



## Review of E-Banking System and Exploring the Research Gap in Indian Banking Context

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**Abstract:** With the rapid set of modernization in commercial products, financial institutions are also not left out from modernizing their business structure. Recent innovation in internet technology and client-side application has curved the path for a brand new method of accessing banking services by the consumer at the comfort of house. One such innovative product in banking is electronic banking (*e-banking*) that is the prime focus of this paper. The study shows that *e-banking* has multi-dimensional advantages to individual as well as corporate, however, it is not without certain challenges and issues for the security and interest of customers. Although there are various work done in the past for exploring the success of *e-banking* on various scale, it is strongly felt that very few studies were focused on Indian Banking Sector systematically and comprehensively. Therefore, the paper will highlight the various aspects of *e-banking* system from researcher's viewpoint and identify the research gap in Indian context.

**Keywords:** *E-banking, online banking, internet banking, banking sector of India, issues in internet banking.*

### 1. INTRODUCTION

In India, banks and also other money related substances entered the universe of data innovation and with Indian Financial Net. It is a wide territory satellite based system utilizing Very Small Aperture Terminals innovation, was together set up by the Reserve Bank and Institute for Development and Research in Banking Technology in June 1999. The Indian Financial Network (INFINET) which at first involved just general society segment banks were opened up for interest by different classes of individuals. The primary arrangement of uses that could advantage significantly from the utilization of mechanical advances in the PC and interchanges zone identify with the Payment frameworks which shape the life saver of any managing an account action. The procedure of changes in installment and settlement frameworks has picked up energy with the usage of undertakings, for example, NDS ((Negotiated Dealing System), CFMS (Centralized Funds Management System) for better supports administration by banks and SFMS (Structured Financial Messaging Solution) for secure message exchange. This would bring about assets exchanges and finances related message exchange to be directed electronically crosswise over banks utilizing the medium of the INFINET. Arranged managing framework (NDS), which has ended up operational since February 2002 and RTGS (Real Time Gross Settlement framework) booked towards the end of 2003 are other significant advancements in the zone. Web has essentially affected conveyance channels of the banks. Web has developed as a critical medium for conveyance of managing an account items

and administrations. Point by point rules of RBI for Internet Banking has arranged the fundamental ground for development of Internet Banking in India. The Information Technology Act, 2000 has given legitimate acknowledgment to creation, trans-mission and maintenance of electronic (or attractive) information to be dealt with as substantial proof in a court of law, aside from in those territories, which keep on being administered by the procurements of the Negotiable Instruments Act, 1881. As expressed in RBI's Annual Monetary and Credit Policy 2002-2003: "To profit from such electronic message exchanges, it is vital that banks offer adequate consideration on the computerization and systems administration of the branches arranged at industrially vital focuses on a period bound premise. Intra-city and intra-bank systems administration would encourage intending to the "last mile" issue which would thusly bring about speedy and effective assets exchanges the nation over". Section 2 discusses about the review of literature and research gap has been illustrated in Section 3, Research methodology has described in Section 4, Result Discussion has presents in Section 5 and concussion has illustrates in section 6.

## 2. REVIEW OF LITERATURE

**Wu and Yang** (2012) reviews and summarizes the methodology, service quality dimensions, suggestions and limitations of seven e-banking service quality studies conducted in seven countries. The primary contribution of this study is to present a holistic view of e-service quality for e-banking with embedded cultural factor and to provide a rigorous measurement scale development procedure applicable to areas other than e-banking.

**Santhiyavalli** (2011) has conducted a study Customer's perception of service quality of State Bank of India. To support the objective of the study, SERVQUAL technique based on the model developed by A. Parasuraman et al (1988) was adopted.

**Kumar and Garg** (2012) discussed their study in order to look into the experience of net banking users with intent to devise the ways to spread the net banking usage. The study will make an attempt to profile the present net banking users so that marketing efforts could be well designed to target and segment the market properly. On the basis of above analysis, it can be concluded that perception of customer towards internet banking service quality largely depends on ease of use, efficiency, trust and security, accessibility, Problem handling and customer contacts. From among the different factors, ease of use and customer contact come out to be the most influential factors which means that majority respondents want that using net banking should be easy and user friendly and in case of any problem, help should be available thru customer contact services any time.

**Kadir, Rahmani, and Masinaei** (2011) conducted a study to identify the effects of services offered by banks through online media and ATMs on customer satisfaction. These dimensions consist of ease of navigation, trust or assurance, privacy, responsiveness, reliability, customization, aesthetic design, efficiency, access, flexibility, and price knowledge. 3 out of 11 dimensions of ESERVQUAL model are found unable to respond customers' need. These dimensions are responsiveness, customization, and flexibility for E-SERVQUAL model.

