

FACTORS INFLUENCING INTERNET BANKING ADOPTION AND CUSTOMER SATISFACTION: EMPIRICAL STUDY IN INDIA

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ABSTRACT: The banking sector has adopted information technology for efficient and effective operations. This technology has led the bank customers to face severe concerns and challenges in the use and usefulness of use. Ultimately the banks should ensure that the technology has been accepted by customers at the early stage to recoup the investment in technology. For this, banks have to understand what factors are influencing the customer adoption of internet banking so that banks can focus more on such factors marketing their internet banking. In light of these facts, we have analyzed public and private sector bank customers' opinion on the factors important for internet banking adoption. It turns out that public and private sector bank customers significantly differ in their opinion on banks' timeliness of service, website upgrade, and information availability on bank websites. The most striking revelation is that there is a significant difference in awareness and usage of internet banking. These differences appear in both groups, i.e., public and private sector bank customers. Confirming the existing literature, it turns out that ease of use, promptness in service and security features have a significant association with internet banking customer satisfaction.

KEYWORD: Internet banking, IT in banking, Customer satisfaction of internet banking, internet banking security, internet banking adoption, technology acceptance model in banking.

I. INTRODUCTION

The banking sector plays a central role in any country's economic development. Banks are the essential intermediaries encouraging people for savings to meet the needs of those who want funds. Through this role, banks help continuous economic activity in a country. They make funds available from surplus to deficit sources, thereby ensure the funds are not lying idle. The banking industry has been facing many external and internal forces (**Rajan R. G 1998**). These unavoidable forces have necessary implications on the way how banks operate and provide services. In turn, these forces affect customer satisfaction and long-term association with banks, thereby influencing the banks' profitability. Technological change has a profound impact on the banking industry. Technological developments have dominated the revolution in the banking industry (**Gandy.A, 1998**). This technology has enabled several players to come into the market and thereby increased competition. Internet, in particular, is a significant force of internal changes. The Internet has allowed the banks to operate at low cost compared to traditional banking operations (**Wylie, I. 1999**). Through Internet banking; customers can perform a variety of banking transactions from check writing to fund transfer, enquiries and many more. Banks survival is highly dependent on their adoption of internet banking (**Burnham 1996**). Today, almost all banks are offering internet banking service. Internet bank service is a cost factor for banks. They have to invest heavily in technology. They are also bound to know what customers value the most and how satisfied they are with the internet banking service. However, Information technology adoption and usage has a direct bearing on the bank's value creation (**Lin, B. W. 2007**)

According to the technology acceptance model (TAM), the adoption of any IT is dependent on two constructs, i.e., ease of use and usefulness in using IT. However, **Wang et al. (2003)** have added the 3rd dimension to TAM. That third dimension is "Perceived Credibility of IT". Hence, the three most important factors for the success of internet banking is (1) perceived ease of use, (2) Perceived usefulness and (3) Perceived credibility of internet banking transactions. It is imperative to the banks to know whether customers are satisfied with these factors and whether these factors have significantly associated with the length of customer associating with the bank.

The business model of the banks is to have the operations happening at full capacity and improve capacities to improve profitability. Banks are primarily low profit-making business and depend highly on the volume of customers. Hence, it is inevitable for banks to understand the customers, attract and retain them. Banks will benefit from the long-term association of customers (**Hallowell 1996**). Therefore, banks should focus on their customer satisfaction on various services. Internet banking is one of such services that have a great influence on customer satisfaction and continuity with the bank. Customer satisfaction for internet banking use has been an exciting area of research for many academicians. There are several natural questions to answer, such as what makes it to the customer satisfaction of internet banking. Different geographical areas have various reasons. Some common reasons are customer education, awareness of internet use and sometimes the age of the customers. These factors are usually out of control of banks to do anything with improved customer satisfaction. However, few factors can be dealt with by the banks. Those features that have to be improved by the banks are security, promptness of services, and availability of information and ease of access to internet banking services. Therefore, we have focused on several questions about customer satisfaction in internet banking usage. We have explored to see the significant differences of opinions, if any, between public and private sector bank customers.

