Emerging trends in artificial intelligence-based bankingServices: application of UTAUT model towards individual acceptance

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Abstract

Acceptance of new technology, particularly internet banking, is becoming a more pressing issue in the business world. Many studies on internet banking have found that IB users' experiences and perceptions are critical to the success of the service. To determine factors that influence Internet Banking adoption, the study could employ a Unified theory of acceptance and use of technology (UTAUT), anxiety, and security risk. 116 responses were collected for data collection, and PLS-SEM was employed for factor analysis. The SEM revealed that predictors explained roughly 53.5 percent of the variance in user intention to use internet banking. Users' intentions to use internet banking were most strongly influenced by the integrated UTAUT model. Furthermore, the UTAUT model integration can assist academics and policymakers in better understanding how to promote Internet banking acceptability among commercial bank clients, ultimately contributing to the growth of internet banking acceptance. This paper provides a different perspective on internet banking among consumers of commercial banks. The RBI and bank managers should focus on technological and service quality factors to boost internet banking users' confidence.

Keywords: Internet Banking, UTAUT Model, anxiety, security risk.

Introduction

The emergence of Internet Banking is one of the costs – effective and profit-making source of electronic commerce applications in recent years (Wang et al., 2017a, 2017b). Various banks have implemented internet banking systems in an effort to cut costs and increasing customer service at the same time. (Celik and Kocaman, 2017; Vohra and Bhardwaj, 2019). Internet banking has aided the banking industry in providing personalized services while also improving service delivery (Boateng et al., 2016). It provides consumers with services 24 hours a day, seven days a week, and aids in the retention of existing customers, enhancing the competitive sustainable development of banks and attaining a competitive edge in the dynamic Banking industry.

The current research bridges the research gap by developing an integrated technology adoption model that incorporates the UTAUT model's key factors, such as performance expectancy, social influence, effort expectancy, and facilitating condition, as well as two qualitative factors, anxiety and security

risk. We contribute to the body of knowledge on this topic by looking into the effect of user intention in influencing whether or not they utilize internet banking. A recently designed integrated technology model broadens the breadth of technology adoption decisions and provides academics and policymakers with helpful insights on internet user behavior toward internet banking adoption.

Literature Review

Several researches have demonstrated the utility of UTAUT in identifying the perception of using social media is various aspects which includes external relationships, academics (Gruzd et al, 2012; Balakrishnana, 2016), healthcare, banking (Tan and Lau, 2016), microbusinesses models (Mandal, 2012), e-marketing (Tan et al., 2013), enterprise resource planning (Ling et al., 2012; Alleyne and Lavine, 2013), (Park, 2013). Curtis et al. (2010) discovered the idea of implementing UTAUT constructs which has a notable link with non-profit organizations' usage of social media in public relations.

Despite being regarded as an emerging paradigm in active development, internet banking adoption remains a significant barrier (Aboobucker and Bao, 2018; Samar and Mazuri, 2019). Customers are hesitant to use internet banking services, despite the potential benefits (Martins et al., 2014). However, banks are having difficulty fully utilizing their electronic operations, which is attributed to customers' reluctance to use internet banking services despite the benefits (Rahi et al., 2018b).

Theoretical Background and Hypothesis

As a theoretical framework, this study used the UTAUT model. It then adds two more constructs, anxiety and security risk, to the UTAUT (Venkatesh et al., 2003). Because of its capacity to predict intent to use technology, the UTAUT model was chosen. Different studies have modified and expanded on this paradigm.

I.   **Performance Expectancy**for Results in terms of **Performance Expectancy (**PE) of results in terms of performance is termed as the benefits gained from using E-Banking services, for example time saving, fund saving, effort saving, payment comfort, quick response, and service effectiveness.)

H1: PE will have a substantial impact on customers' willingness to use Internet Banking.

II.   **Effort Expectancy** (EE) is a measure of how easy customers find it to use technology (Venkatesh et al., 2003). According to UTAUT, EE has a beneficial impact on BI's willingness to embrace technology (Venkatesh et al., 2003). As a result, the following hypothesis is initiated:

H2. Effort Expectancy will significantly affect customers' BI to use Internet Banking.

