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The Use of Theory Reasoned of Action to Study Information Technology in Jordan

Malek AL-Majali
Assistant professor of Marketing at College of Business Adminstration, Mu'tah University
Postal Address: **Merwed/Alkarak/Jordan.**
*Author's Personal/Organizational:***www.mutah.edu.jo/**
Email: **almajalimalek@yahoo.com**
Dr. AL-Majali is an expert in E-marketing and E-commerce, E-consumer behaviour and marketing research. Other fields of experience include Structural Equation Modeling (SEM) analysis, Statistical Package of Social Sciences (SPSS) analysis, Internet Business and Marketing and researching.

Abstract

Internet Banking Service her after called (IBS) is an information intensive business that has become a major trend in the financial marketplace nowadays. It is important to understand what factors will impact the customer's attitude toward internet banking service adoption her after called (IBSA) in Jordan. This study uses a survey data of 700 Jordanian public university employees that have used internet banking services. Confirmatory Factor Analysis (CFA) was performed to examine the reliability and validity of the measurement, and the structural equation modeling techniques (Amos 6.0) were used to evaluate the causal model. The results show that the Jordanian customers have high intention to adopt IBS. Also the results show that customer's attitude and their belief about social influence play a vital role in influencing the IBSA intention. In addition, attitude and subjective norm are influenced by attitudinal belief and normative belief structures. This study found that perceived risk, trust and awareness of IBSA are significant factors that influence customer's attitude towards IBSA. Additionally, family and mass media are significant factors that influence subjective norm.

Keywords: Internet banking, Jordan, risk, trust, awareness

INTRODUCTION

Internet banking service (IBS) has become a major trend in the financial marketplace and the number of users of the internet banking has been increasing significantly (Ho & Ko, 2008). In the case of Jordan, banks spent US$182 million to upgrade their internet technology service (Association Banks in Jordan Jordanian, 2009). However, its adoption by customers is still low. Only 2-3.5% of the total of population is internet banking service users (Department of Statistics in Jordan, 2010; International Telecommunication Union, 2009; International Research & Exchanges Board, 2008). This evidence seems to imply that the internet banking services adoption (IBSA) in Jordan is still very minimal. This leads to the necessity to have more researches to determine the factors influencing internet banking services adoption in Jordan.

One of the major issues causing this reluctance of internet banking services adoption (IBSA) in Jordan is highlighted by a statement from Al-Rai, (2010): "Most issues that were of interest to the customers regarding internet banking were high risk and lack of security assurance of the bank's web site". Moreover, the trust element is still more important in an online situation (Gefen & Straub, 2004). Also the importance of trust in e-commerce activities is the fact that in a virtual setting the degree of uncertainty of economic transactions is higher than in traditional settings (Rotchanakitumnuai & Speece, 2007). In addition, lack of awareness about IBS and its benefits could be other probable reasons for consumers to be reluctant to use internet banking services in Jordan (Siam, 2006). Besides the above reasons, lack of campaign promotion by the banks to promote the internet banking service, could reduce the customer's needs to use the internet banking services, The matter is compounded by the lack of the mass media support to endorse this services (Al Sukkar & Hasan, 2005).

In recent years, understanding why people accept or reject computer systems such as internet banking has proven to be one of the most challenging issues in information system research especially in Jordan. Further, there are limited empirical studies related to internet banking service adoption in Jordan (Al Sukkar & H, Hasan, 2005; Al-Qeisi, 2009). This gap makes it necessary to have more empirical studies on antecedents of internet banking service adoption, since past studies have included a few numbers of variables. Therefore, this study intends to investigate ten factors of internet banking service adoption using Theory of Reasoned Action (TRA) model to enhance this quantitative study using Structural Equation Modeling (SEM) to analyze the structural model of internet banking service adoption.

1. LITERATURE REVIEW

Theory Reasoned of Action (TRA) (Fishbein & Ajzen, 1975) is originally introduced in the field of Social Psychology typically used to explain individual behavior. The TRA

hypothesizes that behavior is predicted by an individual's intention to engage in a given behavior. Intention, in turn, is predicted by two factors, the individual's attitude towards the outcome of the behavior and by the opinions of the person's social environment, which is called the subjective norm (Fishbein & Ajzen, 1975).