II. LITERATURE REVIEW

The Indian banks have been facing tremendous pressure to perform; otherwise, they have no option but to perish. Information technology is throwing continuous challenges and also offering wide-open opportunities. Internet banking, on the one hand, requires considerable investments in information technology and the, on the other hand, it is a cost saving factor. Indeed, IT adoption in Indian banking is inevitable now. Internet banking and technology adoption have become the order of the day. Regulatory and competitive forces have nudged the Indian banking sector to adopt technology and banking operations automation. IT in banking is used basically for communication, connectivity and banking service operations aimed at customers. This technology has also enabled the banks to come up with innovative financial products and non-banking services. However, it is not smooth going for banks with technology. Banks are facing several problems in terms of lack of trained employees and continuous development of IT infrastructure. The reasons are apparent. The main business of banks is banking, not technology innovation. Technology is ever-changing, and banks have to catch-up with the technology. Otherwise, they lose a substantial competitive advantage. While technology brings competitive advantage and cost leadership, it has also come with several problems. There are many research papers focused on finding the factors affecting technology adoption by users. Among several plausible reasons, the Technology Acceptance Model (TAM) gives systematic and logical reasoning for factors influence technology adoption (**Davis 1989**). However, the factor that influences technology acceptance will also vary by users, context and actual technology offered (Moon and Kim 2001). However, the research gives mixed results about the factors at the individual level affecting the IT acceptance (**Aggarwal and Prasad 1999**).

Bank customers should accept the use of internet banking for banks to be successful in IT adoption. But, such adoption by customers is a complicated process as it requires the change in the customer's behavioural patterns (**Meuter et al. 2000**). Mick and Fournier (1998) identified eight paradoxes of information technology: (1) Control/Chaos (2) Freedom/enslavement (3) New/obsolete (4) Competence/incompetence (5) Efficiency/inefficiency (6) Fulfills/creates needs (7) Assimilation/isolation (8) Engaging/disengaging. Among these eight paradoxes, competence/incompetence and new/obsolete paradoxes seem to be the most important for customers while using electronic and computer-oriented products (**Mick and Fournier 1998**). There are several research models, and theories evolved to justify or explain internet banking adoption. Hanafizadeh, Keating and Khedmatgozar (2014) provide a detailed description of the number of research papers that came out in different models and theories. Trust is one chief factor that influences the adoption of IT. Increased trust has a positive effect on ease of use and usefulness on internet banking (**Eriksson, Kerem, and Nilsson 2005**). Banks are keen on understanding the factors influencing internet banking adoption. After understanding these factors, banks can focus on marketing the internet banking services to make sure the early adoption of customers and thereby recover the investment in IT (**Rogers 2010**). Roger (1962)'s diffusion model seems to be the starting point for studies on internet banking adoption. Accessibility and confidentiality are two major influencing factors for internet banking users (**Gerrard and Cunningham 2003**). Trust has a significant positive association with user attitude towards internet banking adoption (**Shu and Han 2002; Harridge, Grabner and Faullant 2008**). Perceived risk adversely affects the consumer attitude towards internet banking, and trust helps in reducing the perceived risk of using internet banking (**Harridge, Grabner and Faullant 2008**). What helps in increasing the trust of internet banking?. It is the familiarity that reduces risks and increases perceived trust (**Harridge, Grabner and Faullant 2008**). Also, perceived usefulness and web security have a direct positive relationship with customer attitude towards internet banking adoption (**Cheng, Lam, and Yeung 2006; Nasri and Chrfeddine 2012**).

Frequency of use is yet another influencing factor for the consumer's acceptance of a technology (**Ricard et al. 2001; Lang and Colgate, 2003**). Consumers' use is an essential predictor of the consumer experience. Continuous and frequent use reduces uncertainty and builds the habit of using. The length or duration of use is also a deciding factor for consumer's acceptance of internet banking (**Ricard et al., 2001**). Bank customer's relationship is also a function of the website design and functionalities that enable them for ease of use. Website layout and functioning, and the physical interaction with the website will influence customer relationship with their banks (**Eriksson, Kerem, and Nilsson 2005**). Use and user experience are critical factors in defining the usability of human-computer interaction (**Baber 2005**). Several studies focused on customer satisfaction through website usability on online-shopping. However, there are no or few studies focused on web usability of internet banking (**Dianat et al. 2019**). Dianat et al. (2019) show that web design has a significant association with user satisfaction. Individual attributes, such as age, and gender do not affect user satisfaction of internet banking (**Dianat et al. 2019**).

After the thorough review of literature on internet banking adoption and customer satisfaction on internet banking usage, we have formulated the following hypotheses to see which factor has a significant influence on internet banking user satisfaction.

H1: There is significant opinion difference between public and private sector bank customers on:

- (a) Banks are upgrading websites in a timely fashion
- (b) Banks are prompt on providing service
- (c) Banks make available the Product information on internet banking facility.

H2: There are significant differences in internet banking usage for:

- (a) Balance enquiry
- (b) Check status enquiry
- (c) Stop check payment request

H3: There are significant differences between awareness and usage of internet banking facilities among:

- (a) Public sector bank customers
- (b) Private bank customers.

