Internet Technology and Customer Profitability in Banks

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ABSTRACT

Rapid expansion of technology in banking has led customers to shift towards virtual banking from actual banking. Even though 100% migration to technology platform in the banking industry in India is yet to happen in view of some public sector laggards, by and large customers in India have shifted their transactions to various channels of virtual delivery like ATMs, internet banking, phone banking etc.The adaptation of technology in banking sector took place mainly because of two factors one is customer demand and second is increasing competitive environment.

Although lot many studies have been made about the progress of technology in banks but the impact on customer's profitability are still an unexplored domain. Electronic Banking, Internet Banking, Online Banking, Mobile Banking or Virtual Banking as a whole have all been making rapid advances with leverage of Technology giving a new direction to the banking system in India. Customer profitability is an evolving area and first among the ten most critical issues in the area of Technology management in Banks.

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Introduction

Internet Technology, one of the most commonly used words in the present day scenario has become an inseparable part of one's life. Internet Banking is a revolutionary breakthrough in the new age banking system. Internet Banking, as the name suggests uses internet as a delivery mode through which various banking activity is performed e.g. Paying Bills, Transferring funds, checking account balances, etc. It is difficult to assess whether banking technology has been applied for the benefit of the banker or for the convenience of the customers. But ultimately it contributes to the increasing efficiency of the banker as well as the cost reduction, time saving and overall convenience of the customers. Through internet banking, customers can transact from one corner of the world to another, without even interacting with the bankers.

Thus, in order to assess the impact of Internet banking on the Profitability of the customer as compared to traditional banking, the study deals with developing the model, which will not only identify weather customer is profitable with the advent of Internet/Online banking but will also identify the factors that is more important from customers point of view while making the use of Internet Banking.

Background of Study

Improved customer service has become very important for survival and growth in the emerging deregulated financial markets for banks. The banks are competing with each other to offer multifarious and diversified services to customers to widen their client base. Automation of various banking services using the latest technology envisages provision of superior customer services. Some of the modern technologies introduced in the banking industry are discussed below.

Internet Banking

Internet banking is one access point like an automated teller machine or a call centre from where a customer can transact business for which earlier he used to go to a bank branch . Internet is the cheapest of all banking channels and helps banks gain substantially in terms of transaction costs. In internet banking, banks need only a processing centre which would, in fact, be located anywhere in the world. But more importantly, it saves the time of the customer from physically visiting the bank.

Under internet banking, one can do any transaction simply sitting at in front of a computer.

The following types of transactions can be done online:

- Pay utility bills
- View and print your statements
- Transfer funds online between accounts

- Make third party payments
- Place fixed deposits
- Change maturity instructions
- Pay credit card bills
- Stop Cheques, request cheque books
- Send and receive secured e-mail to and form the bank

Anywhere Anytime Banking

Earlier, major challenge was related to the divide caused by distances. Today, banking has broken all geographical barriers and demand from customers relates to anywhere and anytime banking. Before the introduction of electronic banking facilities, the customers had only limited fixed time to transact banking business such as deposit of money and withdrawal of cash. ATMs have helped to overcome the time limitation for banking services. The customers can carry out business all the 24 hours of the day with the help of ATMs.

Costs and revenues for customers were detailed as follows:

Customer costs

- Opening costs of an account (differing depending on the product type and venue at which it is opened);
- Maintenance costs for all accounts and the history (for example, arrears); and
- Fees directly from customer accounts;

Customer revenues and benefits

- Interest revenue;
- Opportunity gain arising out of time and cost saving through e-banking

Research Objective

- The objective of the research is to assess weather the usage of Internet Technology by bank is profitable / beneficial to the customer or not.
- The secondary objective of the research is to discover the factor contributing to the benefit/profitability of the customer.

Scope of Study

- It studies the relationship between Internet Technology in Banking (Online Banking) and profitability of the Customer.
- The sample though collected from different parts of the country but major contribution of the response remains from IBS-Hyderabad students using Online Banking.

Limitation of the study

- The Model used for measuring the relationship between Overall Customer

Profitability with the usage of Internet Banking is based on Regression Analysis.

