Identifying Major Barriers and Concerns for Mobile Banking in Sri Lanka

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***Abstract*— The Banks of Sri Lanka recently changed their technologies and references from paper to mobile. old banks used lot of papers in old days but the according to the current situation, through banks are heavily following e-governance practices still lot of Sri Lankan banks have a concern regarding the adoption of mobile banking among their customer base. The technology is growing faster with the banking sectors but still their customers have lot of concerns and complains regarding the mobile applications which are introduced by the banks. we examine how mobile application usage is related to relationship commitment, intention to recommend the bank, overall satisfaction, and future intentions to remain with the bank. A survey was used to collect data from experience banking users. 108 valid responses received. this survey is done by users filling an online questioner. The results have both practical and statistical implications for mobile banking usage and its effects on bank-customer relationships. This paper is discussing about the existing issues and barriers to adoption for mobile applications for banking services. This study will attempt to statistically address these crucial unseen factors while helping to develop a strategic plan for proper implementation of mobile banking strategy in the Sri Lankan banking industry.**

Keywords—Mobile Banking; e-Banking, Quality of service; User satisfaction, Customers interaction, Application usage, e-governance practices, Relationship commitment, Mobile banking strategy. Sri Lankan banking industry, mobile technology, customer experience, Ease of access, Better security, Customer relationship.

I. INTRODUCTION

The execution of financial services via the Internet in electronic banking changed the business of retail banks in Sri Lanka. In the other hand It is made easy to take strategic business decision by looking at the analysis of the transactional backend data. As we already know the improvement of mobile technology and increasing the usage of mobile applications raised new options and favorable circumstances for the banking industry. The internet enabled smart mobile devices made the conversion of primitive banking applications into mobile application. It created a new subset of electronic banking with many capabilities such as electronic fund transferring, cashless transactions, bill payments, cards and loan management. New mobile based technology leads customers to many financials' services anywhere in the world in their finger print.

In the context initially banks Offred e-banking capabilities through their banking websites but smart mobile devices transform it into mobile application. Ease of use, Improved customer experience, Better security, gathering customer analytics, Ease of access, reducing the contacts of people are the some of the advantages of using the mobile application for the banking. There are many studies have been carried out to find the adoption of mobile banking has been steadily growing with increased metamorphosis and product offerings in Sri Lanka. fundamentally, mobile banking give authority to banking users to take care of financial activities and saves their time in completing the tasks.

This research is an extension of the existing literature using the actual experiences of using mobile banking applications. We analyze the customer relationship and customer requirement. we identify the most of important mobile banking use cases and special concerns and issues affecting for users in their day-to-day practice. And ultimately this paper focus on to find out why customers reject the mobile application in their banking activities.

Online application is used to fill the questionnaire and social media platform is used to distribute the questionnaire among the banking customers since social media platforms are the best media to reach out the users and collect the data accurately. We assume that banking customers are honestly answer to the

questionnaire and expected to cover the whole country for data collection.

The outcome of the paper is a defined set of requirements to mobile banking applications, the identification and assessment of four standard types of current mobile banking applications and an explanation of major failure reasons along with opportunities for their improvement.

II. RELATED WORKS

Popular digital banking platforms include point-of-sale (POS), automated teller machines (ATMs), online banking, Interactive voice response (IVR) systems, telephone and the recently introduced m-banking, branchless banking and social media banking platforms. There are still some major concerns between the mobile application user usage, satisfaction, relationship commitment, behavioral intention to remain a customer of the bank, overall satisfaction, and intention to recommend the bank.

In general, mobile application usage, has been considered a direct function of behavioral determination, which leads to increased overall banking customers satisfaction. System usage is defined as ‘either the amount of effort expended interacting with a mobile infrastructure or, less frequently, as the number of reports or other information products generated by the information system per unit time. A study done to analyze the customer expectations and needs from mobile applications and banking service. the requirements can be identified of a banking customer is described in section 2. This study had identified the reasons for the failure of application adoption and the important opportunities for the upcoming mobile banking applications in Sri Lanka. In our paper we examine the usage levels and expectation index of different sectors using an online survey which is done through the social media platforms.

