Cost Benefit Analysis of e-Banking Services of SBI in Kerala

Thesis submitted to the
University of Calicut
for the Award of the Degree of
Doctor of Philosophy in Commerce

By

Sujitha K.A.

Under the Supervision of
Dr. B. Johnson

Professor and Head

Department of Commerce and Management Studies
School of Business Studies
University of Calicut
Kerala

February 2018

Department of Commerce and Management Studies
School of Business Studies
University of Calicut
Calicut University P.O PIN-673635Kerala, India

Dr. B. Johnson
Head of the Department

Phone:0494-2400297(Off)
Mob: 0944618286
Email:dcmshod@uoc.ac.in

Declaration

I, Sujitha K.A hereby declare that the thesis entitled **"Cost Benefit Analysis of e-Banking services of SBI in Kerala"** is a bonafide research work done by me under the supervision of Dr. B. Johnson, Professor and Head, Department of Commerce and Management Studies, University of Calicut. I further declare that no part of this thesis has been presented before for the award of any degree, diploma or other similar title or recognition in any university.

Calicut University

Sujitha K.A.

Doctoral Candidate

Department of Commerce and Management Studies
School of Business Studies
University of Calicut
Calicut University P.O PIN-673635Kerala, India

Dr. B. Johnson **Phone:0494-2400297(Off)**
Head of the Department **Mob: 0944618286**
Email:dcmshod@uoc.ac.in

Certificate

This is to certify that the thesis entitled **"Cost Benefit Analysis of e-Banking Services of SBI in Kerala"** is a bonafide record of research work carried out by Mrs. Sujitha K.A. under my supervision and guidance for the award of Ph.D Degree of the University of Calicut and no part of the thesis has been presented before the award of any degree, diploma, or other similar title of recognition.

She is permitted to submit the thesis.

Calicut University **Dr. B. Johnson**

(Supervising Teacher)

Acknowledgements

My heart is glittered by recognition and admiration towards all those who sacrificed and facilitated me from the beginning till the final submission of my doctoral thesis.

At the very outset, I would like to express my sincere gratitude, indebtedness and appreciation to my esteemed mentor, my research supervisor Dr. B. Johnson, Professor & Head of the Department of Commerce and Management Studies, University of Calicut, for guiding me patiently and giving his valuable advice, enlightened perspectives, encouragement and requisite suggestions for the betterment and completion of this research. He has been the beacon who inspired me to tread the right path in my search for the right answers. Without his intellectual inputs and constant support, this work would not have been complete in any respect. In spite of his extremely busy academic pursuits, he always took pains to stand with me, giving valuable guidance and support to complete this venture. No words would suffice to express the depth of my respect and gratitude to him. It is a great privilege and honour to work and study under his guidance.

I extend my sincere thanks to the former Heads of the Department Dr, B.Vijayachandra Pillai, Dr. E.K.Satheesh and Dr.M.A Joseph for their fathomless support during my research work. I am highly grateful to the entire faculty of the department for their support and assistance in the completion of this endeavor.

I am also indebted to former Librarian, Mr.Habeeb Koya Thangal, former Library assistant, Mr.Abhilash, present Librarian, Mr. Abdulla Moozhikkal, present Library assistant, Mr. Moideen Kutty K.V, Section Officer, Mr. K.P. Krishna Prasad and Mr.Sooriasen.M, Ms.Daisy.E.D & Ms.Molly Varghese for their relentless help.

I am immensely grateful to Regional Managers, Branch Managers, and employees of alternate channels of State Bank of India in Kerala circle, who have provided valuable help in my data collection, especially Mr. P. Narayanan Kutty, ATM AGM, Local Head Office, Thiruvananthapuram and G.M.IT Infrastructure, Belapur, Mr.Sanal, ATM channel manager, Thrissur R B O, and Mr. Tijo George, Branch Manager, SBI In touch. I express my most sincere thanks to all the staff and employees of Thrissur R B O for extending facilities for data collection. Mr. R. V. Sureshkumar, Regional Manager, Thrissur R B O deserves special commendation for helping me at every phase of data collection of the work, for invaluable assistance in the cost computation of banking services and for a wide variety of informational assistance that made the overall task a pleasurable experience.

