

Nexus between Quality of Smartphone Online Banking Application and Customer Retention

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Abstract. Nexus between quality of smart phone online banking application and customer retention is still obscure as per the previous finding, particularly in Matale district. Objectives of the study have three folds, *first*, to identify the extent of quality of the smartphone online banking application as well as customer retention, *second*, to examine the impact of smartphone online banking application on customer retention and *third*, to examine whether quality of the smartphone online banking application varies among demographic factors of customers in selected banks. The study was undertaken by collecting the data from two hundred banking app users of selected banks in Matale via structured questionnaire (Google Form). Univariate, bivariate analysis (correlation and regression) and ANOVA and Independent Sample T test were applied to analyze the data with SPSS. Results showed that, perceived usefulness, perceived ease of use and perceived trust are very high level though the perceived risk is very low level. Further, perceived usefulness, perceived ease of use and perceived trust are positively and significantly associated with customer retention while it has a negative insignificant relationship with perceived risk. Finally, it is concluded that perceived usefulness, perceived ease of use, perceived trust positively and significantly impacts on customer retention, whereas perceived risk insignificant negative impacts on customer retention. Moreover, perceived quality of the smartphone online banking application varies among types of occupation of customers while perceived ease of use is varied among educational level. Findings of the study would be helpful to software designers and managers of banks to further enrich the applications to retain the customers.

Keywords: Quality of Banking App, Perceived Usefulness, Perceived Ease of Use, Perceived Trust, Perceived Risk, Customer retention

1 Introduction

Banking industry is one of the significant and growing industries in the services sector in Sri Lanka. There are many banking categories such as commercial banks, development banks, housing banks, grameen banks, savings banks and more. Each type of banks serves a specific purpose and have been in the forefront in ensuring steady economic growth rates of Sri Lanka over the years [1]. The Sri Lankan banking sector has become as satisfactory during last decades in spite of many bottlenecks and unfavorable business climates. And also, “during the

last two decades, the financial sector has developed rapidly in terms of size, industry structure and the variety of consumer products and services” [2]. Development of Information and Communication Technology (ICT) in the banking sector is the main reason.

The banking sector plays a prominent and active role in the economic life using this technology. Indeed, the information technology enforces the banking industry to improve both its performance and the quality of its services. There has been a rapid and rigorous shift from traditional banking to electronic banking or mobile banking. Competitive banks make significant investment in adopting new technology to align business strategies, enable innovative functional operations and provide extended customer services.

One potential way to utilize the opportunities of digitalization is mobile applications. According to [3], mobile applications are software systems that operate on mobile devices, allowing access to information regardless of time and place. In case of mobile applications, success requires more than just usable technology applications need to engage the customers [4]. Rather than using banking services through the internet it facilitates the banking services through online banking application. In the current world each and every customer willing to download the online banking application on their smart phones and access their bank accounts without stepping to the particular branch of their bank. Hence, customer need to install the relevant application and access by using a user name and a password.

According to the top ranked bankers in Sri Lanka, in 2013 Sampath bank PLC introduced their online banking application named “Sampath Online banking App” as the first Sri Lankan online banking application and in 2014 Commercial bank of Ceylon PLC introduced its app as “Com bank online App.” After that in 2018 Bank of Ceylon and Peoples’ bank have introduced their online banking applications which are known as “B App” And “Waves” respectively.

Considering Matale, there are number of banks, whose attitude to provide quality and competitive banking services to their customers. Due to the intention, most of the banks are currently engaging with the mobile banking in order to facilitate customer services and invest millions of moneys to develop mobile applications. But, customers have created much worries among the banks and questions have arisen, do these banks should invest such big amount of money in introducing new technology-based services to the customers? And will customer embrace it and be with the bank in future?