- The sample size consist of 100 respondents,

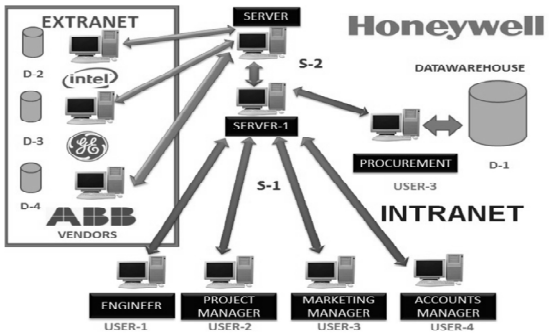
Methodology

The study employs use of primary data. A structured survey was conducted in order to collect primary data. The survey was undertaken online as well as personally. Out of the total respondent of 100, 80 respondents were online and remaining 20 were surveyed personally.

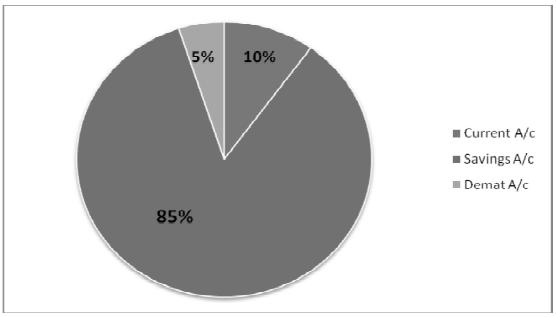
In the questionnaire various application of Internet banking was included and the benefit or profitability was assessed. The survey was conducted by sending online questionnaire to various region of the country like Gujarat, Maharashtra, Karnataka etc. but the majority of the target audience is of IBS Hyderabad students using Online Banking.

Respondents Profile

Out of the total respondent, 66 were male and 34 were female.



The chart below exhibits the classification of respondent based on the type of Account they hold with the bank:



Hypothesis Formulation

H0: Internet Technology in banking sector does not have any effect on the Profitability of customer

H1: Use of Internet Technology in banking sector is profitable for the customer

Variables Undertaken for Research

1. Type of Accounts

These variables will assist in discovering which type of Account contributes more towards the usage of Internet Banking. Depending upon the outcome of for these variable, banks can develop strategies to focus on the target audience.

2. Internet banking and Time Convenience

The study undertaken by Lie and Arnett identified Time as an important prime factor

that act as a quality feature for customers to use Internet Banking. Time saving is an important factor encouraging customer to use Internet Banking (Beer, 2006).

H1: Time Convenience positively influences the profitability of customers.

3. Internet Banking and Technology

It assists in identifying weather the usage of Technology/Penetration of Internet affect the usage of Internet Banking. Ease of use and customer friendly software and technology is another important determinant for the customer preferring Internet Banking.

H2: Technology Factor positively influences the profitability of the customers.

4. Internet Banking and Location

Online Banking lets the customer access its account from anywhere and anytime (IAMAI's 2006). Ease of access to account encourage customer to increase the use of Internet Banking.

H3: Ease of Access from different Location positively influences the Profitability of the customers.

5. Internet Banking and Regular service update

During Pre Internet Banking arena, customers need to physically visit the Bank branch in order to know the latest service provided by the bankers. Usage of Internet Banking has removed the hassle of visiting bank branch every time and waste time and money. Instead, Internet Banking has led to faster and profitable access to Service updates from bank.

H4: Regular Service Update via Internet Banking has increased the profitability/ convenience of the customer.

6. Internet Banking and Security Updates

Security is one of the major concerns that may refrains customer from using Internet banking. Thus, sufficient security guidelines from banks side may encourage the usage of Internet banking and thus leading to profitability of the customers.

H5: Security Updates positively influence the profitability of the Customers.

7. Internet Banking and Risk

Risk is one of the predominant factors that may hinder the usage of Internet Banking. Until and unless customer feel safe about the usage of Internet banking, customer refrain themselves from using Internet banking. In order to encourage customer for the usage

of Internet Banking, banks needs to provide the customer an assurance of utmost security.

H6: Risk factor of Internet banking adversely affects the usage of Internet Banking.

8. Internet Banking and Increase in service usage

Faster and Ease of access to various service has led customer to increase the usage of service provided by the customer. Thus, the increase in usage of online banking service has led to more profitability for the customer as well as for bankers.

H7: Internet Banking has led to the increase in the usage of variety of service.

9. Internet Banking and Transaction Cost

Usage of Internet Banking as compared to traditional branch banking has reduced the cost of transaction. The reduction in the cost may take in the form of savings as no fuel expenditure to visit the banking branch, avoiding of waiting in queue lead to reduction in opportunity cost.