I wish to place on record my sincere thanks to the Librarians of CHMK Central Library (University of Calicut), Indian Institute of Management (Kozhikode), CUSAT (Kochi) and Kerala Agricultural University (Vellanikkara) for their assistance in providing necessary secondary data for the study. I am also extending my deep gratitude to Dr. V. M. Chacko & Dr. Hareesh Ramanadhan, for assisting in my analysis work. With immense pleasure I thank Dr. G. S. Sandhya Nair, the Head of the Department (Commerce), Sree Vivekananda College, Kunnamkulam, for her mental support, in exhaustive help and for the stimulating discussions. I am also obliged to all colleagues in the department, Ms. Minu M. Gopal, Mr. Arun M.S, Ms. Femy O.A, Ms. Deepthi S and Ms. Suba Kuriakose.

I am short of words to express my gratitude to my co-worker, Mr.Krishnakumar Menon, Assistant professor, Department of English for the proof reading of this work. I am also obliged to all my fellow research scholars in the Department of Commerce and Management studies especially, Ms. Reshmi M. Menon, Dr.K Shahar, Mr. Sanesh C,

Dr.M.Dhanisha, Dr.M. Divya and Ms. Amritha N.P. I also express my special thanks to M/s Educare Printing, Thrissur for their valuable help.

My study would not have been successful without the support of my beloved husband, Mr.Rejeeve Rajan. I sincerely thank him for his continuous help, inspiration, more importantly, for his patience and good humor when the midnight oil was being burned. From the bottom of my heart, I thank my lovely sweet son, M.R. Karthikeyan and the new born baby M.R.Nalinraj for their sacrifices during the course of the work. My heartfelt gratitude to Dr.Bindu Varghese, Gynecologist, Mother Hospital, Thrissur, for the mental courage and strong support to complete this work even during the struggling pregnancy period. I am very much indebted to my ever loving brothers and sisters for pushing me to pursue my dreams. I express my sincere gratitude to my father- in-law H/Capt. M.K.Rajan, Sister-in-law Advocate Reena Sujeth and my nephew Mr. Devanarayanan for their love, understanding, prayers and continuing support to complete this research work.

Above all, the endless thanks go to lord Almighty for all the blessings he has showered on me, the opportunities and the cozy circumstances he has forever offered me to pen down every single word of this thesis.

Sujitha K.A

Contents

List of Tables

List of Figures

List of Abbreviations

ABC	Activity Based Costing
AMC	Annual Maintenance Contract Charges
ATM	Automated Teller Machines
CAFRAL	Centre for Advanced Financial Research And Learning
CBA	Cost Benefit Analysis
CBR	Cost/Benefit/Risk Analysis
CBS	Core Banking Solutions
CBSAC	Central Bank of a South Asian Country
CDM	Cash Deposit Machine
CEEP	Customer Experience Excellence Project
CINB	Corporate Internet Banking
CRM	Customer Relationship Management
CVM	Customer Value Management
DB	Data Base
ECDM	Electronic Cheque Dropbox Machine
EDI	Electronic Data Interchange
EFT	Electronic Fund Transfer
EMEE	Economic Management Efficiency Evaluation
EMI	Equated Monthly Installment
EMV	Euro pay, MasterCard and Visa
e-TDR	Electronic Term Deposit receipt
e-STDR	Electronic Special Term Deposit receipt
FD	Fixed Deposit Receipt
HVB	High Volume Branches
IB	Internet Banking
IBA	Indian Bank's Association
ICICI	Industrial Credit and Investment Corporation of India

ICT	Information and Communication Technology
IDRBT	Institute for Development and Research in Banking technology
IMT	Instant Money Transfer
IT	Information Technology
KYC	Know Your Customer
KPIs	Key Performance Indicators
KS	Kolmogrove Smirnov Test
LAF	Liquidity Adjustment Facility
LHO	Local Head Office
LVB	Low Volume Branch
MB	Mobile Banking
MBPM	Miscellaneous Budgeting and Performance Monitoring
MFSD	Monetary and Financial Statistics Division
MICR	Magnetic Ink Character Recognition
MOPS	Multi Option Payment System
MSS	Market Stabilization Scheme
MVB	Medium Volume Branch
NFS	National \financial Switch
NPCI	National Payments Corporation of India
OCC	Office of the Comptroller of Currency
OTP	One Time Password
PC	Personal Computer
PEP	Productivity, Efficiency and Profitability
PIN	Personal Identification Number
PNB	Punjab National Bank
POS	Point of Sale
PRM	Proactive Risk Management
QMS	Queue Management System