Do banks willing to face the challenges to retain their technically sound, valuable customers? Since 1990 when technology emerged, the banking industry which was an important segment of the country’s economy became a highly demanding service. However, banks discourage the customers to visit the branch and introduce the new concept of door step banking services first time in Sri Lankan banking history. Because of increasing usage of mobile banking by customers each and every bank adapting different types of strategies to provide mobile banking services. Present customers do not want to spend time exploring, they want to get in, take care of business, and get on with life as quickly as possible. In current age of real-time everything, there is no room for slow online experiences.

However, customers have poor awareness or understanding of these services. Though the internet and smartphone usage have been increased, it is very difficult to persuade these customers switch to these services from their traditional accustomed method of carrying out banking transactions. Therefore, delineating the impact of the mobile banking apps on the customer retention, which is still not in matured implementation will assist the banks in Sri Lanka to persuade their customers to use these services on one hand and also fine tune the development options and implementations by banks concerned on another, in future.

In Sri Lankan context, although many research studies have been conducted about different topics or the problems in relevant to the banking sector, prevalence of the researches related to smart phone online banking application and customer retention are limited. Therefore, this

study is trying to fill this knowledge gap by undertaking an empirical study to examine how smartphone online banking application impact on customer retention in Matale. Hence, following objectives are set;

1. To identify the extent of quality of smartphone online banking application as well as customer retention in selected banks in Matale.
2. To examine the impact of the quality of smartphone online banking application on customer retention of selected banks in Matale.
3. To examine whether quality of smartphone online banking application varies with demographic factors of selected banks in Matale.

2 Literature Review

The existing literature shows that perceived ease of use, perceived usefulness, perceived trust, perceived risk, attitude to use, social image and intention to use are the major factors impacting on usage of banking application-based services. Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her transaction performance [5]. The term, 'Perceived use of ease' was defined as "the degree to which the user expected the target system to be free of effort" [5]. Perceived trust is the expectation that customers believe that a selected group actions will take place in a proper manner in step with their assured expectations. Perceived risk refers to the degree of risk in using innovations [17]. Customer retention is incredibly important for growing a sustainable business in an extensively competitive environment. Moreover, an assessment of the product or service quality provided by a business that measures how loyal its customers are [6]. Previous studies illustrate, when there is high degree of perceived usefulness, perceived ease of use, perceived trust and low level of risk, the customers tend to retain with the banks. When retention criteria are not well managed, customers might still leave from banks, no matter how hard bankers try to retain them. Therefore, banks must innovate well and those innovations must be communicated effectively and attractively to their targeted market [7].

3 Hypothesis Formulation

Based on previous research studies [8], [9], [10]

- H1: There is a positive relationship between Perceived Usefulness and Customer retention pertaining to smartphone online banking applications in banks in Matale.
- H2: There is a positive relationship between Perceived Ease of Use and Customer retention pertaining to smartphone online banking applications in banks in Matale.
- H3: There is a positive relationship between Perceived Trust and Customer retention pertaining to smartphone online banking applications in banks in Matale
- H4: There is a negative relationship between Perceived Risk and Customer retention pertaining to smartphone online banking applications in banks in Matale.
- H5: Quality of smartphone online banking applications (perceived usefulness, perceived ease of use, perceived trust, perceived risk) varies significantly with demographic factors of customers in banks in Matale.

4 Methodology

Exact population of smartphone mobile app customers was not identified as such information was internal confidential information of the banks. Two hundred banking customers, who were using smartphone online banking apps of banks (BOC, Peoples bank, Commercial Bank, and Sampath Bank) in Matale, were selected as sample to study. Snow ball sampling technique was applied to identify the respondents. Questionnaire was used to collect necessary data from the customers via Google Form. Quality of smartphone online banking application has four dimensions namely perceived usefulness, perceived ease of use, perceived trust, and perceived risk. Customer retention was measured with six indicators such as satisfaction, loyalty, saying positive thinking, recommending bank, considering bank first choice, complain handling. The survey instrument consisted of 23 items. All variables were measured by the five-point Likert scale which were ranged from “Strongly Disagree” to “Strongly Agree” with the points of 1 to 5 and 5 to 1 for the positive and negative statements order respectively. As well as, secondary data were collected from the web sites of the banks.

