FACTORS INFLUENCING THE BEHAVIOURAL INTENTION TO ADOPT INTERNET BANKING: AN EMPIRICAL STUDY IN INDIA

S. Saibaba,

Faculty – Marketing
Siva Sivani Institute of Management Kompally,
Secunderabad, Andhra Pradesh, India.

T. Naryana Murthy,

Director – Academic Planning
Nimra Group of Colleges,
Vijayawada, Andhra Pradesh, India.

ABSTRACT

Internet banking provides huge benefits to banks' in cost savings, improved customer relationships and differentiating their offerings from competitors. Although the Internet banking services were introduced in India for more than a decade ago, the adoption among the bank customers is still very low. This study aims to identify the factors that are significantly influencing the bank customers intention to use Internet banking services in India. The research proposed a comprehensive model called 'Internet banking Acceptance in India', constructs of which were developed based partially on the Unified Theory of Acceptance and Use of Technology (UTAUT) and three additional variables as identified to be context-specific. The data presented in this study are based on 325 questionnaires collected from individual bank customers' in Hyderabad city. The empirical findings of the study confirms the relationships between the identified latent variables and their impact on the adoption of Internet banking services. The proposed model explained about 67% of the variance in behavioural intention to adopt the Internet banking in India. This study contributes to the literature by providing a new research framework for predicting Internet banking adoption in India and its findings provide useful insights for bank managers and policy makers in planning Internet banking promotion strategies.

Keywords: Behavioural Intention, UTAUT, Trust, Awareness, Attitude.

INTRODUCTION:

With the advent of Information technology, the way individuals and business are performing various activities have changed over the last two decades worldwide. The Internet users have been rapidly growing, as a new avenue of performing tasks like communication, shopping, banking, etc. According to Internet World Stats (2012), there are approximately 2.4 billion Internet users across the world against 361 million in the year 2002, with a growth rate of 566.4%. Further, it was reported that there were around 137 million Internet users in India with the penetration of only 11.4% of the population (Internet World Stats, 2012).

Internet technology has undoubtedly redefined the way the products and services are designed, communicated and delivered to the customers. For a marketer, the Internet has provided innumerable opportunities to understand and serve the customers better than rivals in the Industry. For example, the Internet has enabled most of the firms to save a considerable amount of money, by having personalized communication and delivering their products and services online. Most of the firms have been using hybrid channels (a combination of physical and virtual channels) to reach different customer segments, expanding their market coverage globally. This impact of the Internet is evident in almost all industries, including banks in India. Many banks in India have established their presence online, thus providing their customers the convenience of banking 'anytime, anywhere'. With the rapid diffusion of the Internet, banks now can add more value to their customers through their innovative banking channels and differentiate their offerings from competitors.

Internet banking is a platform where bank customers can perform various activities such as balance enquiry, fund transfer, request for bank statement, etc. which were traditionally performed in branch banking. There are numerous benefits for the banks and the customers through offering banking services online. For instance, it was estimated that branch banking costs about Rs.1 per transaction, Automated Teller Machines (ATMs) cost only 45 paise whereas Internet banking at 10 paise per transaction. This results not only in cost savings but also efficient and effective services quality. And for customers, it is possible to perform most of the banking transactions online without visiting the physical bank branch, at any time and in any place. In India, the banking services provided by the banks' websites can be classified under two types: informational websites and transactional websites. Informational websites would simply give customers access to services such as checking balances, viewing account statement, etc. whereas through transactional websites, customers can transfer funds online, make bill payments, etc.

Internet banking has been defined in the literature in many ways. For instance, Pikkarainen et al. (2004) defined Internet banking as "an Internet portal through which customers can use different kinds of services ranging from bill payment to making investments."

Although many banks have been offering banking services online, still the bank customers in India have not been using this technology-based service channel completely. The penetration of the Internet is steadily growing in the last few years in India, but it was reported that only 7% of the bank customers are using Internet banking for performing their banking transactions (McKinsey & Company, 2011).

A number of research studies have been conducted across the world, for understanding the adoption behaviour of Internet banking by the bank customers (Liao et al. 1999, Tan and Teo 2000, Wang et al. 2003, Pikkarainen et al. 2004, Eriksson et al. 2005, Cheng et al. 2006, Yeow et al. 2008, Yousafzai and Yani-de-Soriano, 2012). There are many factors identified in those studies that influence the user's intentions to accept Internet banking for performing the banking transactions. Perceived usefulness, perceived ease of use, perceived security, trust, attitude and perceived behavioural control are some of the factors that are found to have stronger influence on the adoptions' intentions of bank customers. Most of these studies have been conducted in the countries where innovation adoption rate is much higher than the developing country like India in the last twenty years. The Internet banking has been introduced in India more than a decade before, but the adoption rate is still very low. Some of the reasons for bank customers not preferring online banking were lack of knowledge, privacy and security issues and preference for face-to-face transactions (IAMAI, 2006).

