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Electronic Financial Service System Adoption in Kerala: A Comparison of Public and Private Sector Banks

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Abstract

Though Electronic Financial Service System(EFSS) is becoming more popular among customers in Kerala, there is still no evidence of the nature and extent of its adoption. Customer awareness regarding EFSS and its usefulness seems to need more investigation to spread its utilization among all customers. In this context, it is imperative to conduct a study to understand the EFSS adoption with respect to banks in Kerala. The researcher intends to compare the EFSS adoption among customers of public and private sector banks in Kerala. Discriminant analysis was used to compare the attitude of customers towards the Electronic Financial Service System adoption of public and private sector banks. The predictor variables are perceived usefulness, perceived ease of use, trust, perceived risk and security concerns, customer awareness, technological self-efficacy, accessibility, terminology clarity, response time, perceived innovativeness and system reliability. The study revealed that there exists significant difference in the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks.

Keywords: Electronic Financial Service System; Customer Adoption; Discriminant Analysis; Private and Public Sector Banks.

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1. Introduction

Electronic Financial Service of bank involves the use of electronic devices for delivery of banking products and services to customers. Electronic Financial service system (EFSS) offers various banking products and services such as Automated Teller Machine (ATM) including Cash Deposit Machine (CDM), credit/debit/smart cards, mobile banking, phone banking, internet/online banking, Electronic Fund Transfer (EFT), Electronic Clearing Services (ECS), Electronic Data Interchange (EDI), demat account, digital signature, corporate banking terminals, core banking solutions, e-wallets, micro payments, aadhar based payments etc. througha digital platform. Electronic Financial service System is basically a technology enabled system that helps any customer with a computer facility and a browser to be connected to his bank's website to perform any of the virtual banking functions. In Electronic Financial Service System, each bank has a centralized database that is web-enabled. All the electronic financial services that the bank has permitted on the internet platform are displayed in the bank's website. When the branch offices of bank are interconnected through terrestrial or satellite links, there would be no physical identity for any bank branches. Therefore, electronic financial service of banks has become a borderless activity permitting anytime, anywhere and anyhow electronic banking transaction. EFSS can be defined as a web-based system through which customer is expected to perform all digital transactions such as depositing and withdrawing of cash, viewing account balance and transaction histories, paying bills, transferring funds, ordering cheques, paying utility bills, availing electronic customer relationship management facilities, managing stock trading and other investments activities.

Electronic Financial Service System provides a number benefits to banking customers; ease of use, convenience, lower cost of transactions etc. to name a few, as it facilitates transactions, through internet, telephone or other electronic devices. Electronic finance has become one of the most essential technological changes in the finance industry. E-finance can be defined as the provision of financial services and markets using electronic communication and computation. In a broad sense, e-finance includes electronic payment, e-trading, and Electronic Financial Information System. Mobile phone penetration has reached almost 85 per cent which in turn marked a remarkable increase the number of households with internet connectivity. Banks are acknowledging this change and almost all banks are in the process of coming out with online, mobile and social banking extensions to their customers and thereby responding to the changing consumer demographics. Banks leveraging technology can develop innovative customer solutions to attain growth with profitability within the

framework of sound risk-management practices. Techno-savvy banks are focussing on online services to initiate a new era in relationship management to create one to one relationships as well as one to many relationships to enhance their competitive advantage. Recent developments in critical areas of information technology have changed the way banks manage their customer relationships. Customer Relationship Management (CRM) has been in India for over a decade but its penetration into the industry in general and financial services sector in particular has not been very impressive. With the entry of many foreign banks and the setting up of many private sector banks, there is an increased competition in the banking sector to attain a competitive advantage. Banks have slowly but surely realized the importance of building and maintaining customer relationships. CRM is a holistic strategy which can help the banks to become customer-oriented and implement customer-focused strategies, which in turn will help them build long-lasting relationships with the customers and hence increase their profits.