Mean and standard deviation were used to determine the extent of quality of smartphone banking and customer retention. The below decision rule (Table 01) was applied to evaluate those variables.

Table 1: Decision Rule

Range	Decision Attribute (PU, PEU, PT, CR)	Decision Attribute (PR)
$1.00 \leq x_i \leq 1.80$	Very Low Level	Very high Level
$1.80 < x_i \leq 2.60$	Low Level	High Level
$2.60 < x_i \leq 3.40$	Moderate Level	Moderate Level
$3.40 < x_i \leq 4.20$	High Level	Low Level
$4.20 < x_i \leq 5.00$	Very high Level	Very Low Level

x_i = Mean of the variable

The correlation analysis was used to measure the magnitude and the direction of the relationship among two variables. The below decision rule (Table 02) is applicable for those variables.

Table 2: Decision Rule

Range	Decision Attributes
± 0.91 to ± 1.00	Very Strong
± 0.71 to ± 0.90	High
± 0.41 to ± 0.70	Moderate
± 0.21 to ± 0.40	Small But Definite Relationship
± 0.00 to ± 0.20	Slight, almost negligible

Source: [11]

The regression analysis was made to determine the functional regression among the following set of an independent variables (PU, PEU, PT, and PR) and dependent variable (Customer retention) for the purpose of prediction and making other inferences. Regression model is as follows,

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y	- Customer Retention
α	- Intercept
β_1	- Coefficient of perceived usefulness
β_2	- Coefficient of perceived ease of use
β_3	- Coefficient of perceived trust
β_4	- Coefficient of perceived risk
ε	- Random error term

5 Findings

Cronbach's alpha test is the most common measure of internal consistency. Results of this test are given in the Table 3, suggest that the internal reliability of each research instrument is satisfactory as all the values are greater than 0.7.

Table 3 Cronbach's Alpha Test Result

Variable	Reliability
Smart Phone Online Banking Application	0.741
Perceived Usefulness	0.702
Perceived Ease of Use	0.777
Perceived Trust	0.712
Perceived Risk	0.813
Customer retention	0.858

(Source: Survey Data)

Table 4: Personal Information

Classification	No. of Respondents
1. Name of the Banking App	
BOC B App	89
People's Wave	43
Sampath Online Banking App	35
COMBANK App	33
2. Age	
Less than 25	35
25 – 34	83
35 – 44	54
45 – 54	19
Above 54	09
3. Gender	
Male	78
Female	122
4. Civil Status	
Single	91
Married	109
5. Time Duration (Months)	
Less than 6	12
6 – 12	43

12 – 24	99
Above 24	46
6. Educational Level	
Postgraduate	07
Graduate	64
Diploma	52
Advanced Level	64
Ordinary Level	13
7. Occupation	
Government Employment	53
Private Employment	68
Student	36
Other	43
8. Type of Services	
Balance inquiry	70
Fund Transfer	32
Utility Bill Payments	41
Cheque Service	00
All the Above	57

(Source: Survey Data)

The Table 4 depicts the distribution of responses throughout the personal information. There are eight personal factors such as name of the bank App, job position, age group, gender, civil status, time duration, educational qualification, and the type of service from banking application. Here, the results show the majority of respondents were unmarried males under the age of 25-35 who are using BOC - B app. Most of them have engaged with this technology within 12-24 months, level of education was high with majority of the respondents having up to degree or diploma and most of them are government employees who are frequently using mobile banking application for balance inquiry.

According to the research objective one, researchers have tested means and standard deviations of each variable to determine the level of perceived quality. All variables except risk are very high level while risk presents very low level. Customer retention has the highest mean value comparatively to other variables. Further, out of the independent variables, perceived trust has the highest mean. Results were identified according to the decision rule which was presented in Table 1 and it is shown in the below Table 5.