TRA has been successfully applied in internet banking services setting to predict the performance of behavior and intention. For example, Shih and Fang (2004) have used the TRA in Taiwan to examine effect of customer's attitude and subjective norms on internet banking adoption. This study found that attitude has a significant effect on adoption intention, while subjective norm has not. The statistics from the finding of this study indicate that the TRA model provides a good fit to the data. Wan, Luk and Chow (2005) used TRA to investigate the factors that influence Hong Kong bank customers to adopt four major banking channels services. This study shows that TRA was less applicable when a behavior is habitual, such as the adoptions of IBS or other channel branch banking and telephone banking. Ok and Shon (2010) have applied TRA to understand the factors that could impact the actual use of IBS. The data for this study was collected from 300 personal banking customers who were internet banking users in Korea. The finding of this study shows that the TRA predicts behavioral intention to use the internet banking quite well.

According to TRA, behavioral intention is determined by the user's intention to accept, use or adopt one or more of the IT fields. Since this factor is one of the most important factors that determine the final actual usage, most previous research in internet banking found significant and positive relationship between intention and actual (Al-Qeisi, 2009; Tan & Teo, 2000; Shih & Fang, 2004). However, only one study investigating intention→IBSA linkage has been conducted in Jordan using Unified Theory of Acceptance and Use of Technology (UTAUT) model (Al-Qeisi, 2009). Thus, there is still a lack of studies that have used TRA model to examine this linkage in Jordan. Numerous previous studies that investigate this relationship have found positive and significant linkage in internet banking setting (Shih & Fang, 2004; Tan & Teo, 2000; Nor & Pearson, 2008). However, only one study has examined this linkage in Jordan (Al Sukkar & Hasan, 2005). Moreover, non-significant finding has been found in IBSA area (Shih & Fang, 2004; Tan & Teo, 2000), but in other (non-internet banking setting), some of previous studies found that attitude has insignificant influence on individual intention (Amoroso & Hunsinger, 2008; Fusilier & Durlabhji, 2005; AbuShanab & Pearson, 2007). The finding suggests that individual will have a higher intention to adopt IBS if they have socially supportive reference groups. On the other hand, Al-Qeisi (2009) found that subjective norm has insignificant effect on banks customers' intention toward IBSA context in Jordan. In other countries, previous findings in internet banking setting are inconclusive, such as Nor & Pearson (2008) in Malaysia found that subjective norm to be positive and significantly effecting intention. Alternatively, Tan & Teo (2000) found that this linkage is insignificant in Singapore. Due to this conflicting result, this study intent to examine this link on IBSA in Jordan.

Most of past studies found that the perceived risk negatively affects attitude toward internet banking service adoption not only in Western countries but also in Eastern cultures and in many countries (Tan & Teo, 2000; Eriksson, Kerem & Nilsson, 2008; Grabner-Kraeuter & Faullant, 2008). However, there was limited empirical study conducted in internet banking service adoption setting in Jordan as yet. Therefore, to fill

this gap this study intends to examine the perceived risk as an antecedent of customers' attitude toward internet banking service adoption in Jordan. Many of the previous studies found that trust is the most important factor that influences customer's attitude toward using the internet banking service (Nor & Pearson, 2008; Suh & Han, 2003; Cho & Cheung, 2003). In internet banking service adoption setting, there are a few past studies that examined the impact of internet banking service awareness on customer's attitude. Some of the past studies examine lack of awareness (Laforet & Li, 2005; Sathye, 1999). In addition, there are a few past studies in internet banking service setting that examined relationship effect of family on subjective norm (Shih & Fang, 2004; Nor & Pearson, 2008). These studies found that family has significant effect on subjective norm. Moreover, in non-internet banking settings, there are also some past studies that found it significant (Ng & Rahim, 2005; Taylo & Todd, 1995). In contrast, Chu and Wu (2004) found it insignificant. Most of the past studies were conducted in different settings (Pedersen & Nysveen, 2005; Taylor & Todd, 1995; Bhattacherjee, 2000), while none of them were conducted in internet banking service setting.