## 3. RESEARCH OBJECTIVES

The prime aim of the proposed research is to perform an investigational analysis to understand the problems and prospects of electronic banking system and thereby propose a comprehensive and systematic study that is in practice considering Kerala as case study. In order to accomplish the proposed aim, following are the research objectives:

1. The study intends to identify the loyalty of customers towards their Banks and the satisfaction they receive after using e-business services of Banks in Kerala.
2. The study intends to explore the nature of customer's behavior towards online banking and their growing tendency towards the online financial institutions.

3. The study intends to evaluate the usage pattern of various banking tools
4. The study intends to evaluate service efficiency of E-Banking
5. The study intends to identify the problems of E-Banking services that customers are facing

The assignment of data collection and processing ran from October 2013 to September 2014. Field research was carried out in Kerala, South-West region of India on the Malabar Coast over a period of five months. The mixed research strategy is adopted where both qualitative and quantitative techniques were considered aimed at producing in-depth knowledge about the topics of significance and reliability of E-Banking being investigated. The research survey parameters are as shown in Table 1.

#### 4. RESEARCH METHODOLOGY

**Table 1**  
**Research Survey Parameters**

<i>Research Methodology</i>	<i>Qualitative and Quantitative</i>	
Total participants	494	
Participant Sampling	432 Customers	62 Employees
Universe	Kerala (India)	
Tools Used	Descriptive Statistics, T-test, F-test, Correlation analysis, Reliability Statistics, Cross Tabulation, Chi-Square test.	
Questionnaire Design	Semi-structure questions for customers Semi-structure questions for employees	

##### 4.1. Hypothesis

**The constructed hypothesis of the proposed system is as follows:**

1. E-Banking policy has no significant impact on Customer Loyalty
2. E-Banking policy has no significant impact on Customer Satisfaction
3. E-Banking policy has not significantly increased the Service Efficiency of Banking

##### 4.2. Sources of Data

To satisfy the objective of the study both primary and secondary data have been collected.

1. **Primary data:** The primary data for the proposed study will be the participants involved in the study. The participants of the study are 432 Customers associated with the 4 Banks selected for the study and 62 Employees working in those selected Banks.
2. **Secondary data:** The secondary data will consist of published reports regarding various issues, challenges, and even positive aspects of electronic banking in Kerala and related aspects. The secondary data will consist of:
  3. Published studies in various international and national journals and conference proceedings, those studies which deal with E-Banking.
  4. Articles published in periodicals relating to the above subjects.
  5. Information contained in social networking websites and various public forums related to E-Banking in India and so on.
  6. The research work as well as data collection will be conducted in Kerala.

### 4.3. Calculation of Sample Size

The study undertakes **Krejcie and Morgan Table** to determine the sample size for the study (please refer Appendix-7). Hence, the formula for estimating sample size is:

$$S = X^2NP(1 - P) / d^2(N - 1) + X^2P(1 - P)$$

Where,

S = Required sample Size,

N = The population size

X<sup>2</sup> = Table value of chi square for 1 degree of freedom at the desired confidence level

P = Population,

d = degree of accuracy

From Krejcie and Morgan Table (Krejcie & Morgan, 1970), it can be seen that, population size considered for customers is 600 and for employees is 72. The margin of error considered for the study is 0.025. Therefore, 432 customers and 72 employees will be selected for the study. Out of 72 employees, 10 response sheets were partially filled. Hence, for better accuracy and in-depth investigation of the study, the sample size considered for the study is 432 customers and 62 employees *i.e.* 494 total sample size. The universe of the study is Kerala and the study considers Customers and Employees from the selected four Banks.

## 5. RESULT DISCUSSION

The total sample size of the present study comprises of 494 participants out of which 432 participants are customers and 62 participants are employees working in various banks in Kerala. The outcome of the study is considered for statistical evaluation after collecting the final survey outcomes from the targeted respondents of the study. Statistically, mean, standard deviation and range of scores for all the variables were computed. T- Test and F- Ratio were calculated for the groups to identify the mean difference between the groups. This section discusses about the descriptive statistics of demographic parameters *e.g.* age, gender, salary of employees and name of bank for the participants from 4 banks (State Bank of Travancore, S.B.I, ICICI, and HDFC Bank respectively). The above Table 2(a) shows the demographic analysis of the age of the participants involved in the study. The Table shows that majority of the participants of the State Bank of Travancore are within 30-35 years old, while that of S.B.I is 35-40 years old. ICICI's participants come under the age range of 30-35 years in majority followed by majority of the participants in HDFC bank are found in the age range of 25-30 years old.

