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UIBR – An Approach to Innovations Acceptance

Ali Hussein Saleh Zolait, PhD
Assistant Professor of MIS at Faculty of Business and Accountancy, Department of Business, Amran University, Khamer, Republic of Yemen
Faculty of Business and Accountancy, Department of Business, Sana'a University – Amran University Branch, P.O. Box 41000, Khamer, Republic of Yemen
Email: alicomyemen@yahoo.com
Ali H.S. Zolait is Assistant Professor of MIS at Faculty of Business and Accountancy, Department of Business, Amran University. Dr. Zolait's research interests are Management Information systems, E-banking Diffusion of Innovation, Security and E-commerce. He has several articles published in the leading International journal of Marketing and Information Systems.

Minna Mattila, Dr.Sc. (Econ)
Head of Project, Laurea University of Applied Sciences, Tikkurila, Finland
Laurea, Ratatie 22, FIN01300 Tikkurila, Finland
Email: laalmatt@hotmail.com
Minna Mattila is an invited member of the European Academy of Sciences elected for fundamental developments in the field of interactive banking and e-banking. She serves the European Commission as an Expert Evaluator and Reviewer. In 2008-2010 she will serve as an Expert in the OECD reviews of higher education in regional development and in 2008-2011 as an External Assessor for Professorships in Marketing & Information Systems for the University of Malaya. She works part-time at Market Court as a Council of State assigned Expert Member.

Abstract

In this paper, we first attempt to review user acceptance theory and then discuss the four common models. Second, this study intends to assess the relationship of Users' Informational-Based Readiness (UIBR), the tendency to adopt Internet banking services

as an innovation and whether or not it contributes to the prediction of an individual's intention (decision) to accept innovation as a new variable, thereby extending the former variables known as psychological determinants. In order to achieve this, the study proposes a new model for studying the acceptance of technology, which was assessed by using data collected from 369 bank customers and the application of Internet Banking (IB) services was used to assess its acceptance. The study found that users' information readiness combined with innovation attributes are the joint determinants of the users' attitude towards the use of IB.

Keywords: **Internet banking; adopter's readiness; IS theories**

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INTRODUCTION

Several studies focused attention on the study of the determinant in the mirror of psychological variables and several IS authors in studying innovation acceptance utilized among other theories – TRA, TPB, TAM, TRA, and DOI. Some researchers recently began to emphasis the importance of adding other non-psychological variables such as the adopter's experience (e.g. Brown, et al. 2004; Karjaluoto et al. 2002; Black et al. 2001; Tan & Teo, 2000), exposure (e.g., Chang, 2004, and Barbara, 2001), knowledge (e.g., Fredriksson,2003) and awareness (Devlin and Yeung, 2003). This implies that previous research in IS discipline has established the need to examine other factors that influence an individual to accept innovation. By reviewing the existing intention-based theories such as TRA, TPB, TAM, and TRA, this study noted a critical gap in modelling the behaviour to accept new introduced technology (innovation).

This study explains the gap in light of the need to examine further factors beyond the psychological determinant. Also there is a need to differentiate intention behaviour from habit behaviour. Accordingly this study argues that psychological determinants can explain an individual's intention as well as another determinant called User Informational Based Readiness (UIBR). Also the link between intention and actual behaviour needs further clarification. Furthermore, it is suggested in this study that an individual's level of knowledge, experience, exposure, and awareness of innovation could work together in identifying the determinant of Technology acceptance, based on the effect of their intention to use or not use a particular innovation.

INDIVIDUAL BEHAVIOR

Researchers in this study attempt to highlight four adoption theories that will assist in formulating a new model as follows:

Social Psychology Adoption Theories; models from social psychology, such as the TRA, TPB, TAM, and Triandis (4 Theories) are generally used to investigate adoption studies. The theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980) and the Theory of Planned Behaviour (TPB) (Ajzen, 1985) in addition to the Technology Acceptance Model (TAM) were reviewed as a fundamental background for this study. The fourth theory found is that of Triandis (1980), but this theory is seldom used in IS and has not yet been

used in IB adoption studies.

Theory of Reasoned Action (TRA) is designed to explain human behaviour (Ajzen and Fishbein, 1980) and consists of two factors that affect behavioural intentions – attitude towards behaviour and the subjective norm. Attitude is defined as an individual's positive or negative feeling towards performing behaviour. The subjective norm is the individual's perception of social pressure to perform the behaviour. The TRA has been widely applied in its original or extended form to predict online grocery buying intentions (Hansen et al., 2004), nursing (Ellison, 2003), the adoption of IT applications (Anandarajan et al., 2000) and more recently, to investigate the factors which influence the consumer's intentions to purchase services over the Internet (Njite and Parsa 2005).