RBI	Reserve Bank of India
RBO	Regional Business Office
RD	Recurring Deposit
RTGS	Real Time Gross Settlement Scheme
RTO	Recovery Time Objectives
SBI	State Bank of India
SMS	Short Message Services
SSK	Self Service Kiosk
SWO	Standardized Single Window Operator
TAM	Technology Acceptance Model
TEBSS	Technology Enabled Banking Self Services
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TVM	Thiruvananthapuram
WAP	Wireless Application Protocol
WWW	World Wide Web

Chapter 1

Introduction

Contents **Page No.**

Chapter 1

Introduction

Bank is a financial institution that borrows money from the public and lends money to the public for productive purposes. For a businessman it is an institution of finance and for day to day customer it is a depository for his savings. Thus banks act as intermediaries in the flow of funds from savers to users. Therefore banks should render an efficient customer service to retain the present customers and also to attract potential customers.

Banking sector has undergone huge transformation and it appears and acts totally different from the past. Going by the current trends it might be vastly different in future also. Large scale usage of information technology by banks has resulted in computerization of many branches and their interconnectivity by means of safe and reliable networks. Banking functions have undergone a significant change. While the new private sector banks have all commenced as entities with fully computerized operations, the older banks too have embraced the IT in a big way. Today all the public sector banks are on the threshold of achieving the status of 100 percentage computerization of their business.

Prior to the liberalization era, the banking sector in India was operating in a protected environment and was dominated by nationalized banks. Banks at that time did not feel the need to pay attention to service quality issues and they assigned very low priority to identification and satisfaction of customer needs. The need of the hour in the Indian banking sector is to build up competitiveness through enhanced service quality, thus making the banks more market oriented and provide more services to the customers as they want to improve their operational efficiency.

1.1 e-Banking Services

Electronic banking (e-banking) is the newest delivery channel of banking services. e-banking refers to several types of services through which a bank's customers can request information and carry out most retail banking services via computer and mobile phone.Burr,1996,describes it as an electronic connection

between the bank and customer in order to prepare, manage and control financial transactions. Electronic banking can also be defined as a variety of the platforms like internet banking or online banking, tele banking, mobile banking, PC banking or offline banking.

Financial institutions should base any decision to implement e-banking products or services on a thorough analysis of the costs and benefits associated with such action. Some of the reasons, institutions offer e-banking services include:

- Lower operating costs
- Greater geographic diversification
- Improved or sustained competitive position
- Increased customer demand for services
- New revenue opportunities

In this context a systematic process for calculating and comparing benefits and costs of e-bankingservices are required. Therefore, the cost benefit analysis will be conducted and aimed at two things:-

(1) To determine if it is a sound investment/decision

(2) To provide a basis for comparison

Hence, to gain and sustain competitive advantages in the fast changing retail banking industry in India, it is crucial for banks to understand the effectiveness of e-banking strategy. Bankers should realize the importance of cost of benefits accruing from the opportunities emerging from the digital revolution.

1.2 Significance of the Study

The rapid advancement in information and communication technology (ICT) has had profound impact on the banking industry and the wider financial sector. It has now become a tool that facilitates bank's organizational structures, business strategies, customer services and other related functions. Banks, with the help of IT are providing their customers with the best technology-based products and services than ever before. Some of the services are:-

- Internet banking or online banking
- Tele-banking
- Mobile banking
- Electronic mail
- INFINET
- Cyber banking
- ATM
- E-cheque
- Electronic Fund Transfer(EFT)
- Automated clearing home
- Magnetic Ink Character Recognition(MICR)
- Real-Time Gross Settlements(RTGS)
- D-mat accounts

These technologies, when combined, can dramatically change how IT is organized and delivered within banks. There are also far too many services in banks that can be outsourced like transaction reconciliation, settlements, customer data integration, kiosk management etc.

The future of banking business very much depends upon the ability of the banks to develop close relationship with the customers. In order to develop close relationship with the customers the banking industry has to focus on the technology oriented innovations that offer convenience to the customers. Today customers are offered ATM services, access to internet banking, phone banking facilities and credit cards. These have elevated banking beyond the barriers of time and space. Customer centric approach coupled with effective use of technology and resources speaks of encouraging signs for the growth in this sector. Therefore the significance of this study lies in its attempt to examine the cost benefit analysis in e- banking transactions which may be useful to the banking industry in Kerala.

