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An Empirical Study of Rural Customer's Satisfaction from E-Banking in India

NISHI SHARMA
Assistant Professor, UIAMS, Panjab University, Chandigarh, India
Postal Address: **Sector 14, Panjab University Campus, Chandigarh, India**
Author's Personal/Organizational Website: ***www.puchd.ac.in***
Email: ***jmdnishi@yahoo.com***
Dr. Nishi Sharma is an Assistant Professor in University Institute of Applied Management Sciences, Panjab University, Chandigarh, India. Her areas of interest are Finance and Banking.

Abstract

In India there are 6, 40,867 villages and 68.84% of population resides in rural areas that offer a huge potential to the economy (Census 2011). Banking sector being the forefront of the economy has ventured into many innovative services to cater the need of these non-urban residents and e-banking is one of the most splendid offers in this context. E-banking has alchemized the conventional way of banking through providing countless benefits to its users. But the adaptability of e-banking in rural areas is not in consensus with the proliferate growth of e-banking observed in other areas. In this context the present paper attempts to explore different factors that might be interrupting the burgeoning development of e-banking in rural areas. The study is based upon the primary data collected from 520 rural respondents regarding 17 variables which are expected to affect the satisfaction level of e-banking users. The data has been tested through Cronbach Alpha, Kaiser-Meyer-Olkin measure, Bartlett's test and correlation among different variables. It has further been analyzed though factor analysis, regression analysis and ANOVA. The study attempts to submit some suggestions to enhance the level of overall satisfaction of rural customers and resultant rise in the propensity to use e-banking as a primary channel of banking.

Keywords: **e-banking; India; overall satisfaction; rural customers.**

INTRODUCTION

During current decade 2001-11 the growth rate of population in India as a whole s well as in rural declined as compared to the last decade 1991-2001. However in urban area the same has shown the upward trend. One of the primary reasons for such a trend is migration from rural to urban areas (Census 2011). The urbanization is primarily due to the non-availability of basic (including financial) facilities in these areas. Regulatory authorities of India have initiated many steps to mitigate the problem and provision of click banking services is one of the most dynamic expedient in this direction. E-banking has alchemized the conventional way of banking. It provides countless benefits to its users like 24x7 availability, better accessibility, saving in transaction cost saving, quick operations etc.

The burgeoning development of e-banking is very much obvious in urban areas but in rural areas the propensity to use e-banking could not touch the expected heights. In this context, the present paper attempts to study the level of satisfaction of rural customers from e-banking. The paper studies 17 different variables representing the qualitative aspects of e-banking and submits some suggestion to enhance the adaptability of e-banking in rural areas.

REVIEW OF RELATED LITERATURE

Technology has revamped entire business scenario all around the world. In this reference e-banking has emerged out to be a boon for ensuring smooth and quicker flow of funds. It has transformed and revolutionized the traditional banking industry (Mols, 2000). It is a wonderful media to reduce transaction cost. Further the increased volume of transactions may compensate the fixed cost that a bank may have to bear for providing click bank services. Wise and Ali (2009) remarked that the objective to invest in ATMs by Bangladeshis banks is to reduce the branch cost. It argued that the marginal increase in fee income could substantially be offset by the cost of significant increment in the number transactions. It empowers banks to deliver variety of value added services to its customers (Bitner 2001).

In fact internet banking is such an internet portal through which customers may use vivid range of banking services from bill payment to making investments (Pikkarainen, Karjaluoto, and Pahnila, 2004). It provides number of services to its users and access to almost any type of banking transaction (except cash withdrawal) at the click of a mouse (Young, 2001).
Flavián, Torres, & Guinalíu, (2004) argued that use of internet as an alternative channel for financial services has now become a competitive necessity instead of being simply a competitive advantage. Lustsik (2003) pointed out that offering of e-banking services facilitates better branding and responsiveness to the bank.

E-banking has eliminated the boundary of time and geography. Now the customers have relatively easy access to their accounts, 24 hours per day, and seven days a week all round the globe (Karjaluoto et al. 2002).