A detailed literature review found that previous studies examining the Internet banking acceptance in India did not have detailed and systematic theoretical approach, relating to the contextual factors. This study is the first attempt to address this limitation by applying Unified Theory of Acceptance and Use of Technology (UTAUT), which aims to conduct thorough research on factors that influence the behavioural intentions of bank customers in India, assist bank managers and policy makers in offering superior Internet banking services to their customers.

This paper is structured as follows. The next section provides overview of Information Technology theories, UTAUT, Internet Banking acceptance research, and a research model proposed in this study. After proposing the research framework, the article describes the methods employed. The next section includes research results,

analysis and discussion. The final section contains the conclusions, implications and recommendations for future research.

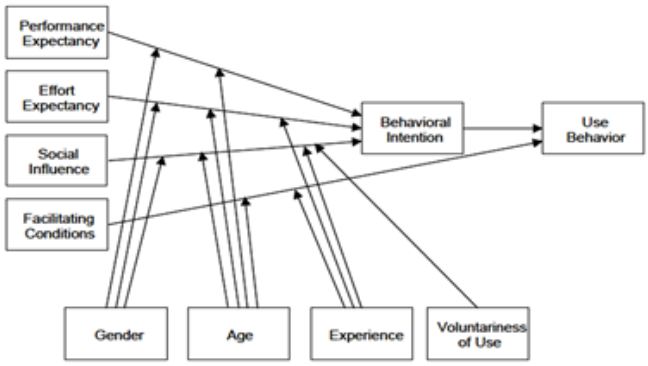
LITERATURE REVIEW:

User's acceptance of IT has always been an important area being studied by both researchers and practitioners for many decades. Understanding the secret behind user's decision to accept IT is one of the biggest challenge for successful IT implementation and management issues. According to Dillion and Morris (1996), IT acceptance is "demonstrable willingness to employ information technology for the task it is designed to support". Intentions to use a particular IT system is considered to be a critical element in predicting the behaviour (usage) (Venkatesh et al., 2003).

There are variety of theoretical perspectives that have been applied in various research studies in an attempt to understand the determinants of IT adoption and its usage, mostly derived from social psychology. These research frameworks use behavioural intentions of individuals to predict their actual use of technology, in turn, focuses on the identification of the determinants of their intentions to use that technology. Some of those research models mostly used in the context of IT acceptance, include Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975), Theory of Planned Behaviour (TPB) by Ajzen (1991) and Technology Acceptance Model by Davis (1989), and Unified Theory of Acceptance and Use of Technology by Venkatesh et al. (2003).

The choice of acceptance model being adopted in this study has been justified as the Unified Theory of Acceptance and Use of Technology (UTAUT) model developed by Venkatesh et al. (2003). This model was considered to be robust and comprehensive for understanding the acceptance and adoption of IT, which integrates eight previously established models on individual acceptance of IT. It was found that there are four factors that significantly influence user acceptance and usage behaviour, namely *performance expectancy, effort expectancy, social influence* and *facilitating conditions* (Venkatesh et al. 2003). UTAUT model (fig. 1) was found to explain 70% of the variance of users' intentions to use a technology, whereas the previous eight models could explain variance of only 17 to 53 percent.

Figure 1: Unified Theory of Acceptance and Use of Technology



Source: Venkatesh et al. (2003)

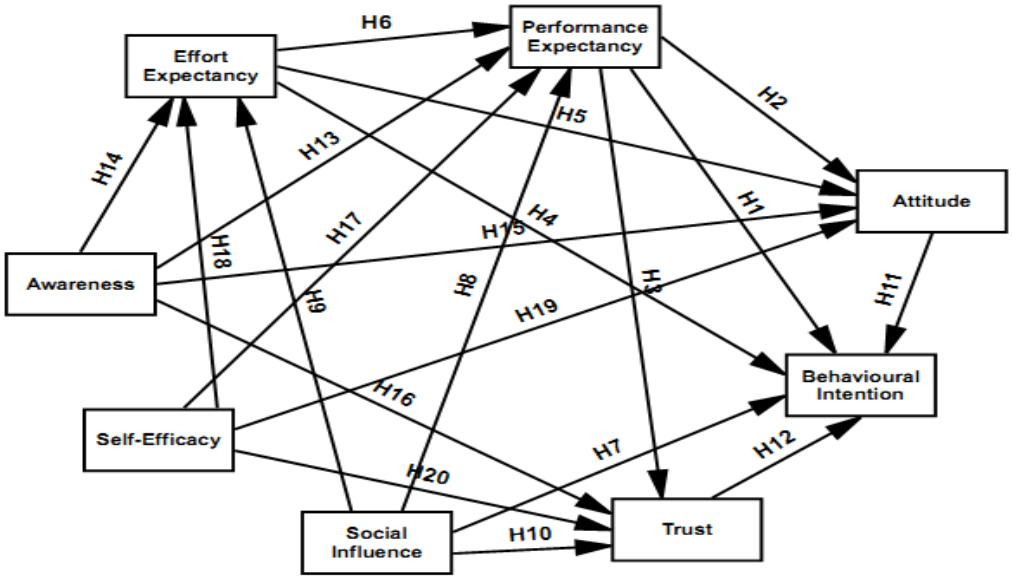
A study conducted by Sathye (1999) revealed that 'lack of awareness' and 'security concerns' were the major factors that are hindering customers from the adoption of Internet banking services in Australia. In another study, Wang et al. (2003) extended the TAM model by adding a variable called 'perceived credibility', for determining the users' acceptance of Internet banking in Taiwan. They found that factors such as perceived usefulness, perceived ease of use and perceived credibility had significant influence on the behavioural intentions of bank customers for using the Internet banking services. Pikkarainen et al. (2004) investigated online banking acceptance among the finish customers, by using extended TAM. This study found that perceived usefulness, amount of information on online banking were the most influential factors of Internet banking acceptance.