H4: There is a significant difference between public and private sector bank customers' satisfaction on their respective banks' internet banking facilities

H5: There are significant differences in opinions between public and private sector banks customers about:

- (a) Bank helps prevent loss of funds through internet bank usage
- (b) Banks are prompt in attending customer complaints
- (c) Banks offer robust security features

H6: Bank customer association with the bank is significantly associated with:

- (a) Perceived satisfaction with internet banking security features
- (b) Perceived promptness of service
- (c) Perceived availability of product information on Internet Banking
- (d) Perceived ease of access.

We have also examined whether there are any significant differences of opinions between public and private sector bank customers on internet banking security, promptness of service, product information availability on websites and tailor-made service products on internet banking. To our knowledge, it is first of its kind to investigate the effect of these factors and customer satisfaction of internet bank users in the public and private sector banks in India.

III. METHODOLOGY

Data collection

Data have been collected through a structured questionnaire. The respondents are strictly Indian citizens and have been chosen from five public sector banks and five private sector banks from 5 different cities in Andhrapradesh State. One public and one private sector bank have been selected for study from each of the city. We ensured that the same bank was not chosen again for the study in other cities. Suppose, if selected ICICI in city A, then we made sure that ICICI was not in the survey in the other four cities. Through this type of sample collection methodology, we tried to get maximum variation in responses with maximum possible random selection to avoid any bias in responses. The questionnaire consists of 38 questions (initially we have used 50

items in the pilot study but eliminated 12 items to improve simplicity, reliability and validity of instrument). We have categorized them into five broad variables. The details of reliability test have been presented below.

Table-1: Reliability tests

S.No	Dimension Name	Alpha	Items
1	Awareness of banking account related services through Internet Banking	0.8518	8
2	Utilization of service request through Internet Banking	0.9686	6
3	Bank website maintenance of Internet Banking	0.8199	9
4	Banks promptness to customer service requests	0.8992	8
5	Overall customer satisfaction on internet banking services	0.8405	7

We have conducted a reliability test for our constructs. We estimated the Cronbach alpha with SPSS, and the results have been presented in table-1 above. We have finally satisfied with our constructs that have satisfied the threshold alpha of 0.8.

Sample selection and sample size

We have collected data from the customers of public and private sector banks. We have collected data from total 740 respondents (collected data initially from 800 respondents, but discarded the partially filled-in questionnaires from the analysis. However, we wanted to maintain the balanced sample size of each group). Out of these 740 respondents, 370 respondents comprise public sector bank customers, and another 370 respondents are private bank customers.

Hypotheses

We have developed the following hypotheses for testing in this research article.

H1: There is significant opinion difference between public and private sector bank customers on:

- (a) Banks are upgrading websites in a timely fashion
- (b) Banks are prompt on providing service
- (c) Banks make available the Product information on internet banking facility.

H2: There are significant differences in internet banking usage for:

- (a) Balance enquiry
- (b) Check status enquiry
- (c) Stop check payment request

H3: There are significant differences between awareness and usage of internet banking facilities among:

- (a) Public sector bank customers
- (b) Private bank customers.

H4: There is a significant difference between public and private sector bank customers' satisfaction on their respective banks' internet banking facilities

H5: There are significant differences in opinions between public and private sector banks customers about:

- (a) Bank helps prevent loss of funds through internet bank usage
- (b) Banks are prompt in attending customer complaints
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- (d) Perceived ease of access.

Method

We used two-tailed t-tests and a multiple regression test to test the hypotheses. We have presented the test results in our results and discussion part.

IV. RESULTS AND DISCUSSION

Table-2: Respondents’ opinion on various services provided through internet banking

S. No	Statements	SDA	DA	N	A	SA
1.	Internet banking enabled you to do all the banking related transactions at home	10 (1.4%)	15 (2%)	107 (14.5%)	389 (52.6%)	219 (29.6%)
2.	Your bank’s website is upgraded as and when required	17 (2.3%)	12 (1.6%)	185 (25%)	286 (38.6%)	240 (32.4%)
3.	It is easier to do online shopping with your internet banking service	4 (0.5%)	23 (3.1%)	151 (20.4%)	388 (52.4%)	174 (23.5%)
4.	Your bank’s internet banking service covers all kinds of banking services	15 (2%)	38 (5.1%)	182 (24.6%)	330 (44.6%)	175 (23.6%)
5.	There are information about your bank’s new products in their website	21 (2.8%)	36 (4.9%)	198 (26.8%)	365 (49.3%)	120 (16.2%)
6.	The overall daily limit for all financial transactions through the internet banking is satisfactory	18 (2.4%)	48 (6.5%)	196 (26.5%)	318 (43%)	160 (21.6%)
7.	All the branches of your bank are internet banking enabled branches	18 (2.4%)	31 (4.2%)	179 (24.2%)	333 (45%)	179 (24.2%)
8.	The internet banking facility is given as soon as applied for	37 (5%)	43 (5.8%)	225 (30.4%)	268 (36.2%)	167 (22.6%)
9.	Internet provides world wide connectivity	8 (1.1%)	35 (4.7%)	186 (25.1%)	309 (41.8%)	202 (27.3%)