The flexible design of e-banking allows customers to make changes while making transactions and further ensures availability of customer service adviser within minimum possible waiting time (Dabholkar 1994).

There is an availability of number of researches to display different factors that motivate customers to adopt e-banking as their primary media for banking. Joseph et al. (2003) found that reliability, accuracy, personalized and better customer services are some of the factors that are considered by the customers before opting any service delivery channel. Some researchers recognized convenience, flexibility, security concern, complexity, and responsiveness as some of the prominent determinants of e-banking modishness at global level (Barczak et al., 1997; Danniel & Strong, 1997; Lia et al., 1999; Polatoglu & Ekin, 2001; Devlin & Yeung, 2003). Nupur (2010) found that the satisfaction level of e-banking users is related with reliability, responsiveness, assurance, empathy, and tangibles.

Some studies identified bank-corporate customer relation as one of the important factor for the success of financial services and having a higher competitive advantage in the market (Kandampully & Duddy 1999, Easingwood & Storey 1993).

Akinyele and Olorunleke (2010) studied technology and service quality in banking industry in Nigeria. They found that secured services are the most important dimension of e-banking. Similarly another study recognized that security as one of the paramount issue questioned by e-banking users. They found that security issue basically depends upon some factors viz., availability of internet service, social factors and psychological factors (Mattila and Mattila 2005).

In the common parlance the study of perceived easiness in using website and the privacy policy found that the most important factor influencing adaptability of e-banking is security. Further the study noticed that perceived ease of use is of less importance than privacy and security (Hua 2009). In a study of assessing the impact of e-banking functionality factors over satisfaction, it was found that among all the variables security, privacy, and content appear to have the greatest impact on satisfaction (Ahmad & Al-Zubi 2011).

All these studies emphasis upon the need of e-banking in present scenario and also suggest some measures to enhance the propensity to use. But still there is a dearth of studies to study the perception and satisfaction level of rural customer from e-banking.

NEED OF THE STUDY

Most of the research work conducted in the field of e-banking has targeted urban population but perception of rural customers has not been studied in opulence. In this reference the present study attempts to analyze the satisfaction level of rural customers

from e-banking in India.

OBJECTIVE OF THE STUDY

1. To analyse overall satisfaction of rural customers from e-banking services.
2. To identify the factors that influence rural customers' satisfaction from e-banking.
3. To identify the primary obstacles hindering the wide acceptability and propensity to use e-banking as a primary banking channel in rural areas.
4. To summarise different qualitative factors that may assist to enhance the
5. satisfaction level of rural customers from e-banking.
6. To test the strength of relationship of rural customer's satisfaction with different factors identified as major determinant affecting adaptability and satisfaction from e-banking.

LIMITATIONS OF THE STUDY

The present study is based upon the results of survey conducted on 520 users of e-channels. The results of the study are subject to the limitations of sample size, regional territory, psychological, financial and emotional characteristics of surveyed population.

RESEARCH METHODOLOGY

Data Collection

The study is primarily based upon primary data collected through a questionnaire from rural users of e-banking channels from different villages of Punjab and Haryana (India). Questionnaire comprises of 9 general questions and 17 questions relating to variables to be studied. The selection of variables is based upon previous research work. The survey has initially been administered on 650 respondents online as well as personally. However, only 520 questionnaires were found suitable for further analysis. The surveyed population was required to respond to different variables on the basis of five point Likert's scales, which rated 1 as least satisfactory and 5 as most satisfactory.

Analysis of data

The collected data has been analyzed through IBM statistical software SPSS 20.0. At the outset Cronbach Alpha test has been employed to check the internal consistency (reliability) of the data. Later on Kaiser-Meyer-Olkin and Bartlett's tests were conducted to test sample adequacy and sphericity of collected data. To diagnose the problem of multi-co linearity degree of correlation has been estimated. As the results have shown problem of co-linearity, factor analysis has been done as a tool of dimension reduction. The results have further been analyzed through regression to establish the relation of RGER scores with overall satisfaction level of customers.