Yeow et al. (2008) have developed a research framework based on UTAUT model for investigating adoption of online banking in Australia. The study extended UTAUT theory with additional factors such as perceived credibility, anxiety, self-efficacy and attitude toward using online banking services. This research concluded that most of the independent variables have sign cant effect on behavioural intentions to use online banking in Australia. In another study conducted by Foon and Fah (2011), a survey of 200 respondents in Malaysia found that trust perception when added to UTAUT model, explained about 56.6% of the variance in behavioural intention.

RESEARCH MODEL:

Many studies as discussed in previous section, have identified various factors which influence the adoption of Internet banking acceptance. As discussed earlier, this study considered the factors that would be more relevant for the Indian context, in addition to factors in UTAUT model. The new proposed model has six factors namely, performance expectancy, effort expectancy, social influence, attitude, trust, and awareness. These factors are assumed to influence the behavioural intentions of bank customers' in India, for adopting the Internet banking services. The extended UTAUT as illustrated in figure 2, will be named as 'Internet banking Acceptance in India' model.

Figure 2: Proposed Research Model - Internet Banking Acceptance in India



In this study, the bank customers' acceptance of Internet banking is measured by their behavioural intention to use this technology. Dillion and Morris (1996) defined user acceptance as a persons' intentions to use a technology. Behavioural intention to use a technology was verified to be a valid and reliable measure of actual usage (Sun, 2003). Therefore, this study measures customers' acceptance of Internet banking through their behavioural intention to use it.

Table-1: Significant Factors used in this study that influence Internet banking acceptance in India

Factors	Definition
1. 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)
2. Effort Expectancy	"The degree of ease associated with the use of the system" (Venkatesh et al. 2003)
3. 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)
4. Attitude	"An individual's overall affective reaction to using a system"(Venkatesh et al. 2003)
5. Trust	"Perceptions about others' attributes and a related willingness to become vulnerable to others" (Rousseau et al. 1998)
6. 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)
7. Self-Efficacy	Computer self-efficacy is defined as the judgment of one's ability to use a computer. (Eastin & Larose, 2000).

Several hypotheses were formed for testing as summarized in Table 2 and the sources from which they have been derived.

Table-2: Research hypotheses studied in this study

Hypotheses	Sources
H1: Performance expectancy has a significant impact on behavioural intention to use Internet banking H2: Performance expectancy has a positive impact on attitude towards using Internet banking H3: Performance expectancy has a significant impact on users' trust perceptions of Internet banking	Tan and Teo, 2000; Wang et al., 2003; Pikkarainen et al., 2004; Al-Somali et al., 2009; AbuShanab et al., 2010; Karthikeyan and Sudhakar, 2010; Foon and Fah, 2011;
H4: Effort expectancy has a positive impact on attitude towards using the Internet banking services H5: Effort expectancy has a significant impact on performance expectancy H6: Effort expectancy has a positive impact on trust perceptions	Ramayah et al., 2003; Wang et al., 2003; Nor and Pearson, 2008; Qureshi et al., 2008; Abu-Shanab and Pearson, 2009; Chang and Hamid, 2010; Sentosa et al., 2012;
H7: Social influence has a significant impact on behavioural intention to use Internet banking H8: Social influence has a positive impact on performance expectancy H9: Social influence has a positive impact on effort expectancy H10: Social influence has a positive impact on trust perceptions	Mashhadi et al., 2007; Liu et al., 2008; Nor and Pearson, 2008; Al-Somali et al., 2009; Alsajjan and Dennis, 2009;
H11: Attitude has a significant impact on behavioural intention to use Internet banking	Liao et al., 1999; Shih and Fang, 2004; Lai and Li, 2005; Nor and Pearson, 2007; Al-Somali et al., 2009; Prema and Sudhakar, 2009;
H12: Trust perceptions has a positive impact on behavioural intention to use Internet banking	Wang et al., 2003; Nor and Pearson, 2008; Abu-Shanab et al., 2010; Chong et al., 2010; Dimitriadis and Kyrezis, 2010; Foon and Fah, 2011;
H13: Awareness has a positive impact on performance expectancy H14: Awareness has a significant impact on effort expectancy H15: Awareness has a positive impact on attitude towards using Internet banking H16: Awareness has a significant influence on trust perceptions of users towards Internet banking usage	Sathye, 1999; Pikkarainen et al., 2004; Al-Somali et al., 2009; Prema and Sudhakar, 2011
H17: Self-efficacy has a positive impact on performance expectancy H18: Self-efficacy has a significant impact on effort expectancy H19: Self-efficacy has a positive impact on attitude toward using Internet banking H20: Self-efficacy has a significant influence on trust perceptions towards Internet banking services.	Wang et al., 2003; Sentosa et al., 2012;