Based on the discussion above, eight hypotheses ere formulated as shown below:

H1. Behavior intention has positive influence on IBSA (BI→IBSA).
H2. Attitude has positive influence on intention (ATT→BI).
H3. Subjective norm has positive influence on intention (SN→BI).
H4. Perceived risk has negative influence on attitude (RSK→ATT).
H5. Trust has positively influence on attitude (TRST →ATT).
H6. Awareness has positively influence on attitude (AWAR→ATT).
H7. Family influence has positive influence on subjective norm (FM→SN).
H8. Mass media influence has positive influence on subjective norm (MM→SN).
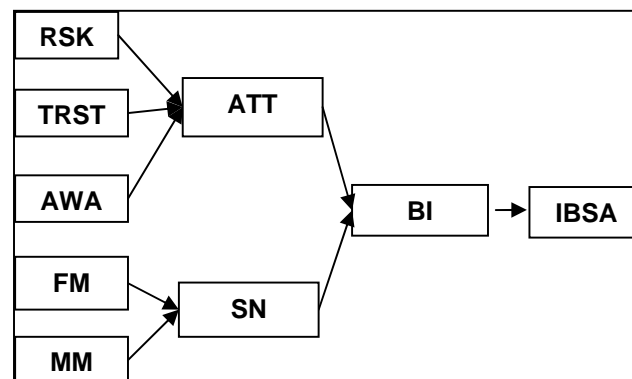

Figure 1. Proposed research model

2. METHODOLOGY

This study use mainly quantitative approach to research. The unit of analysis is bank consumers sampled through university staff of four public universities in Jordan. The

questionnaire contains the nine latent constructs that are hypothesized to influence IBSA in Jordan totaling forty three (43) items. These constructs were adopted from previous banking studies thus, exploratory factor analysis is omitted. The measures are (1) IBSA is measured by four items (Raman, Stephenaus, Alam & Kuppusamy, 2008); (2) intention is measured by five items adopted from Tan & Teo, (2000); (3) attitude is measured by five items adopted from Tan & Teo, (2000); (4) subjective norm is measured by five items adopted from Tan & Teo, (2000); perceived risk is measured by four items adopted from Grabner-Kraeuter & Faullant, (2008); trust is measured by six items adopted from Suh & Han, (2003); awareness is measured by four items adopted from Sthyee, *1999); family influence is measured by five items adopted from Shih & Fang, (2004) and Tan & Teo, (2000); mass media is measured by five items adopted from Ng & Rahim, (2005) and Pedersen & Nysveen, (2005). Seven-point Likert scale with anchors from (1) strongly disagree to (7) strongly agree respectively, was used for all items.

To examine the factors that could influence IBSA intention of bank customers in Jordan, the sample (employees) was taken randomly from telephone directories of the four selected public universities in Jordan. They are selected because it is customary for employees of these universities to have bank accounts since their salaries are paid through the banks. Also, they have access to the internet and therefore may have used internet banking services before. The universities selected are: (1) Jordanian University, (2) Jordanian-Germania University in the Middle of Jordan, (3) Yarmouk University in North of Jordan and (4) Mu'tah University in the South of Jordan. The survey was conducted from the 1st of September to the 1st of December 2009 (around twelve weeks). The researcher distributed seven hundred (700) questionnaires to the respondents who returned 565 of the questionnaires while one hundred thirty five (135) questionnaires were unreturned. Another 33 questionnaires were incomplete leaving five hundred thirty two (532) questionnaires for further analysis or 76% response rate.