FINDING AND ANALYSIS

Descriptive statistics

The present study is based upon the satisfaction level of rural e-banking users. The level customer's satisfaction has been observed on the basis of 17 different variables measured on Likert's five-point basis (1 as least satisfactory and 5 as most satisfactory). The brief summary of studied variables along with the mean and standard deviations of surveyed population is shown in table 1.

Table 1: Descriptive Statistics

Variable	Characteristics	Mean	S.D.	N
1.	Presence of required physical facility (Like adequate ATM machines, hardware availability etc.)	3.7750	.76619	520
2.	Functioning of e-channels (like smooth functioning of ATM machines, no problem of lack of currency etc.)	3.6404	.65070	520
3.	Network availability	3.3962	.75825	520
4.	Accuracy of transactions	3.9231	.73046	520
5.	Speed of services	3.8212	.79784	520
6.	Customised or User-friendly services (like use of regional language, personal welcome to customer etc.)	3.4115	.66560	520
7.	Availability of services (like 24 X 7 hour availability, no waiting time etc.)	3.8212	.62443	520
8.	Reliability	3.7788	.70447	520
9.	Specialised services to differently able persons	3.0558	.75185	520
10.	Problem handling (by bank personnel and concerned authorities)	3.8173	.66808	520
11.	Communication between bank and customers	3.7846	.67129	520
12.	Processing charges (in terms of transaction cost)	3.0923	.63545	520
13.	Regular updates (like acknowledgement of any receipt or payment)	3.9442	.72312	520
14.	Safety	3.6885	.57824	520
15.	Compensation (in case of any fraudulent attack by unauthorised person or error by bank)	3.0269	.66225	520
16.	Satisfaction from regulatory mechanism	3.0365	.65447	520
17.	Overall satisfaction	3.7769	.76801	520

Source: Primary Data

As shown from the above table apparently customers seem to be most satisfied with the feature of regular updates followed by accuracy of transactions. The mechanism for compensation (in case of any fraudulent attempt by unauthorized user or for any damage caused due to error committed by bank) appears to be least satisfactory to the respondents.

Internal consistency (reliability), sampling adequacy and test of sphericity

The internal consistency of the data has been checked through Cronbach Alpha test. The commonly accepted rule of thumb regarding the minimum score of Cronbach Alpha is 0.70 (Nunnaly 1978; Cortina 1993; Netemeyer, Bearden, and Sharma, 2003). In the present study the value of Cronbach Alpha is found to be 0.914 (table 2) which is

satisfactory enough to precede the study.

Kaiser-Meyer-Olkin (KMO) is an index to identify whether sufficient correlation exist among the variables has checked the sampling adequacy or not. It compares the magnitudes of the observed correlation coefficients with the partial correlation coefficients. The minimum acceptable value of KMO is 0.50. In the present study the value of KMO is found to be 0.893 (table 2).

To measure strength of relationship among variables of population correlation matrix Bartlett's test has been employed. The maximum acceptable value of the test is 0.05. In the present study Bartlett's value is 0.000 (table 2) which is satisfactory one to precede the study.

Table 2: Cronbach Alpha, KMO and Bartlett's Test results

Cronbach Alpha	KMO measure of sampling adequacy	Bartlett's Test of Sphericity	
0.914	0.893	Approx. Chi-Square	6401.903
		Degree of Freedom	136
		Significance	.000

Source: Author's Calculation from Primary Data

Analysis of mulit-co linearity

The study estimates correlation of each variable to other variables for detecting the multi- co linearity of data. The correlation between different variables may be observed through table 3.