RESEARCH METHOD:

The survey method was used for collecting the data to test the hypotheses in this study.The questionnaire was developed based researches conducted by Davis et al. (1989), Compeau and Higgins, (1995), Venkatesh et al. (2003), Pikkarainen et al. (2004), and Al-Somali et al. (2008). The questionnaire consisted questions related to (i) respondents' profile, (ii) Internet-related experience, (iii) bank-related experience (iv) possible factors affecting the intention to adopt Internet banking services. The respondents were required to rate their level of agreement in the questionnaire with statements using five-point scales ranging from "strongly disagree" (1) to "strongly agree" (5).

The content validity of the research instrument was done in three ways: (i) questionnaire scale items were adapted from previous research studies, (ii) questionnaire was pre-tested among five bank managers and five senior professors in a business school and modified accordingly, and (iii) adequacy of the questionnaire was confirmed through pilot study of 50 randomly chosen bank customers.

The data was collected through a survey conducted in commercial bank branches in Hyderabad, Andhra Pradesh, India. The survey was conducted in May-July 2012. Data were collected from five bank branches through randomly chosen bank's customers. Out of 500 self-administered questionnaires distributed, only 325 questionnaires were considered to be useful, which represents a response rate of 65%.

Table 3: Profile of the respondents

Sample respondents' characteristics	No. of respondents (n=325)	Percentage (%)
I. Demographics		
Gender		
Male	213	65.5
Female	112	34.5
Age		
18-25 years	80	24.6
26-35 years	127	39.1
36-45 years	86	26.5
46-55 years	20	6.2
55 years and above	12	3.7
Education		
School & Diploma	47	14.5
Bachelor's Degree	120	36.9
Master's Degree	106	32.6
Professional Degree	42	13.0
Others	10	3.1
Occupation		
Student	16	4.9
Private employee	141	43.4
Govt. employee	90	27.7
Business	62	19.1
Others	16	4.9
Average monthly income (Rs.)		
Less than Rs.20,000	101	31.1
Rs.20,001-40,000	139	42.8
Rs.40,001-60,000	55	16.9
More than Rs.60,000	30	9.2
II. Internet-related Behaviour		
Internet usage experience		
Less than 2 years	30	9.2
2 to 4 years	75	23.1
4 to 6 years	107	32.9
More than 6 years	113	34.8
Internet usage per week		
Less than 5 hours	38	11.7
5 to 10 hours	113	34.8
10 to 15 hours	96	29.5

More than 15 hours	78		24.0
III. Bank-related Behaviour			
Most frequently used Bank			
Public Sector Bank	152		46.8
Private Sector Bank	144		44.3
Foreign Bank	29		8.9
Satisfaction with frequently used Bank (Mean)	**Public Sector Bank**	**Private Sector Bank**	**Foreign Bank**
Bank products	3.30	3.40	3.37
Bank staff	3.17	3.33	3.31
Physical surroundings	3.22	3.41	3.34
Bank fees and charges	3.63	3.51	3.55
Automated services	3.57	3.63	3.51
Overall satisfaction	3.38	3.46	3.42

Table 3 summarizes the demographic characteristics and Internet-related behaviour of the respondents. Of the 325 respondents, 65.5% were male and the majority (39.1 percent) were between 26 and 35 years of age. Most (36.9 percent) had completed bachelor's degree, followed by respondents with master's degree (32.6 percent). In total, 43.4% were working with private sector organizations and 27.7% were with public sector undertakings. Majority (42.8 percent) of the respondents were in the monthly income group of 'Rs.20,001 to Rs.40,000', followed by 31.1% in 'less than Rs.20,000' income group. Most (34.8 percent) had been using the Internet for more than 6 years and the majority were using the Internet for about 5 to 10 hours (34.8 percent) per week.

Most (46.8%) of the respondents preferred public sector banks as their most preferred bank for frequent usage, followed by private sector banks with 44.3%. and 8.9% for foreign banks. The satisfaction of the respondents with their most frequently used bank with respect to factors such as bank products, courteous staff, fee and charges etc. were examined. Although, there are not many differences evidently found among the preferred bank types, still private sector bank customers had scored better than public sector banks in many aspects in particular and in overall satisfaction in total.