Though EFSS is becoming more popular among customers in Kerala, there is still no empirical evidence of the nature and extent of its adoption. The awareness of EFSS and its usefulness seems to need more investigation to spread its utilization among all customers. In this context, it is imperative to conduct a study to understand the EFSS adoption with respect to banks in Kerala. The researcher intends to compare the EFSS adoption of public and private sector banks in Kerala**.** So the research question addressed in this study is:

- Is there any difference in the customer adoption of Electronic Financial Service System offered by Public and Private sector banks in Kerala?
- To answer the research question, the following hypothesis was formulated in this study
- There is no significant difference in the customer adoption of Electronic Financial Service System between the Public and Private sector banks.

2. Background of the Study

Ramola (2015) examined the adoption of internet banking in Tamil Nadu by identifying factors that explain the intention to use internet banking in the light of the UTAUT model in Tamil Nadu. The data were collected from new age private sector bank customers of South India. Multiple Regression analysis was employed to get the results. The analysis indicated that there was no significant influence of age on the adoption of internet banking. Amola (2016) analysed the factors affecting customer adoption of mobile banking service in Gujarat.

For this purpose, a descriptive study was conducted among a sample size of 200 bank account holders belonging to public as well as private sector banks who were using mobile banking services. Security issues associated with mobile banking have deterred the customers from approaching m-banking solutions. It is also found that customers using mobile banking enjoyed the advantages of this system such as time-saving, less expensive, convenience, safety, operational simplicity and ease of navigation. Hussein (2016) evaluated the adoption of Internet banking by customers of Jordanian commercial banks. A total number of 476 customers having accounts in thirteen local commercial banks and using internet banking facility of various banks were selected for the study. The self-administered questionnaire used 5-point scale to elicit primary data. Regression analysis was employed to determine the relative influence of perceived privacy and security, perceived ease of use, service quality, customer trust, and customer feedback on internet banking adoption. The result of the study shows that all the independent variables have significant impact on internet banking adoption and the best predictor of the adoption was the website quality followed by customer trust. Krishna & Aloysius (2016) examined mobile banking service adoption in rural area of Karnataka. Factors selected were subjected to reliability, exploratory factor analysis (EFA), multiple regression, and interaction analysis. For this purpose 959 samples were collected. Multiple regression–interaction analysis reveals that age and gender moderated attitude's path toward Behavioural Intention. The result of the study showed that mobile banking technology improves job performance compared with traditional banking methods. If mobile banking service is easier to learn, rural people would adopt it. Perceived Riskhad a negative relationship with BI indicating risk perception of rural people. Mansour et.al. (2016) evaluated the adoption level of internet banking among the customers of Omani banks. The technology acceptance model (TAM) was adopted to examine the effect of perceived usefulness (PU), and perceived ease of use (PEOU) on clients' intention to adopt internet banking. The multiple regression was used to analyse the collected data. The findings revealed that the TAM model explained around 56 per cent of the variance in clients' intention to adopt internet banking services. Both PU and PEOU have a significant influence on clients' acceptance of internet banking.

Bruce et.al. (2017) investigated the electronic banking literature by applying the modified Technology Acceptance Model (TAM) in an under-researched Zambian context. The study evaluated the influence of e-banking technology's perceived usefulness, perceived ease of use and trust on e-banking adoption. Data were collected from 222 bank customers from two of Zambia's largest cities. The findings revealed that the modified TAM model was applicable in the Zambian context and that perceived usefulness, ease of use and trust significantly

and positively influenced the attitude towards e-banking. Aftabparvez, Shahnawaz & Ivan (2017) examined the significant factors influencing consumers' intention to adopt online banking in the Malaysian context. Survey samples of 200 respondents were chosen which included male and females in equal proportions. Self-administered questionnaire is used for data collection. The factors such as convenience, trust, perceived ease of use, and perceived usefulness were found to influence internet banking adoption. At the same time rest of the factors, such as social influence, gender and age group, etc. do not impact consumer intention to adopt online banking services. There exists gap in the literature in terms of studies conducted to compare the adoption of EFSS among private and public sector banks. This study intends to fill this gap.

