

## Factors Influencing Customers' Intentions to Use Internet Banking: Model Development and Test

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**Abstract**— Although Internet banking provides many benefits and proves to be advantageous for both banks and their customers, there are still large number of customers in India who refuse to change from traditional banking channels to this technology based channel for various reasons. Many research studies have been conducted to examine the factors that explain bank customers' intention to use Internet banking, but few have developed a model to statistically explain the interactions among these factors and how they influence customers' intention to use this technology in India. The purpose of this study is to propose and test a model to explain bank customers' behavioural intention to use Internet banking services in India. The research model has been empirically tested based on responses of 325 bank customers in Hyderabad city, using structural equation modeling approach. Results of the study revealed a good model fit and most of the hypotheses formulated in this study were supported. This study contributes a comprehensive and robust research model, highlighting the significant predictors of customers' intentions to adopt Internet banking services. The banks should make their customers feel how Internet banking services will be more useful or easy to use, more trustworthy, and less risky to improve their intention to use Internet banking services in India.

**Keywords**— Behavioural Intention, Awareness, UTAUT, Attitude, Technology Acceptance

### I. INTRODUCTION

With the rapid developments in Internet technology, there are major changes in the way personal financial services are produced and offered to the customers. There are many benefits and advantages enjoyed by both the banks and their customers as the Internet had become the most integral part of banking industry. Through Internet banking, consumers can perform many banking transactions from any place at any time, without a need for visiting their bank branches. This also proves to be advantageous for the banks, as there is increased

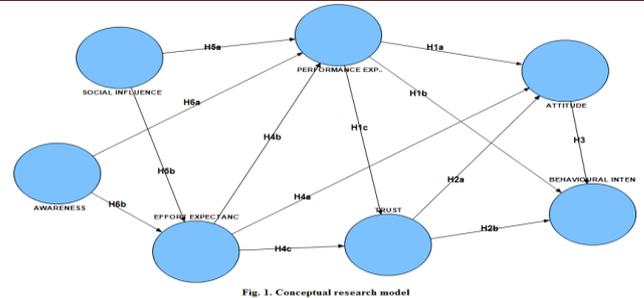
flexibility and efficiency in delivering the banking services to the customers. This would further enable banks to differentiate their services from competitors, resulting in increased value added to diversified customer segments. The Internet banking usage rate is found to be very high in the developed nations such as United States and Europe (Pikkarainen et al., 2004), whereas in case of developing nations like India, the adoption rate is still found to be growing at a slower rate.

The Internet population in the world is rapidly growing, providing new opportunities for performing activities like communication, shopping, banking etc. There are approximately 2.4 billion users during 2012 across the world against 361 million in the year 2002, with 566.4% growth rate (Internet World Stats, 2012). In India, it was reported that 137 million Internet users during the year 2012, with the penetration of only 11.4% of the population. Although Internet population is growing at a faster rate in India, the usage of Internet banking has been slower than other developed countries. According to a report by McKinsey & Co (2011), only 7% of the bank customers in India are using for performing banking transactions. There are many reasons for bank customers resisting to change from traditional bank channels to this technology based banking channels, such as lack of knowledge, privacy and security issues and preference for face-to-face transactions (IAMAI, 2006). There is a need for Indian banks to understand their customers' perceptions about Internet banking services, in order to persuade them for using this channels for performing their banking transactions. Many research studies have been conducted in the field of Internet banking adoption, examining the factors influencing bank customers' intention to use Internet banking. Based on the extensive literature review, it was found that there are very few studies that have developed and validated a research model explaining the interactions among the influencing factors and how they ultimately impact customers' decision to

adopt Internet banking in India. Hence, the purpose of this study is to propose and test a model that explains bank customers’ behavioural intention to use Internet banking services in India.

**II. LITERATURE REVIEW AND RESEARCH MODEL**

Both researchers and practitioners have been emphasizing on a key idea of understanding why people accept information technology. This gives cue about better methods of designing, evaluating and predicting how users will respond to a new technology that can be developed and implemented successfully (The Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh, Morris, Davis and Davis (2003), attempts to predict technology acceptance behaviour from a unified view. Venkatesh et al (2003) reviewed and integrated eight dominant theories (i.e. Theory of Reasoned Action, Motivational Model, Theory of Planned Behavior, a combined TAM and TPB model, model of PC utilization, Innovation Diffusion Theory, and Social Cognition Theory) to formulate the UTAUT, in explaining technology acceptance behaviour. Based on detailed review of these eight models, Venkatesh et al. (2003) have posited four key constructs in the UTAUT namely Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions, which are validated as significant determinants of predicting technology acceptance behaviour. Thus, UTAUT model is considered to be a comprehensive, robust and powerful model to predict the technology adoption, which accounts up to 70% of the variance in users’ technology acceptance behaviour. UTAUT has been applied to measure the acceptance of a number of technologies including, Internet banking, mobile phone, digital library, online tax filing, etc. This study proposed an Internet banking acceptance model (Fig. 1) by extending UTAUT with additional three variables including awareness, trust and attitude. These variables used were drawn from accepted studies that mainly focus on the intention to use technology in the business setting.