RESULTS AND DISCUSSION:

In this study, data analysis methods including descriptive statistical analysis and exploratory factor analysis, reliability and validity tests, confirmatory factor analysis and structural equation modeling were done in SPSS version 17 and AMOS version 17.

The exploratory factor analysis was used to confirm the item loadings and to evaluate the reliability of the measures used. The suitability of factor analysis for this study was determined using two main measures such as sample size and Kaiser-Meyer-Olkin (KMO) with Bartlett's test of sphericity (Pallant, 2001). Hair et al. (1998) recommended a ratio of 1:10 between the items to be factored and the number of cases used. In this study, factor analysis was conducted on 29 items and the ratio of items to cases was 1:11.

The Barlett's test of sphericity with an X_{406} = 18429.180, $p<0.001$ indicates that correlations were adequate to conduct factor analysis. The sampling adequacy measure of Kaiser-Meyer-Olkin was used to check for excessive correlations with a value equal to 0.890, well above the recommended value of 0.5. This explains the existence of small correlations among variables.

The principal component method of factor analysis with varimax rotation method was used, which extracted eight (8) factors having eigen values of more than 1.0, as shown in Table . The cumulative variance explained by extracted 8 components was 83.63%.

The cronbach's alpha of all items ranged from 0.836 to 0.967, were well above the minimum requirement of 0.7 (Hair et al. 2010). All factor loadings were larger than 0.5 representing the significant level of construct validity (Malhotra, 1999). The factor loadings ranged from 0.721 to 0.855 for Performance Expectancy, 0.808 to 0.941 for Effort Expectancy, 0.841 to 0.890 for Social Influence, 0.821 to 0.928 for Attitude, 0.666 to 0.778 for Trust, 0.821 to 0.844 for Awareness, 0.900 to 0.922 for Self-Efficacy, and 0.852 to 0.868 for Behavioural Intention. Since all factor loadings were meeting the acceptable significant criteria, all 29 questionnaire items were retained for further analysis.

Table 4: Factor loadings (from SPSS exploratory factor analysis)

Component	Mean	S.D	Cronbach alpha	Factor loading	Variance explained (%)
				Total cumulative %	83.629
Performance Expectancy (PE)					
PE1	3.42	0.77	0.890	0.721	8.793
PE2	3.44	0.78		0.809	
PE3	3.42	0.79		0.855	
PE4	3.58	0.72		0.764	
Effort Expectancy (EE)					
EE1	3.66	0.76	0.967	0.900	35.584
EE2	3.65	0.74		0.909	
EE3	3.69	0.75		0.922	
EE4	3.64	0.74		0.941	
EE5	3.17	0.76		0.808	
Social Influence (SI)					
SI1	3.04	0.70	0.957	0.841	6.204
SI2	3.13	0.73		0.850	
SI3	3.03	0.72		0.890	
Attitude (ATT)					
ATT1	2.67	0.90	0.925	0.831	11.730
ATT2	3.06	0.97		0.928	
ATT3	3.03	0.97		0.897	
ATT4	3.22	0.84		0.821	
Trust (TR)					
T1	3.12	0.80	0.868	0.778	7.450
T2	3.20	0.69		0.778	
T3	2.99	0.74		0.798	
T4	2.60	0.82		0.666	
Awareness (AW)					
AW1	3.15	0.75	0.836	0.821	4.012
AW2	3.01	0.76		0.832	
AW3	3.22	0.69		0.844	
Self-Efficacy (SE)					
SE1	3.06	0.70	0.942	0.900	4.805
SE2	3.06	0.71		0.914	
SE3	3.13	0.64		0.922	
Behavioural Intention (BI)					
BI1	3.05	0.96	0.963	0.857	5.050
BI2	3.03	0.98		0.868	
BI3	2.87	0.92		0.852	

Used SPSS Principal Component Factoring extraction with Varimax rotation method.

In analysing the data further, the two-step procedure suggested by Anderson and Gerbing (1988) was followed. First, the measurement model was examined to measure the item reliability, scale reliability, convergent validity and discriminant validity. Then, the structural model was specified to investigate the strength and direction of the relationships among the theoretical constructs.

A eight-factor measurement model was set up to validate the scales, and a confirmatory factor analysis (CFA) was conducted to test the measurement model (Table 6). CFA was used in this study, to assess the quality of each measure under three main issues: convergent validity, unidimensionality and reliability. The model were estimated by using the Maximum Likelihood (MC) estimation procedure available in the Amos version 17, because this type of estimation method is widely used in the literature of business and marketing (Shah and Goldstein, 2006). Five common-model fit measures were used to assess the model's overall goodness of fit: the

ratio of χ2 to degree of freedom (df), goodness-of-fit index (GFI), Tucker Lewix index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA).

