



# Factors Influencing The Customers' Adoption Of Internet Banking In Punjab

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## ABSTRACT

Electronic banking has experienced fiery growth and has altered traditional practices in banking. Now it has become synonym for wide variety of automated services of which one of the significant types of service is Internet banking. Various researchers have been organized to identify the factors affecting adoption of internet banking but the effectiveness of these factors may have reduced with time. So, it is indispensable to check the effectiveness of these factors. The objective of the study is to identify the various factors influencing the customers' adoption of internet banking in Punjab. Keeping in mind all the consideration given in various papers published internationally, a sample of more than 417 was found to be the most sufficient for the study. The study was conducted in Punjab state of the India. The data was collected from three districts viz. Amritsar, Jalandhar and Patiala. In the present study various standardized scale items were used. Among the different factors relative advantage, internet experience, trialability, self-efficacy, government support and technical support were found significant predictors of internet banking adoption.

## I. INTRODUCTION

Service sector plays vital role in growth and expansion of Indian economy. It is the highest contributor in the GDP of the country. Financial service sector perform crucial functions to enable the society to act in a stable and sustainable way. The Banking industry is one of the key components of financial service sector. The Banks play pivotal role in fiscal area of each economy by mobilizing savings and channelizing investments. They act as key financial mediators and their activities affect every area of the economy. It acts as mediator among depositors and borrowers (Kapoor, 2017).

Banks help in a big way in economic development by assembling small and scattered savings of the people and disbursing those as loans. Thus, banks perform the task of credit intermediation and settlement of payments. Banks also carry out the role of maturity transformation, as money deposited may be for short-term while the loans are granted for long-term. Banks offer indispensable and wide variety of services to shoppers, SME's, huge corporate houses and governments which help them to conduct their day to day business, both at a national and global level (Bank for International Settlements, 2010). They offer quality services to the customers. Hence, resilient banking system is vital for financial, industrial and agricultural growth of economy. With the advent of information technology, there have been revolutionary changes in

banking operations. Thus, banks today are not only confined to accept and lend funds but various other activities also (Singh, 2019).

In the present era, information technology has quantitative as well as qualitative impact on every person's life. Technological improvements have successfully made life easier in several aspects for present generation (Rust and Oliver, 1994). The introduction of information technology has reformed the commercial landscape as well as the financial system. Various online banking channels are now available for the customers to access and conduct banking transactions. These constant technological developments in the financial industry in the form of electronic banking have played a major role in improving various processes and reducing costs of services. Electronic banking has experienced fiery growth and has altered traditional practices in banking (Gonzalez et al, 2008). Electronic banking has now become synonym for wide variety of automated services of which one of the significant types of service is Internet banking. It is also referred as Anywhere, Anytime banking. Internet banking uses the internet as the delivery channel by which banking activities or transactions can be performed through web. Nowadays, banks offer numerous services through internet banking like transferring funds, paying bills, viewing and checking account balances, paying loans mortgage and purchasing financial instruments and certificates of deposit (Haque et al, 2009).

Intense rivalry among the banks has resulted in complete transformation of entire banking system. At present, contemporary banking system attempts to appeal the customers in best possible way, in addition it tries to preserve the existing clientele to get competitive edge over their opponents (Kaur et al., 2012). The banking sector is persistently modifying its products and services according to customer preferences, social trends, competitor moves and government regulations. With de-regulation of economic sector, host of new banks have entered the Indian financial system. These new bandwagon of banks viz. private banks and multi-national banks have migrated to state-of-art technology to sustain in competition and retain their customer base (Singh, 2019)

## II. LITERATURE REVIEW

**Pikkarainen et al. (2004)**, highlighted that electronic banking technology had created new ways of handling daily banking affairs especially via online banking channel. The authors adopted technology acceptance model to leverage the online environment. The authors suggested that banks should now more concentrate on their E-Banking issues so that online banking could become more popular and adaptive for customers.

**Ashish Shashikant Jani, (2012)** stated in their study titled, "A study of Customer Perception on the Use of E-Technology in the Retail Banking Sector" as the technology is drastically changes in the current environment so there is a vivid battle between banks to satisfy the needs of customers by offering various products and financial services. The present study suggested that, to meet the customer requirements it is very important to understand the customer behavior

**Rani (2012)** aimed to examine the progress of e-banking in India. The results of the study portrayed that opportunities in e-banking are immense in India but the only need is to explore them.