3. Materials and Methods

The population for this study consists of individual banking customers who use EFSS of Public and Private Sector banks in Kerala. In this study, the individual banking customer who is currently a user of EFSS is chosen as the sample unit. The respondents are identified through different stages. At the first stage of sample selection, the banks were divided in to two categories –Public and Private sector banks. The categorisation of banks by RBI for the purpose of assessment of performance is followed in this study. Public and Private Sector banks have strong branch network in Kerala. Then banks were selected from each of these categories. The selection of sample banks is based on two criteria, first, Bank must be EFSS enabled and the bank must be in the forefront in harnessing technology. Second, banks must have highest number of urban bank branches in Kerala as per RBI report 2016, since it was found from the literature that EFSS is found to be clearly favoured by customers living in urban areas (Michael and Thomas, 2009). Accordingly SBI, Canara Bank and Punjab National Bank were selected from Public Sector banks. Federal bank, South Indian Bank, HDFC were selected from private sector banks. To accommodate geographical importance, in the second stage of sample selection one district each from northern, central and southern regions was selected and accordingly North Kerala is represented by Kozhikode, Central Kerala by Ernakulum and South Kerala by Thiruvananthapuram. These three districts were selected as they are having maximum number of urban bank branches in their respective region as per RBI statistics. Details of EFSS users could not be obtained from the banks due to privacy issues and competition reasons. Hence, the actual study population was not known to select the samples for the study. Hence, the researcher selected 100 customers from each selected bank in the third stage. Thus, the sample size of the study is determined as 900, representing the 3 selected public sector banks from the 3 regions in Kerala and another 900 to represent the 3 selected private

sector banks from the3 regions in Kerala. The samples of the study were selected from the branches of the selected banks, based on the convenience of the respondents. Hence, the total sample size of the study is 1800. The researcher circulated the structured questionnaire to 1800 customers for the purpose of data collection. Out of 1800 questionnaires, 1627 questionnaires were collected back and the same was considered for the study. Hence the response rate of the survey was about 90 percent by eliminating the 173 incomplete questionnaires. For the purpose of analysing the customer adoption, the study used variables such as Perceived usefulness (PU), Perceived ease of use (PEU), Perceived risk (PR), trust (TR), customer awareness (CA), technological self-efficacy (TSE), perceived accessibility (PA), terminology clarity (TR), system reliability (SR), perceived innovativeness (PI) and response time (RT).The collected data were validated and tested for reliability by employing various statistical tools. The collected data were analysed using discriminant analysis to test the hypothesis developed from the literature review in tune with the objective of the study.

4. Results and Discussion

Results and discussion section is presented under three heads, namely, sample profile, reliability and validity and discriminant analysis. Sample profile gives an idea about the demographic characteristics of the sample, including age, gender, educational qualification, professional status and monthly income.

4.1 Sample Profile: Demographic Profile of the Sample is given in Table 1.

Table1: Gender-wise Sample Profile

Gender	Frequency	Per cent
Male	966	59.3
Female	661	40.7
Total	**1627**	**100**

Source: Primary Data.

Table 1 deals with the gender of the sample customers of Public and Private sector banks. It reveals that out of the 1627 total respondents, 966 are male customers and 661 are female customers. Hence the majority of the sample customers of Public and Private sector bank are male.

Age-wise classification of the respondents is given in Table 2.

Table 2: Age of the Sample Customers

Age	Frequency	Per cent
Below 20	33	2.02
21 – 30	331	20.34
31 – 40	582	35.78
41 – 50	277	17.02
51- 60	319	19.7
Above 60	85	5.23
Total	**1627**	**100**

Source: Primary Data.

Table: 2 deals with the age of the selected customers of Public and Private sector bank. It reveals that out of the 1627 total respondents, 33 customers belongs to the age category of below 20, 331customers belongs to the age category of 21 - 30 years, 582 customers belong to the age category of 31 - 40 years, 277 customers belong to the age category of 41 – 50 years, 319 customers belong to the age category of 51 – 60 years and 85 customers belong to the age category of above 60 years. Hence the majority of the selected customers of Public and Private sector bank belongs to the age category of 31 - 40 years.