In the current measurement model analysis, it is found that all values of standard regression weights were above 0.6. The value of squared multiple correlations for all items were above 0.5, except for T4 and AW4. These two items were deleted from the measurement model analysis to improve the model fit. The results of items creating problems for model fit, can alsobe identified through Modification Indexes. Only those items that show high covariance values plus high regression weight in the modification indexes should be deleted (Byrne, 2001). Based on this guidelines, the following items: EE5, ATT2 and ATT3 were deleted. After the deletion of those items, CFA was run again, where all the model-fit indices exceeded their respective common acceptable levels, as given in Table 5 , thus demonstrating that the measurement model Fit the data quite well.

Table 5: Goodness-of-fit results

Constructs	Unidimensionality					
	Overall model fit					
	Absolute fit			Incremental fit		Parsimonious fit
	χ^2, df, p-value	GFI	RMSEA	TLI	CFI	χ^2/df
Acceptance level	**p>0.05**	**≥0.9**	**<0.08**	**≥0.9**	**≥0.9**	**Range 1-3**
Measurement model	**χ^2=464.759 df =223 P=0.000**	**0.945**	**0.041**	**0.980**	**0.984**	**2.084**
Structural model	**χ^2=518.564 df =228 P=0.000**	**0.938**	**0.045**	**0.977**	**0.981**	**2.274**

The evaluation of the psychometric properties of the measurement model in terms of reliability, convergent validity, and discriminant validity was further done. As shown in Table 6 , in term of composite reliability (CR), the scales exceed the recommended cutoff value of 0.70; thus, it is reasonable to conclude that the scale items are reliable. In terms of Average Variance Extracted (AVE), all the values are greater than 0.50. The R^2 value for all indicators is greater than 0.50, indicating the item reliability.Furthermore, Table shows that each of the item loadings is greater than 0.60, which provides empirical support for the convergent validity of the scales.

Table 6: CFA results of latent variables

Constructs		Convergent Validity			Item Reliability	Scale Reliability	
		Standard Regression Weights	Standard Error	Critical ratio (t-value)	R^2	Composite Reliability	Average Variance Extracted
Acceptance level		**≥0.6**	**Low**	**±1.96 ±2.57**	**≥0.5**	**≥0.7**	**≥0.5**
Performance Expectancy	**PE1**	0.825	n/a	n/a	0.680	0.894	0.679
	PE2	0.898	0.056	19.225	0.807		
	PE3	0.852	0.057	17.988	0.726		
	PE4	0.710	0.057	13.856	0.504		
Effort Expecta ncy	**EE1**	0.888	n/a	n/a	0.788	0.961	0.860
	EE2	0.925	0.038	26.79	0.855		

	EE3	0.911	0.039	25.815	0.831		
	EE4	0.982	0.035	31.557	0.965		
Social Influence	**SI1**	0.918	n/a	n/a	0.843	0.960	0.889
	SI2	0.935	0.035	30.562	0.875		
	SI3	0.974	0.031	34.561	0.948		
Attitude	**ATT1**	0.755	n/a	n/a	0.570	0.861	0.758
	ATT4	0.973	0.081	15.203	0.947		
Trust	**T1**	0.879	n/a	n/a	0.773	0.916	0.785
	T2	0.951	0.036	25.28	0.905		
	T3	0.824	0.043	19.688	0.679		
Awareness	**AW1**	0.803	n/a	n/a	0.646	0.747	0.597
	AW3	0.741	0.067	11.124	0.550		
Self-Efficacy	**SE1**	0.876	n/a	n/a	0.767	0.940	0.839
	SE2	0.888	0.042	23.35	0.789		
	SE3	0.980	0.036	27.813	0.961		
Behavioural Intention	**BI1**	0.946	n/a	n/a	0.895	0.963	0.896
	BI2	0.981	0.025	42.354	0.962		
	BI3	0.912	0.03	31.261	0.832		

To examine discriminant validity of the measurement model, the comparison of the correlation between factors with the average variance extracted of the individual factors (Fornell and Larcker, 1981) was made. The result of this analysis shows all the inter-scale correlations are lower than the square root of average variance extracted confirming discriminant validity (Table 7).

Table 7: Discriminant Validity

	BI	**PE**	**EE**	**SI**	**TR**	**AW**	**ATT**	**SE**
BI	**0.947**							
PE	0.555	**0.824**						
EE	0.450	0.489	**0.927**					
SI	0.489	0.524	0.383	**0.943**				
TR	0.562	0.621	0.429	0.634	**0.886**			
AW	0.549	0.684	0.399	0.466	0.577	**0.773**		
ATT	0.736	0.489	0.491	0.392	0.485	0.535	**0.871**	

SE	0.404	0.486	0.416	0.392	0.534	0.442	0.417	**0.916**

Note 1: Diagonal elements (in bold) are the square root of average variance extracted (AVE). Off-diagonal elements are the correlations among constructs.

Note 2: ATT=Attitude, PE=Performance Expectancy, EE=Effort Expectancy, SI=Social Influence, TR=Trust, AW=Awareness, SE=Self-Efficacy, BI= Behavioural Intention

Overall, the measurement model demonstrated adequate reliability, convergent validity, and discriminant validity, for proceeding to test the structural model.