**Vandana Tandon Khanna and Neha Gupta, (2015)** studied Customer Perception about technology being used in public sector banks to deliver various banking services. It has been found in the study that public sector banks required to determine the factors which influence the behavior of customer while using internet banking services. These factors can be helpful in various marketing decisions in terms of strengthening the performance of innovative delivery channels.

**Arnold et al (2016)** concluded that internet has changed the way banking operations are being performed in the new era. While adapting to Internet banking, there is a change in behaviour across customer segments that necessitate banks in India to understand the factors that facilitate the adoption of it.

**Madavan and Vethirajan (2020)** tried to examine the customer satisfaction in respect of electronic banking Services of Public Sector and Private Sector Banks in Pondicherry Region. .The result of the study showed that the customers of Public Sector Banks had lesser knowledge of the various dimensions of e-service quality as compared to the private sector Banks.

### **III. OBJECTIVE OF THE STUDY**

To determine the factors affecting internet banking adoption among customers of Punjab State of India.

### **IV. SAMPLING DESIGN**

Since the populations of the study are the consumers, each and every consumer is the part of the population. The size of the population is unknown. Data was collected through convenience sampling. Keeping this in mind, each subset of the population must be fairly represented in the sample. The statistical formula (Z Score) suggested a sample size of around 400 for infinite population with a margin of error of 5%. Therefore, keeping in mind all the consideration a sample of more than 417 was found to be the most sufficient for the study. The study was conducted in Punjab state of the India. The data was collected from the respondents of three district of Punjab viz. Jalandhar, Patiala and Amritsar. The Punjab state has 23 districts. The state can be divided into three geographical regions viz. Majha, Malwa and Doaba containing 15, 4 and 4 districts. From each region one district was selected randomly. In the next stage convenience sampling technique was used to select sample from these districts.

### **V. SAMPLING TECHNIQUE**

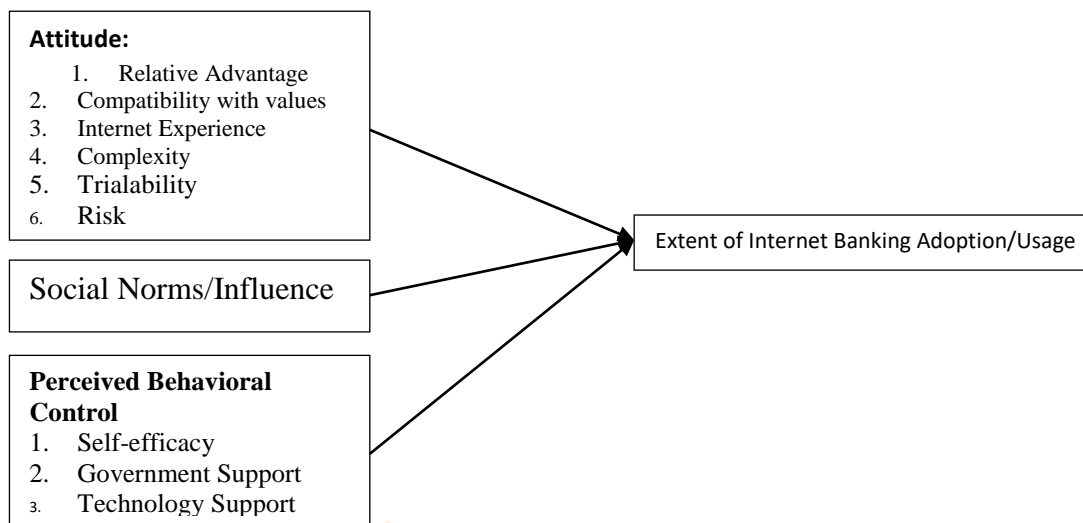
The present research paper applied Non Probability Sampling Method because the number of customers who are using internet banking are unknown. Data was collected through convenience cum judgment sampling.

