Business Administration and Business Economics

Factors Affecting Internet Banking Usage in India: An Empirical Analysis

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Abstract: This study aims at identifying the factors affecting the customers demand for Internet banking usage by analyzing sample of 450 consumers' responses who have been interviewed personally through structured survey in 3 districts of Uttar Pradesh India. The study was conducted on the private, public and foreign banks which included ICICI Bank Ltd., HDFC Bank Ltd. and AXIS Bank, Standard Chartered Bank and Yes Bank. Among public sector banks the respondents were from Bank of Baroda, Punjab National Bank and State Bank of India and Canara Bank. The sample size of 450 has been taken from among the urban population of above 18 years of age. The result indicates that the educated respondents use the service of internet banking. Based on occupation we can say that the service class and the business class is the one who use internet banking service to nearly 2 times as other occupation. The high income respondents having more than 1 lack income prefer to use this service. The private sector bank account holders use this service as compared to public sector banks. The banking attributes i.e. convenience and security do have very attentive influence on the use of Internet banking.

Keywords: Internet banking usage; regression analysis; logit model; technology and innovation; consumer usage; customer's satisfaction

JEL Classification: G10

1.   Introduction

After the implementation of liberalization, privatization and Globalization (LPG) policy there were number of new developments which were implemented in the banking sector. In 1991 then the government brought the privatization in the banking sector. Banking in India has witnessed remarkable changes and development since the onset of the processes of liberalization, privatization and Globalization (LPG). The challenges ahead for banks have greatly increased with increasing competition and the growing demands for a variety and superior quality of banking services. The customer's orientation of the banking sector has significantly increased in recent times. The introduction of variety of new products and services with emphasis on quality of services clearly indicates how banks

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address the issues of customer's needs and requirements through a customer's – centric approach. The private banks are posing a very stiff competition to the public sector banks through their initiatives for meeting customer's expectation and gaining a cutting edge. Now the public sector banks are responding to the challenges posed by the private sector banks through conscious efforts to enhance their services quality.

In the post–LPG (Liberalization, Privatization and Globalization) era and information technology (IT) era, transformation in Indian banks is taking place with different parameters and the contours of banking services are dynamically altering the face of banking, as banks are stepping towards e-banking from traditional banking. Banking sector is undergoing a rapid transformation with the use of technology. These banks are able to leverage on low cost channels such as ATMs and net banking to the optimum levels contributing to reduced operating costs. The different e-channels such as ATMs, credit and debit cards, Telebanking, Mobile–banking, phone banking, and online banking are changing the face of the Indian banks.

Internet banking means, on-line banking from home or anywhere. It provides "anywhere, anytime" banking access to one's account as well as to the public information updated by the bank on its website. It has been introduced in India by most commercial banks which have fully computerized their operations. Just as the bank staff accesses the account of a customer on-line, the customer can also access his/her account on-line *via* internet.

For using internet banking the customer requires a personal computer, a telephone link, and a modem along with a internet provider and then he can use this facility of the bank.

In internet banking, the customer himself accesses his account through the internet connected to the bank's data base. The account details are displayed on the PC screen and can be browsed by him.

  I. In the first type of internet banking the customers are allowed only viewing facility, in this the customer cannot transfer funds;

 II. The second type of internet facility is by which the customer can transfer money from one of his accounts to another and even to a third party's account, albeit, within the authorized limits. Here the RTGS facility is taken into consideration.

Technology was seen as a key business enabler in six vital areas of banking viz. augmenting profit pool, operational efficiency, customer management, distribution and reach, product innovation and efficient payment and settlement (Shastri, 2004).

Innovations in the field of banking, information and telecommunication technologies have drastically changed the structure of the overall financial system and particularly banking system by lowering the transaction costs and reducing asymmetric information (Katri et.al, 2002).

In recent years, the application of information technology has been magnificently increased in the service industries, particularly in the banking industry, which by using information technology related products such as online banking, electronic payments, security investments, information exchanges, financial organizations can deliver high quality services to clients with less efforts (Berger, 2003).

