well-fit. These results indicated an acceptable fit. The parameter unstandardized coefficients and standard errors for the final model are shown in Table 5. All paths were significant.

6. Discussion and Implications

Table 7 shows that attitude ($\beta = 0.796$, $CR = 23.777$, $p < 0.001$) has a direct positive and significant effect on customers' intention to adopt Internet banking. This finding was consistent with other studies in the Internet banking domain (e.g., Agarwal et al., 2009; Al-Majali&Nik Mat, 2010; Jaruwachira thanakul & Fink, 2005; Lee, 2009; MdNor, AbuShanab & Pearson, 2008). The significant effect of the attitude on intention is not surprising given the fact that the extrinsic benefits of using Internet banking are numerous. Banks should publicize these factors to create a positive attitude amongst its customer towards Internet banking. Banks should also consider how to shift the perceptions of their customers by highlighting the positive advantages' features of IB services. They should pass an effective message to customers that the Web security facility now available will eliminate any third-party intrusions into their IB account in order to turn around the negative perceptions of their customers, thereby enabling customers to feel secure and comfortable in using IB services.

Subjective norm ($\beta = 0.110$, $CR = 4.986$, $p < 0.001$), was also found to have a significant effect on the intention to use Internet banking services. Hence H2 is supported. A significant effect of the subjective norms on intention is consistent with findings in empirical studies of technology adoption related literature (e.g., Al-Majali, 2011; AbuShanab, et al., 2010; Md Nor et al., 2008; Park, 2000; Smith & Terry, 2003;). This suggests that social pressure is an influencing factor in shaping ones' behavior towards intention to use Internet banking. This suggests that respondents tend to seek information from their reference groups. In terms of social influence on behavioral intention is not surprising given the fact that the Arabic traditions and Islamic teachings urge respect between family members, friends and society members in general, which lead to individuals will be influenced by relative opinion. Therefore, bank managers should bear in mind the characteristics of these groups that influence individuals' behavior when they are designing advertising and media campaigns of the Internet banking services.

Perceived behavioral control ($\beta = 0.128$, $CR = 5.790$, $p < 0.001$), was also found to have a significant positive effect on the intention to use Internet banking. Thus, H3 is also supported.

This finding is consistent with other empirical studies (e.g., Al-Majali and Nik Mat, 2010; Jaruwach; irathanakul and Fink, 2005; MdNor and Pearson, 2006). Without doubt that the availability of technology infrastructure, such as computer, Internet services and advanced protection software, which give the

customer a sense of ability, lead to increase individual's capability toward Internet banking adoption. The above discussion indicates that the customers' intention towards adopting Internet banking is positively related to their attitude, subjective norm and perceived behavioral control.

7. Conclusion

This study has examined the relationship between attitude, subjective norm, perceived behavioral control and customers' intention to use Internet banking service. The results provide evidence for the theoretical model embracing theory of Planned Behavior (TPB). The results support the view that attitude, subjective norm and perceived behavioral control are predicting variables for individuals' behavioral intention. They have played a significant role in influencing individuals' intention to adopt Internet banking. All hypotheses were supported. As it is clear from the key fit statistics, the model testing yielded a set of fit indices with an overall well-fit, indicating that the model fitted well with the data. The results of hypothesis testing provide satisfactory support for the TPB through the SEM analysis. Overall, the results indicate that the model provides a good understanding of factors that influence the intention to use Internet banking. Approximately, 64% of the total variance on the behavioral intention was explained.

8. Limitations and future studies

There are several limitations in this study. Firstly, this study has examined only the determinants of behavioral intention. Although beyond the scope of this research, future study can enhance the research model, and include the determinants of re-intention or continue of using new technology. Secondly, our research is conducted specifically in Yemen. However, it would be interesting to test this model in other countries and compare the results with this study. Such cross comparison studies would allow us to have a better understanding of the factors that affect Internet banking adoptions. Thirdly, future study can also consider using the demographic variables in this research as control variables and compare the effects with the ones found in the present research.

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Appendices*Tables of Study Findings***Table 1. Demographic profile of respondents**

Variables	Category	Frequency	Percent
Gender	Male	1098	85.4
	Female	188	14.6
Age	18-24	201	15.6
	25-34	420	32.7
	35-44	210	16.3
	45-54	261	20.3
	55 and older	194	15.1
	Education	School certificate	144
Diploma		315	24.5
Bachelor		404	31.4
Master		204	15.9
Ph.D		184	14.3
Other		35	2.7
Occupation		Student	205
	Self-employed	478	37.2
	Officer in government sector	300	23.3
	Officer in a private sector	265	20.6
	Unemployed	34	2.6
	Other	4	.3
	Income	Less than 40000	224
40,001-70,000		291	22.6
70,001-100,000		415	32.3
More than 100,001		356	27.7
IB Knowledge	Yes	897	69.8
	No	389	30.2
IB Awareness	Yes	699	54.4
	No	587	45.6

Table 2. Measure of the model fit.

Goodness-of-Fit Measures	Recommended Value	Measurement Model	Structural Model
X ² /df	>1 and <5	2.020	3.436
GFI	≥ 0.90	0.934	0.896
NFI	≥ 0.90	0.962	0.942
IFI	≥ 0.90	0.969	0.949
TLI	≥ 0.90	0.964	0.940
CFI	≥ 0.90	0.969	0.949
RMSEA	≥ 0.08	0.056	0.063

Table 3. Cronbach's alpha, Composite reliability and Average variance extracted

Code	Variable	Cronbach's alpha	Composite Reliability	Average Variance Extracted
AT	Attitude	0.921	0.944	0.771
SN	Subjective Norm	0.949	0.930	0.758
PBC	Perceived Behavioral Control	0.961	0.951	0.830
IN	Behavioral Intention	0.906	0.896	0.638

Table 4. Discriminant validity

Construct	AT	SN	PBC	IN
AT	0.878			
SN	0.295	0.905		
PBC	0.155	0.180	0.911	
IN	0.348	0.545	0.251	0.898

Note: All correlations significant at $p < 0.05$. Diagonal elements are square roots of the average variance extracted.

Table 5. Regression Weights of re-specified model

Independent	Relationship	Dependent	Estimate	S.E.	C.R.	P
AT	→	IN	0.796	0.033	23.777	***
SN	→	IN	0.110	0.018	4.986	***
PBC	→	IN	0.128	0.020	5.790	***

Abbreviations

AT attitude

CFI comparative fit index

DF degrees of freedom

GFI goodness of fit index

IB internet banking

IFI incremental fit index

NFI normed fit index

PBC perceived behavioral control

RMSEA root mean square error of approximation

SN subjective norm

TLI Tucker-Lewis index

TPB Theory of Planned Behavior

X²chi-square