The proposed conceptual model (Figure 2) was tested using structural equation modeling. The empirical estimates of the structural model are shown in Figure 3. As with the case of the measurement model, the proposed model was found to fit the data satisfactorily as the fit values were well within acceptable ranges [$\chi^2(228) = 518.564$, $p<0.01$, $\chi^2/df = 2.274$, GFI = 0.938, TLI = 0.977, CFI = 0.981, RMSEA = 0.045] . Thus, the path coefficient of the structural model could be examined.

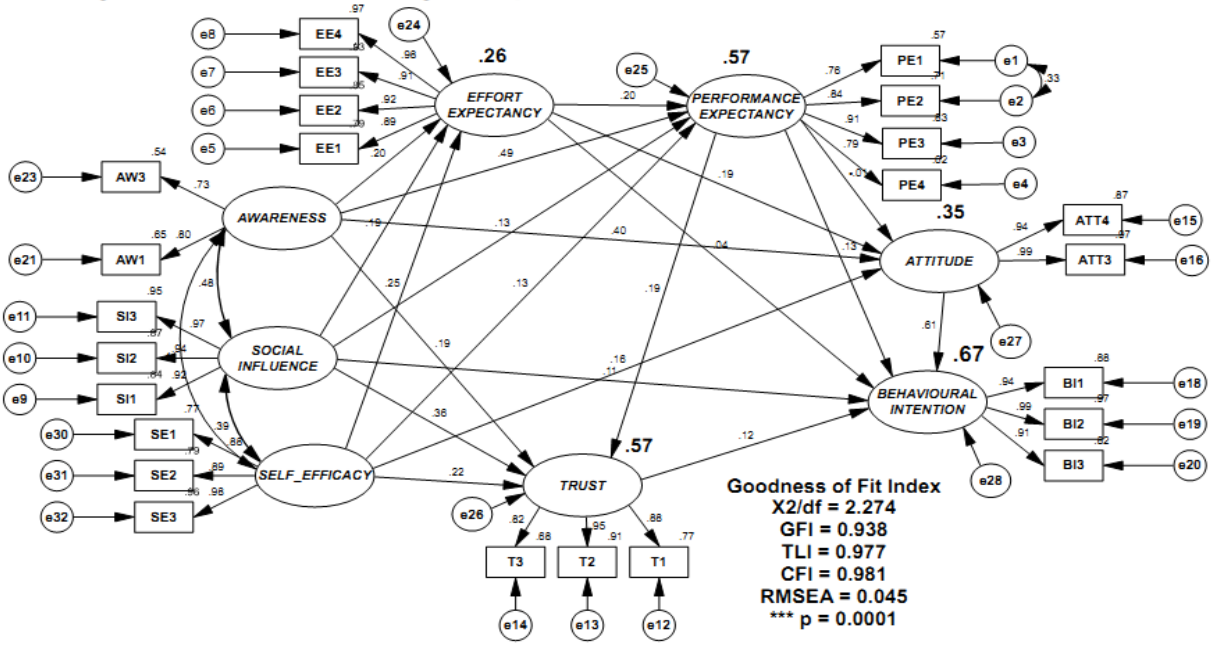
The results of research hypothesis tested are given in Table 8. Behavioural intention to use Internet banking in this study was jointly predicted by PE, SI, ATT, and TR. But, EE was found to have insignificant impact on behavioural intention. Among all significant predictors, attitude (=0.612, $p<0.001$) had stronger influence on bank customers' intention to use Internet banking in India. A total of 67.4% of the variance in behavioural intention to use Internet banking was explained by these four significant predictors. As a result, Hypotheses 1,7,11,12 were supported and H4 was not supported.

Table 8: Results of Hypothesis testing

Hypothesis	Hypothesised relationship	Path coefficient	p-value	Result
H1	PE → BI	0.132**	0.010	Supported
H2	PE → ATT	-0.015 (ns)	0.865	Not supported
H3	PE → TR	0.190**	0.008	Supported
H4	EE → BI	0.044 (ns)	0.291	Not supported
H5	EE → ATT	0.191***	0.001	Supported
H6	EE → PE	0.201***	0.001	Supported
H7	SI → BI	0.111*	0.016	Supported
H8	SI → PE	0.131*	0.017	Supported
H9	SI → EE	0.189**	0.002	Supported
H10	SI → TR	0.365***	0.001	Supported
H11	ATT → BI	0.612***	0.001	Supported
H12	TR → BI	0.117*	0.026	Supported
H13	AW → PE	0.494***	0.001	Supported
H14	AW → EE	0.199**	0.006	Supported
H15	AW → ATT	0.396***	0.001	Supported
H16	AW → TR	0.190*	0.013	Supported
H17	SE → PE	0.130*	0.017	Supported
H18	SE → EE	0.255***	0.001	Supported
H19	SE → ATT	0.158**	0.007	Supported
H20	SE → TR	0.216***	0.001	Supported