III.   **Facilitating Conditions (FC)**
"The degree to which an individual believes that an organizational and technological infrastructure exists to enable the usage of the system," according to the Facilitating conditions (Venkatesh et al., 2003, p. 453). As a result, we provide the following hypothesis:

H3. FC will have a major impact on Internet Banking BI.

IV.   **Security Risk (SR)**
Security risk, defined as the uncertainty of outcomes outside an individual's control or vision, can result in harm. Individuals are vulnerable to security attacks due to the open nature of the online world.
As a result, we provide the following hypothesis:

H4: SR has a big impact on Internet Banking BI.

V.   **Anxiety**
Anxiety is an essential response of the human mind to strain, pressure or tension; in other words, it is a state of panic or worry about the time ahead. Therefore, the following hypothesis is formulated:

H5: Anxiety has a significant impact on Internet Banking behavioral intention.

VI.   **BI and actual usage**
Behavioral Intention is thought that directs usage behavior history since it indicates a person's preparedness to undertake a

specific action. "The evident, observable response in a particular situation with respect to a certain target" is what actual behavior is (Ajzen, 1991). As a result, the current research aims to test the following hypothesis:

H6. Customers' BI will have a significant influence on actual usage of Internet

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Methodology
To acquire the necessary data, convenience sampling (Branch intercept method) was used. Northern Indian public and private banks were approached for based on distribution paper surveys to their customers. In all, 150 questionnaires were issued, and 126 replies were received, with 10 responses being removed owing to barrier data. According to the guidelines of (Hair et al.2006), the sample size for overall ability ought to be 15–20 samples per variable. This research has a total of seven variables, including the practical application of the e-banking services as a result, the sample size was deemed sufficient. Convenient Sampling (Branch intercept method) was used to collect data from 2 private bank and one public bank. Out of 150 targeted people, we get 126 responses and 10 responses were excluded due to missing items. Demographic profile shown in below table. The items mentioned, which were designed by the authors of the UTAUT model, were used to measure all UTAUT characteristics (Venkatesh et al., 2003, 2011). Actual measurements, Johnson et al. (2014), Because real system use is difficult to determine, and this type of information is typically unavailable to researchers, determining system usage is challenging. On a five-point Likert scale, a total of subtests were assessed.

TABLE I. **Demographic profile of respondents**

VARIABLES	NUMBER OF RESPONDENTS	PERCENTAGE
GENDER		
MALE	42	36.2
FEMALE	74	46.8
AGE		
LESS THAN 25	21	18.1 41.4
25-40	48	24.1
40-60	28	16.4
MORE THAN 60	19	
EDUCATION		
UNDER-GRAD.	19	16.4 36.2
GRADUATE	42	47.4
POST GRAD.	55	
OCCUPATION		

GOVT SECTOR	39	33.6 35.3
PRIVATE JOB	41	10.3
BUSINESS	12	20.8
AGRICULTURE AND OTHERS	24	

Data Analysis

The data was analyzed using structural equation modelling (SEM) methods. The test by (Anderson and Gerbing's 1988) two-step technique was used to conduct the analysis (1988). The first step was to determine the validity and reliability and other one for to test the hypotheses.

A. Measurement model

I. According to confirmatory factor analysis (CFA), seven components (PE4, EE4, SR1, AX2 FC4, BI and AU1) were recommended to check validity and reliability where good-fit should be ≥ 8 (Forza and Filippini 1998) for good reliability (Hair et al., 2010). The table IIshows this model resulted gave indices that were a good fit. As a consequence, the findings show that the suggested model is good-off it to the observed data.

Confirmatory factor analysis to get-fit

TABLE II. *Goodness of fit Result* MODEL *index*

Degree of freedom	1.360
GFI*	0.876
IFI	0.963
AGFI	0.857
RMSEA	0.050

GFI* required >0.8 is satisfied

ii. Convergent reliability and validity test

Convergent and discriminant validity were assessed to evaluate the measurement model's concept validity. TABLE III shows Factor loadings is (> 0.707), composite reliability is (> 0.7), and average variance extracted (AVE) is (> 0.5) were used to assess convergent validity (Hair et al., 2010). the findings table below show satisfactory convergent validity and reliability (Cronbach's Alpha >0.7).

TABLE III.