Table 3: Correlation Matrix

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17
V1	1.000	.649	.585	.689	.486	.666	.504	.682	.396	.793	.617	-.207	.662	.568	.342	.581	.713
V2	.649	1.000	.391	.700	.399	.551	.538	.671	.214	.695	.493	-.101	.395	.373	.206	.415	.522
V3	.585	.391	1.000	.455	.394	.547	.471	.363	.144	.600	.448	-.248	.553	.462	.174	.355	.629

V14	V13	V12	V11	V10	V9	V8	V7	V6	V5	V4
.568	.662	-.207	.617	.793	.396	.682	.504	.666	.486	.689
.373	.395	-.101	.493	.695	.214	.671	.538	.551	.399	.700
.462	.553	-.248	.448	.600	.144	.363	.471	.547	.394	.455
.395	.444	-.171	.442	.757	.124	.656	.506	.608	.446	1.000
.414	.467	-.161	.460	.416	-.006	.523	.435	.571	1.000	.446
.574	.516	-.199	.617	.611	.154	.560	.553	1.000	.571	.608
.379	.550	-.240	.441	.573	-.016	.593	1.000	.553	.435	.506
.389	.513	-.122	.469	.704	.089	1.000	.593	.560	.523	.656
.226	.183	.001	.314	.197	1.000	.089	-.016	.154	-.006	.124
.551	.549	-.214	.582	1.000	.197	.704	.573	.611	.416	.757
.671	.575	-.111	1.000	.582	.314	.469	.441	.617	.460	.442
-.152	-.203	1.000	-.111	-.214	.001	-.122	-.240	-.199	-.161	-.171
.484	1.000	-.203	.575	.549	.183	.513	.550	.516	.467	.444
1.000	.484	-.152	.671	.551	.226	.389	.379	.574	.414	.395
.490	.301	-.079	.433	.412	.415	.095	.217	.215	-.064	.275
.392	.334	-.110	.461	.641	.501	.247	.247	.244	.038	.397
.694	.536	-.337	.561	.732	.238	.507	.519	.662	.526	.653

V15	.342	.206	.174	.275	-.064	.215	.217	.095	.415	.412	.433	-.079	.301	.490	1.000	.611	.455
V16	.581	.415	.355	.397	.038	.244	.247	.247	.501	.641	.461	-.110	.334	.392	.611	1.000	.522
V17	.713	.522	.629	.653	.526	.662	.519	.507	.238	.732	.561	-.337	.536	.694	.455	.522	1.000

Source: Author's Calculation from Primary Data

The maximum value of correlation is 0.793 which exists between variable 1 and variable 10. The least correlation is -.337 which exists between variable 12 and variable 17. The summarized picture of mean, co-variance and correlation may be understood through table 4.

Table 4: Summarized Statistics

Particulars	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.576	3.027	3.944	.917	1.303	.111	17
Inter-Item Covariance	.188	-.164	.420	.584	-2.555	.017	17
Inter-Item Correlations	.384	-.337	.793	1.130	-2.354	.069	17

Source: Author's Calculation from Primary Data

The result of correlation depicts the problem of co-linearity (as some variables have more than 0.50 degree of correlation). Therefore factor analysis has been done as a tool of data reduction.

Factor analysis

Factor analysis is a tool to reduce the number of variables to such a small number that could be capable enough to explain the observed variance in the large number of variables. It reduces the number of variables to such a small number which could be capable enough to explain observed variance in the large number of variables. Initially the communalities of variables have been calculated to represent the amount of variation extracted from each variable (Table 5). Variable with higher value is expected to represent better one. The extraction of variable is done by principal component analysis method.

Table 5: Communalities

Variable	Characteristics	Initial	Extraction
1.	Presence of required physical facility	1.000	.804

2.	Functioning of e-channels	1.000	.755
3.	Network availability	1.000	.555
4.	Accuracy of transactions	1.000	.715
5.	Speed of services	1.000	.604
6.	Customised (User-friendly) Services	1.000	.672
7.	Availability of services	1.000	.559
8.	Reliability	1.000	.774
9.	Specialised services to differently able persons	1.000	.552
10.	Problem handling	1.000	.813
11.	Communication between bank and customers	1.000	.603
12.	Processing charges	1.000	.435
13.	Regular updates	1.000	.563
14.	Safety	1.000	.633
15.	Compensation	1.000	.706
16.	Satisfaction from regulatory mechanism	1.000	.758
17.	Overall satisfaction	1.000	.775

Source: Author's Calculation from Primary Data

As shown from the table variable 10 i.e. problem handling carries maximum communalities which is followed by variable 1 i.e. presence of required physical facility and so on. All of these variables could further be analyzed through their Eigen values which represent the variances of the factors (table 6). The extraction has been done through the method of principal component analysis.