Karjaluoto et al. (2002) tried using the TRA to explore how different factors influence attitudes towards Internet banking (IB) and the use of IB in Finland. Furthermore, the TRA was used as a basis to develop the theory of planned behaviour as well as for modifying the TAM model with SN as suggested by Venkatesh and Davis (2000) and Morris and Venkatesh (2000). It is important to note that the TRA capability in explaining behaviour were questioned because of the inconsistence effect of subjective norm (SN) in modelling technology acceptance in the IS context. Brown et al. (2004), in a comparative study of IB adoption in Singapore and South Africa, demonstrated that SN showed no influence on the adoption of IB in either Singapore or South Africa as hypothesised in their model. Liao et al. (1999) and Shih and Fang's (2004) findings showed that SN was not a significant determiner in either study.

Theory of Planned Behaviour (TPB) is an extension to the TRA theory and was developed to justify conditions where individuals do not have complete control over their behaviour (Ajzen, 1991, Ajzen and Fishbein, 1980). The theory of planned behaviour posits that behaviour is determined by the intention to perform the behaviour. The components of behavioural attitude and SN are the same in the TPB as in the TRA. However, in addition, the model includes behavioural control as a perceived construct. Therefore, in the TPB there are three constructs that determine the user's intention – attitude, SN and PBC. This theory has been used to study the adoption of different information systems such as spreadsheets (Mathieson, 1991), computer resource centres (Taylor and Todd, 1995), electronic brokerages by Battacherjee (2000), and negotiation support systems by Lim et al., (2002).

Decomposed TPB Model was suggested by Taylor and Todd (1995b). It is a new format of the TPB theory that is considered as helpful for a better understanding of the relationships between the belief structures and the antecedents of intention. Several researchers have examined approaches to decomposing beliefs into multidimensional constructs. The decomposed TPB model is inspired by Taylor and Todd (1995a; 1995b). This model provides three sets of belief structures in a multi-dimensional belief construct. These beliefs, according to Taylor and Todd (1995b), can be referred to as attitudinal beliefs, normative beliefs, and control beliefs and are related to Attitude, SN and PBC respectively. The decomposed TPB model has many valuable advantages such as it represents the TRA's core constructs. Also, it provides more attitudinal belief dimensions that are derived from Rogers' (1995) five attributes of innovation, rather than the two factors of ease of use and usefulness proposed in the TAM model.

Technology Acceptance Model (TAM) by Davis et al. (1989) was the first theory used to explain computer usage behaviour before becoming one of the most widely used and referenced theories in the context of technology acceptance (Davis, 1989; Legris et al., 2003; Gefen et al., 2003). Briefly, the TAM, as shown in Figure (3) posits two specific variables, namely perceived ease of use (PEOU) and perceived usefulness (PU). These determine one's behavioural intention to use a technology, attitudes towards adopting IT, and the actual usage. Intention is a measure of the strength of one's intention to perform a specified behaviour. The TAM model has received extensive empirical support through validations, applications, and replications (e.g. Mathieson, 1991; Plouffe et al., 2001; Legris et al., 2003).

The TAM model has been extended and modified to the TAM2, which includes two concepts of social influence processes and cognitive instrumental processes as determinants of perceived usefulness (Venkatesh and Davis, 2000). The second TAM extension incorporated perceived resources that refer to the extent that an individual believes he or she has the personal and organizational resources needed to use an IS, such as skills, hardware, software, money, documentation, data, human assistance and time (Mathieson et al., 2001). The third extension proposed by Pikkarainen et al. (2004) included four constructs, namely; perceived enjoyment, amount of information on online banking, security and privacy and quality of Internet connection. These could be evidence of the flexibility of such extensions that the original TAM extended to, and, also give evidence that studies based on the TAM theory have found that PU and PEOU are not the only predictors of technology acceptance. The TAM has been proposed to investigate different IS adoption.

INNOVATION'S ATTRIBUTES

Innovation's attributes is a new concept that is proposed by this study to refer to how much innovation's attributes agrees or disagrees to a person's wanted expectation. Davis's (1985) inaugural TAM, in investigating the acceptance of technology, focused on assessing an individual's attitudinal belief through two attributes of the innovation – how much individuals perceive it is useful and how easy it is for them to use. Davis's (1985) TAM paved the way for this study to argue that investigating the acceptance of innovation should not be limited to usefulness and ease of use; researchers have to look into the issue with a holistic view. Accordingly, this paper introduces innovation's attributes to represent the attitudinal beliefs and test the effect on attitude in a new behavioural model. In line with this, the theory of DOI introduced five variables developed to explore the diffusion of a particular innovation technology in a society. Rogers (1995)'s innovation variables are the most cited in information systems research pertaining to predicting adoption and examine its influence in the adopting rate. Innovation characteristics according to Agarwal & Prasad (1997), do explain acceptance behaviour. Lockett & Littler (1997) hypothesized on the perceived innovation characteristics based on the anticipation of the adopter of direct banking services.