1.3 Research Problem

Banking is a key industry in the service sector and the Indian banking system has the largest branch network spread over a vast area. In the cut throat competition,

the survival of any bank depends upon the satisfied customers. The efficiency of a banking institution depends upon how best it can deliver services to its target customers. In order to survive in this competitive environment and provide continual customer satisfaction, the providers of banking services are now required to continually improve the quality of services. Therefore it is crucial for banks to understand the effectiveness of e-banking strategyand should realize the importance of cost saving from the opportunities emerging from the digital revolution.

In the emerging market scenario, survival and growth is critical for bank to align its vision, mission, goals and objectives of customer satisfaction. In order to retain the customers, banks have to provide better quality services. More than that, the cost structure of e-banking strategy needs to be evaluated for analyzing the efficiency of banks. Therefore, one of the problems emerging in the changing banking scenario is, whether the huge investments made in providing e-banking services are justifiable with the benefits or return aspects of e-banking services. From the bank's point of view, cost per unit of electronic transactions is much lower than that of traditional channels. But for some reasons banks do not want to lose the traditional channels. Banks can save a large amount of cost on the transactions effected via electronic channels. Therefore to be able to draw conclusions about cost saving aspectof e-banking services, some investigation in to the transaction cost level is required. In this background, the cost benefit analysis of e-banking services is quite relevant.

Research Questions

- What is the Average hit per day per ATM machine of SBI from different dimensions like, Volume, RBO, Module and Network levels?
- Find out the Actual Number of users of internet banking & Mobile banking services of different classes of SBI in the state of Kerala?
- To what extent the level of cost per user and cost per transaction is varied between internet banking and mobile banking services?

- What are the relevant costs associated with Traditional and e-banking Services?
- What is the nature of growth pattern of e-banking services of SBI?
- Whether the e-banking services are cost effective in comparison to traditional banking services?

1.4 Scope of the Study

The scope of the study is exclusively limited to the cost benefit analysis of electronic banking services. The geographical area of the study is confined to the state of Kerala. The study covers the transaction cost analysis of e-banking services with the traditional banking services. All public sector banks, private sector, new generation banks and even co-operative banks are now in the path of adopting e-banking services. Due to the inconsistency and wide variations in providing e-banking services in private sector and new generation banks, State Bank of India alone is considered for the detailed analysis of the study.

Quick adoption of electronic banking can lead to success for the banks, consumers as well as for the economy. Human beings, being creatures of habit will probably view anything that is new with caution and suspicion. The same applies to electronic banking also. On the other hand, globalization and its impact on the use of information technology in the banking industry compel banks to push clients towards electronic banking.

Most of the earlier researchers have investigated the diffusion of new banking technologies in developed countries. Very less is known about the same in developing countries among which India is one. In Kerala, comparatively less number of studies has been conducted on the current status of electronic banking and internet banking adoption particularly from the consumer point of view. None of the studies were conducted for analyzing the cost effectiveness of e-banking services from the banks point of view. Thus there is a lot scope for this research to present new ideas concerning the cost benefit analysis in e-banking services, which may be useful to the banking industry in Kerala.

1.5 Objectives of the Study

The main objective of the present research work is to conduct a cost benefit analysis of e-banking services of SBI operating in the state of Kerala. In order to accomplish this main objective, the following specific objectives have been set forth.

1. To assess the transaction cost of ATM, CDM & RECYCLER services
2. To examine the transaction cost of Internet banking & Mobile banking services
3. To analyze and compare Average hit of ATM,CDM & RECYCLER services
4. To measure and compare the usage pattern of Internet and Mobile banking services
5. To make a comparative analysis on the transaction cost of e-banking services with Traditional banking service

1.6 Hypotheses

In line with the objectives stated above, the following hypotheses have been formulated and tested by employing the appropriate statistical tools.

Objective 1:

1. There is no significant difference in the transaction cost of ATM services in Volume level.
2. There is no significant difference in the transaction cost of ATM services in RBO level.
3. There is no significant difference in the transaction cost of ATM services in Module level.
4. There is no significant difference in the transaction cost of ATM services in Network level.
5. There is no significant difference in the Average transaction cost of CDM &Recycler services in RBO level.