Table 6: Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.227	48.394	48.394	8.227	48.394	48.394	5.480	32.233	32.233
2	1.917	11.275	59.669	1.917	11.275	59.669	2.954	17.378	49.611
3	1.134	6.668	66.336	1.134	6.668	66.336	2.843	16.725	66.336
4	.981	5.771	72.107						
5	.756	4.445	76.552						
6	.662	3.896	80.447						
7	.626	3.681	84.128						
8	.461	2.709	86.837						
9	.408	2.400	89.237						
10	.381	2.242	91.479						
11	.341	2.005	93.484						
12	.284	1.672	95.156						
13	.238	1.402	96.558						
14	.196	1.150	97.709						
15	.152	.892	98.601						
16	.133	.780	99.381						
17	.105	.619	100.000						

Source: Author's Calculation from Primary Data

As depicted from table 6 there are three variables which have more than 1.000 Eigen value. The cumulative variance explained by these three components is 66.336%. Eigen values and associated components can further be studied through Cattell's Scree Plot (figure 1).

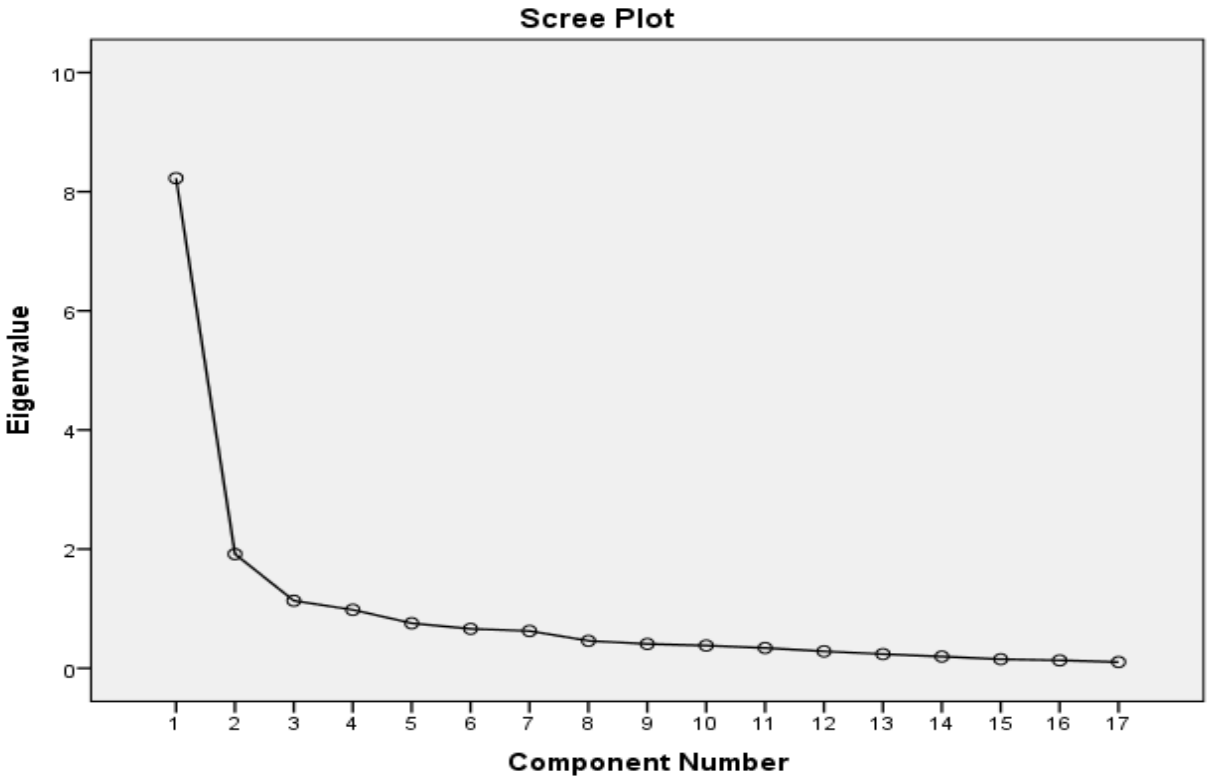

Figure 1: Scree Plot
Source: Primary Data

The graph clearly demonstrates that there are three components which are more crucial for the users of e-banking channels. The remaining variables also have exerted influence on the users but that is on a limited scale. The result of principal component analysis has further been analyzed through factor loading. Table 7 depicts the component matrix of the variables. To identify substantive loadings, the present study suppresses loadings having value less than 0.40.

Table 7: Component Matrix

Variables	Components		
	1	2	3
Presence of required physical facility	.887		
Problem handling	.885		
Overall satisfaction	.852		
Customised (User-friendly) services	.785		
Accuracy of transactions	.778		
Communication between bank and customers	.755		
Functioning of e-channels	.739		.442
Reliability	.737		
Regular updates	.721		
Safety	.712		
Network availability	.685		
Availability of services	.684		

Speed of services	.595	-.484	
Compensation	.456	.697	
Specialised services to differently able		.660	
Satisfaction from regulatory mechanism	.593	.624	
Processing charges			.588

Source: Author's Calculation from Primary Data

Table 8 demonstrates the rotated component matrix on the basis of Varimax criterion with Kaiser Normalization method. Rotated component matrix is a matrix of the factor loadings for different variables onto each factor. It represents the correlation of specific variable with different factors.

Table 8: Rotated Component Matrix

Variables	Component		
	1	2	3
Reliability	.872		