Table 5: Mean / Standard Deviation for variables

Variables	Mean	Std. Deviation
Perceived Usefulness	4.34	0.513
Perceived Ease of use	4.27	0.53
Perceived Trust	4.35	0.49
Perceived Risk	4.13	0.91
Customer retention	4.42	0.52
Smart Phone Online Banking Application	4.27	0.365

(Source: Survey Data)

According to the survey results in Table 6 perceived usefulness and perceived trust are moderately positive and significant relationship with customer retention. In the meantime, perceived ease of use is significantly positive weak relationship with customer retention.

Perceived risk is negative and insignificant relationship with customer retention. Therefore, first three alternative hypotheses are accepted whereas fourth hypothesis is rejected.

Table 6: Correlation analysis

Dimension of Quality of smartphone banking application	Customer Retention	Sig. (2-tailed)
Perceived Usefulness	0.527**	0.000
Perceived Ease of use	0.259**	0.000
Perceived Trust	0.614**	0.000
Perceived Risk	-0.035	0.624

(Source: Survey Data)

The second objective attempts to find out the impact of each variable on customer retention. Result of ANOVA show that all models of simple regression are acceptable to predict for customer retention relating to smartphone online banking application since “p values” are less than 0.05.

Table 7: OLS estimate of smartphone online banking application on customer retention

Independent variables	Dependent variable: customer retention				
	Separate Regression				Multiple Regression
	Model 1	Model 2	Model 3	Model 4	Model 5
β_0	2.092*** (0.000) [0.269]	3.332*** (0.000) [0.292]	1.580*** (0.000) [0.262]	4.507*** (0.000) [0.172]	1.037*** (0.003) [0.347]
Perceived Usefulness	0.537*** (0.000) [0.062]				0.236*** (0.002) [0.074]
Perceived Ease of Use		0.256*** (0.000) [0.068]			0.115** (0.038) [0.055]
Perceived Trust			0.653*** (0.000) [0.060]		0.470*** (0.000) [0.077]
Perceived Risk				-0.020 (0.624) [0.041]	-0.043 (0.179) [0.032]
F	76.258*** (0.000)	14.262*** (0.000)	119.612*** (0.000)	0.241 (0.624)	36.165*** (0.000)
R	0.527	0.259	0.614	-0.035	0.653
R ²	0.278	0.067	0.377	0.001	0.426
Adjusted R ²	0.274	0.062	0.373	-0.004	0.414

P-values are shown in parentheses and standard errors are reported in square brackets. Significance levels are indicated by *, **, *** for 10%, 5% and 1%, respectively.

(Source: Survey data)

Based on the simple regression data illustrated in the above Table 7, except of perceived risk, other dimensions are positively impact on customer retention. Regression results of model 4 indicates that the beta value of perceived risk is -0.020. Its means if perceived risk increased by one-point customer retention is decreased by 0.020. However, it is not significant (0.624) as it is greater than 0.05.

F value is 36.165 at significant level 0.000 in the model 5. Moreover, according to multiple regression, determination of coefficient (R²) is 0.426 which indicates that around 43% of variation of the dependent variable (customer retention) can be explained by the encompassing all independent variables (Perceived Usefulness, Perceived Ease of Use, Perceived Trust and Perceived Risk). Hence, it can be clearly said that 57.4% of variation of customer retention is explained by other factors.

The Unstandardized constant statistic 1.037 units show that model would predict if all of four-independent variables were zero. The β coefficient for Perceived Usefulness is 0.236. This means if the Perceived Usefulness goes up by 1 point, the customer retention will improve by 0.236. Similarly, the β coefficient for Perceived Ease of Use is 0.115. This specifies that if usefulness goes up by 1 point, customer retention will improve by 0.115. The β coefficient for Perceived Trust is 0.470. This reveals that if Perceived Trust rises by 1 point, customer retention will also rise by 0.470. On the other hand, the β coefficient for Perceived Risk is -0.043. This indicates that if risk goes up by 1 point, customer retention will reduce by 0.043 unit.