A total of 8 per cent of the sites offers "advanced transactions" such as online funds transfer, transactions and cash management' services. Foreign banks in India like Citibank, ANZ Grindlays Bank, Standard Chartered Bank, HSBC, Bank of America, Deutsche Bank and ABN Amro Bank; and local private banks like ICICI Bank, UTI Bank, HDFC Bank, Global Trust Bank, IndusInd Bank and IDBI Bank are leaders in offering advanced online banking facilities to the Indian customers. ICICI Connect, a leader in providing online banking services, has more than one million customers banking through their computers. This is one-sixth of the total customer base of ICICI Bank. Also, their number of online customers has doubled in six months, which is also true for other banks such as HSBC, HDFC, Citibank, lDBI, ABN Amro, GTB and UTI (Sinha, 2002).

Sharma and Mehta (2004) made a comparative study of quality perceptions on four banks in India State bank of India, Corporation bank (both government owned banks), UTI Bank (NPSB) and J & K Bank (OPSB) using SERVQUAL model. The result indicated that there is a difference in the service quality perception of customers in the public sector and private sector banks. On tangibility dimensions, UTI Bank topped the list followed by Corporation bank, SBI and J&K Bank. Public Sector Undertaking Banks were ranked better compared to private sector banks on reliability. On the dimensions of responsiveness (employees' capability to respond to customers) the ranking was Corporation bank leading the list followed by UTI, SBI and J&K Bank. On empathy dimensions (Bank's understanding of customer needs) Corporation bank lead the ranking followed by UTI, SBI and J&K Bank. PSU Banks were found to be ahead of private sector bank on assurance dimension of service quality.

Kaynak and Harcar, (2005) observed that in recent years, commercial banks of all types and sizes have intensified the use of online banking in their operations. First offered in mid-1990s, online banking is becoming the latest breakthrough development in the ever·growing world financial services marketing.

There is a multitude of retail banking service available for consumers but their classification and total number vary across different sources. In a broad context,

Howcroft et al. (2002) have classified the financial services into the following four groups:

1) Current account;

2) Insurance-based;

3) Credit-based;

4) Investment-based services.

In relation to online banking, Chou and Chou (2000) have listed some five basic services:

1) Viewing account balances and transaction histories;

2) Paying bills;

3) Transferring funds between accounts;

4) Requesting credit card advances;

5) Ordering cheques.

One of the major forces behind these developments is technology, which is breaching geographical, industrial, and regulatory barriers, creating new products, services, market opportunities, and developing more information and systems-oriented business and management processes Liao and Cheung, (2002).

AC Nielsen (2002) found that Internet banking is expanding in many Asian countries, including South Korea, Hong Kong, Singapore, China, and Taiwan. Thai banks have followed worldwide trends in implementing self-service technology via the Internet, although as a still developing country, Thailand is slightly behind the more developed Asian countries. ACNielsen (2002), Internet banking provides opportunities for the bank to develop its market by attracting a new customer base from existing Internet users (Suganthi et al., 2001; Dannenberg & Kellner, 1998; Zineldin, 1995).

Pooja Malhotra and Balwinder Singh (2007), made an exploratory study is to attempt to discover the factors affecting a bank's decision to adopt Internet banking in India. Particularly, it seeks to examine the relationship between the bank's adoption decision and various bank and market characteristics. The data for this study consist of panel data of 88 banks in India covering the financial years 1997-1998 to 2004-2005.

Siriluck Rotchanakltumnuai & Mark Speece (2003) Many Thai banks are currently implementing Internet banking. Banks that offer service via this channel claim that it reduces costs and makes them more competitive. In-depth qualitative interviews with Thai firms suggest that security of the Internet is a major factor inhibiting wider adoption. Those already using Internet banking seem to have more

confidence that the system is reliable, whereas non-users are much more service conscious and do not trust financial transactions made via Internet channels. Non Internet banking users tend to have more negative management attitudes toward adoption and are more likely to claim lack of resources. Legal support is also a major barrier to Internet banking adoption for corporate customers.