Educational Qualification of the Selected Customers is given in Table 3.

Table 3: Educational Qualification of the Sample Customers

Educational Qualification	Frequency	Per cent
Primary Education	139	8.5
Higher Secondary	154	9.5
Bachelor Degree	589	36.2
Master Degree	431	26.5
Professional	314	19.3
Total	**1627**	**100**

Source: Primary Data.

Table 3 deals with the educational qualification of the selected customers of Public and Private sector bank. It reveals that out of the 1627 total respondents,

139 customers were have primary education, 154 customers have higher secondary education, 589 customers have bachelor's degree, 431 customers have master's degree and 314 customers are professionals. Hence, the majority of the selected customers are graduates.

Professional status of sample customers is depicted in Table 4.

Table 4: Professional Status of Customers

Profession	Frequency	Per cent
Govt. Employee	447	27.5
Private Employee	352	21.6
Business	613	37.7
Student	168	10.3
House wife	47	2.9
Total	**1627**	**100**

Source: Primary Data.

Table 4 reveals that out of the 1627 total respondents, 447 customers are government employees, 352 customers are private employee, 613 customers are business man, 168 customers are students and 47 customers are house wife. Hence, the majority of the selected customers are business people.

Monthly Income of the sample customers is given in Table 5.

Table 5:Monthly Income of the Customers

Monthly Income	Frequency	Per cent
No Income	65	4.02
Below 20,000	184	11.34
20,000 – 30,000	257	15.78
30,000 – 40,000	212	13.02
40,000 – 50,000	321	19.7
50,000 – 60,000	346	21.3
Above 60,000	242	14.84
Total	**1627**	**100**

Source: Primary Data.

Table 5 deals with the monthly income of the selected customers of public and private sector banks. It reveals that out of the 1627 total respondents, 65 customers have no monthly income, 184 customers have below Rs.20,000 monthly income, 257 customers have monthly income between Rs.20,000 and 30,000, 212 customers have monthly income between Rs.30,000 and 40,000, 321 customers have monthly income between Rs.40,000 and 50,000, 346 customers claimed to have monthly income between Rs.50,000 and 60,000 and 242 customers reported to have above Rs.60,000 as monthly income. Hence, it is found that most of the customers have monthly income between Rs.50,000 and 60,000.

4.2 Reliability of the Constructs: Reliability means the ability of measuring instrument to give accurate and consistent result. It measures the relative absence of errors in a measuring instrument, as less the error the more stable and more accurate the data. Internal consistency is one of the methods to measure the scale reliability by assessing the commonness of a set of item that measure a particular construct and here the researcher used the Cronbach's alpha to test the internal consistency in measuring the scale. If the Cronbach's alpha is more than 0.70, the scale is reliable. Reliability of the constructs used in the study are given in Table 6.

Table 6:Assessment of Construct Reliability

Construct	Cronbach's Alpha (α)
Perceived Usefulness	0.806
Perceived Ease of Use	0.841
Trust	0.826
Perceived risk and Security Concerns	0.765
Customer Awareness	0.829
Technological self-efficacy	0.846
Accessibility	0.847
Terminology clarity	0.721
Response time	0.789
Perceived Innovativeness	0.874
System Reliability	0.814

Customer Support Problems	0.896
Service Problems	0.732
Web based Problems	0.881
Password Problems	0.811
EFSS Adoption	0.854

Source: Reliability Analysis, SPSS 21.

It is identified from the table 6, that the Cronbach's alpha for all the constructs is higher than 0.70, which confirms internal consistency among the items in the scale. So, it is inferred that all the constructs are reliable and fit for further analysis.