**Table 2(a)**  
**Demographic analysis of Age**

	25-30 Years	30-35 Years	35-40 Years	40-45 Years	Above 45 Years
State Bank of Travancore	3	6	4	2	1
S.B.I	4	3	6	2	1
ICICI	3	7	3	2	0
HDFC	5	4	3	3	0

**Table 2(b)**  
**Demographic analysis of type of account**

	Savings A/c	Current A/c	Demat A/c	Loan A/c
State Bank of Travancore	49	40	33	40
S.B.I	38	30	21	21
ICICI	47	11	19	13
HDFC	21	19	13	17

The above Table 2(b) shows demographic analysis of participant’s type of account.

The analysis outcome shows that majority of participants in State Bank of Travancore have Savings A/c followed by current A/c and Loan A/c. Majority of participants in State Bank of India have Savings A/c followed by Current A/c. Majority of participants in ICICI Bank have Savings A/c followed by Demat A/c. Majority of participants in HDFC Bank have Savings A/c followed by Current A/c.

**Table 3**  
**Cronbach Alpha Test for Reliability efficiency**

<i>Factors</i>	<i>Cronbach's Alpha</i>
Customer Loyalty	.954
Customer Satisfaction	.920
Service Efficiency	.866

### 5.1. Hypothesis Testing of Customer Loyalty

**Table 4**  
**One-Sample t-Test**

	<i>t</i>	<i>df</i>	<i>Sig. (2- tailed)</i>	<i>Mean Difference</i>	<i>Test Value = 3</i>	
					<i>95% Confidence Interval of the Difference</i>	
					<i>Lower</i>	<i>Upper</i>
State Bank of Travancore	4.452	34	.000	18.829	10.23	27.42
S.B.I	4.939	34	.000	18.886	11.11	26.66
ICICI	3.544	34	.001	19.114	8.15	30.07
HDFC	3.997	34	.000	18.886	9.28	28.49

**Table 5**  
**One-Way ANOVA**

		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
State Bank of Travancore	Between Groups	9609.829	4	2402.457	6.174	.001
	Within Groups	11673.143	30	389.105		
	Total	21282.971	34			
S.B.I	Between Groups	7397.543	4	1849.386	5.547	.002
	Within Groups	10002.000	30	333.400		
	Total	17399.543	34			
ICICI	Between Groups	9988.400	4	2497.100	3.043	.032
	Within Groups	24619.143	30	820.638		
	Total	34607.543	34			
HDFC	Between Groups	9516.400	4	2379.100	4.185	.008
	Within Groups	17055.143	30	568.505		
	Total	26571.543	34			

Some of the interesting outcomes can be seen in Table 6, where it can be seen that  $p$ -value scores for State Bank of Travancore as well as for S.B.I and HDFC Bank are .001, .002, and .008. As the  $p$ -value is less than the significance level of 0.05, the null hypothesis of the study is rejected as *Banks E-Banking policy has no significant impact on Customer Loyalty*.

## 5.2. Hypothesis Testing of Customer Satisfaction

Table 6 highlights the outcome of one-sample  $t$ -test considering the test value as 3. At 95% confidence interval, the lower limit value is found to be 11.7569, while the higher limit is found to be 13.4387. The  $t$ -value found under this evaluation for State Bank of Travancore is found to be 7.166,  $t$ -value for S.B.I is 6.486,  $t$ -value for HDFC is found to be 6.271, while  $t$ -value for ICICI was found to be 5.405. The degrees of freedom for this part of the analysis was found to be uniform as 84, as we chose the same number of participants who are associated with the four Banks. The table also show the 2-tailed significance value, where the  $p$ -value for is .000. It can be observed that  $p$ -value for all the customers associated with the 4 banks is found to be less than the significance level of 0.05, for which reason the null hypothesis of the study is rejected on potential statistical evidence. Therefore, it can be now strongly said that *Banks E-Banking policy has no significant impact on customer satisfaction* is strongly rejected

**Table 6**  
**One-Sample  $t$ -Test**

	$t$	$df$	Sig. (2- tailed)	Mean Difference	Test Value = 3	
					95% Confidence Interval of the Difference	
					Lower	Upper
State Bank of Travancore	7.166	84	.000	18.60000	13.4387	23.7613
S.B.I	6.486	84	.000	18.60000	12.8974	24.3026
ICICI	5.405	84	.000	18.60000	11.7569	25.4431
HDFC	6.271	84	.000	18.60000	12.7020	24.4980