Notes: *p < 0.05, **p < 0.01, ***p < 0.001; ns = not significant

Figure 3: Internet Banking Acceptance in India - Results of Structural Model



Trust was predicted by PE, SI, AW and SE. Together, these variables explained 57.4% of the total variance. Consequently, Hypotheses 3, 10, 16 and 20 were supported. As shown in Table 8, ATT was predicted by EE, AW, and SE, and these variables together explained 34.6% of the total variance. Thus, Hypotheses 5, 15, and 19 were all supported. But, the effect of PE on ATT was found to be insignificant, hence H2 was not supported.All the four predictors i.e. EE, SI, AW and SE., were found to be have significant impact on perceived performance expectancy of Internet banking services. Hence, Hypotheses 6, 8, 13 and 17 were supported. These four variables together explained 57.3% of the variance of PE.Effort expectancy was predicted by SI, AW and SE, which together explained about 25.9% of the total variance. These findings validated Hypotheses 9, 14, and 18.
As shown in Table , the decomposition of the effects analysis would provide more significnat insights about the structural model tested in this study. For example, the indirect effect of awareness of Internet banking services and its benefits on behavioural intention to use the system was found to be highly significant. This implies that awareness is still considered to be an important factor for adoption of Internet banking services in India. Additionally, awareness also has stronger influence on predictors of behavioural intention i.e. PE, SI, ATT and TR. Similarly, individual's beliefs about their ability to competently use Internet banking (self-efficacy), has positive impact (indirectly via PE, EE, ATT, TR) on behavioural intention.

Table 9:Analysis of Effects in the Structural Model

Criterion variable predictors	Direct effects	Indirect effects	Total effects
(a) Dependent Variable: **Effort Expectancy**			
Self-Efficacy (SE)	0.255	None	0.255
Awareness (AW)	0.199	None	0.199
Social Influence (SI)	0.189	None	0.189
(b) Dependent variable: **Performance Expectancy**			
Self-Efficacy (SE)	0.130	0.051	0.182
Awareness(AW)	0.494	0.040	0.534
Social Influence (SI)	0.131	0.038	0.169
Effort Expectancy (EE)	0.201	None	0.201
(c) Dependent Variable: **Attitude**			
Self-Efficacy (SE)	0.158	0.046	0.204
Awareness(AW)	0.396	0.030	0.426
Social Influence (SI)	None	0.033	0.033
Effort Expectancy (EE)	0.191	-0.003	0.188

Performance Expectancy (PE)	-0.015	None	-0.015
(d) Dependent Variable: **Trust**			
Self-Efficacy (SE)	0.216	0.034	0.250
Awareness(AW)	0.190	0.101	0.291
Social Influence (SI)	0.365	0.032	0.397
Effort Expectancy (EE)	None	0.038	0.038
Performance Expectancy (PE)	0.190	None	0.190
(e) Dependent Variable: **Behavioural Intention**			
Self-Efficacy (SE)	None	0.189	0.189
Awareness(AW)	None	0.374	0.374
Social Influence (SI)	0.111	0.098	0.208
Effort Expectancy (EE)	0.044	0.146	0.190
Performance Expectancy (PE)	0.132	0.013	0.145
Attitude (ATT)	0.612	None	0.612
Trust (TR)	0.117	None	0.117

Conclusion:

The major purpose of this research was to identify the factors that determine customers to adopt Internet banking services in India which can be useful for bank managers and policy makers. This study identified seven significant factors that directly or indirectly influence the user's behavioural intention to use Internet banking services. These factors are: performance expectancy, effort expectancy, social influence, attitude, trust, awareness and self-efficacy. The research framework proposed in this study has been derived from UTAUT, which was modified to meet the needs of Internet banking adoption in the Indian context. The proposed model is considered to be unique, as it incorporates the factors that influence Indian commercial banks' customers to accept Internet banking. An important contribution of this study is developing the research model based on previous literature, which is statistically tested to be effective in yielding the desired results.

The results of this study provide bank managers and policy makers, an insight into the most influential factors that determine Indian bank customers' intention to use Internet banking. For instance, awareness was found to be one of the important factor in determining the customers' perception of Internet banking services as it influences customers' perception on system benefits, complexity involved, positive opinion and their trust beliefs. Banks should plan awareness campaigns especially for minimizing the risk perceptions of the customers and to increase their confidence on the system, by communicating its benefits and advantages over other traditional channels. The results of this study also provide sufficient evidence of the significant effects of the individual's ability to use computers (i.e. computer self-efficacy) on behavioural intention through performance expectancy, effort expectancy, attitude and trust. Thus, it can be concluded that higher awareness level and higher computer self-efficacy are likely to make bank customers to adopt the Internet banking services in India.

Future studies could extend the proposed model to include other important variables such as perceived value, perceived risk, personal innovativeness etc. It would be interesting to study the different segments' perception on Internet banking services in India, based on variables such as level of computer knowledge, prior experience, technology readiness etc. The applicability of the proposed model can be evaluated in other developing countries where similar conditions are prevailing.

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