4.3 Discriminant Analysis: Discriminant Analysis is a statistical technique that satisfies the difference between two or more groups with respect to several variables simultaneously and provides a means of classifying any object or individual into the group with which it is closely associated and to infer the relative importance of each variable used to discriminate between the different groups. Alinear Discriminant function is the linear combination of predictor variables weighted in such a way that it discriminates among groups with least error.

Discriminant analysis is used to compare the attitude of customers towards the Electronic Financial Service System adoption of Public and Private sector banks. The predictor variables are perceived usefulness, perceived ease of use, trust, perceived risk and security concerns, customer awareness, technological self-efficacy, accessibility, terminology clarity, response time, perceived innovativeness and system reliability.

Table 7: Box's M Test Results for Suitability of Data

Box's M		753.840
F	**Approx.**	22.328
	Degree of Freedom 1	54
	Degree of Freedom 2	2331730.184
	Significance	0.000
Tests null hypothesis of equal population covariance matrices.		

Source: Box's M Test, SPSS 21.

Table 7 shows the Box's M Test Results for suitability of data for the Discriminant analysis. The significance of F value is less than 0.05 (0.000) which indicates that the data is suitable for discriminant analysis.

Table 8: Tests of Equality of Group Means

Variables	Wilks' Lambda	F	Degree of Freedom 1	Degree of Freedom 2	Significance
Perceived Usefulness	0.360	31.785	1	1625	0.000
Perceived Ease of Use	0.496	22.923	1	1625	0.002
Trust	0.399	12.487	1	1625	0.000
Perceived risk and Security Concerns	0.319	26.134	1	1625	0.001
Customer Awareness	0.427	10.056	1	1625	0.000
Technological self-efficacy	0.530	23.382	1	1625	0.011
Accessibility	0.489	13.109	1	1625	0.001
Terminology clarity	0.478	17.118	1	1625	0.000
Response time	0.619	16.390	1	1625	0.012
Perceived Innovativeness	0.525	29.567	1	1625	0.002
System Reliability	0.492	18.771	1	1625	0.000

Source: Tests of Equality of Group Means, SPSS 21.

Wilks' lambda is the ratio of the within-groups sum of squares to the total sum of squares. Wilks' lambda is very small for Perceived risk and Security Concerns (0.319), Perceived Usefulness(0.360) and Trust (0.399) which means that there is a strong group difference between the customers of public and private sector bank. Thus the mean values of Perceived risk and Security Concerns, Perceived Usefulness and Trust are significantly different between the two groups. Wilks' Lambda for Customer Awareness (0.427), Terminology clarity (0.478), Accessibility (0.489), System Reliability (0.492), Perceived Ease of Use (0.496), perceived Innovativeness (0.525), Technological self-efficacy (0.530) and Response time (0.619) is comparatively high because there is no much difference in their mean values between the customers of public and private sector bank. The F statistic is a ratio of 'between-groups variability' to the 'within-groups variability'. The value of F ratio with respect to degrees of freedom is very significant which is indicated in the significance value. The significance value of all eleven

predictor variables of customer adoption of Electronic Financial Service System is less than 0.05 indicating that there exists a significant difference in the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks. The above two facts explain that the present segmentation is right and there exists a significant group difference.

Table 9: Eigen Value and Canonical Correlation Analysis

Eigen value	% of Variance	Cumulative %	Canonical Correlation	Wilks' Lambda	Chi-square	Significance
2.315[a]	100.0	100.0	0.816	0.352	122.184	0.000

a.First 1 canonical discriminant functions were used in the analysis.

Source: Canonical Correlation Analysis, SPSS 21.