Objective 2:

1. There is no significant difference in the transaction cost of internet banking services in volume level.
2. There is no significant difference in the transaction cost of internet banking services in RBO level.
3. There is no significant difference in the transaction cost of internet banking services in Module level.
4. There is no significant difference in the transaction cost of internet banking services in network level.
5. There is no significant difference in the transaction cost of Mobile banking services in volume level.
6. There is no significant difference in the transaction cost of Mobile banking services in RBO level.
7. There is no significant difference in the transaction cost of Mobile banking services in Module level.
8. There is no significant difference in the transaction cost of Mobile banking services in network level.

Objective 3:

1. There is no significant association in the average hit of ATM service in Volume level.
2. There is no significant association in the average hit of ATM service in RBO level.
3. There is no significant association in the average hit of ATM service in Module level.
4. There is no significant association in the average hit of ATM service in network level.
5. There is no significant association in the average hit of CDM service in Volume level.
6. There is no significant association in the average hit of CDM service in RBO level.

7. There is no significant association in the average hit of CDM service in Module level.
8. There is no significant association in the average hit of CDM service in network level.
9. There is no significant association in the average hit of Recycler service in Volume level.
10. There is no significant association in the average hit of Recycler service in RBO level.
11. There is no significant association in the average hit of Recycler service in Module level.
12. There is no significant association in the average hit of Recycler service in Network level.

Objective 4:

1. There is no significant association in the Active users of Internet banking service in Volume level.
2. There is no significant association in the Active users of Internet banking service in RBO level.
3. There is no significant association in the Active users of Internet banking service in Module level.
4. There is no significant association in the Active users of Internet banking service in Network level.
5. There is no significant association in the Active users of Mobile banking service in Volume level.
6. There is no significant association in the Active users ofMobile banking service in RBO level.
7. There is no significant association in the Active users ofMobile banking service in Module level.
8. There is no significant association in the Active users ofMobile banking service in Network level.

Objective 5:

1. There is no significant difference in the transaction cost of Traditional banking services in Volume level.
2. There is no significant difference in the transaction cost Traditional banking services in RBO level.
3. There is no significant difference in the transaction cost of Traditional banking services in Module level.
4. There is no significant difference in the transaction cost of Traditional banking services in Network level.
5. There is no significant difference in the transaction cost of e-banking services in Volume level.
6. There is no significant difference in the transaction cost e-banking services in RBO level.
7. There is no significant difference in the transaction cost of e-banking services in Module level.
8. There is no significant difference in the transaction cost of e-banking services in Network level.
9. There is no significant difference in the transaction cost of Traditional& e-banking services in Volume level.
10. There is no significant difference in the transaction cost of traditional & e-banking services in RBO level.
11. There is no significant difference in the transaction cost of traditional & e-banking services in Module level.
12. There is no significant difference in the transaction cost of Traditional &e-banking services in Network level.
13. There is no significant difference in the comparative transaction cost of various banking services.
14. There is no functional relationship between Mobile banking & Traditional banking services.
15. There is no functional relationship between Internet banking & Traditional banking services.

16. There is no functional relationship between ATM service & Traditional banking services.
17. There is no functional relationship between CDM services & Traditional banking services.
18. There is no functional relationship between Recycler services & Traditional banking services.

1.7 Operational Definition of Terms and Concepts

1. ABC: - ABC is a method of assigning overhead costs which identifies key activities and accumulates the costs associated with them. According to CIMA terminology, Activity based costing refers to "cost attribution to cost units on the basis of benefits received from indirect activities, i.e., ordering, setting up, assuring quality etc."Thus ABC recognizes that overheads do not just occur but are caused by activities. This is the heart of ABC.

2.LVB: -The size of banking branches depend upon the business of deposits and advances of transactions .Low Volume branches are those classification of banking branches which include in scale1&scale 2 of 15 crores to 30 crores of volume of business having average transaction per day varies from 200 to 300.

3. MVB: - Medium Volume branches are those classifications of banking branches which include in scale 3& scale 4 of 35 crores to 75 crores of volume of business having average transaction per day varying from 300 to 500.