In this paper we specially focus on the people who don’t use the mobile application and the reason and factors for that. there are two main parts in our questionnaire. The first part is for demographic questions and the second part is for the other questions demographic question covers the customer personal information while other questions focus on the reasons for not using the mobile application for the banking activities.

We addressed the following other questions to be answered for our analysis.

How long to use a bank account?

What type of mobile phone are you using?

Do you use mobile app for banking?

How many times a month do you use the following banking services - Branch Banking?

How many times a month do you use the following banking services – ATM?

How many times a month do you use the following banking services - Internet Banking?

How many times a month do you use the following banking services - mobile app?

How often do you use the following banking services per month - Credit Card?

What do you think about mobile app issues for banking?

What motivates you to use and use mobile app banking?

If you plan to use a mobile app for banking in the future, this is the reason?

What kind of financial services do you want to see through your mobile phone – Savings?

What kind of financial services do you want to see through your mobile phone - bill payments?

What kind of financial services do you want to see through your mobile phone - Transaction History?

What kind of financial services do you want to see through your mobile phone - money transfer?

Therefore, in this paper we expected to focus for below main points

1. To identify the banking user’s personal information
2. To identify the influencing factors for mobile banking
3. To identify the problem their facing
4. How to improve the mobile banking user’s base

III. LITERATURE REVIEW

Changes in banking service and customer-service relationships portfolios by changing banking practices and introducing new and more innovative digital

banking channels, including mobile banking applications and services. Previous research has explored and identified a number of precursors to and consequences of behavioral intentions to adopt and use mobile banking services in developed, emerging and developing countries such as Sri Lanka. The present study contributes to the literature on mobile banking. The major objective of the banks is to repeat and if possible, expand the big success of e-banking in mobile banking. Four different types of mobile banking applications and some future developments where introduced and assessed. None of the automation can provide a mobile banking solution that works entirely without satisfies and problems the consumer. The recommendation to the banks should be not to center on one technology only, but to use the advantages of different technologies.[1]

In previous study, the Social Risk (has no significant influence on the usages of mobile banking in Bangladesh. The results for each variable differ from the study conducted by Lee (2009) in the sense that he explored outstanding relation between usages of Time Risk and mobile banking, Financial and Social Risk whereas no relationship has been found between usage of Mobile Banking and Security Risk. On the Bangladesh. The isolated variables indicate that all the null hypotheses except the social security hypothesis have been rejected verifying the outstanding relationship between eleven variables (Ability, Benevolence, Integrity, Perceived Usefulness, Perceived Ease of Use, Perceived Time Savings, Cost Savings, Time Risk, Security, Performance Risk and Financial Risk) while null hypothesis for security risk has been taken up indicating no connection between usages of mobile banking and social risk.[2]

IV. METHODOLOGY

A. Formulation of Hypotheses

For the exploring the issue and concerns related to mobile banking in Sri Lanka below the hypotheses have been developed:

Hypothesis testing for Type of Mobile Device:

Pa = Proportion of Android users who said no
Pi = Proportion of Apple I phone user who said no
Ho : Pa = Pi
Ha : Pa > Pi

H0 = There is no relationship between education level and the mobile application usage
Ha = There is relationship between education level and the mobile application usage

Hypothesis testing for Occupation:

Pp = Proportion of Private employee who said no
Pg = Proportion of Government employee who said no

Ho : Pp = Pg
Ha : Pg > Pp

H0 = There is no relationship between occupation and the mobile application usage
Ha =There is relationship between occupation and the mobile application usage.

B. Data Collection

The research is based on primary data. Data have been collected through a structured Questionnaire as an online google form. The questionnaire made by 16 questions and 9 of them are related the user demography details. The questionnaires have been sent to many banking users through social media such as WhatsApp, Facebook, Linked-in. 108 responses received.as overall 54% responses received as non-mobile application users and 46% are voted as mobile application users. Thus, rate of duly filled returned questionnaires 61.3% are mail and 38.7 are female. The 50% responses received from Colombo district.