### **VI. DATA INTERPRETATION AND ANALYSIS**

Banking has always been a highly information intensive and relies heavily on information technology (IT) to acquire, process, and deliver the information to all relevant users. With the rapid diffusion of the Internet, banking in cyberspace is fast becoming an alternative channel to provide banking services and products. Internet banking allows customers to perform a wide range of banking transactions electronically via the bank's Web site.

According to Tan &Teo (2000), a person's intention to adopt Internet banking is determined by three factors. They are (1) attitude, which describes a person's perception towards Internet banking; (2) subjective norms, which describe the social influence that may affect a person's intention to use Internet banking; and (3) perceived behavioral control, which describes the beliefs about having the necessary resources and opportunities to adopt Internet banking. In the study the effect of these three factors on the extent of internet adoption/usage has been estimated.

Figure 4.5 exhibits the framework for the adoption of internet banking based on the most recognized researches. (Nor, Abu Shanab, & Pearson, 2008)& (Tan & Teo, 2000)

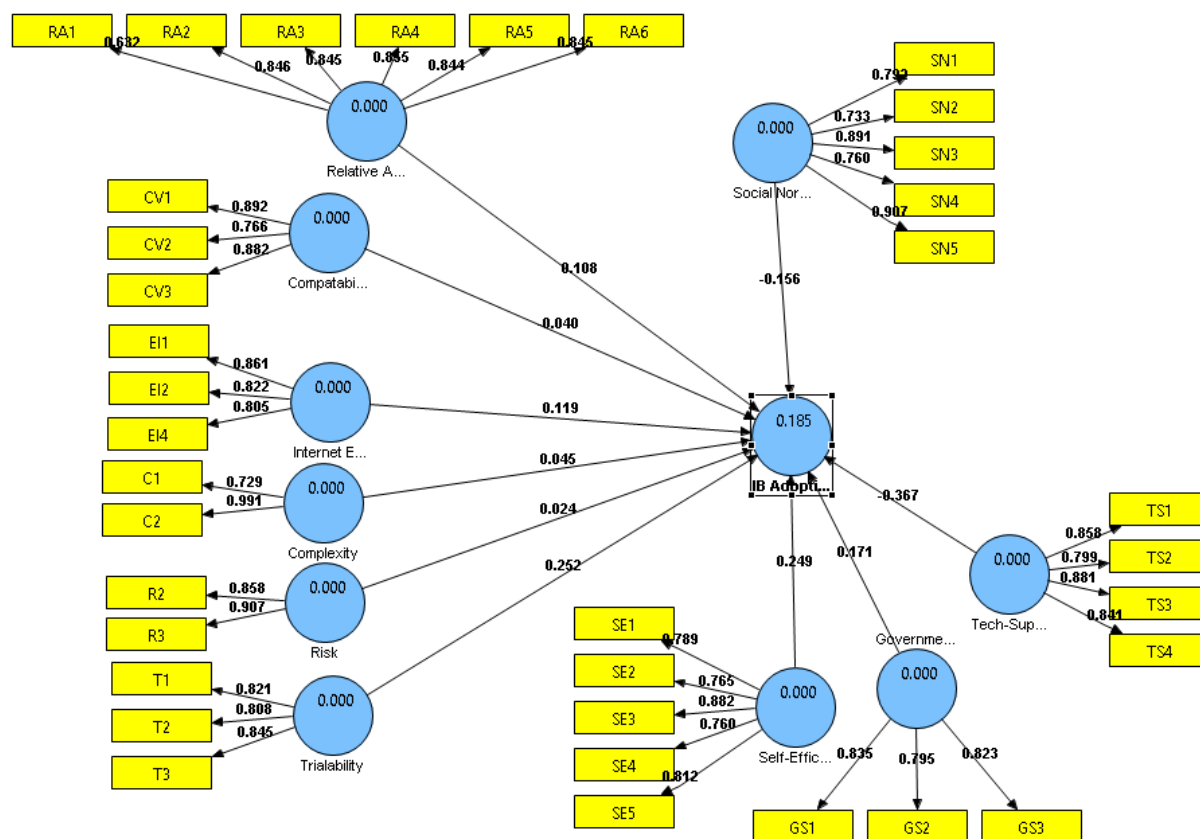


**Figure 4.5: Framework for adoption of internet banking (Tan & Teo, 2000) (Nor, Abu Shanab, & Pearson, 2008)**

The extent of internet banking has been computed through the various banking related activities available through internet banking (as shown in table 4.4). The antecedents have been measured using a five point likert scale from strongly disagree (=1) to strongly agree (=5). The standardize instrument has been used to collect the information on the three factors affecting the internet banking adoption.