4. HVB: - High Volume branches are those classifications of banking branches which include in scale 5 of 75 crores to 100 crores of volume of business having average transaction per day more than 500.

5. Transaction Channels: - Transaction channels are the general term used for combining traditional channels and electronic channels. The major group of e-channels mentioned in the study were, ATM, CDM, Recycler, Internet and Mobile banking channels. The transaction cost of these services is analyzed in the present work.

6. Hit: In banking terminology, hit means the number of transaction in an ATM, CDM& Recycler machine. The number of "hits" per day is multiplied by the total working days to arrive at the monthly hit for calculating cost per transaction of ATM, CDM& Recycler service.

7. Footfall:-In banking terminology, the transaction cost of traditional banking activity is known as **footfall.** All India Level SBI rate of footfall is Rs.45/-. Generally it may vary from Rs.40/- to Rs.60/-.

8. AMC: AMC stands for Annual Maintenance Contract charges.It is one of the important cost elements for the cost computation of operation cost of ATM, CDM & Recycler services.

1.8 Methodology and Data base

The methodology followed in the present research work is briefly explained in the following pages.

1.8.1 Method of Research

The research work is both descriptive and experimental in nature. Since the study uses methodology for analyzing and comparing the transaction cost of various transaction channels at the first time than ever before, it can be described as an experimental study also.

1.8.2 Sources of Data

Both the secondary and primary data have been collected and used for the research work.

A Secondary Data

The secondary data needed for the study has been collected from the following sources:-

- MBPM department of SBI, LHO, TVM.
- Regional Business Offices of SBI in Kerala circle.
- SBI Annual Reports between 2013-2016.
- SBI website www.onlinesbi.com.

- Research Dissertations and Theses.
- Research Journals.
- Periodicals.
- Study Reports.
- Research Publications.
- Books related to the study area and
- Other websites in banking sector

B Primary Data

Primary data have been collected from the branch managers of SBI branches in Kerala circle.

1.8.3 Population

The present research work is a population study.The population of the study comprises of 463 branches of SBI operating in the state of Kerala. The four dimensions of the study and number of units in each level are enlisted in the following table 1.1.

Table 1.1

Dimensions of Analysis and Number of Units

Dimensions of Analysis		No. of units
Volume	LVB	251
	MVB	199
	HVB	13
Total branches		463
RBO		13
MODULE/REGION		4
NETWORK		2

Source: computed and compiled from MBPM Department, LHO, TVM.

From the table 1.1, it is found that in volume level SBI branches are classified into 3 types such as Low Volume, Medium Volume and High Volume branches. The study also focused on Thirteen Regional Business Office levels, four Module levels and two network levels.

1.8.4 Instruments for Data Collection

Semi-structured Interview Schedule was used as the instrument for the collection of primary and secondary data. The interview schedule covers the cost details, number of transactions and elements used for the transaction cost. (Appendix)

1.8.5 Method of Analysis Followed and Variables Used

The current study aims to examine the cost structure analysis of e-banking services with traditional banking services of SBI in Kerala. It also covers the effectiveness of various transaction channels of SBI. To fulfill these objectives, the following variables are presented in the following table 1.2.

Table 1.2

Variables identified for the Study

Traditional level	Cost per transaction (footfall), Number of transaction, volume of business, Proportion of energy utilization of employees, number of depository transactions.
Internet banking	Cost per transaction, cost per user, transaction per user, Retail &corporate transaction, Number of transactions, Registered and active users.
Mobile banking	Cost per transaction, cost per user, transaction per user, No.of users, No. of transactions, Transaction cost.
ATM/CDM/RECYCLER	Average hit, Number of ATM/CDM/RECYCLER machines, Total number of transactions, Cost elements, Transaction cost.