2.   Objectives and Hypothesis

Here we had taken a hypothesis that all the customers are equally satisfied with the use of all kinds of e-banking services. The study also aims to identify Socio – Demographic factors (Gender, Education, Occupation, Income, and Metro Status) which influence uses of advanced IT based banking services/ Innovative Banking Services**, i.e** Internet Banking. It also studies the Banking attribute (bank type, account type, convenient accessibility, number of services offered, and cost of services) are associated with the use of advanced IT based banking services/ Innovative Banking Services i.e Internet Banking .

Following hypothesis have been tested based on customers responses:

H1: Demographic profiles of consumers have a significant impact on usage of innovative Banking.

H1a: Demographic profiles (Gender, Education, Occupation, Income, and Metro Status.) have a significant impact on the use of Internet Banking.

H2: Banking attributes have a significant impact of use of innovative Banking.

H2a: Banking attribute (bank type, account type, convenient accessibility, number of services offered, and cost of services) significantly influence the use of advanced IT based banking services/ Innovative Banking Services like Internet Banking.
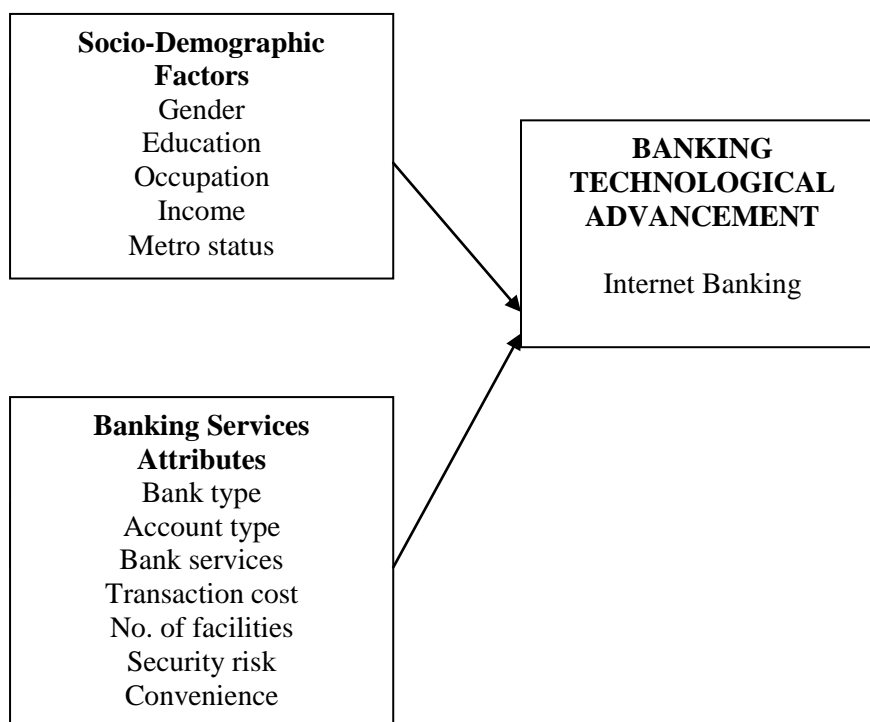
2.1. The Basic Model Has Been Defined as Follows:

Socio-Demographic Factors
Gender
Education
Occupation
Income
Metro status

BANKING TECHNOLOGICAL ADVANCEMENT

Internet Banking

Banking Services Attributes
Bank type
Account type
Bank services
Transaction cost
No. of facilities
Security risk
Convenience

Figure 1. Basic Model

Source: Made by Author

2.2. Data and Methodology

2.2.1   Survey Data

This study is based on a survey carried out through a structured questionnaire. The primary data required for the study has been collected from three cities of Uttar Pradesh, India across different regions so as to make it representative of entire population. Sample size of 450 has been taken from among the urban population of over 18 years of age from Lucknow, Kanpur, and Varanasi. Questions related to use of ATM Services were asked, usage pattern, problems faced during usage etc were asked. Similarly, the questions related to socio-demographic information of the respondents such as gender, education level, occupation and household income were also included.

