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FACTORS AFFECTING ATM USAGE IN INDIA: AN EMPIRICAL ANALYSIS

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Abstract:
This study aims at identifying the factors affecting the customers demand for ATM services, by analyzing sample of 450 consumers' responses who have been interviewed personally through structured survey in 3 districts of Uttar Pradesh India. The results indicate that graduated and employed male customers who belong from higher income groups and having a bank account preferably in public sector bank are greatly emphasized to use of the banking services. Significant positive influence of the characterized socio-economic attributes on the use of ATM service was found. The service occupied customers significantly more emphasized to the use of ATM services. Noticeable, the banking attributes such as account type, convenience, number of services offered, and cost of banking services don't have very attentive influence on the use of advanced IT based banking services.

Keywords: ATM services, regression analysis, Logit Model, technology and innovation, consumer usage, customers satisfaction.

JEL classification: O32; O31

INTRODUCTION

The Indian Financial system is undergoing a period of substantial change, the impact of which is transforming the way financial services are delivered. Now a days there are number of alternative channels available for the delivery of services. The most commonly used delivery channel introduced for financial services is the ATM.

ATM is a cash rending teller machine. This helps a bank customer to withdraw money from his account without having to go to the bank. ATM is a user friendly, computer driven system, which operates 24 hours a day, 7 days a week. A totally menu-driven system, it displays easy-to-follow, step-by-step instructions for the customers.

It can be accessed using an ATM card that gives entry into ATM room. The Personal Identification Number (PIN), exclusive to each customer, has to be keyed-in for carrying out desired transactions.

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From 1st April 2009 Reserve Bank of India (RBI) has abolished the charges which were being charged by the banks for using an ATM of other bank. Now banks will allow usage of any ATM of other banks to be used for three free transactions.

Some other experts believe growing levels of automation and cost control measures would make more and more transactions moving out of the branches. Dr V P Gulati, Director of Institute for Development of Research in Banking Technology (IDRBT), estimates that in mid-term, 40–50 percent of transactions will move to ATMs, 8–10 percent will move to Internet, 10–25 percent to mobile or Tele-banking, resulting only 15–40 percent of transactions will be done through branches (Professional Banker, August 2004).

The research of Burc Ulengin (1998) in Turkey and Almossawi (2001) in Bahrain concluded that ATM network in convenient locations was a dominant factor in bank selection decision making of consumers in those countries.

If a bank already has a reputation for technical innovation, its customers are likely to feel comfortable with more technology. But if a large share of its profits or growth comes from older customers who prefer personal service, it could be unwise to push ATMs too hard. Bank marketing managers need to continuously assess the customer's decisions-making process as well as the formation of attitudes, preferences and satisfaction of automated services. It is of little use for an organization to attempt to position an offering by emphasizing a particular attribute(s) that do not constitute significant choice criteria in target market (Devlin 2002).

Moutinho and Smith (2000) studied the bank customer satisfaction through mediation of attitudes towards human and automated banking. Their findings suggest that the drive towards 'ease of banking' and convenience is favored by customers and therefore banks should find alternative strategic routes designed to improve service delivery, either human based or technology based. The study also suggests that Bank customer's attitudes towards the human provisions of services and subsequent level of satisfaction will impact on banks switching more than when the same delivery is made through automation (Moutinho and Smith 2000).

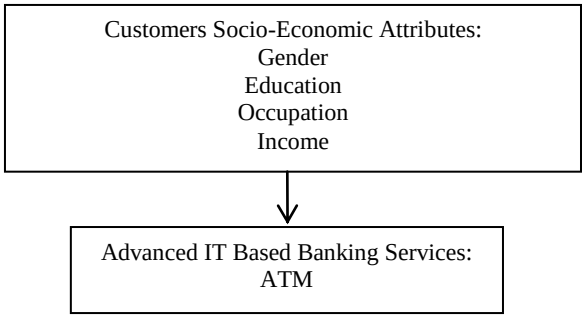
As regards the use by bank customers of Internet banking, it has been estimated that only about 1 per cent of the retail transactions are done over the Internet (Ernst and Young 1996).

"Advance bank, which was quick to adapt new technology and started to provide net banking one and a half years ago, has only 5,000 active users" (Wood 1996).

Milind Sathaye (1999) in his study was to quantify the factors preventing adoption of Internet banking in Australia. The literature on Internet banking in Australia does identify lack of awareness and security concerns as the prime reasons for slow adoption thereof by consumers. However, no empirical evidence was available to support the theory that these factors are in fact responsible. The above analysis shows that security concerns, and lack of awareness stand out as the reasons for non-adoption of innovation of Internet banking by Australian customers.

Objectives and hypothesis

The ATM usage depends on the education, income class, gender, and types of accounts.and some other demographic factors of the customer of banks.this study has been undertaken to analyse the socio demographic influence on ATM usage.
Following hypothesis have been tested based on customer responses:
H1: Customers Socio- Economic attributes are associated with the use of ATM servicess.
H2: Demographic profiles significantly influence the use of ATM's services.



DATA AND METHODOLOGY

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.