Figure 4.6 exhibits the SEM model wherein the effect of factors affecting the internet adoption model has been estimated. Attitude has been measured using six variables i.e. relative advantage, compatibility with values, internet experience, complexity, risk and trial ability. The social norms/influence is a construct with no further sub-constructs. . The effect of perceived behavioral control has been estimated using self-efficacy, government support, and technical support.

THE RESULTS ARE DISCUSSED BELOW.



SEM model estimating the effect of 3 factors affecting the internet banking adoption

Table exhibits the factor loadings of the measurement model or outer model. Complexity was originally measured using 3 statements out of which C3 was removed due to poor factor loading and C1 and C2 were retained which had factor loadings of 0,729 and 0,992 respectively. Compatibility with values was originally measured using 3 statements and all were retained as the factor loadings ranged between 0.892 and 0.776. One item from internet experience i.e EI3, one from risk i.e. R1, were also removed due to poor factor loading. In total 3 statements were removed from the analysis. Remaining all factor loadings are highly significant and greater than 0.60. Significant factor loadings provide support to convergent validity of the constructs.

Table: factor loadings of measurement model

	CO	CV	IE	GS	Risk	RA	SE	SN	TR	TS
C1	0.729									
C2	0.992									
CV1		0.892								
CV2		0.766								
CV3		0.882								
EI1			0.861							
EI2			0.822							
EI4			0.805							
GS1				0.835						
GS2				0.795						
GS3				0.823						
R2					0.858					
R3					0.907					
RA1						0.632				

RA2						0.846				
RA3						0.845				
RA4						0.855				
RA5						0.844				
RA6						0.845				
SE1							0.789			
SE2							0.765			
SE3							0.882			
SE4							0.760			
SE5							0.812			
SN1								0.792		
SN2								0.733		
SN3								0.891		
SN4								0.760		
SN5								0.907		
T1									0.821	
T2									0.808	
T3									0.845	
TS1										0.858
TS2										0.799
TS3										0.881
TS4										0.841

*CO = Complexity; CV = Compatibility with values; IE = Internet Experience; GS =Government Support; Risk = Risk; RA = Relative Advantage; SE =Self-Efficacy; SN = Subjective Norms; TR = Trial ability; TS =Tech-Support*

## VII. Reliability and validity of scales

Once the factor loadings have been found to be significant and acceptable, in the next step, the reliability and validity of the constructs is required to be assessed. Reliability means how consistently a construct is measuring (certain phenomenon). Or the reliability means, whether the same results would be obtained if the same construct is used to measure the same phenomenon after sometime. The two most popular measurements of construct reliability in use are Cronbach's alpha (CA) and Construct reliability (CR). Cronbach's alpha (CA) is a measure of internal consistency, which means it measure how well the construct is actually measuring what it is supposed to measure. The desired value of alpha is above .70. Composite reliability a better measure of constructs reliability and explains the external reliability of the construct which means that the test or measure can be generalized beyond the study. The desired level of CR is also .70 and above (Hair. Jr, Black, Babin, & Anderson, 2010).

As shown in the table CR of the entire construct is above .70. The CR ranged between 0.858 and 0.910 which is very good. Also, CA of the construct is also ranged between 0.756 and 0.898 which is very good suggesting a very high level of internal consistency. Overall, it may be concluded that the constructs were highly reliable and in line with the proposed theory.