Factor	Variables	Standardized Loadings (> 0.707)	diz	Reliability (R2)>E 0.5)	AVE (> 0.5)	Composite Reliability (CR) (> 0.7)

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Table iv. Reliability and Convergent Validity

Factor	Variable	Loadings	diz	Reliability (R2)	AVE	Composite Reliability (CR)
PE	Pe1	0.722	0.521	1	.841	0.821
	Pe2	0.869	0.721			
	Pe3	0.800	0.640			
EE	Ee1	0.771	0.594	1	.865	0.741
	Ee2	0.841	0.707			
	Ee3	0.829	0.687			
FC	Fc1	0.829	0.687	1	.792	0.741
	Fc2	0.861	0.761			
	Fc3	0.801	0.642			
SR	Sr1	0.708	0.501	1	.891	0.888
	Sr3	0.896	0.896			
AX	Ax1	0.731	0.501	1	.851	0.780
	Ax2	0.884	0.652			
	Ax3	0.771	0.690			
BI	Bi1	0.812	0.659	1	.759	0.888
	Bi2	0.854	0.724			
	Bi3	0.874	0.764			
AU	Au1	0.709	0.503	1	.785	0.792
	Au2	0.503	0.529			
	Au3	0.771	0.594			

iii. Factor correlation

Discriminant validity assesses the degree to which conceptions differ (Bagozzi et al., 1991). All of the constructs were different, as indicated in the table v. below since the correlation coefficients between components were less than the required value of 0.85. (Kline, 2011).
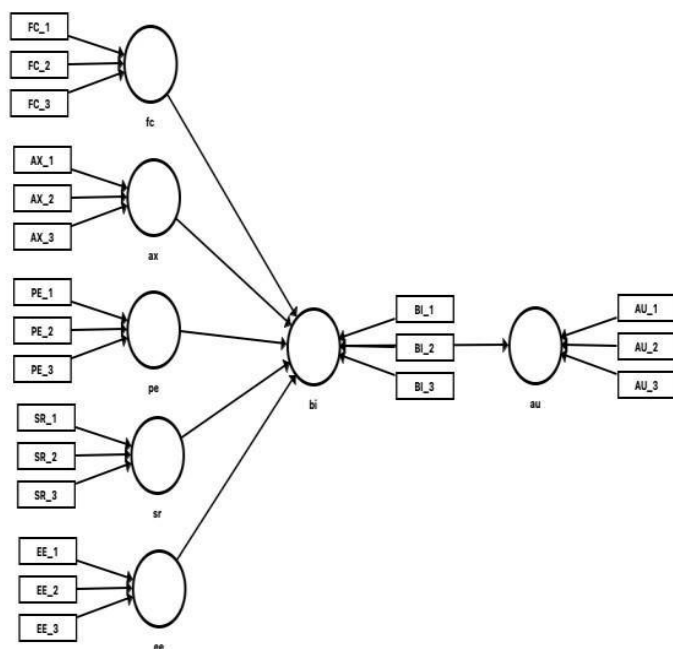
Table V.

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	au	ax	bi	ee	fc	pe	sr
au	0.797						
ax	0.584	0.767					
bi	0.668	0.536	0.643				
ee	0.763	0.601	0.590	0.652			
fc	0.642	0.592	0.564	0.719	0.784		
pe	0.713	0.599	0.602	0.858	0.694	0.792	
sr	0.348	0.529	0.355	0.533	0.334	0.476	0.779

Factor correlations less than 0.85 Is satisfied

B. Structural model

i.   The structural model was then put to the test now.   SEM (structural equation modelling)   is   a comprehensive method used   to evaluate hypothesized   correlations (Hair et al., 2010). Figure 1 depicts the final structural model, which has 18 elements, as a consequence of applying the refinement parameters given in the measurement model section.

Figure 1.

ii.   **proportion of the variation in dependent variable (Y) explained by independent variables (X)**

The following table VI summarizes regularly used model fit measures based on structural model analysis, the findings of which suggest an appropriate fit to the data. This model explains roughly 0.44 percent of the variance in behavioral intentions and 0.53 per cent of the variance in actual usage which less than the 70 per cent estimated (Venkatesh et al 2003).

Table VI. model fit.