This study focuses on an individual's perception about the characteristics of innovation to technologies, mainly self-service based (Internet banking), as exploratory and predictive variables for user attitude and acceptance behavior. In addition, this work will rely on perceived characteristics of innovation as a platform for developing a constructed measurement tool of innovation.

USER'S INFORMATIONAL-BASED READINESS

In the previous section we discussed innovation characteristics while this section will discuss the characteristics of the individual. Both Innovation Characteristics and Individual Characteristics were considered by Prescott & Conger (1995)'s Diffusion and implementation Model. User's informational-based readiness is a newly proposed concept that has not yet been studied academically. Its focus is to identify the informational characteristic of the individual. In this circumstance, Informational-Based Readiness refers to the potential adopters' assessment of their *awareness, information knowledge, experience and exposure* to the related technologies available or recommended by referents, which reflect their informational abilities to adopt or reject the innovation. In other words, user's or customer readiness refers to people's propensity to embrace and use new technologies of banking over the Internet for accomplishing their needs from the banking dealing. In this study, the User's Informational-Based Readiness construct is given the acronym UIBR. This construct aims to probe the potential adopter in terms of their informational capability and readiness for IB. In order to understand the potential adopters' readiness, this study suggests specific elements, namely awareness, knowledge, experience and exposure. In this study, the operational definition of UIBR is limited to those specified attributes.

This study argues that there is a relationship between the users' Informational-based readiness (UIBR) for the innovation and the behavioral intention as well as the attitude to adopt this technology. The innovation examined in this study is acceptance of Internet Banking services. Therefore, this argument is translated into a research proposition in order to be tested. "The variable that could contribute in predicting customer's behavioral intention to use IB is UIBR which included user's (Awareness, Knowledge, Experience, and Exposure) variables". In other words, this study argues that the more the customer is aware, knowledgeable, experienced, and has past exposure to using IB, the more likely that IB will be adopted. User's Informational Readiness as a new determinant of acceptance of the innovations should be considered by IS researchers for several reasons.

COMMUNICATION CHANNEL (SUBJECTIVE NORM)

Rogers' (1995) DOI posited that any individual's decision to adopt or reject an innovation is independent, but that it may still be influenced by the norms of the system and by communication occurring among members of the interpersonal network. SN reflects an individual's perception of social support for, or opposition to, his or her performance of the behavior (Ajzen & Fishbein, 1980). Bearden et al. (1986) and Karahanna et al. (1999) categorized social influence (normative belief) into two types – informational-based influence and normative influence.

According to Bearden et al. (1986) and Kelman (1961), both forms of social influence are thought to operate through the processes of internalisation, identification, and compliance. Bearden (1986) posited that the normative component does not discriminate adequately between informational-based social influence and influence that is truly normative in nature. Rogers (1995) pointed out that individuals could actively seek information about an innovation after they are aware that the innovation exists and when they know which source or channel can provide further information about the innovation. Rogers (1995, p.192) said that the importance of different channels or

information sources about the innovation is determined by their availability to the audience of the potential adopter. Informational influence, according to Bearden et al. (1986), occurs when individuals accept information as evidence of reality.

In the diffusion of innovation literature, some researchers have focused on the process by which adoption occurs (Rogers, 1995). This approach, according to Rogers (1995) and Liao et al. (1997), asserts that the adoption of an innovation is primarily the outcome of a learning or communications process. The outcome of a communication process in this study refers to an individual's awareness-knowledge of innovation existence and its attributes (Aggarwal et al., 1998). In the two early stages of the adoption process, communication channels, according to Rogers' (1995), play different roles in creating knowledge versus persuading individuals to change their attitude towards an innovation. Here, it becomes clear that many potential adopters form their opinions of an innovation based on the information conveyed via the mass media and impersonal channels. Furthermore, Rogers (1995) and Aggarwal et al., (1998) posited that one method to speed up the process by which innovations are adopted is to communicate the information about the innovations more rapidly.

METHODOLOGY

A questionnaire was developed as the main instrument for the current study. The questionnaire, in addition to demographic and information about bank customer, elicits data on individuals' perceptions about Internet banking services, the possible referents that could be taken as influencers, and respondents' attitudes towards using IB services. The first issue of operationalising the constructs dealt with measuring the respondents' attitude towards using IB services and their intention to use. This was gauged based on responses to five statements meant for measuring intention and another four statements designed to measure attitude.

Respondents were asked to rate their agreement or disagreement to each behavior based on a seven point Likert scale. The second issue of operationalising the constructs dealt with measuring perceptions about Internet banking services using elements included in Rogers' literature review. These were developed from the five dimensions identified in Rogers' (1995, p. 218) theoretical framework called the five attributes of innovation (Appendix I-A). The third issue of operationalising the constructs dealt with measuring communication channels, which were determined by a scale adapted from Pedersen (2005); Battacherjee (2000) and Taylor and Todd (1995b). Data was collected via a self-administered questionnaire survey using convenience sampling. One thousand questionnaires were distributed to bank customers who were bank account holders in any of the 17 banks operating in Yemen. There were 471 responses received and thirty-five questionnaires were discarded due to incomplete responses.