**Table: Reliability and validity statistics**

	<b>AVE</b>	<b>Composite Reliability (CR)</b>	<b>Cronbach's Alpha (CA)</b>
<b>Compatibility with values</b>	0.720	0.885	0.814
<b>Complexity</b>	0.758	0.859	0.776
<b>Government Support</b>	0.669	0.858	0.756
<b>Internet Experience</b>	0.688	0.869	0.778
<b>Tech-Support</b>	0.714	0.909	0.874
<b>Relative Advantage</b>	0.664	0.922	0.898
<b>Risk</b>	0.779	0.876	0.719
<b>Self-Efficacy</b>	0.645	0.900	0.862
<b>Subjective Norms</b>	0.672	0.910	0.882
<b>Trial ability</b>	0.680	0.864	0.770

Validity of a construct refers to the degree to which a test measures what it claims, or purports to measure. A construct is said to be valid if both convergent and discriminant validity are found to be intact. Or if both, convergent and discriminant validity of constructs in the model are proven, the construct validity is said to prevail.

Convergent validity is the extent to which a measure correlates positively with alternative measures of the same construct (Hair, Hult, Ringle, & Sarstedt, 2014). Convergent validity represents the extent to which the indicators/measures a specific construct or have a high proportion of common variance. The convergent validity of a construct is said to prevail if two conditions are met – Average Variance Extracted (AVE) should be greater than .50, and the factor loadings should be significant. As it can be seen from the table 4.13 and 4.14 that the factor loadings of the constructs are significant and the AVE of all of constructs in the model are also greater than .6. Therefore, the convergent validity of the construct is intact.

Discriminant validity describes the degree to which models' constructs are truly distinct from each other (Hair, Hult, Ringle, & Sarstedt, 2014). Fornell Larker Criterion (1981) is the most popular and widely used criterion to confirm the discriminant validity of constructs. According to this criterion, a construct is said to have discriminant validity if its square root of AVE is greater than its correlations with all other constructs in the model.

Table exhibits the inter-constructs correlation matrix. As per the Fornell Larker criterion, on the diagonals of the inter-constructs correlation matrix, the square root of AVE ( $\sqrt{AVE}$ ) of each construct has been placed, and off diagonals are the correlations of a construct with all other constructs. For example, the AVE of 'compatibility with values (CV)' is 0.72 which means its underroot is ( $\sqrt{.72}$ ) 0.848 which has been placed on the diagonal of the correlation matrix. Now .848 is compared with the correlations of CV with all other constructs in the model and shown in the first column below this. 0.848 is greater than all other values below this suggesting that the construct is distinct and its discriminant validity is intact. Similarly,  $\sqrt{AVE}$  of all other constructs in the study are placed on the diagonals of correlation matrix and the compared with the correlation of the construct with all other constructs in the model. It can be seen that the values on the diagonals of correlation matrix are greater than off diagonal values supporting the discriminant validity of the constructs in the study.

### VIII. Discriminant validity statistics

	CV	CO	GS	IE	TS	RA	Risk	SE	SN	TR	Mean	SD
CV	<b>0.848</b>										3.97	0.86
CO	0.143	<b>0.870</b>									2.81	0.76
GS	0.605	0.163	<b>0.818</b>								3.86	0.78
IE	0.750	0.282	0.611	<b>0.829</b>							3.59	0.61
TS	0.713	0.119	0.791	0.709	<b>0.845</b>						3.91	0.88
RA	0.745	0.128	0.605	0.694	0.702	<b>0.815</b>					4.01	0.86
Risk	0.332	0.378	0.415	0.389	0.385	0.287	<b>0.883</b>				3.02	0.68
SE	0.666	0.258	0.724	0.682	0.722	0.644	0.440	<b>0.803</b>			3.75	0.78
SN	0.688	0.310	0.683	0.696	0.729	0.705	0.492	0.705	<b>0.820</b>		3.73	0.83
TR	0.606	0.440	0.545	0.689	0.566	0.602	0.488	0.630	0.682	<b>0.825</b>	3.66	0.88

*CO = Complexity; CV = Compatibility with values; IE = Internet Experience; GS =Government Support; Risk = Risk; RA = Relative Advantage; SE =Self-Efficacy; SN = Subjective Norms; TR = Trial ability; TS =Tech-Support*

From the above analysis, it may be concluded that the constructs used in the study are highly reliable and valid and therefore the responses are true in nature.