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 upto secondary and higher secondary levels. About 55 percent respondents have a 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 a 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

DATA ANALYSIS

Model specification and variables description

An empirical model has been developed to identify the factors affecting the customers demand for banking services. The customers' socio-economic attributes (mainly gender, education, occupation and income level) and the banking attributes (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 such as ATM was considered as dependent variables.

All the variables were evaluated in accordance to logit model developed as follows.

$$\begin{aligned}\mathrm{Log}\lambda_i &= \alpha + \beta_1 \mathrm{GEN} + \beta_2 \mathrm{EDUC} + \beta_3 \mathrm{OCCUP} + \beta_4 \mathrm{INCOM} + \beta_5 \mathrm{BANK} \\ &\quad + \beta_6 \mathrm{ACCNT} + \beta_7 \mathrm{CONV} + \beta_8 \mathrm{SERVIC} + \beta_9 \mathrm{COST} + \varepsilon_i\end{aligned} \tag{1}$$

All the variables (dependent & independent) used in the model were dichotomized into binary (0, 1) formats according to description made in table 2. The logit model is based on the cumulative logistic probability function and is specified as:

$$P = F(Z) = \frac{1}{(1 + e^{-(\alpha + \beta_i X_i)})} \tag{2}$$

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.

Results and Discussion

Binary Logistic Regression

In order to analyse the influence of customers' socio-economic profile and the banking attributes (account type, cost of services, convenience, security, and other banking facilities) on the customers use of IT based advanced banking services (ATM), logistic binary regression analysis was performed using SPSS 15.0 software. To conduct regression analysis, the banking services were treated as dependent variables while socio-economic 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	Mean	Mode	Std. Deviation
	Dependent variables			
ATM	(1-If use of ATM services, 0-otherwise)	0.947	1	0.225
	Independent variables			
GEN	(1-if male, 0-otherwise)	0.809	1	0.394
EDUC	(1-if PG, 0-otherwise)	0.338	0	0.473
OCCUP	(1-if service, 0-otherwise)	0.627	1	0.484
INCOM	(1-if >Rs. 100000 annual, 0-otherwise)	0.880	1	0.325
BANK	(1-if public sector, 0-otherwise)	0.744	1	0.437
ACCNT	(1-if saving account, 0-otherwise)	0.873	1	0.333
CONV	(1-if convenient accessibility of services, 0-otherwise)	0.931	1	0.254
SERVIC	(1-if offered maximum number of services, 0-otherwise)	0.953	1	0.211
COST	(1-if least cost services, 0-otherwise)	0.871	1	0.335

The regression analysis resulted - coefficients β and effect-coefficients Exp(β). The estimated β coefficients are measures of the changes in odds[2] 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 R^2 to assess the goodness of fit of the model and the Wald test to

[2] Odds (Y=1) = P(Y=1)/1-P(Y=1)

estimate the significance of the influence of the independents. The model is reasonably fit as indicated by the summary statistics in table 3.

Table 3. Logit model of demographic and socio-economic factors influencing the ATM Usage

ATM						
Variables /Code						
Dependent variables						
ATM						
Independent variables	B	S.E.	Wald	df	Sig.	Exp(B)
GEN	1.940	0.556	12.180	1	0.000	6.961
EDUC	1.340	0.627	4.564	1	0.033	3.819
OCCUP	2.371	0.598	15.698	1	0.000	10.708
INCOM	1.624	0.656	6.125	1	0.013	5.072
BANK	0.197	0.535	0.135	1	0.713	1.218
ACCNT	0.410	0.695	0.348	1	0.555	1.507
CONV	0.646	0.775	0.696	1	0.404	1.909
SERVIC	1.379	0.906	2.316	1	0.128	3.973
COST	1.026	0.670	2.341	1	0.126	2.789
Constant	-4.330	1.364	10.082	1	0.001	0.013
-2 Log likelihood	132.60					
Cox & Snell R Square	0.11					
Nagelkerke R Square	0.34					
Chi-square	54.78***					
Correct prediction	95.60					
***significant at 1% level						

The results indicate that Graduated use the services of ATM's, the usage Exp is 10.708 as given in the logit model. The male respondents use this service as compared to female customers to almost 7 times more. Based on the income it is seen that the respondents who have higher incomes above Rs. 100000 prefer the ATM services.

The results indicate that graduated and employed (Government or private service) male customers who belong from higher income groups (> Rs. 100000) and having a bank account preferably in public sector bank are greatly emphasized to use of the banking services. Significant positive influence of the characterized socio-economic attributes on the use of ATM service was found. Noticeable, the banking attributes such as account type, convenience, number of services offered, and cost of banking services don't have very attentive influence on the use of ATM's services. The value of log likelihood function is 132.60 the model correctly predicted 95.60 percent of the observed responses. The result clearly indicates that *H2* is fairly true.

CONCLUSION AND RECOMMENDATIONS

The results indicate that graduated and employed (Government or private service) male customers who belong from higher income groups (> Rs. 100000) and having a bank account preferably in public sector bank are greatly emphasized to use of the banking services. Significant positive influence of the characterized socio-economic attributes on the use of ATM service was found. Noticeable, the banking attributes such as account type, convenience, number of services offered, and cost of banking services don't have very attentive influence on the use of advanced IT based banking services.

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