C. Model Specification

The basic conceptual model for this study is illustrated in Figure 1, which focus the hypothesized relationships between the study constructs for the analysis. This model by showing how Convenience of Use (CU), More Secure (MS) , Convenience of login (CL) and User Interface(UI) , Saving Time (ST) , Human Contact (HC) , Cost Benefit (CF)

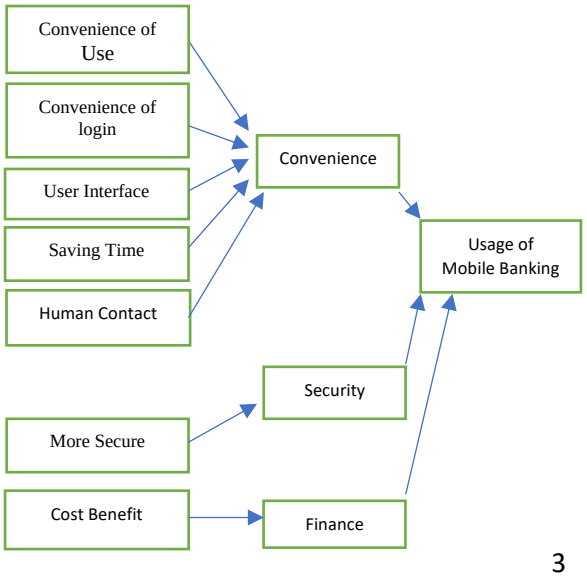

Figure 1: Model for influencing factors of Mobile Banking Usage

The above model shows 7 factor of influence users' perception while it shows the combination of Convenience of Use, Convenience of login, User Interface, Saving Time and Human Contact to use make mobile banking a convenient one whereas More Secure provides Secure mobile banking and Cost benefit provide financial benefits, above model shows the high-level categorical relationship with the individual variables

V. RESULTS AND DISCUSSION

This section explains the analysis of the study which target the extent of banking customers' interaction in Sri Lankan banks with mobile banking applications. This will be done by exploring the study questions. The banking users who said NO 89.4% are Android Mobile phone users and 10.6% are Apple I-Phone users, in general the mobile device is a proxy for the social status and individual wealth this data is applied for the further investigation with the hypothesis testing.

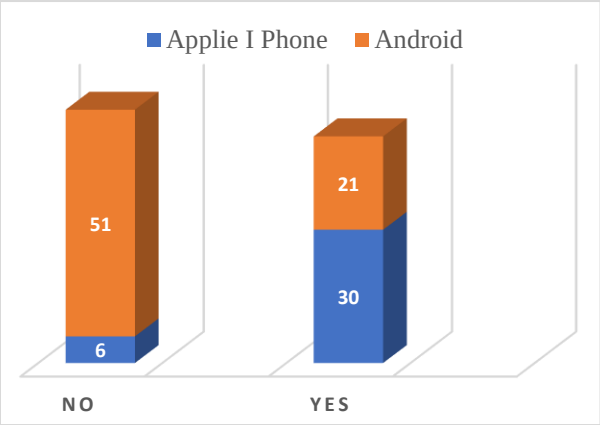

Figure 2. Mobile device vs Mobile Application Usage for Mobile Banking

The hypotheses were tested for two sample proportions Pa = Proportion of Android users who said no and Pi = Proportion of Apple I phone user who said no, whereas Ho: Pa = Pi, Ha: Pa > Pi, The Z= 5.3263 and p is < .00001. The result is significant at p < .05. therefore, H0 is rejected, Since the significant Level is 0.05, We are 95% confident that Android mobile users who said no are gather than the Apple I-Phone users. As we already know the mobile phone usage is a proxy for individual social status and wealth of the users. Therefore, this factor is very important to describe the mobile usage analysis in order to obtain some hidden usage patterns.