The detailed description of the factors identified to be influencing the Internet banking adoption in India is given in Table-1, along with the hypotheses constructed for testing and the sources from which they have been derived.

**TABLE-I**  
 DEFINITION OF FACTORS USED AND THE RESEARCH HYPOTHESES

Factors	Definition	Hypotheses	Source
Performance Expectancy	“The degree to which an individual believes that using the system will help him/her to attain gains in job performance” (Venkatesh et al. 2003)	H1a: Performance expectancy positively influences behavioural intention to use Internet banking services. H1b: Performance expectancy positively influences trust perceptions.	Wang et al., 2003; Pikkarainen et al., 2004; Al-Somali et al., 2009
Trust	“Perceptions about others’ attributes and a related willingness to become vulnerable to others” (Rousseau et al. 1998)	H2a: Trust positively influences attitude towards Internet banking. H2b: Trust positively influences behavioural intention to adopt Internet banking.	Nor and Pearson, 2008; Chong et al., 2010; Foon and Fah, 2011
Attitude	“An	H3: Attitude	Liao et al.,

	individual's overall affective reaction to using a system” (Venkatesh et al. 2003)	positively influences behavioural intention to use Internet banking.	1999; Al-Somali et al., 2009; Prema and Sudhakar, 2009
Effort Expectancy	“The degree of ease associated with the use of the system” (Venkatesh et al. 2003)	H4a: Effort expectancy will positively influence attitude. H4b: Effort expectancy positively influences performance expectancy. H4c: Effort expectancy positively influences trust perceptions.	Ramayah et al., 2003; Chang and Hamid, 2010; Sentosa et al., 2012
Social Influence	“The degree to which an Individual perceives that important others believe he or she should use the new system” (Venkatesh et al. 2003)	H5a: Social influence will positively influence performance expectancy. H5b: Social influence will positively influence effort expectancy.	Mashhadi et al., 2007; Liu et al., 2008; Alsajjan and Dennis, 2009
Awareness	“Consumers go through a process of knowledge, persuasion, decision and confirmation before they are ready to adopt a product or service” (Rogers and Shoemaker, 1971)	H6a: Awareness of Internet banking and its services will positively influence performance expectancy. H6b: Awareness will positively influence effort expectancy.	Sathye, 1999; Pikkarainen et al., 2004; Al-Somali et al., 2009; Prema and Sudhakar, 2011

### III. RESEARCH METHODOLOGY

The survey technique was adopted for collecting the data to test the hypotheses in this research study. The questionnaire was developed based on the measurement scales available from previous research studies (Venkatesh et al., 2003; and Pikkarainen et al., 2004), and modified each item to fit the research context. The research instrument had questions on respondent’s profile, Internet-related behaviour and the factors identified to influence the Internet banking adoption in India. Measurement of Performance expectancy, Trust, Attitude, Effort expectancy, Social influence and Awareness were carried out by a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). A total of 500 questionnaires were distributed across different commercial banks situated in Hyderabad during 2012, of which 325 were returned giving a response rate of 65%. Sixty five percent of the respondents were male and 35% were female. The majority of the respondents (64%) were below 35 years old. About 35% of the respondents had been using the Internet for more than six years. Finally, 37% of the respondents were graduates and 43% were in the month income group of ‘Rs.20,001 to Rs.40,000’.

### IV. DATA ANALYSIS AND RESULTS

The research model was tested using Partial Least Squares (PLS), a structural equation modeling technique which has been gained popularity among the researchers because of its ability to model latent constructs under conditions of non-normality, small to medium sample sizes and well suited for highly complex predictive models (Barclay et al., 1995; Chin, 1998). Using the Smart-PLS software, the measurement model was examined to assess reliability and validity before testing the proposed research model. Reliability has been tested in this study through Cronbach’s alpha, Composite reliability (CR), Average Variance Extracted (AVE), and factor loadings. Table-2 shows the results of measurement model, where the factor loadings of all items were higher than 0.70, Cronbach’s alpha value of all constructs were than greater than 0.70 and AVE of all constructs were more than 0.50 and the composite reliability values of all variables were much above than the threshold value of 0.70, thus, confirming the quality of the measurement model.