Table-2 shows that respondents are positive in opinion about various benefits and timeliness aspects of internet banking in India. For almost all questions, respondents comprise more than 60% who agree (Combining Strongly agree and Agree) on these questions on their opinion about internet banking. The internet banking transaction limit provided by banks found to be satisfactory (agree + strongly agree= 64.6%). Then the natural question arises as to whether there is a significant difference in opinion between public and private sector bank customers on these questions about internet banking. Then we carried out a t-test to check the hypothesis.

H1: There is significant opinion difference between public and private sector bank customers on:

- (a) Banks are upgrading websites in a timely fashion
- (b) Banks are prompt on providing service
- (c) Banks make available the Product information on internet banking facility.

Table-3: Hypothesis testing on up-gradation, product information availability and timeliness of service

S.No	Statements		Mean	SD	T-Value	P-Value
a	Upgradation	Public	4.15	0.83	5.458	.000**
		Private	3.79	0.97		
b	Availability of product information	Private	3.80	0.94	3.525	.000**
		Public	3.83	0.93		
c	Timeliness of service	Public	3.77	1.08	2.931	.003*
		Private	3.54	1.00		

*Significant at 1% level and ** significant at 5% level.

Table-3 shows us that the opinions of public and private bank customers are significantly different on their respective banks’ internet banking facilities are (a) upgraded in a timely fashion (p=0.000) (b) provide all

products related information on websites (p= 0.000) and (c) Provide prompt service on their requests through internet banking (p= 0.003)

H2: There are significant differences in internet banking usage for:

- (a) Balance enquiry
- (b) Check status enquiry
- (c) Stop check payment request

Table-4. Respondents utilization of service request through internet banking

S.No	Utilization of Facilities		Mean	SD	T-Value	P-Value
a	Balance enquiry	Public	2.28	0.57	-.123	.902
		Private	2.29	0.63		
b	Check status enquiry	Public	2.04	0.64	1.585	.113
		Private	1.96	0.70		
		Private	1.51	0.68		
		Private	1.31	0.52		
c	Stop check payment request	Public	1.47	0.59	-2.975	.003**
		Private	1.61	0.62		

** significant at 1%

Table-4 explains to us that the respondents from public and private banks are significantly different (p=0.003, t=-2.975) in terms of (c) stop check request rising through internet banking. A high negative t-value is also a signal that public and private bank users differ significantly in opposite directionality in the stop-check request. Probably, private banks are more active in looking into online requests, whereas public banks still prefer a personal call.

Our third hypothesis is about the differences in awareness and usage of internet banking facilities. We hypothesize that there could be a significant difference between awareness and usage of internet banking among all bank customers who use internet banking facilities.

H3: There are significant differences between awareness and usage of internet banking facilities within

- (a) Public sector bank customers
- (b) Private bank customers.

Tabl-5: Respondents awareness and utilization of service request through internet banking

Type of Bank	Difference	n	Mean	SD	T-Value	P-Value
Public	Awareness	370	1.866	0.486	6.38	0.000
	Utilization	370	1.653	0.422		
Private	Awareness	370	1.911	0.465	7.49	0.000
	Utilization	370	1.662	0.440		

It is evident from the data and table-5 results that there are significant differences in terms of awareness and utilization in each of the groups, i.e., Private and Public bank customers. The p-values are significant even at 1% level. The means and standard deviations are also high, which indicate that the customers may be highly aware of internet banking but not utilizing all functionalities in internet banking.

H4: There is a significant difference between public and private sector bank customers' satisfaction on their respective banks' internet banking facilities

Table-6: Respondents' opinion on various services provided through internet banking

Opinion	Type of Bank	N	Mean	SD	T-Value	P-Value
Satisfaction on Internet banking facilities	Public	370	3.9330	.58625	3.549	0.000**
	Private	370	3.7730	.63929		

** significant at 1%

After seeking the responses from public and private sector bank customers on various questions about internet banking facilities, we then calculated the satisfaction scores. We then grouped the scores into satisfied and not satisfied based on their agreement on each item. All questions are unidirectional. We found that the satisfaction levels are significantly different ($p=0.000$, $t =3.549$) between public and private sector bank customers.