Development of the UR-TAM Model and Questionnaire:
The model consists of two independent variables – Users Informational-Based Readiness (UIBR) and Innovation Attributes (IA). These two variables jointly function as an intervening variable showing the attitude towards use, which in turn is a function of intention to use (I), which determines Actual Behavior (AB), the dependent variable in the TAM model. Items on a seven point Likert scale are used as the research instrument, which was developed in consideration of TAM, TRA, and TPB. It consists of

five sections displayed in Appendix I-A. They are: i) *Intention to Use*: (5 Items) consists of five items that together express the attitude of the respondent towards the use of the subject – Internet banking services; ii) *Attitude towards Use:* (4 Items); iii) *Informational-Based Readiness:* (4 components involving 18 Items); iv) *Innovation Attribute:* (4 components involving 20 Items) that together express the perception of the respondent on Internet banking attributes using Rogers' (1995) five attributes; v) *Actual Behavior:* (4 items). The following diagram displays the underpinning conceptual framework
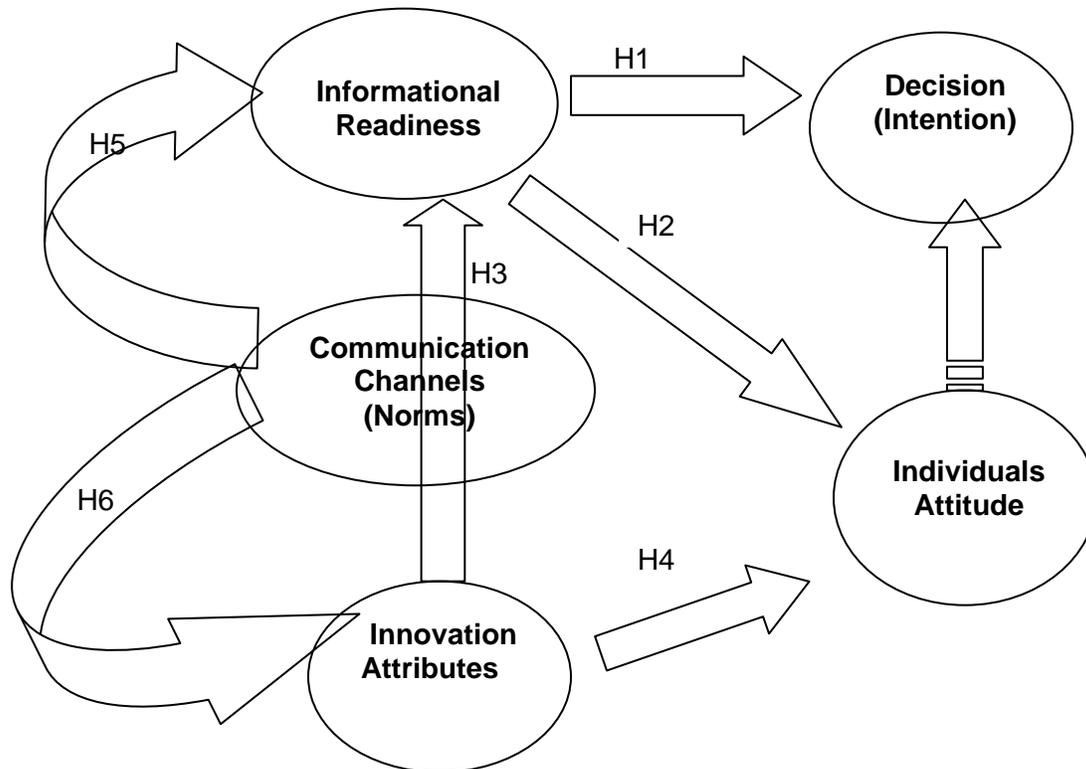

Figure 1: Conceptual Framework

Davis (1989) highlighted that system usage is often operationalized using self-reported measures. Therefore E-banking usage in this study is measured using four questions, with three of them posed to get the respondents' frequencies of use, 1) Internet banking, 2) SMS banking and 3) e-rail. Respondents were asked to "tick the box" for – Never, less than once a month, once a month, few times a month, a few times a week, several times per day. The fourth question was on a 7-point Likert scale with the adjective extremely agree and extremely disagree at the endpoints (See Appendix I-A).

Hypothesis:
The conceptual framework of the study displayed in figure 4 proposes some multiple relationships among research model's variables as follows:

H1: There will be a positive relationship between Users' Behavioral Intention (BI) towards the use of IB and Users' overall Informational-based Readiness (UIBR).