It is found that perceived trust is the most impact factor to the customer retention (B = 0.470) at 1% significant level.

Third objective is obtained by performing ANOVA for name of the banking app, age, time duration, educational level, occupation and type of services while Independent Sample T test is undertaken for gender and status (Table 8).

Table 8: Summarized ANOVA and Independent T test for Demography Factors of Respondents

Demographic Factors	Variables							
	Perceived Usefulness		Perceived Ease of Use		Perceived Trust		Perceived Risk	
	Mean	Std.D	Mean	Std.D	Mean	Std.D	Mean	Std.D
1. Mobile Banking App								
BOC B App	4.37	0.53	4.28	0.49	4.40	0.46	4.09	0.91
People's Wave	4.26	0.54	4.22	0.57	4.17	0.52	4.21	0.80
Sampath Online Banking App	4.42	0.39	4.18	0.58	4.39	0.48	4.31	0.82
COMBANK App	4.30	0.55	4.41	0.51	4.42	0.50	3.96	1.1
P Value		0.496		0.289		0.054		0.399

2. Age

Less than 25	4.16	0.60	4.25	0.57	4.26	0.57	3.86	1.11
25 – 34	4.35	0.56	4.31	0.53	4.37	0.51	4.11	0.93
35 – 44	4.43	0.39	4.32	0.54	4.38	0.42	4.31	0.81
45 – 54	4.38	0.44	4.06	0.47	4.34	0.54	4.20	0.81
Above 54	4.39	0.25	4.27	0.41	4.44	0.24	4.14	0.59
P Value		0.212		0.435		0.738		0.257

3. Gender

Male	4.32	0.55	4.28	0.53	4.36	0.47	4.11	0.94
Female	4.38	0.45	4.26	0.53	4.35	0.52	4.16	0.88
P Value		0.437		0.800		0.821		0.688

4. Civil Status

Single	4.31	0.55	4.24	0.57	4.35	0.53	4.15	0.91
Married	4.38	0.47	4.31	0.48	4.34	0.44	4.10	0.93
P Value		0.371		0.345		0.923		0.707

5. Month

Less than 6	4.42	0.44	4.25	0.56	4.21	0.60	4.38	0.53
6 – 12	4.23	0.70	4.23	0.64	4.22	0.65	3.98	0.94
12 – 24	4.37	0.44	4.32	0.45	4.41	0.41	4.15	0.96
Above 24	4.36	0.47	4.23	0.58	4.41	0.43	4.16	0.88
P Value		0.418		0.728		0.093		0.559

6. Educational Level

Postgraduate	4.11	0.56	4.26	0.56	4.36	0.35	4.68	0.35
Graduate	4.29	0.49	4.43	0.41	4.33	0.48	4.41	0.94
Diploma	4.41	0.51	4.29	0.55	4.42	0.47	4.14	0.86
Advanced Level	4.34	0.56	4.13	0.58	4.34	0.54	3.99	1.03
Ordinary Level	4.44	0.33	4.15	0.55	4.31	0.48	4.44	0.42
P Value		0.458		0.027		0.852		0.242

7. Occupation

Government Employment	4.42	0.42	4.24	0.53	4.40	0.37	4.22	0.79
Private Employment	4.43	0.51	4.30	0.56	4.44	0.50	4.00	1.13
Student	4.06	0.56	4.26	0.55	4.10	0.56	3.95	0.94
Other	4.35	0.51	4.29	0.46	4.37	0.49	4.43	0.50
P Value		0.002		0.934		0.006		0.035

8. Type of Services

Balance inquiry	4.33	0.43	4.29	0.48	4.35	0.47	4.26	0.64
Fund Transfer	4.39	0.44	4.26	0.48	4.31	0.58	4.15	0.86
Utility Bill Payments	4.33	0.50	4.28	0.57	4.32	0.45	4.12	1.03