H8: Reduction in the Transaction Cost has increased the profitability of the customers.

10. Internet Banking and Transaction Speed

Usage of Internet banking has increased the frequency of transaction in form of online fund transfer which earlier would take couple of days. The benefit of increase in the transaction speed has led to the increase in turnover leading to increase in profitability of the customers.

H9: Increase in Transaction Speed positively influences the profitability of the customers.

11. Internet Banking and Transaction Transparency

Transparency in the transaction is one of the important factors contributing towards the usage of Internet Banking. Lack of transparency in the transaction undertaken by the customer discourages the usage of Internet Banking. Transparency in the transaction builds confidence in the customer for the usage of Internet Banking thus leading to the increase in profitability of the customer.

H10: Transaction Transparency increases the profitability of the customer through increase in the usage of Internet Banking

12. Internet Banking and On-Line Payments

Internet Banking facilitates the On-line payments of various dues like Telephone bill, Income tax return, Magazine subscription, etc. This On-Line payment helps in reduction

of cost like opportunity cost of investing the time for productive usage rather than going personally for the payment, save the cost of fuel, etc.

H11: Online Payment of Bill is positively influenced by the profitability of the customers

13. Internet Banking and Fund Transfer to Third party

The facility of transferring fund On-line reduces the transaction time on one hand and increases the turnover on the other hand leading to increase in profitability of the customers.

H12: On-Line Fund Transfer increases the profitability of the customers.

14. Internet Banking and Overall Profitability

This variable measures the overall profitability which a customer derives from using Internet Banking. This variable is also used as a dependent variable in the study.

Data Analysis

The sequence of data analysis is as follows

1. Running Cronbach alpha Test in order to measure the reliability of data collected via questionnaire.
2. Measure the correlation among the variables.
3. Running factor analysis. (if correlation among few or all variables is greater than 0.50)
4. Running Regression analysis based on the factors generated.

Test for internal consistency of Data

Cronbach's alpha is a statistic which is used to measure the internal consistency or reliability of the data.

Reliability Statistics

Cronbach's Alpha	N of Items
0.699097013	13

The value of Cronbach's Alpha is 0.699 (Minimum value for reliability is 0.60), which states that the data collected is reliable for conducting statistical test.

Correlation Analysis among the variables

Correlation Matrix exhibits the degree of correlation among the variables. If the correlation between any two variables is greater than 0.50, than their exist multi-co linearity among the variables and Factor analysis needed to be run in order to reduce multi-co linearity among the variables and to get appropriate and unbiased result (Refer Exhibit:1 for correlation matrix among the variables). The correlation matrix

apparently exhibits that there exist multi-co linearity problem among the variables. Thus factor analysis will be undertaken to remove the problem of multi-co linearity.

Factor Analysis

Factor analysis is used to group the variables with similar characteristics together. With factor analysis we can produce a small number of factors from a large number of variables which is capable of explaining the observed variance in the larger number of variables. The reduced factors can also be used for further analysis.

Interpretation of the Output

Descriptive Statistics

The first output from the analysis is a table of descriptive statistics for all the variables under investigation. Typically, the mean, standard deviation for the number of respondents (N=100) who participated in the survey are given. Looking at the mean, one can conclude that "Time Saving" is the most important variable that influences the profitability of the customers. It has the highest mean of 4.38 and one of the least std. deviations (0.663324958).

Table 1 : Descriptive Statistics

Descriptive Statistics	Mean	Std. Deviation
Time	4.38	0.663324958
Technology	4.12	0.755852586
Location	4.26	0.760382679
Service Update	3.6	0.953462589
Security Update	3.4	0.942809042
Risk	3.39	0.930895084
Increase in service usage	3.57	0.934793231
Transaction cost	3.81	0.884147709
Transaction Speed	4.3	0.659047369
Transaction Transparency	3.35	0.783349452
On line Payment	3.31	0.761378335
Fund Transfer	4.24	0.780054388

Test to measure sampling adequacy and appropriateness of Data

KMO tells weather there is enough correlation between variables or not. The range of KMO test lies between 0-1; i.e. if the value is near to 1, factor analysis can be undertaken. The minimum value of KMO should be 0.50 in order to undertake Factor analysis.

Bartlett's Test of Sphericity measures weather the Population matrix is Identity matrix or not. The cut-off value of Bartlett's Test of Sphericity is less than or equal to 0.05.