The Eigen value is the ratio of 'between-groups sum of squares' and 'within-groups sum of squares'. The largest Eigen value corresponds to the maximum spread of the groups' means. Small Eigen accounts for very little of the total dispersion. The Eigen value for the discriminant function is 2.315 that indicates an evidence for a strong function and explains maximum spread of customer adoption of Electronic Financial Service System between the Public and Private sector banks. For the two groups, one discriminant function is formed and there will be one canonical correlation. The canonical correlation is a tool used to measure the relationship between discriminant function and the two groups. The canonical correlation between the discriminant function and the two group is very high which is 0.816, indicating that the function have strong relationship with the customer adoption of Electronic Financial Service System and the two groups. Wilks' lambda for the overall discriminant function is 0.352 which indicates that the group means of customer adoption of Electronic Financial Service System are different between the public and private sector bank. A chi-square transformation of Wilks' lambda is used along with the degrees of freedom to determine the degree of significance. The significance value for the discriminant function is .000 which is less than 0.05 indicating that group means of customer adoption of Electronic Financial Service Systemdiffer significantly between the public and private sector bank.

Table 10 shows the Canonical Discriminant Function Coefficients which are estimated to discriminate the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks and

Table 10: Canonical Discriminant Function Coefficients

Variables	Function
	1.000
Perceived Usefulness	0.495
Perceived Ease of Use	0.071
Trust	0.386
Perceived risk and Security Concerns	0.513
Customer Awareness	0.236
Technological self-efficacy	0.049
Accessibility	0.125
Terminology clarity	0.184
Response time	0.013
Perceived Innovativeness	0.179
System Reliability	0.212
(Constant)	4.813

Source: Canonical Discriminant Function Coefficients, SPSS 21.

the unstandardized coefficients are used to create the discriminant function in the form of following equation,

$$D = a + b_1X_1 + b_2X_2 + b_3X_3 \ldots\ldots\ldots\ldots\ldots + b_{11}X_{11}$$

D = Discriminant Function; a = Constant; b = Unstandardized beta coefficients of each variable and X_1, X_2, X3.....X_{11} are the eleven predictor variables of customer adoption of Electronic Financial Service System. Thus the discriminant function for the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks is formulated as follows:

D = 4.813 + (.495 X Perceived Usefulness) + (.071 X Perceived Ease of Use) + (.386 X Trust) + (.513 X Perceived risk and Security Concerns) + (.236 X Customer Awareness) + (.049 X Technological self-efficacy) + (.125 X Accessibility) + (.184 X Terminology clarity) + (.013 X Response time) + (.179 X Perceived Innovativeness) + (.212 X System Reliability)

The discriminant function coefficient indicates the partial contribution of each variable to the discriminant function. It is used to assess the unique contribution of all eleven predictor variables of customer adoption of Electronic Financial Service System to the discriminant function. It is identified that the unstandardized beta coefficients of each variables of customer adoption of Electronic Financial Service System are positive and which explains that all the eleven predictor variables have direct effect in discriminating the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks. It also revealed that the Perceived risk and Security Concerns, Perceived Usefulness and trust are the highest factors that discriminate the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks. The least factor that discriminate the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks is Response time. Hence the hypothesis is rejected and it is inferred that there is asignificant difference in the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks.

The results of the study shows that the mean values of Perceived risk and Security Concerns, Perceived Usefulness and Trust are significantly different between the two groups of Public and Private sector banks. The significance value of all eleven predictor variables of customer adoption of Electronic Financial Service System is less than 0.05. It indicates that there exists a significant difference in the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks.

Conclusion

The canonical correlation between the discriminant function and the two groups is very high which is 0.816, indicating that the function have strong relationship with the customer adoption of Electronic Financial Service System and the two groups. Wilks' lambda for the overall discriminant function is 0.352 which indicates that the group means of customer adoption of Electronic Financial Service System are different between the public and private sector bank. It is revealed that the unstandardized beta coefficients of each variables of customer adoption of Electronic Financial Service System are positive and which explains that all the eleven predictor variables have direct effect in discriminating the level of customer adoption of Electronic

Financial Service System between the Public and Private sector banks. It also revealed that the Perceived risk and Security Concerns, Perceived Usefulness and Trust are the highest factors that discriminate the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks. The least factor that discriminate the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks is Response time. Hence, it is inferred that there is a significant difference in the level of customer adoption of Electronic Financial Service System between the Public and Private sector banks.

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