	R Square	R Square Adjusted
au	0.446	0.441
bi	0.535	0.509

iii.   **Standardized   effect   of construct   on exogenous**

Table vii (Cohen' 1988) comments on the evaluation of effect size, user behavioral intents to internet banking had a substantial overall effect (more than 0.5) on individual usage whereas enabling conditions had a modest total effect (greater than 0.3).

Table VII. Variables	Direct	Indirect	Total effect
pe -> bi	1.93		1.93
sr -> bi	0.56		0.56
ax -> bi	2.47		2.47
fc -> bi	3.89		3.89
ee -> bi	2.83		2.83

iv.   **Variable effect on Actual usage of internet banking**
In view of indirect effect anxiety impact more on behavior intention on usage of internet banking. Effect sizes larger than 0.1 are noted in table viii. However, Security risk shows less impact on behavior

intention which total effect also less at 0.002.

Table VIII. Variables Direct Indirect Total effecteffect

pe -> bi ->au		0.164	**0.164**
sr -> bi ->au		0.002	0.002
ax -> bi ->au		0.137	**0.137**
fc -> bi ->au		0.323	**0.323**
ee -> bi ->au		0.182	**0.182**
bi->au	2.68		**2.08**

Effect size greater than 1 is effective

v.   Path relationship (result)
All of the construct's path were significant except security risk as per table ix, the beta value is .093 and p value .129. since the critical ratio (C.R.) should be more than 1.96 and the p value should be less than 0.05. resulted security risk not a significant path for behavior intention.

Table IX.

Relationship	Estimate Result	Standard errors	P value (beta)	Result
sr -> bi	0.082	.093	.129	Rejected
fc -> bi	0.298	.239	.002	Accepted
ee -> bi	0.356	.326	***	Accepted
Bi -> au	0.473	.349	***	Accepted
pe -> bi	0.311	.297	***	Accepted
ax -> bi	0.567	.432	***	Accepted

Findings and Discussion
The findings of the study are shown in table below the accepted and unsupported theories. individuals' behavioral intentions to utilize internet facilities of banking are significantly influenced by performance expectancy (Hypothesis 1) and effort expectancy (Hypothesis 2).

However, security risk (4 Hypothesis) had no discernible effect on bank users' intentions to utilize online banking. Facilitating conditions (hypothesis 3) and anxiety (hypothesis 5) somewhere make impact bank users' intentions to utilize online banking.

Table X. conclusion

Hypothesis	Conclusion
sr -> bi	Not support the statement
fc -> bi	support the statement
ee -> bi	support the statement
Bi -> au	support the statement
pe -> bi	support the statement
ax -> bi	support the statement

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Anxiety in individual behavior may impact more in terms of using internet banking which can be avoid with high assurance from banking employees. Other construct make effect on consumer behavior intentions and holistic impact on intention on actual usage are very high. Security risk is not found significant for consumers' intention towards e-banking explains less driving factor which may change the tendency of actual usage as people who are using internet banking have great faith in security implications or not aware about more on security impacts. By strengthening and constructing a technological environment that will assist individuals in improving their Banking Activities, decision-makers in the banking industry will be able to utilize increase efficiencies people to engage with the system by better understanding the determinants of behavioral intentions and the use of IB by bank users. This is especially important in an emergency circumstance like the covid-19, which has compelled this sector to employ E-banking systems throughout the world.

Conclusions
This study was conducted to get the major variables put impact to customer's adoption behaviorto using banking technologies. According to the findings, IB adoption and usage of technologies is predicted. Their positive attitudes, on the other hand, are influenced by performance and effort. The data also suggest that enabling circumstances really exist and that they have a significant impact on behavior. In the context of banking technology, this study verifies the UTAUT's usefulness in predicting behavioral intentions and actual usage of e-banking services by clients in developing countries. Based on these findings, banks and government should encourage bank customers to adopt internet banking to easy accessible their banking activities. timesaving, cost-effective other many advantages they can avail. since successful implementation of the mechanism is dependent on individuals' perception.

Limitation

❖ This study is only limit to northern India although further study could be complied on PAN India for more result accuracy.

❖ Possible modifiers which leads to estimate on bank consumers has been ignored.

❖ There is requirement of longitudinal study to get more accurate result on this behavior system.

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