Table 2 : KMO and Bartlett's Test

KMO and Bartlett's Test(a)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.584278957
Bartlett's Test of Sphericity	Approx. Chi-Square	304.9206792
	df	66
	Sig.	0.00
Based on correlations		

The value of KMO test is 0.58 (>0.50) and Bartlett's Test is 0.00 (<0.05), which permits to undertake Factor Analysis.

Communalities

The Communality table shows the amount of variation extracted from each variable explained by all the factors. The higher the value better is factor representing variables.

Table 3 : Communalities

	Rescaled
	Extraction
Time	0.5609216
Technology	0.4040451
Location	0.5490003
Service Update	0.8092032
Security Update	0.7446772
Risk	0.860143
Increase in service usage	0.7920647
Transaction cost	0.623082
Transaction Speed	0.290482
Transaction Transparency	0.5051584
On line Payment	0.4838649
Fund Transfer	0.6739885
Extraction Method: Principal Component Analysis.	

Total Variance Explained

The next item shows all the factors extractable from the analysis along with their Eigen values, the percent of variance attributable to each factor, and the cumulative variance of the factor and the previous factors. The cumulative variance explained by 4 components extracted is 64. 377%.

Table 4 : Factor Analysis

	Component	ExtractionSums of Squared Loadings			Rotation Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Raw	1	2.067	25.376	25.376	1.558	19.127	19.127
	2	1.184	14.529	39.905	1.443	17.720	36.847
	3	1.036	12.723	52.628	1.180	14.485	51.333
	4	0.957	11.749	64.377	1.063	13.044	64.377

Rotated Component Matrix

The table below shows the loadings of the eleven variables on the three factors extracted. The higher the absolute value of the loading, the more the factor contributes to the variable. The gap on the table represent loadings that are less than 0.25, this makes reading the table easier. We suppressed all loadings less than 0.25.

The table below shows the variables belonging to each factor along with its loading value:

Table 4 : Rotated Component Matrix(a)

	Raw				Rescaled			
	Component				Component			
	1	2	3	4	1	2	3	4
Time	0.47				0.70			
Technology	0.40				0.53			
Location	0.52				0.68			
Service Update		0.85				0.89		
Security Update		0.75				0.79		
Risk				-0.86				-0.92
Increase in service usage			0.80				0.86	
Transaction cost	0.67				0.75			
Transaction Speed		0.25				0.38		
Transaction Transparency			0.41				0.52	
On line Payment			0.44				0.58	
Fund Transfer	0.61				0.78			
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations.								

Factors Generated

Factor Analysis generated 4 factors. The factors with corresponding variables are as follows:

Factor 1:

The variables included in first factor are:

a. Time b. Technology c. Location d. Transaction Cost e. Fund Transfer

For the sake of convenience, this factor would name as **"Transactional Ease and Cost Savings".**

Transactional Ease & Cost Savings = 0.47*(Time) + 0.40*(Technology) + 0.52*(Location) + 0.67*(Transaction Cost) + 0.61*(Fund Transfer)

Factor 2:

The variables included in second Factor are:

a. Service Update b. Security Update c. Transaction Speed

This factor would be named as **"Updates".**

Updates = 0.85*(Service Updates) + 0.75*(Security Updates) + 0.25*(Transaction Speed)

Factor 3:

The Variables included in third Factor are:

a. Increase in Service Usage b. Transaction Transparency c. On-Line Payment

This factor would be named as **"Usage and Transparency"**

Usage and Transparency = 0.80*(Increase in Service Usage) + 0.41*(Transaction Transparency) + 0.44*(On-Line Payment)

Factor 4:

This factor includes only one variables i.e. Risk.

Regression Analysis

In the Regression Analysis, the Dependent Variable for the study is "Overall Profitability of the Customer" and the Independent Variables are the factors generated i.e. Transaction Ease and Cost Savings; Updates; Usage and Transparency and Risk.

Table 5 : Regression

Model Summary(b)									
Model 1	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.679334	0.46149517	0.438821282	0.530829293	0.46149517	20.3536	4	95	0.00
a	Predictors: (Constant), REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1								
b	Dependent Variable: Overall Profitability								

Table 6 : ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.94092489	4	5.735231224	20.3536	0.00
	Residual	26.76907511	95	0.281779738		
	Total	49.71	99			
a	Predictors: (Constant), REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1					
b	Dependent Variable: Overall Profitability					

The above table apparently exhibits that the regression model developed is significant at 5% level of significance as the value of Sig. F is 0.00 (<0.05). The Value of R-Square is 0.46 (i.e. >0.40) which is satisfactory for defining the positive strength of relationship between Profitability (Dependent Variable) and Online Banking (Independent Variables).