Functioning of e-channels	.839		
Accuracy of transactions	.808		
Problem handling	.757	.403	
Presence of required physical facility	.720	.424	
Customised (User-friendly) services	.648		.490
Availability of services	.634		
Speed of services	.584		.469
Communication between bank and customers	.471	.432	.441
Satisfaction from regulatory mechanism		.819	
Compensation		.811	
Specialised services to differently able		.739	
Processing charges			-.657
Overall satisfaction	.526		.594
Safety		.423	.589
Network availability	.423		.587
Regular updates	.487		.530

Source: Author's Calculation from Primary Data

Rotated component matrix reveals that out of total 17 variables eight variables load highly onto one factor and remaining nine variables load on two or more factors. The entire rotation process has been converged in four iterations and has resulted into three factors. These factors may be summarized as follows:

Factor 1: It comprises of 9 variables viz., reliability, functioning of e-channels, accuracy of transactions, problem handling, presence of required physical facility, customized (user friendly) services, availability of services, speed of services and communication between bank & customers.

Factor 2: It includes 3 variables viz., satisfaction from regulatory mechanism, compensation and specialized services to differently able persons.

Factor 3: It includes 5 variables namely processing charges, overall satisfaction, safety,

network availability and regular updates.
The component score coefficient matrix of these components may be shown as follows (table 9).

Table 9: Component Score Coefficient Matrix

Variables	Component		
	1	2	3
Presence of required physical facility	.123	.080	-.039
Functioning of e-channels	.290	.010	-.283
Network availability	-.041	-.027	.259
Accuracy of transactions	.235	-.013	-.168
Speed of services	.098	-.209	.166
Customised (User-friendly) services	.080	-.072	.129
Availability of service	.116	-.110	.078
Reliability	.290	-.099	-.193
Specialised services to differently able	-.045	.338	-.132
Problem handling	.153	.071	-.081
Communication between bank and customers	-.007	.100	.116
Processing charges	.213	.080	-.472
Regular updates	-.004	-.012	.196
Safety	-.106	.097	.264
Compensation	-.148	.346	.060
Satisfaction from regulatory mechanism	-.012	.335	-.112
Overall satisfaction	-.028	.054	.211

Source: Author's Calculation from Primary Data

The scores of factor analysis may further be utilized to have regression analysis and ANOVA which has been discussed in next paragraph.