Cheque Service	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
All the Above	4.34	0.64	4.27	0.60	4.42	0.51	3.37	1.13
P Value		0.943		0.993		0.725		0.391

(Source: Survey data)

As per the Table 8, perceived usefulness, perceived trust and perceived risk significantly vary among the types of occupation of customers in banks in Matale whereas perceived ease of use is not significantly varied among the types of occupation of customers. Similarly, perceived ease of use significantly varies among the educational level. Quality of smartphone online banking applications (perceived usefulness, perceived ease of use, perceived trust, perceived risk) are not significantly varied among other demographic factors (the mobile banking App, Age, Gender, Civil Status, time duration, and type of services) of customers in banks in Matale.

6 Discussion

According to research results, there is high level of usefulness, ease of use and trust while there is low level of risk. [12] have said that ease of use has a significant positive impact on actual usage of any technology. Therefore, most of the studies have discussed that there is a positive and significant relationship between perceived ease of use and customer retention.

The study found that perceived trust is most significant and positively related with customer retention. Similar findings were found by other researchers [13], [14] and [15]. They also found that trust has positive relationship with customer retention and also it is a key element of customer retention. Trust has strong relationship with customer commitment. According to the previous studies that there is a positive and significant relationship between perceived trusts and customer retention.

[16]demonstrated that risk negatively and significantly affects attitudes towards adopting on technology and the usage. Based on findings, risk has a negative relationship with customer usage. Finding of the study also matched with [16].

Based on the evidence of the research findings, it shows the previous studies are consistent with them where, the perceived usefulness, perceived ease of use, and perceived trust positively and significantly impact on customer retention, while perceived risk is negatively and insignificantly impact on customer retention.

7 Conclusions and Recommendations

Descriptive statistics depicts that perceived usefulness, perceived ease of use, perceived trust and customer retention are having very high level while perceived risk having very low level. Pearson Correlation reveals that perceived usefulness and perceived trust are significant moderate positive relationship with customer retention. Perceived ease of use is positive significant weak relationship. In contrast, perceived risk is insignificant negatively related with customer retention. It is concluded that, perceived usefulness, perceived ease of use and perceived trust positively and significantly impact on customer retention, while perceived risk is negatively (insignificant) impact on customer retention. It has been identified that perceived trust is the most impact factor to the customer retention. Moreover, around 43% of variation of the customer retention can be explained by the encompassing all independent variables. Quality of smartphone online banking applications are not significantly varied among

following demographic factors (the mobile banking App, Age, Gender, Civil Status, time duration, and type of services) of customers in banks in Matale. Nevertheless, Perceived usefulness, perceived trust, perceived risk are significantly varied among occupational type while perceived ease of use is significantly varied among educational level.

The management may continuously improve online services through creating various activities and strategies. Therefore, this research suggests certain policy implications for the banking industry. Thus, the proposed model can support to plan how consumers could be retained. By improving these factors, bank management may increase adoption and satisfaction among mobile banking app users. The following recommendations are given in order to enhance the effectiveness and efficiency of mobile banking application for retaining customers.

- The smart phone application developers should consider in reducing the number of steps in the process.
- Use simple language and understandable commands, which can be understood by the any customers.
- Categorized services in a convenient and understandable manner.
- Always try to issue accurate/updated information about their transactions to the customers through the mobile banking app.
- Try to introduce new services which can be completed easier.
- Increase the security of login details, personal details and accounts details without revealing to the unknown people by using fingerprint logins or sensors.
- Make necessary arrangements to change the password every three months interval.
- Banks should organize sessions and presentations to demonstrate how to use mobile banking application services, as well as what services are provided in order to show the benefits of using it. This may help customers to gain a positive perception on using smart phone online banking application.

The study was limited to investigate the quality of mobile banking application and customer retention in four top ranked banks in Matale. All Sri Lankan banks provides this service to their customers. Therefore, future research could be undertaken by covering customers of all banks to enhance more accurate findings.

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