The 532 dataset were coded and saved into SPSS version 15.0 and analyzed using AMOS version 6.0. The data were carefully examined for missing data. It was discovered that nineteen (19) questionnaires or 3.3 percent have missing responses. However, the missing cases were treated with replacement of mean so none was deleted. This method is considered to be viable by several scholars e.g. (Hair et al., 2006). Next, inspection of Mahalanobis distance (D2) was conducted to identify outlier cases. Outlier result shows that 15 dataset were deleted due to D2 values greater than χ2 value. For univariate normality test, Z-skewness scores greater than +3 or -3 were absent. Thus, each item is considered to be normal data. Thus, only five hundred seventeen 517 questionnaires remain for final analysis.

Subsequently, several statistical validity tests were then conducted such as reliability test, composite reliability tests, confirmatory factor analysis (CFA) for construct convergent validity, discriminate validity for multicollinearity treatment, descriptive analysis and correlation. Hereafter, Structural Equation Modeling (SEM) analysis using AMOS 6.0 was conducted. SEM is selected because SEM using confirmatory factor analysis to minimize measurement error through to the multiple indicators per –latent variable, ability to estimate both direct and indirect effects, and a testable model and ability to ensure consistency of model with data and to estimate effects among

constructs. The SEM analysis produces three structural models namely hypothesized structural model, revised model and competing model.

3. FINDING

Most of the respondents were male (73.7%) compared to female (26.3%). This is expected in a male dominant country like Jordan. Their ages range from 31 to 40 years. About 80% of respondents were married, the majority (73.9%) lives in the Jordanian cities and about 40% have a Bachelor degree. About 55% work at managerial level in the university and more than half (57.4%) of respondents have salaries between 501-1000 JD. On the usage of internet technology, 63% have used the internet technology for period of 6-10 years, while 44% of respondents have used IBS for period between 3-5 years. Most of the respondents indicate that they know about IBS in Jordan from mass media and access the IBS from their homes. Finally the finding shows that the Jordanians use IBS mostly for balance enquiry, bill payment, money transfer, loan application, downloading information and investment activity services respectively.

The Descriptive statistics of Variables indicates that the nine constructs, five exogenous (perceived risk, trust, awareness, family influence and mass media influence)) and four endogenous (attitude, subjective norm, behavior intention and IBSA) have both Cronbach alpha and composite reliability of above 0.60. This implies that the measurement scales for all variables are internally consistent and reliable (Nunnally, 1970).

Moreover, Confirmatory Factor Analysis (CFA) indicate that the factor loadings of all observed variables or items are adequate, ranging from 0.56 to 0.93. In this study, the "cut-off" point chosen for significant factor loading is 0.30, the minimum level required for a sample size of 350 and above as suggested by (Hair et al. 2006, p 128). Discriminant validity refers to observed constructs should not be highly correlated to each other (multicollinearity). In other words, observed variables should be discriminating or distinct. To support discriminant validity, Average Variance Extratcted (AVE) should be more than the correlation squared (Fornell & Larcker, 1981). Table 1 shows the result of the calculated variance extracted (VE) to support discriminant validity of constructs. Average variance extracted (AVE) is the average VE values of two constructs. The VE is derived from the calculation of variance extracted using the following equation:

$$\text{Variance Extracted} = \frac{\sum \left(s\,\tan\,dardized\ SMC^2 \right)}{\sum \left(s\,\tan\,dardized\ SMC^2 \right) + \varepsilon \sum j} \quad (1)$$

Consequently, each AVE value is found to be more than correlation square, thus discriminant validity is supported i.e. multicollinearity is absent.

Table 1: Variance extracted of variables

Observed Variables	Variance Extracted
IBSA	.55
BI	.93

ATT	.63
SN	.92
RSK	.86
TRST	.90
AWAR	.73
FM	.94
MM	.90

Confirmatory factor analysis was conducted on each individual construct and measurement models. All CFAs of constructs produced a relatively good fit as indicated by the goodness of fit indices such as CMIN/df ratio (<2); p-value (>0.05); Goodness of Fit Index (GFI) of >.95; and root mean square error of approximation (RMSEA) values of less than .08 (<.08) (Hair et al. 2006; Bagozzi & Yi, 1989). Table 2 shows that the goodness of fit of revised model is better compared to the hypothesized model. This is expected as hypothesized model could be only strictly confirmatory (Byrne, 2001).