H2: There will be a positive relationship between users' attitude (ATT) towards the use of IB and Users' overall Informational-based Readiness (UIBR).
H3: There will be a positive relationship between Users' overall Informational-based Readiness (UIBR) and perceived attribute of Internet banking services.
H4: There will be a positive relationship between users' attitude (ATT) towards the use of IB and Users' Perception on Internet banking services
H5: The norms of all communication channels have an effect on individuals' informational-based readiness towards acceptance innovations.
H6: There is an association between communication channels and the attribute that individuals perceived about the innovation (Internet).

DATA ANALYSIS

In order to perform further analysis of the current study data, the researcher checked the constructs reliability. Therefore, reliability tests were performed to check for the internal consistency and the results are displayed in the following Table (1).

Variables	No. Items	Full Model Sample (n=369)	Sample 1 Split = 1(n=192) Time 1= January	Sample 2 Split = 0 (n=177) Time 2 = March
Usage	4	.720	.754	.673
BI	5	.914	.914	.916
ATT	4	.908	.899	.917
UIBR	18	.718	.735	.731
ATRB	20	.910	.910	.909
COMCAT	10	.900	.911	.888

Table 1: Reliability Test

The Usage scale with four-items scored a Cronbach alpha of 0.72 at the full set model (includes all cases for data collected in both Time 1 "January" and Time 2 "March") while it is respectively 0.75 and 0.67 at time 1 and 2. The five-item BI scale achieved reliability scores of 0.91 (full), 0.91 (January) and 0.92 (March). The four-item ATT scale achieved an internal consistency of 0.91 (full) and 0.90 and 0.92 respectively for the two points of time – January and March. The eighteenth-item UIBR scale scored reliability coefficients of 0.72, 0.74, 0.73 Cronbach alpha. Respectively, the twenty-item ATRB scale achieved reliability coefficients of 0.91 at all points in time and the full sample set. Lastly, the ten-item COMCAT scale obtained a reliability coefficient of 0.90 at the full set model, 0.91 for time 1 and 0.89 for time 2. According to Davis (1989), these scale reliabilities are all at levels considered adequate for behavioral research. In order to examine such relationships among the variables in this study, as shown below figure (2) simplifies the explanation of the expected relationships.
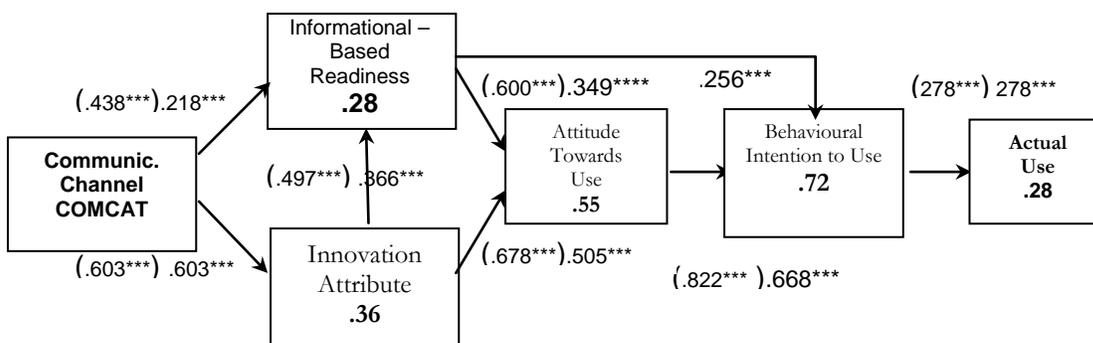
Note: 1- *** p <0.001, ** p<0.01, * p<0.05
    2- Numbers in Parenthesis indicate zero-order correlation; other numbers are path coefficients,
    3- Numbers in Bold R^2

Figure 2: Informational-Based Readiness Model (UR-TAM)

In order for a Multiple Linear Regression equation to have utility for prediction it must be generalized beyond the sample that was used to derive it. Generalizability in Information Systems, according to Lee & Baskerville (2003), refers to the validity of a theory in a setting different from the one where it was empirically tested and confirmed. A theory that lacks such generalizability also lacks usefulness. Statistical sampling-based generalizability is a valid concept within its bounds, but its uncritical application as the norm for all generalizability can lead to an improper assessment of the generalizability of many research studies (Lee & Baskerville, 2003). A variety of methods are available for assessing such generalizability. In order to generalize our findings to populations beyond our sample, this study needs to aggregate evidence that the study's regression results are not limited to the sample used in estimation. Since the study does not usually have the resources available to replicate and validate our results, the study employs statistical procedures to assure that the solution that fits our data sample can be generalized. Accordingly, Hair et al. (2006, p. 259) suggested two approaches by which the researcher can assess the validity of the results, the first method included an assessment of adjusted R^2 and the second approach divided the sample into two subsamples (split-sample).