### IX. Effect of antecedents on the extent of internet banking adoption/usage

To measure the effect of factors on the extent of internet banking adoption/usage, PLS based structural equation modeling has been used as shown in figure4.6. To estimate the parameters, 2000 bootstrap samples have been used. Results of the estimates are shown in table.

The following hypotheses have been tested using SEM Model –

*H1 (a): Relative advantage effects Internet Banking Adoption.*

*H1 (b): Compatibility with values positively effects Internet Banking Adoption. .*

*H1 (c): Complexity effects Internet Banking Adoption. .*

*H1 (d): Risk effects Internet Banking Adoption.*

*H1 (e): internet experience effects Internet Banking Adoption.*

*H1 (f): trial ability effects Internet Banking Adoption.*

*H1 (g): social norms effects Internet Banking Adoption.*

*H1 (h): self-efficacy effects Internet Banking Adoption.*

*H1 (i): government support effects Internet Banking Adoption.*

*H1 (j): tech-support effects Internet Banking Adoption.*

The effect of RA on IB adoption has been found to be highly significant ( $b = 0.108$ ,  $SE = 0.035$ ,  $t = 3.08$ ,  $p < .01$ ) suggesting that as relative advantage of using internet banking increased by unit, the tendency to use internet banking increased by 0.108 units which is significant. The similar results are observed by Tan & Teo (2000). H1 (a) is supported.

The effect of compatibility with values, complexity, and risk were not found to be significant. Chan & Lu (2004) found an insignificant effect of risk on internet banking adoption, whereas Tan & Teo (2000) found an insignificant effect of complexity on internet banking adoption. Internet experience had a significant effect on the internet banking adoption ( $b = 0.119$ ,  $SE = 0.054$ ,  $t = 2.20$ ,  $p < .05$ ). H1(e) was supported. Also the effect of trial ability ( $b = 0.252$ ,  $p < .01$ ); self-efficacy ( $b = 0.249$ ,  $P < .01$ ); government support ( $b = 0.171$ ,



$p < .05$ ), and tech-support ( $b = -0.367$ ,  $p < .01$ ) were significant and were in line with Tan & Teo (2000). The effect of social norms was not found to be significant ( $b = -0.156$ ,  $p > .05$ ) and in majority of the researches the results were not significant (Nor, Abu Shanab, & Pearson, 2008) (Tan & Teo, 2000).

## X. Estimates of SEM model

PATH	B	SE	T	CILL	CIUL	Remarks
Relative Advantage --> IB adoption	0.108	0.035	<b>3.08**</b>	0.039	0.177	H1(a) Supported
Compatibility with values --> IB adoption	-0.040	0.092	-0.44	-0.221	0.140	H1(b) not Supported
Complexity --> IB adoption	0.045	0.061	0.73	-0.075	0.165	H1(c) not Supported
Risk --> IB adoption	0.024	0.053	0.46	-0.079	0.127	H1(d) not Supported
Internet Experience --> IB adoption	0.119	0.054	<b>2.20*</b>	0.013	0.225	H1(e) Supported
Trialability --> IB adoption	0.252	0.077	<b>3.30**</b>	0.102	0.402	H1(f) Supported
Social Norms --> IB adoption	-0.156	0.081	-1.92	-0.315	0.004	H1(g) not Supported
Self-Efficacy --> IB adoption	0.249	0.069	<b>3.60**</b>	0.113	0.384	H1(h) Supported
Government Support --> IB adoption	0.171	0.082	<b>2.07*</b>	0.009	0.332	H1(i) Supported
Tech-Support --> IB adoption	-0.367	0.106	<b>-3.48**</b>	-0.575	-0.160	H1(j) Supported

\*\* Significant @.01 level; \* Significant @.05 level.

## XI. FINDINGS AND CONCLUSION

Majority of the results were in line with the literature. From the above findings it may be concluded that adoption of Internet banking can be predicted by attitudinal and perceived behavioral control factors, but not by subjective norms. The attitudinal factors that are significant include relative advantage; internet experience, and trial ability. Although the findings show that perceived complexity, risk, and compatibility with values did not have a significant relationship with internet banking adoption.

Social Norms did not have influence on the Internet banking adoption. With regard to perceived behavioral control, both self-efficacy and government support are found to have positive effect while technology support had a negative effect.

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