Table 2: Revised model and hypothesized model results

Indicators	Revised model	Hypothesized model
CMIN	160.061	236.336
Df	134	842
CMIN/DF	1.194	2.813
p-value	.062	.000
GFI	0.968	0.827
CFI	0.992	0.893
TLI	0.989	0.885
NFI	0.951	0.844
RMESA	.019	.059

Since the hypothesized model did not achieve model fit (p<.000), therefore, the explanation of hypotheses result is based on Revised Model (RM) which achieved model fit of p-value=0.064 (> 0.05) (Figure 3). The revised model produces regression standardized estimates direct effects readings (Beta) as shown in Table 7. All hypotheses are supported when all direct paths are significant and positive (C.R. values > +/-1.96; p-value < 0.05).

Table 3: Direct impact Revised Model (RM):
Standardized regression weights

Endo	Exog	C.R	P	Statue
BI	IBS	4.854	***	Sig
ATT	BI	2.085	.037	Sig
SN	BI	3.129	.002	Sig
RSK	ATT	-1.976	.048	Sig
TRST	ATT	2.102	.036	Sig
AWA	ATT	2.028	.043	Sig
FM	SN	2.302	.021	Sig
MM	SN	10.06	***	Sig

Above Table indicates that the three exogenous variables (perceived risk, trust and awareness) jointly explained 72% variance in attitude. While family influence and mass media influence jointly explained 47% variance in subjective norm, attitude and subjective norms jointly explained 73% variance in intention. Subsequently, intention explained 86% variance in IBSA.

Table 4: Squared multiple correlation results

Endogenous Variable	(SMC) = R2
IBSA	86%
IBSA Intention	73%
Attitude	72%
Subjective norm	47%

4. DISCUSSION AND CONCLUSION

In this study, we have attempted to empirically test a research model based on the theory of reasoned action using Internet banking as the target technology. As expected, the results have supported the theory's proposition that individuals' behavioral intention to use Internet banking service is influenced by their attitude and subjective norm. The results indicate the applicability and ability of the theory of reasoned action to predict adoption intentions, in this study's case within different sampling frame (i.e., in Jordan) and target technologies (i.e., Internet banking service). The results of this study have several practical implications. A significant positive relationship between attitude and behavioral intention suggests that positive attitude about Internet banking service could influence individuals to use Internet banking.

Banks can create a positive attitude amongst its customer towards Internet banking by promoting its trust, decrease the perceived of the risk and promote the awareness of internet banking services and it benefits usefulness, ease of use, compatibility to their value, and image (AL-Majali, & Nik Kmariah, 2010). Consistent with findings in other empirical studies (e.g., Tan & Teo, 2000; Suh & Han, 2003), the findings indicates the importance of social pressure in influencing ones' behavior towards intention to use Internet banking. Banks may want to explore promotional activities to promote the technology. AL-Majali & Nik Mat (2010) in their study on Internet banking acceptance in Jordan have found that family, and mass media have a positive influence on individuals

to accept the technology. Thus, promotional activities such as advertisement and referral plan should target these groups.

As with any study, there are limitations to this research. First, one potential limitation of this study is the use of universities employees subjects. Although universities employees are good surrogates for banking customers because they typically are current banking customers, questions remain concerning the generalizability of the results to a larger population. Second, our study was conducted in Jordan. The results may not be generalizable to customers in other countries and cultures. Customers in these countries might not share the same exposure, experience, level of information technology infrastructure, the comprehensiveness of legal framework and policies protecting customers and others. In conclusion, this study has supported the generalizability of the theory of reasoned action in predicting individual's behavioral intention to use a technology. We have empirically test the research model based on this theory in Jordan as the sampling frame and Internet banking as the target technology. Both hypotheses as suggested by the theory in this study were well supported. Practical implications were discussed and the suggestions put forward could be used by banks to encourage banking customer to adopt Internet banking service.

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