Adjusted R^2, This study's first indicator of generalizability is the adjusted R^2 value, which is adjusted for the number of variables included in the regression equation. The adjusted R^2 is used to estimate the expected shrinkage that would not generalize to the population, because our solution is over-fitted to the data set by including too many independent variables. Hair et al. (2006, p.234) reported that adjusted R^2 is useful in comparing models between different data sets as it compensates for the different sample. If the adjusted R^2 value is much lower than the R^2 value, it is an indication that the regression equations may be over-fitted to the sample, and of limited generalizability. R^2=.751 and the Adjusted R Square =.746 are very close values, anticipating minimal shrinkage based on this indicator (Tabachnick & Fidell, 2007).

Cross-Validation, according to Malhotra (2004, p.522), is one of the approaches for evaluating the model, whereby the researcher examines whether the regression model continues to hold on comparable data not used in the estimation (Hair et al., 2006). Our findings' concerning the individual variables is that the predictive utility of these variables does not meet generalizability. R^2, also called the coefficient of multiple determination, is the percentage of the variance in the dependent explained uniquely or jointly by the

independents. If the Multiple R value for the validation sample is close to the value for the screening sample, the model is validated. In the double cross-validation strategy, the study reverses the designation of the screening and validation sample and re-runs the analysis. Table (2) displays results obtained from three samples used for purposes of the validation test and to analyse the UR-TAM capability in explaining the variances in the model's dependent variables as follows:

Equation	Full Model Sample (n=369)				Sample 1 Time 1= 1(n=192)				Sample 2 Time 2 = 0 (n=177)			
UR-TAM	*b*	R^2	*Adj.R^2*	Beta	*b*	R^2	*Adj.R^2*	Beta	*b*	R^2	*Adj.R^2*	Beta
Explaining Usage BI		.109	.107	**.331***		.127	.122	**.356***		.091	.086	**.302***
BI= ATT + UIBR **ATT** **UIBR**		.718	.716	**.668*** **.256***		.702	.699	**.655*** **.254***		.735	.731	**.684*** **.256***
BI=ATT + UIBR + COMCAT ATT UIBR COMCAT		.730	.728	**.613*** **.230*** **.134***		.724	.720	**.608*** **.201*** **.174***		.740	.735	**.636*** **.248*** .089
ATT= UIBR + ATRB **UIBR** **ATRB**		.552	.550	**.349**** **.505***		.558	.554	**385*** **.474***		.549	.544	**.315*** **.536***
UIBR=ATRB + COMCAT **ATRB** **COMCAT**		.277	.273	**.366*** **.218***		.299	.292	**.347*** **.260**		.254	.245	**.381*** **.175*
TRA		R^2	*Adj.R^2*	Beta		R^2	*Adj.R^2*	Beta		R^2	*Adj.R^2*	Beta
BI= ATT + SN **ATT** **SN**		.689	.688	**.749*** **.138***		.685	.682	**.729*** **.171***		.697	.694	**.775*** **.099*
A= Σ $b_i e_i$ Σ $b_i e_i$		.465	.464	**.682***		.459	.456	**.678***		.472	.469	**.687***
TAM		R^2	*Adj.R^2*	Beta		R^2	*Adj.R^2*	Beta		R^2	*Adj.R^2*	Beta
BI = ATT + U **ATT** **U**		.705	.703	**.647*** **.244***		.704	.701	**.612*** **.286***		.708	.704	**.692*** **.191**
ATT = U + EOU U EOU		.562	.559	**.483*** **.321***		.574	.570	**.392*** **.417***		.559	.554	**.561*** **.240***
U = EOU EOU		.528	.526	**.726***		.570	.567	**.755***		.484	.481	**.695***

Table 2: Regression Results: Determinants and Models (*Note: A= intercept, *** p <0.001, ** p<0.01, * p<0.05*)

The results shown in Table (2) show that; first, the study hypotheses are all supported by the data of this study for data collected in either time 1 or time 2. Second, the correlations investigated and shown in figure (5) reveal adequate significant relationships among the study constructs. The intention-usage correlation obtained in this study of 0.36 at time 1 and 0.30 at time 2 is comparable to Davis's (1989) findings. The study data reveals that both users' informational readiness and Internet banking attributes are strongly correlated with users' attitudes towards using IB with coefficients (r=0.60) and (r=0.68) respectively. It reveals that the intentions are subject to change with time and those variables regarded as determinants of Behavioral Intention (BI) can explain the variance of BI increasingly in the feature.

RESULTS

Explaining Usage (U), the relationship between BI and usage, measured at the full model of n=369, and the result shows that Intention (BI) has a significant relationship with usage (r=0.28***). The intention was found to correlate with usage for the data set collected at the earlier point time 1, in January, (r =0.22***) and the data collected at the later stage, the point time 2, in March (r = .36***). The findings obtained by regressing usage on the URTAM variables (ATT, UIBR, IBATRB and COMCAT), using both samples 1 and 2, indicate that intention mediated the relationships of these variables to usage. Inspecting the standardized coefficients, (Beta) shows that BI accounted significantly for explaining 33 % of the variation in the usage of Internet banking services.