Then we wanted to explore what aspect has created the difference in satisfaction between public and private sector bank customers. We have used a set of questions to see the difference of opinions of banks' responsiveness on various customer problems.

H5: There are significant differences in opinions between public and private sector banks customers about:

- (a) Bank helps prevent loss of funds through internet bank usage
- (b) Banks are prompt in attending customer complaints
- (c) Banks offer robust security features

Table-7: Banks attending customer problems

S.No	Statements		Mean	SD	T-Value	P-Value
a	Helps to prevent loss of funds through cautionary messages	Private	3.94	0.94	-2.007	.045*
		Public	3.59	0.90		
b	Prompt in attending customer complaints about internet bank transactions	Private	3.73	0.93	1.841	.066
		Public	3.72	0.85		
c	Offers robust security features	Public	3.65	0.84	-.400	.689
		Private	3.47	1.01		

*Significant at 5% level.

Table-7 indicates that there are no significant differences of opinions on (b) banks' promptness in customer complaint handling ($p=0.066$), and (c) Offer robust security features ($p= 0.689$). However, there is a significant difference ($p=0.045$) in opinion about (a) banks' help on preventing fund loss while doing internet banking transaction. What we understand is that the difference in satisfaction on internet banking may be the result of customers' non-satisfaction on banks role in preventing fund loss while doing online transactions.

H6: Bank customer association with the bank is significantly associated with:

- (a) Perceived satisfaction with internet banking security features
- (b) Perceived promptness of service
- (c) Perceived availability of product information on Internet Banking
- (d) Perceived ease of access.

To test the above hypothesis, we have conducted a multiple regression with the number of years of association with the bank as dependent variable and satisfaction on security features, promptness of service, information availability and ease of internet banking facility access as independent variables.

Table-8: Regression results of years of association as dependent variable and ease of access, information availability promptness of services and security features as independent variables.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.380433	0.437407	12.30075	0.0000**
EASE_OF_ACCESS	0.950408	0.483149	1.967110	0.0495*
INFO_AVAILABILITY	0.473821	0.458346	1.033762	0.3016
PROMPTNESS	1.525664	0.425393	3.586480	0.0004**

SECURITY_FEATURES	1.377820	0.406796	3.387002	0.0007**
R-squared	0.035372	Mean dependent var		7.228378
Adjusted R-squared	0.030122	S.D. dependent var		3.046417
S.E. of regression	3.000184	Akaike info criterion		5.041958
Sum squared resid	6615.812	Schwarz criterion		5.073084
Log likelihood	-1860.525	Hannan-Quinn criter.		5.053959
F-statistic	6.737843	Durbin-Watson stat		0.029790
Prob(F-statistic)	0.000025			
** Significant at 1% level				
*Significant at 5% level				

From the table-8, it is evident that the years of association with the bank is significantly and positively associated with customer satisfaction about the ease of internet banking access (p=0.049), promptness of internet banking services (p=0.000) and robust security features of internet banking (p=0.000). Information available on internet banking website, though not significantly associated (p=0.3016) with customer years of association, is also positively associated with years of customer association with the respective bank.

V. CONCLUSION

Banks should ensure that the customers have accepted information technology and internet banking services. On the other hand, they should also attract and retain customers through innovative products. Customer satisfaction has a direct positive association with customer relationship with banks. A strong customer relationship is vital for any business. Internet banking is inevitable in today’s economic landscape. Banks should continuously improve the website and ensure ease of access and usefulness of using internet banking because these factors have a direct positive relationship with customer attitude to adopt internet banking. It is also essential to know which factors have a direct bearing on customer satisfaction on internet banking use.

In this research, we found that customer perceived promptness of service, ease of access and security features have a strong association with customer satisfaction. We also found there are significant differences between public and private sector bank customers in terms of specific utilization of internet bank services, such as stop check payment requests. One important finding is that there is a significant difference in awareness and usage of internet banking. We recommend the banking sector to focus more on security as a feature to market their internet banking facility and can be used as a product differentiation strategy. We also suggest that the banks should think of novel ways to educate and create wide-spread awareness among their customers towards internet banking usage. Banks should continuously upgrade and maintain their websites to ensure customers feel more ease and usefulness has been brought in by the banks. Future research can focus on the detailed study on what aesthetic aspects of bank website are influencing factors for customer perceived ease of use and satisfaction. Understanding the aesthetics of bank websites will help the engineers and banking managers to focus more on continuous development and upgrading of their bank websites.

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