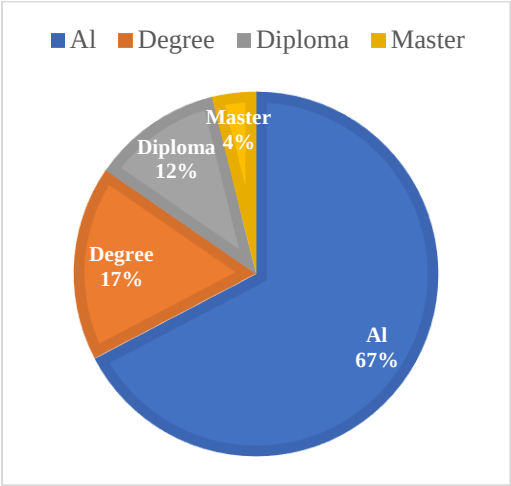

Figure 3. User Education vs Mobile Application Usage for Mobile Banking

The Figure 2 is showing the responses received as non-mobile application users in deferent educational levels, here 67% users who have AL as a education qualification said No for mobile banking and 17% are degree holders rest 12% have Diploma and 4% has Master degree. Using above graph, we can specifically mention that lot of people who are not using the mobile application for banking, don't have a higher educational level. I other hand 58% users who have degree level qualifications, voted as already mobile banking users therefore we can see the are is a relationship between the education level and the mobile application usage but in order to statistically prove that chi-square test is performed.

	No	Yes
Degree	11	37
No-Degree	46	12

Table 1: Cross tab for education level with mobile application users

The null hypothesis is defined as H0 = There is no relationship between education level and the mobile application usage while alternative hypothesis is Ha =There is relationship between education level and the mobile application usage. Calculated p value is 6.67e-09, this is less than the significant level of 0.05 therefore, H0 will be rejected and we can conclude We are 95% confident that there is a relationship between education level and the mobile application usage.

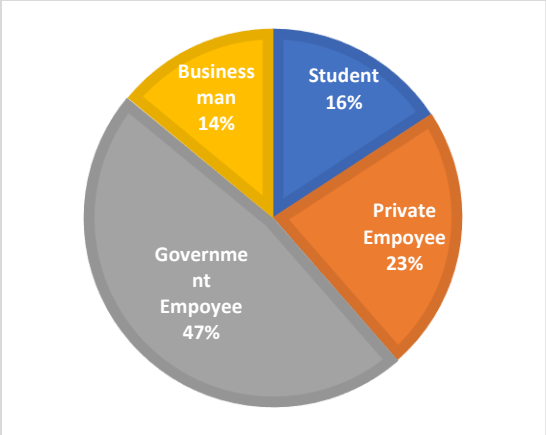

Figure 4. User Occupation vs Mobile Application Usage for Mobile Banking

Occupation is another very important variable in terms of the mobile banking analysis, according to the Figure 4 47% users who are in government sector, voted as non-mobile banking users. And 68% Private employees voted as mobile banking users. In order to check the relationship between the occupation and the mobile application usage variables. Null hypothesis defined as H0 = There is no relationship between occupation and the mobile application usage and alternative hypothesis defined Ha =There is relationship between occupation and the mobile application usage. And calculated p-value is $1.227e^{-10}$. the p-value is less than the significant level of 0.05. therefore, we can consider that We are 95% confident that there is a relationship between occupation level and the mobile application usage. In addition to that another hypothesis testing is done using tow proportions. Null hypothesis is defined as Ho: Pp = Pg Whereas Pp = Proportion of Private employee who said no and Pg = Proportion of Government employee who said no. z value is for the test is Z= 4.8664 and p-value is 0.00001, P value is less than 0.05 therefore H0 is rejected and We are 95% confident that Government employees who said no are greater than the Private employees.

VI. DISCUSSION

The purpose of this study was to investigate the influence of Convenience of Use (CU), More Secure (MS) Convenience of login (CL) and User Interface (UI) , Saving Time (ST) , Human Contact (HC) and Cost Benefit (CF) .Our results showed that Convenience of login (CL) and User Interface(UI) have and influence on the intention to use mobile banking while Cost Benefit (CF) was found with no influence. The statistical analysis implied that Lot of Android mobile users are not using the mobile application comparing with than the Apple i-phone users and the major influencing factor was occupation, the Government employees tend to reject the mobile application for the banking while education level leverage the mobile banking usage. In this study we identified that lot of users have concerns regarding the logging issues related to the banking mobile applications.