2.2.2 Consumers' Profile Analysis

Table 1 presents socio-demographic of the banks' consumer respondents. The socio demographic profile of overall sample is shown in Table 1. The sample comprises of 81 percent male and 19 percent female respondents. Educational profile of the sample shows that about 89 percent respondents are graduate and above; 11 percent are having education up to secondary and higher secondary levels. About 55 percent respondents have an annual income of Rupees 300,000 & above, and 45 percent have a annual income less than Rupees 300,000. The 87 percent of the respondents had a saving account and 13 percent had current accounts. 74 percent of the respondents had a account in a public sector bank, 22 percent of the respondents had a private sector bank account. And 4 percent had a account in foreign bank.

Table 1. Sample Demographic Characteristics

	N	%		N	%
Gender			**Annual Income**		
Male	364	80.9	less than 1,00,000	54	12.0
Female	86	19.1	1,00,001 To 2,00,000	36	8.0
Occupation			2,00,001 To 3,00,000	114	25.3
Government service	103	22.9	3,00,001 To 4,00,000	114	25.3
Private service	65	14.4	More than 4,00,001	132	29.3
Business	177	39.3	**Types Of Accounts**		
others	105	23.3	Saving	393	87.3
Education			Current	57	12.7
High School	13	2.9	**Category of Banks**		
Intermediate	37	8.2	Private Bank	98	21.8
Graduation	248	55.1	Public Bank	335	74.4
Post Graduation	152	33.8	Foreign Bank	17	3.8

3. Data Analysis

An empirical model has been developed to identify the factors affecting the customers demand for banking services. The customers' Socio-Demographics factors (mainly gender, education, occupation income level and metro status) and the banking attribute (bank type, account type, convenient accessibility, number of services offered, and cost of services) were considered as a independent variable whereas use of advanced IT based banking services/ Innovative Banking Services, (Internet Banking,) was considered as dependent variables. The logistic binary regression analysis was performed using SPSS 16.0 software.

To conduct regression analysis, the banking services were treated as dependent variables while Socio-Demographics factors of the customers and the banking

attributes were used as independent variables. The descriptions of both dependent and independent variables are given in the Table 2 as follows.

Table 2. Dependent and Independent Variables

Code	DESCRIPTION OF VARIABLES
	DEPENDENT VARIABLES
Internet banking	(1-If use of Internet banking services, 0-otherwise)
	INDEPENDENT VARIABLES
GEN	(1-if male, 0-otherwise)
EDUC	(1-if PG, 0-otherwise)
OCCUP	(1-if service, 0-otherwise)
INCOM	(1-if >Rs. 100000 annual, 0-otherwise)
METRO STATUS	(0-if Metro status, 1-otherwise)
BANK TYPE	(1-if public sector, 0-otherwise)
ACCOUNT TYPE	(1-if saving account, 0-otherwise)
BANK SERVICES TRANSACTION	(1-Yes, 0-otherwise)
COST	(1-least, 0-otherwise)
SECURITY RISK	(1-Yes, 0-otherwise)
CONV	(1-if convenient accessibility of services, 0-otherwise)
SERVICE	(1-if offered maximum number of services, 0-otherwise)
COST	(1-if least cost services, 0-otherwise)

The regression analysis resulted - coefficients β and effect-coefficients Exp(β). The estimated β coefficients are measures of the changes in odds[1] ratio. A positive coefficient sign indicates increases the probability of customer responses to use the particular banking service and a negative sign not to use it. The degree of impact of the independent variables is reported by so-called effect-coefficients Exp (β) which indicate the change of the odds ratio when the independent value increases for one unit. We used the Nagelkerke R² to assess the goodness of fit of the model and the Wald test to estimate the significance of the influence of the independents.