**Table 7**  
**One-Way ANOVA**

		Sum of Squares	$df$	Mean Square	$F$	Sig.
State Bank of Travancore	Between Groups	10807.341	4	2701.835	5.797	.000
	Within Groups	37289.059	80	466.113		
	Total	48096.400	84			
S.B.I	Between Groups	10583.341	4	2645.835	4.398	.003
	Within Groups	48131.059	80	601.638		
	Total	58714.400	84			

		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
ICICI	Between Groups	25456.753	4	6364.188	8.616	.000
	Within Groups	59091.647	80	738.646		
	Total	84548.400	84			
HDFC	Between Groups	11386.165	4	2846.541	4.429	.003
	Within Groups	51420.235	80	642.753		
	Total	62806.400	84			

Table 7 highlights the statistical outcome of one-way analysis of variance test (ANOVA) considering all the customers associated with the four banks are independent factor and customer satisfaction is the dependent factor. The outcome shows *f*-ratio of State Bank of Travancore is 5.797, for S.B.I *f*-ratio being 4.398, ICICI *f*-ratio being 8.616, while that of State HDFC Bank is 4.429. The *p*-value of HDFC, State Bank of Travancore is found to be .000 and S.B.I and HDFC is found to be .003 which is less than significance level of 0.05. This eventually states the rejection of null hypothesis for State Bank of Travancore, S.B.I, as well as ICICI and HDFC to the factor of quality of customer satisfaction. The outcome of this part of the study eventually accepts the alternative hypothesis that the *Banks E-Banking policy has significant impact on customer satisfaction* is strongly.

### 5.3. Hypothesis Testing of Service Efficiency

Table 8 shows the statistical outcome of one-sample *t*-test considering the test value to be 3. The observed outcomes for *t*-test for State Bank of Travancore are .574, *t*-value for S.B.I is .536, and *t*-value for ICICI is .000, while *t*-value for HDFC is .078. All the observations are carried out with 84 degrees of freedom due to uniform number of participants for the study. The table also highlights the 95% confidence interval.

**Table 8**  
**One-Sample *t*-Test**

	<i>t</i>	<i>df</i>	<i>Sig. (2- tailed)</i>	<i>Mean Difference</i>	<i>Test Value = 3</i>	
					<i>95% Confidence Interval of the Difference</i>	
					<i>Lower</i>	<i>Upper</i>
State Bank of Travancore	.574	84	.567	.200	-.49	.89
S.B.I	.536	84	.594	.200	-.54	.94
ICICI	.000	84	1.000	.000	-.92	.92
HDFC	.078	84	.938	.236	-.87	.94

The table also highlights the 2-tailed significance value, where *p*-value for HDFC is .008, *p*-value of S.B.I is .021, *p*-value for ICICI is .036, and *p*-value for State Bank of Travancore is .003. It can be observed that statistical value of *p* is less than the standard significance level of .05, under which circumstances the null hypothesis is rejected. Therefore, it can be said that null hypothesis bearing the statement that the existing educational system of Republic of Maldives has no significant ill impact on the *work performance* is rejected on strong background of *p*-value comparison. The next part of the analysis is directed to one-way analysis of variance test (ANOVA) under which the hypothesis and significance of the study principle will be tested.

**Table 9**  
**One-Way ANOVA**

		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
State Bank of Travancore	Between Groups	264.424	4	66.106	8.797	.000
	Within Groups	601.176	80	7.515		
	Total	865.600	84			
S.B.I	Between Groups	396.541	4	99.135	13.239	.000
	Within Groups	599.059	80	7.488		
	Total	995.600	84			
ICICI	Between Groups	618.824	4	154.706	13.857	.000
	Within Groups	893.176	80	11.165		
	Total	1512.000	84			
HDFC	Between Groups	515.305	4	128.826	10.855	.000
	Within Groups	937.588	79	11.868		
	Total	1452.893	83			

Table 9 shows the one-way ANOVA test, where  $f$ -ratio for State Bank of Travancore is 8.797,  $f$ -ratio for S.B.I is 13.239,  $f$ -ratio for ICICI is 13.857, and  $f$ -ratio for HDFC is 10.855. Evidently, the  $p$ -value found in this evaluation is .000 in case of all the 4 banks that strongly rejects the null hypothesis and suggest that banks E-Banking policy has significantly increased the service efficiency of banking.

## 6. CONCLUSION

The study had conducted qualitative as well as quantitative investigation regarding the problems and prospects of E-Banking among the customers residing in the state of Kerala, India. The results showed that all the three variables Customer Loyalty, Customer Satisfaction & Service Efficiency had positive influence on internet banking use. The outcome of the study states that E-Banking has a significant impact on Customer Loyalty and Customer Satisfaction as well as the Service Efficiency of Banking system.

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