VII. CONCLUSION

The scope of this study was to find out the key determinants that influence adopting to the mobile banking among the customers of Sri Lanka. The study model was built on the integrated technology acceptance logical model. The results illustrated that customers of banks in Sri Lanka will be more likely to adopt mobile banking service if they find it easy to be used with no much-required efforts. Also, they will intend to use the service if the bank provide convenient method to logging to the mobile application since lot of users had concerns regarding the application logging. In general, making the service drastically easy to be used by enhancing the application user interface (GUI) and update it with sufficient data and information on time.

VIII. REFERENCES

[1] Key Pousttchi and Martin Schurig: Assessment of Today's Mobile Banking Applications from the View of Customer Requirements, University of Augsburg, pp 10, 2004.

[2] Mohammad Rokibul Kabir: Factors Influencing the Usage of Mobile Banking: Incident from a Developing Country, World Review of Business Research, Vol. 3. No. 3, Issue. pp 108, July 2013.

APPENDIX I: Questionnaire for Customers

Mobile Application Usage for Banking:

The objective of the study is to identify and analyses the factors influencing to reduce customer's adoption/usage of mobile application for banking services in Sri Lanka. The impact of technology on banking operations, A comparative analysis between Public and Private banks sectors. Please be assured that your responses will be strictly confidential.

General Questions

1. Name
2. Name of the Bank & Branch
3. Where do live (Specify the district)
4. Gender

A. Male B. Female

5. Age

A. 18 - 25 years
B. 26 - 30 years
C. 31 – 40 years
D. 41 – 50 years
E. 51 – 60 years
F. Above 60 years

6. Education

A. Primary Education Only
B. Grade 5
C. Grade 9
D. O/L
E. A/L
F. Diploma
G. Degree
H. Master's Degree
I. PHD
J. Others (please specify) ----------

7. Marital Status

A. Married B. Un married

8. Profession

A. Govt Employee
B. Private Employee
C. Business
D. Self-Employee
E. Student
F. Housewife
G. Others (please specify)

9.Status of usage a bank account

A. Less than 1 year
B. 1 – 5 years
C. 5 – 10 years
D. 10 – 15 yeas
E. Above 15 years

Specific Questions:

11. Do you use mobile banking?

A Yes B No

12. Which type of mobile device do you use?

A. Apple I-Phone
B. Android Mobile
C. Not a smart mobile phone
D. I don't use a mobile phone
E. Other: _____

13. Which category of the banks do you consider as most technologically advanced?

A. Public sector bank B. Private sector bank

14. Which attribute of the bank do you value the most?

A. Quality of Service
B. Technology used
C. Trust
D. Location
E. Type of the bank

15. Which factor promotes you to use the new techniques in banking? (Tick all that are applicable)

A. Reduced time of transactions
B. Cost effectiveness
C. Ease of use
D. Technology savvy

16. How familiar are you with computer usage?

A. No knowledge of Computer
B. Beginner
C. Average knowledge
D. Expert

17. Select the usage of following technologies (Tick all that are applicable to you)

A. Connected to the Internet at home or work to do their financial transactions
B. Uses E – mail
C. ATM / Debit card service
D. Credit card service
F. E – payments
G.Electronic Fund Transfer (EFTs)/NEFT/RTGS

18. Wht do you think about mobile application problems for banking

A. Login / Sign off are not easy.
B. Lack of trust in the technology
C. Lack of security in transactions.
D. Lack of appropriate software.
E. Lack of appropriate device
F. Lack of internet connection
G. Difficulty of use
H. Other :_____

21. What would motivate you to adopt and use mobile application for banking?

A. Improved user interface (UI)
B. Reduced risks involved in my transactions
C. Increased awareness
D. Free demo by the banks
E. More secure
F. If other, please specify:_____

APPENDIX II: Data Description

Dataset name	Mobile Application Usage for Banking Analysis DATA SIZE
Data size	90.9KB
No fo attribute	106
Data source provider	https://forms.gle/LeWwtrdGNqwLJBUL6
Data privacy	Publicly Available
Note	This data set is generated for analytical purpose
PREPARED BY	M.N.A Muthunayake
Point of contact	Nimesha.20@cse.mrt.ac.lk
Link for dataset	https://github.com/nimeshacs/Mobile-Application-Usage-for-Banking-Analysis
Team members	M.N.A Muthunayake