All the variables were evaluated in accordance to logit model developed as follows:
Equation 1

$$Log\lambda_i = \alpha + \beta_1 GEN + \beta_2 EDUC + \beta_3 OCCUP + \beta_4 INCOM + \beta_5 METROSTATUS + \beta_6 BANK + \beta_7 ACCNT + \beta_8 CONV + \beta_9 SERVIC + \beta_{10} COST + \varepsilon_i$$

All the variables (dependent & independent) used in the model were dichotomized into binary (0, 1) formats according to description. The logit model is based on the cumulative logistic probability function and is specified as:

Equation 2

$$P = F(Z) = \frac{1}{(1 + e^{-(\alpha + \beta_i X_i)})}$$

where *Z* determines a set of explanatory variables *X*; *F(Z)* is the cumulative logistic function; *e* represents the base of natural logarithms and *P* is the probability of success when explanatory variable has the value *X*. Logit models are interpreted using Odds and Odds ratios. The odds ratio indicates the multiplicative impact in the odds for a unitary change in the explanatory variable holding other variables as constant. If the exponentiated coefficient is greater than unity, it explains that the odds are increasing, and on the other hand negative value indicates that the odds decrease. Deviation of the exponentiated coefficient value from one indicates the magnitude of impact on the odds for a unit change in independent variable. The multiple binary logistic regressions were used to find the relative importance of the factors affecting use of different services of the bank like use of Internet banking. The p-value <0.05 was considered for significance. The above tests have been applied on the primary data to analyze association the strength of relationship and correlation between different parameters as given in the questionnaire. (Mohammed, 2012)

4. Results and Discussion

4.1. Binary Logistic Regression

The results of logistic regression analysis taking use of Internet Banking as outcome factor are given in the Table-3.1. Education ($p<0.05$), occupation ($p<0.01$) and income ($p<0.01$) were found to be significantly and positively associated socio-economic factors which affects the use of Internet Banking. Likewise, bank type ($p<.05$), convenience ($p<.01$) and security risk ($p<.01$) were other important and significant factors which positively affects the use of Internet Banking. The value of log likelihood function is 531.366 the model correctly predicted 82.0 percent of the observed responses. The result clearly indicates that *H1, H2, H1a & H2a* fairly true.

Table 3.1. Variables Affecting Use of Internet Banking

	B	S.E.	Wald	Sig.	Exp(B)
Gender (1-Male, 0-Female)	0.266	0.233	1.305	0.253	1.305
Education (1-Grad/PG, 0-otherwise)	0.579	0.273	4.503	**0.034**	1.784
Occupation (1-Service/business, 0-Otherwise	0.836	0.311	7.251	**0.007**	2.308
Income (1- >Rs.100,000, 0-otherwise)	0.660	0.263	6.329	**0.012**	1.936
Metro status (1-No, 0-otherwise)	-0.087	0.283	0.095	0.758	0.917
Bank type (1-Public, 0-otherwise)	-0.536	0.246	4.763	**0.029**	0.585
Account type (1-Saving, 0-otherwise)	0.276	0.294	0.882	0.348	1.318
Bank services (1-Yes, 0-otherwise)	-0.001	0.240	0.000	0.997	0.999
Transaction cost (1-Yes, 0-otherwise)	-0.239	0.302	0.627	0.428	0.787
No. of facilities (1-Yes, 0-otherwise)	-0.084	0.292	0.083	0.774	0.920
Security risk (1-Yes, 0-otherwise)	0.785	0.292	7.201	**0.007**	2.192
Convenience (1-Yes, 0-otherwise)	1.882	0.345	29.715	**0.000**	6.569
Constant	-1.495	0.441	11.485	0.001	0.224
Value of log-likelihood function	531.366				
Cox & Snell R Square	0.136				
Nagelkerke R Square	0.512				
Correct prediction (%)	82.0				
Chi-squared (df=12)	88.021***				

The result indicates that the educated respondents use the service of internet banking. Based on occupation we can say that the service class and the business class is the one who use internet banking service to nearly 2 times as other occupation. The high income respondents having more than 1 lack income prefer to use this service. The private sector bank account holders use this service as compared to public sector banks. The banking attributes i.e. convenience and security do have very attentive influence on the use of Internet banking.

5. Conclusion and Recommendations

In case of Internet banking the results of logistic Regression was as follows the educated respondents use the service of internet banking. Based on occupation we can say that the service class and the business class is the one who use internet banking service to nearly 2 times as other occupation. The high income respondents having more than 1 lack income prefer to use this service. The private

sector bank account holders use this service as compared to public sector banks. The banking attributes i.e. convenience and security do have very attentive influence on the use of Internet banking. (Table 3.1)

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