Table 7 : Regression Coefficients (a)

Model		Un-standardized Coefficients		Standardized Coefficients	t	Sig.	Co-linearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.23	0.05		79.69	0.00		
	REGR factor score 1 for analysis 1	0.46	0.05	0.65	8.69	0.00	1	1
	REGR factor score 2 for analysis 1	0.06	0.05	0.09	1.15	0.02	1	1
	REGR factor score 3 for analysis 1	0.11	0.05	0.15	2.05	0.04	1	1
	REGR factor score 4 for analysis 1	0.03	0.05	0.05	0.63	0.05	1	1
a	Dependent Variable: Overall Profitability							

Regression Equation

Overall Profitability = 4.23 + 0.46*(Transaction Ease and Cost Saving) + 0.06*(Updates) + 0.11*(Usage and Transparency) + 0.03*(Risk)

From the above equation, it is apparent that the contribution of the Factor "Transaction Ease and Cost Saving" is major while measuring the Overall Profitability of the customer using Online Banking.

Managerial Implication

The Profitability of the customer is positively influenced by the usage of Online banking and as it is very much likely that the customer will attracted towards the bank where its cost of transaction or overall cost is minimal or where is profitable, thus banker can create a Point of Differentiation by emphasizing on the variables like User Friendly Technology, Security Assurance and many more Innovative online services which leads to increase in the profitability of the customer and thus increase the customer base for the banks, thus creating a win-win situation for both.

Customers have found doing business online simple and speedy and have become very comfortable with the arrangement. Internet banking gives people more control over their money in a very convenient way that they find enjoyable and reassuring.

With Information Technology spreading to every sector, Banking sector is no exception. Indian banking industry, today is in the midst of an IT revolution. A combination of regulatory and competitive reasons has led to increasing importance of total banking automation in the Indian Banking Industry.

Conclusion

Thus, the analysis done based on the different variables undertaken apparently exhibits that Online Banking has not only contributed to the ease and convenience of the customer but also increased the profitability of the customers. Thus, internet banking is transforming from just a convenience to necessity in the life of human. The most important factor contributing to the increase in profitability of the customer is "Transaction Ease and Cost Saving".

Exhibit: 1

Pearson's Correlations Matrix

	Time	Techn-ology	Location	Service Update	Security Update	Risk	Increase service usage	Trans. cost	Trans. Speed	Trans. Transp.	Online Pay	Fund Transfer
Time	1.00	0.53	0.56	0.11	0.24	-0.08	-0.04	0.31	0.29	0.13	0.00	0.37
Technology	0.53	1.00	0.38	0.26	0.09	-0.14	0.03	0.16	0.37	0.13	0.13	0.21
Location	0.56	0.38	1.00	0.12	0.15	-0.23	0.12	0.37	0.19	0.25	0.17	0.37
Service Update	0.11	0.26	0.12	1.00	0.53	-0.15	0.02	0.09	0.34	0.18	-0.01	-0.01
Security Update	0.24	0.09	0.15	0.53	1.00	0.00	0.15	0.13	0.15	0.21	0.29	0.14
Risk	-0.08	-0.14	-0.23	-0.15	0.00	1.00	0.09	-0.18	-0.04	-0.27	-0.23	-0.01
Increase in service usage	-0.04	0.03	0.12	0.02	0.15	0.09	1.00	0.18	0.03	0.29	0.23	0.18
Transaction cost	0.31	0.16	0.37	0.09	0.13	-0.18	0.18	1.00	0.12	0.16	0.09	0.58
Transaction Speed	0.29	0.37	0.19	0.34	0.15	-0.04	0.03	0.12	1.00	0.32	-0.09	0.25
Transaction Transparency	0.13	0.13	0.25	0.18	0.21	-0.27	0.29	0.16	0.32	1.00	0.32	0.06
On line Payment	0.00	0.13	0.17	-0.01	0.29	-0.23	0.23	0.09	-0.09	0.32	1.00	0.04
Fund Transfer	0.37	0.21	0.37	-0.01	0.14	-0.01	0.18	0.58	0.25	0.06	0.04	1.00
**	Correlation is significant at the 0.01 level (2-tailed).											
*	Correlation is significant at the 0.05 level (2-tailed).											

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