Explaining Behavioral Intention (BI), as hypothesized in this study, both attitude and users' informational-based readiness to accept technology explained a significantly high portion of the variation (72 %) in BI regarding the application of the full set of data. Moreover, it accounted for 70 % of the variance at time 1 and 74 % of the variance at time 2. According to Davis (1989) TRAs (A and SN) accounted for 32 % of the variance at time 1 and 26 % of the variance at time 2 while TAM explained 47% and 51 % of BIs variance at time 1 and 2 respectively. Investigating the determinants of BI, ATT had a strong significant effect on BI (β=.67 full; β=.66 time 1; β=.68 time 2) and UIBR had a significant effect on BI (β=.26 full; β=.25 time 1; β=.26 time 2). Comparing this finding to TRA determinants, as highlighted by Davis (1989), BI's determinants suggested by this study have two advantages over TRA. First because they both succeed in explaining high portions and are consistent with the variation in BI. Second, the BI determinants of this study, both attitude and User' informational-based readiness, are shown to affect BI significantly, while SN in the TRA, according to Davis (1989), had insignificant effect in either time period investigated. With respect to the TAM, the findings highlighted by Davis (1989) indicated that attitude had a smaller effect on BI in time 1 and an insignificant effect in time 2, while the current study shows that attitude had very strong significant effects for almost all time periods (β=.67 full; β=.66 time 1 and β=.68 time 2, respectively). The study's findings also reveal that, UIBR had a significant direct effect on BI (β=.26) and an indirect effect through attitude.

With respect to variable explaining attitude, The regression results reveal that both UIBR

and ATRB, as determinants of attitude in the UR-TAM model, explain roughly 55% of attitude's variance for all time periods. The TRA in this study explains 47% of attitude's variance at the full time period, 46% at time 1 and 47% at time 2. Looking into the determinants of ATT, ATRB had a strong significant effect on attitude (β=.51 full; β=.47 time 1; β=.54 time 2) and UIBR had a significant effect on BI (β=.35 full; β=.39 time 1; β=.32 time 2). Both UIBR(r=.600***) and ATRB (r =.68) are strongly correlated with attitude. The UR-TAM significantly explained the portion of the variation, 28% in Users' Informational-based readiness, to use Internet banking services when applying the full set of data. Looking at the determinants of UIBR, ATRB had a strong significant effect on UIBR (β=.37 full; β=.35 time 1; β=.38 time 2) and COMCAT had a significant effect on UIBR (β=.22 full; β=.26 time 1; β=.18 time 2).

CONCLUSION

Mathieson et al. (2001) indicated that the TRA is a general theory of human behavior while the TAM is specific to IS usage. The findings of this study are supported and guided by three specific theoretical models, – TAM, TRA, and DOI. In this study the researcher examines the impact of two kinds of variables on the usage of Internet banking. The user's internal beliefs represented by attitude and intention variables and the second type are the impact of external informational variables representing the user's readiness and the communication channel. TAM and DOI can fully cooperate to explain why people accept or reject an innovation. In view of this shortcoming, innovation attributes from the diffusion theory (Rogers, 1995), psychological variables from TAM and the UIBR newly proposed variable, would also need to be examined for further validation in different disciplines and contexts. The study's results yield major insights concerning the determinants of Internet banking by the proposed UR-TAM. It confirmed that a user's usage of Internet banking can be predicted from their intentions. On the other hand, a user's attitudes are, significantly, the primary determinant of people's intention to use Internet banking. The user's informational readiness to use Internet banking is a significant determinant of the user's intention to use IB. On the other hand, the user's attitude towards using Internet banking services is jointly determined by the index of Internet banking attributes and the user's informational readiness. The study's findings has an implication for managerial practice by giving the signal to decision makers and practitioners to seek further information on how is user readiness to accept the technology that organization intends to invest in and introduce to customers. The present research implications are also relevant to the marketing area as they help determine whether the mix marketing strategies adopted are effective or not. The marketing mix, also known as the 4 P's of marketing, which is the combination of product, price, place (distribution), and promotion.

It has implications for increasing user acceptance to innovation because decision makers believe that the impediments of accepting new ideas by individuals are attributable to the lack of information on both the innovation availability and its attributes.