Regression analysis and ANOVA
The study employs regression analysis and ANOVA to test the strength of relationship of overall satisfaction (dependent variable) with RGER factor scores (independent variables). The results of this analysis may be studied through table 10.

Table 10: Results of Regression and ANOVA

Regression									
				Std.	Change Statistics				
Model	R	R Square	Adjusted R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.881[a]	.775	.774	.36503	.775	593.800	3	516	.000

ANOVA					
	Sum of Squares	Degree of freedom	Mean Square	F	Sig.
Regression	237.367	3	79.122	593.800	.000[b]
Residual	68.756	516	.133		
Total	306.123	519			

Note: a. Dependent Variable: Overall Satisfaction

b. Predictors: (Constant), REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1
Source: Author's Calculation from Primary Data

The above table apparently exhibits that the regression model developed is significant at 5% level of significance (as the value of F 0.00< 0.05). The value of R square is 0.77 (i.e.>0.40) which is satisfactory for defining the positive strength of relationship between overall satisfaction and other independent variables. Table 11 provides the summary of unstandardized and standardized coefficients taking overall satisfaction level as a dependent variable.

Table 11: Unstandardized and Standardized Coefficients

Model	Unstand. Coff.		Stand. Coff.	T	Sig.
	B	Std. Error	Beta		
(Constant)	3.777	.016		235.945	0.000
REGR factor score 1 for analysis 1	.404	.016	.526	25.223	.000
REGR factor score 2 for analysis 1	.293	.016	.381	18.267	.000
REGR factor score 3 for analysis 1	.456	.016	.594	28.487	.000

Note: Dependent Variable: Overall Satisfaction
Source: Author's Calculation from Primary Data

Unstandardized and standardized coefficients reveal the following regression equation:
Overall Satisfaction = 3.777 + 0.404 Factor 1 + 0.293 Factor 2 + 0.456 Factor 3
Therefore, it may be concluded that factor 1 is most prominent factor among all the three factors to influence the overall satisfaction of rural customers from e-banking.

CONCLUSION AND SUGGESTIONS

Undoubtedly e-banking is a strong catalyst for the economic development and in order to enhance the propensity to use e-banking as a primary channel, it must be tailored suiting to the need of the customers. The present paper analyzed level of satisfaction of rural customers from 17 variables related to the qualitative aspects of e-banking. The study found that rural customers are quite satisfied with the provisions of updating, accuracy of transactions and convenience. However, they were not found to be much satisfied with the regulatory mechanism and compensation given in case of fraudulent attack by unauthorized person or error by bank. Further they expect better services should be provided for differently able persons. The study found that more than 60% of surveyed population comprises of non-graduates and approximately 72% feel uncomfortable in transacting with e-banking because of language problem. Most of them were also not aware of multi-language provision in e-banking.

Therefore, in order to enhance the propensity to use e-banking channels in rural areas the use of regional languages during transactions should be promoted as well as publicized.
The availability of bio-metric and voice-call system for making transactions through e-banking like while using ATM may have magnifying results for securing patronage of rural customers particularly that of illiterate section.

To mitigate the fear of losing the money due to phishing or any other type of fraudulent attempt by unauthorized person better knowledge may be provided to them through advertisement campaign. As some of the villages of study do not have adequate facility for e-banking (like availability of ATM, smooth networking and electricity supply for internet banking) concrete steps should be taken to overcome these problems.

Further through using good interpersonal relation with customers and proper answering to their doubts, banks can motivate them to use e-banking as their primary banking channel.

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