TABLE-II  
 PSYCHOMETRIC PROPERTIES OF MEASURES

Construct	Cronbach's Alpha, Composite Reliability, Average Variance Extracted	Item	Loading
Performance Expectancy	$\alpha = 0.898$ ; CR = 0.929; AVE = 0.767	PE1	0.8571
		PE2	0.9036
		PE3	0.9108
		PE4	0.8292
Effort Expectancy	$\alpha = 0.955$ ; CR = 0.966; AVE = 0.850	EE1	0.9156
		EE2	0.9307
		EE3	0.9298
		EE4	0.9644
		EE5	0.8674
Social Influence	$\alpha = 0.958$ ; CR = 0.973; AVE = 0.923	SI1	0.9497
		SI2	0.9595
		SI3	0.9741
Attitude	$\alpha = 0.949$ ; CR = 0.964; AVE = 0.871	ATT1	0.8359
		ATT2	0.9652
		ATT3	0.9628
		ATT4	0.9637
Trust	$\alpha = 0.895$ ; CR = 0.928; AVE = 0.765	T1	0.9152
		T2	0.928
		T3	0.8854
		T4	0.7599
Behavioural Intention	$\alpha = 0.962$ ; CR = 0.975; AVE = 0.930	BI1	0.9659
		BI2	0.9765
		BI3	0.9514
Awareness	$\alpha = 0.746$ ; CR = 0.868; AVE = 0.871	AW1	0.8401
		AW2	0.7702
		AW3	0.8748

EE	0.4992	0.3993	0.5072	0.9221			
PE	0.4417	0.5553	0.5198	0.4986	0.8757		
SI	0.3719	0.4094	0.4883	0.3912	0.4896	0.9611	
TR	0.4525	0.4793	0.5289	0.4405	0.5835	0.5991	0.8746

The structural equation modeling was used to test the research hypotheses, because of its ability to validate multiple causal relationships simultaneously, found to be suitable for testing the proposed comprehensive research model. The overall explanatory power and estimated path coefficients of the research model are given in Fig. 2. SmartPLS with bootstrapping as a resampling technique (500 random samples) was used to estimate the structural model and the significance of the paths.

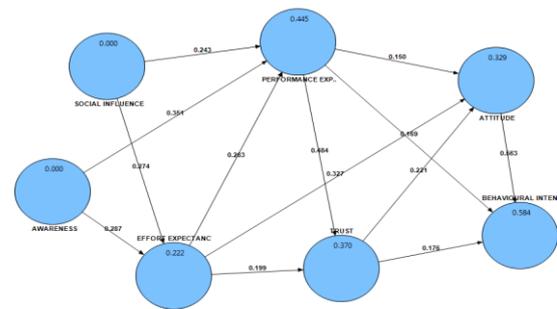


Fig. 2. Structural model and path coefficients

As shown in Fig.2, all research hypotheses of this study are supported. It was found that 44.5% of the variance in performance expectancy was explained by two significant predictors viz. social influence and awareness. Social influence and awareness also have significant influence on effort expectancy and together explain 22.2% of the variance. About 37% of the variance in trust was explained by two significant factors i.e. performance expectancy and effort expectancy. All the three proposed constructs i.e. performance expectancy, effort expectancy and trust, have significant influence on attitude towards Internet banking services and together explain 32.9% of the variance. Finally, 58.4% of the variance in behavioural intention is explained by three significant predictors including performance expectancy, trust and attitude. It was also found that attitude was found to have stronger influence on customers' intention to adopt Internet banking services in India.

V. DISCUSSION AND CONCLUSION

On the other hand, evidence of discriminant validity can be established when the squared root of the average variance extracted (AVE) for each construct is greater than the correlations between it and all other constructs. The results shown in Table-3 suggests an adequate discriminant validity of all measurements.

TABLE-III  
 DISCRIMINANT VALIDITY OF CONSTRUCTS

	ATT	AW	BI	EE	PE	SI	TR
ATT	0.9335						
AW	0.4475	0.8295					
BI	0.5166	0.455	0.9646				

This paper sought to explore the factors that are influencing the bank customer's intention to accept and use Internet banking services in India. The research model is proposed in this study by extending UTAUT with additional three significant predictors of behavioural intention i.e. attitude, trust and awareness. Results of the study revealed a good model fit and all hypotheses formulated in this study were supported. Awareness about the Internet banking and its services had significant (indirect) influence on attitude, trust and behavioural intention. Similarly, social influence was also found to have indirect influence on attitude, trust and behavioural intention. This confirms that customers' knowledge and their peer influence would motivate them to adopt Internet banking services. The results of the study found that all six constructs i.e. performance expectancy ( $\beta=0.398$ ), effort expectancy ( $\beta=0.348$ ), social influence ( $\beta=0.192$ ), trust ( $\beta=0.300$ ), attitude ( $\beta=0.562$ ) and awareness ( $\beta=0.239$ ) have significant (direct/indirect) influence on customers' behavioural intention to accept Internet banking services. Therefore, the banks in India should make their customers understand how Internet banking services will be more beneficial, easy to use, more trustworthy, and less risky to improve their intention to use Internet banking services in India. This study contributes a comprehensive and robust research model, highlighting the significant predictors of customers' intentions to adopt Internet banking services. Future studies could use the proposed model, to study the perceptual differences of segments such as users and non-users, young and old customers etc. on Internet banking services in India.

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