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Appendix (I-A) – Questionnaire Items

Reference:	Items
Davis	**Usage**
(1989)	FU1= How frequently do you use Internet banking? FU2= How frequently do you use SMS BANKING? FU3= How frequently do you use e-rail? U4= I have used Internet Banking before.
Venkatesh, & Davis (2000) Lai & Li., (2004) Mathieson, (1991), Shih & Fang (2004) , Gardner & Amoroso (2004 *Wang, et al. (2003)*	**Intention** INT1= Given the chance, I predict that I would use Internet banking in the future to perform my banking activities. *INT2*= I will strongly recommended others to use Internet Banking. *INT3*= My favourable intention would be to use {Internet Banking} rather than my (traditional banking) for my banking practice. *INT4*= I plan to use Internet Banking. *INT5*= When I have access to the Internet Banking system, I intend to use it.
Taylor and Todd (1995a) and Ajzen and Fishbein's (1980	**Attitude** *ATT1*= In my opinion, using the Internet Banking services is a good idea. *ATT2*= I think it is a wise idea for me to use the Internet Banking services. *ATT3*= I like the idea of using Internet Banking. *ATT4*= Using Internet Banking would be pleasant experience.
(Moore &Benbasat, 1991; Karahanna et al. (1999)	**Innovation Attribute Roger (1995)** **Relative Advantage (RA)** RA1= Internet Banking would enable me to accomplish my tasks more quickly. RA2= If I were to use Internet Banking, the quality of my work would improve. RA3= Internet Banking would enhance my effectiveness on the job. RA4= Internet Banking would make my life easier. RA5= Using Internet Banking gives me greater control over my work.
	Compatibility (COM) COM1= Internet Banking would be compatible with most aspects of my work. COM2= If I were to use Internet Banking, it would fit my work style. COM3= If I were to use Internet banking it would fit well with the way I like to work.
(Moore & Benbasat, 1991; Karahanna et al., 1999; Tan & Teo, 2000; Wang et al., 2003)	**Ease of Use (EU)** EU1= Learning to operate Internet Banking would be easy for me. EU2= Overall, if I were to use Internet Banking, it would be easy to use. EU3= It would be easy for me to become skilful at using Internet Banking. EU4= I believe that it is easy to get Internet Banking to do what I want it to do?
Moore & Benbasat, 1991; Karahanna et al. 1999; Tan&Teo 2000; Brown, et al. (2004)	**Trialability (TR)** TR1= Before deciding on whether or not to use Internet Banking, I want to be able to use it on a trial basis. TR2= Before deciding on whether or not to use Internet Banking, I want to be able to properly try it out. TR3= I want to be permitted to use Internet Banking, on a trial basis for some time long enough to see what it can do.
Karahann, et al.,	**Observability** (OBS) If the bank introduces Internet Banking services, OBS1= I will use them when it is used by many. OBS2= I will use them when I have seen others using Internet banking.

(1999)	OBS4= I will use them if this service becomes popular.
	OBS5= I will wait until other customers start to use them.
	OBS6= I will use them when other people have successful experience of using them.

UIBR		
Khalifa & Cheng (2002) and Chang (2004);	EXPOS1	= I have seen advertisements recommending the use of Internet banking.
	EXPOS2	= I have used Internet Banking before.
	EXPOS3	= I have been exposed to a recommendation to use Internet Banking.
Hall et al., 1977	AW1	= I do not even know what Internet Banking is.
	AW2	= I am not concerned about Internet Banking.
	AW3	= I am completely occupied with other things.
	AW5	= At this time, I am not interested in learning about Internet Banking.
Hall et al., 1977	KW1	= I have a very limited knowledge of Internet Banking.
	KW2	= I would like to discuss the possibility of using Internet Banking.
	KW3	= I would like to know what resources are available if I decide to adopt Internet Banking.
	KW4	= I would like to know what the use of Internet Banking would require in the immediate future.
	KW5	= I would like to know how this innovation is better than what we have now.
Laforet & Li (2005), Karjaluoto et al. (2002)	EXPR1	= I have a great deal of experience using computers.
	EXPR2	= I have a great deal of experience using the Internet.
	EXPR3	= I have a great deal of experience using Personal banking services.
Gardner & Amoroso (2004)	EXPR4	= How long have you been using computers? (Years of Experience recoded 1-7)
	EXPR5	= How long have you been using the Internet? (Years of Experience recoded 1-7)
	EXPR6	= How long have you been using Personal banking? (Years of Experience recoded 1-7)

	Communication Channel (Norm)
	W-O-M
	Nb1- My Referent (peers/colleagues/friends/family) would think that I should use Internet banking
	Nb2- My Referent (peers/colleagues/friends/family) would think that I should try out Internet banking to manage my bank accounts.
	Nb3- My opinion leaders would think that I should use Internet banking
	Nb4- My opinion leaders would think that I should try out Internet banking to manage my bank accounts.
	Nb 5- Bank's employees I deal with would think that I should use internet banking
	Nb 6- Bank's employees I deal with would think that I should try out Internet banking to manage my bank accounts.
Pedersen (2005) Battacherjee (2000) Pedersen (2005	**Mass Media**
	Nb1 - the media are full of reports, articles and news suggesting that using Internet banking services is a good idea
	Nb2 – the media and advertising consistently recommend using Internet Banking services
	Nb3 - In my profession, it is advisable to use Internet Banking services
	Nb4 - I read/saw news reports that using Internet Banking was a good way of managing my bank account.