1.8.6 Conceptual Model

The conceptual model used in the study using the above mentioned variables is shown below:

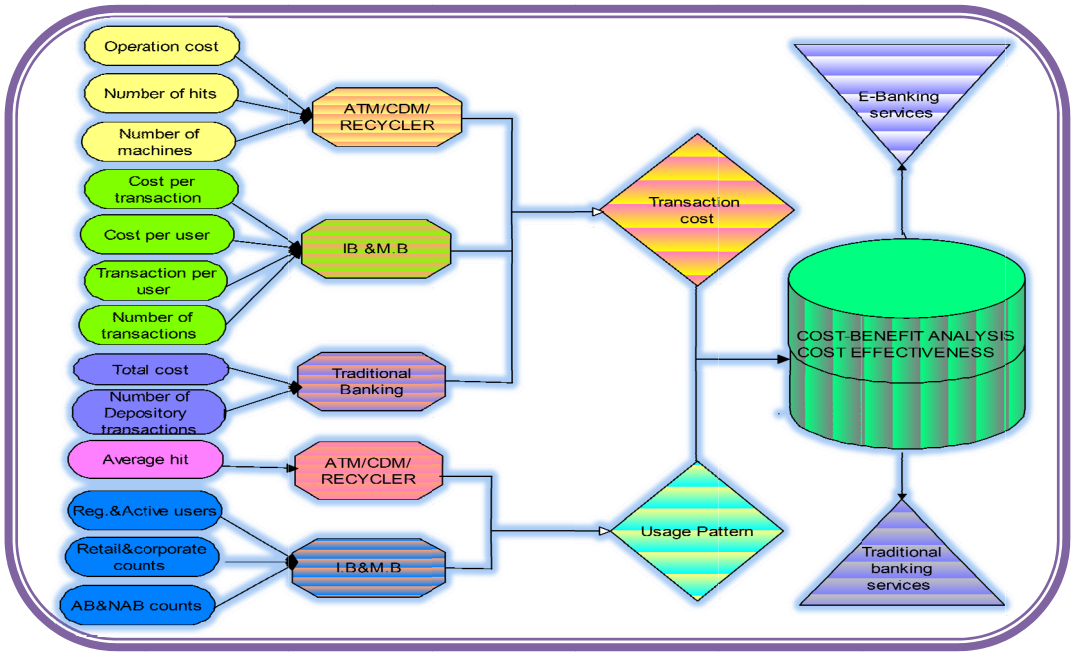


Figure 1.1 Conceptual model

1.8.7 Reliability and Validity Testing

For the scale evaluation, reliability and validity testing are generally applied. Reliability testing is very essential for the validation of the scale. In this study, the reliability of the measurement scales was tested by using Cronbach Alpha Reliability Coefficient. The value of Cronbach alpha is 0.796. Hence, it is proved that the measurement scales have the internal consistency and the scale is reliable.

The validity of a measurement scale means the ability of the measurement scale to measure what it is supposed to measure (Bajpai, 2011). According to Polit and Hungler (1991), there are four types of validity for measuring instruments designed to collect quantitative data. These are Construct validity, Content validity, Face validity and Criterion validity. In the present study, the researcher used Content validity, Face validity, Convergent validity and Discriminant validity. Since p-values are <0.05, all variables are valid.

1.8.8 Normality Testing

The normality of data is needed to test for applying probability statistical tests in the study. It was tested by using one sample K.S Test and found that the result showed a non normal data, as the p values are less than 0.05. Hence the researcher can do the non- parametric test assuming a non normal distribution.

1.8.9 Tools Employed for the Analysis of Data

The tools used for the analysis are briefly discussed below:-

1. Mean, Percentage and Standard Deviation

The mean or average is a measure for representing the entire data by one value. It is a measure of central tendency that attempts to describe a set of data by identifying the central position within that set of data. Percentages are used for comparing information of two different samples. Standard deviation is used for measuring the deviation of values from the mean score.

2.**Kruskal Wallis test**

Kruskal Wallis test is a non-parametric method for testing the samples originate from the distribution. It can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable.

3. Mann-whitney U test, Wilcoxon Signed test, Z test

Mann-whitney U test, Wilcoxon Signed test, Z tests is a statistical test for comparing the means of two independent groups in order to determine whether there is any significant difference between these groups.

4. Chi-square test of independence

Chi-square test of independenceis used to determine if there is a significant association between two catageroy of nominal variables**.**

5.Index Number

Index numbers are the indicators which measure percentage changes in a variable (or a group of variables) over a specified time."An index number is a statistical measure, designed to measure changes in a variable, or a group of related variables with respect to time, geographical location or other characteristics such as income, profession, etc."**(Spiegel)**

6. Regression

Regression is a technique for determining the statistical relationship between two or more variables where a change in a dependent variable is associated with, and depends on, a change in one or more independent variables.

The analysis of the quantitative data has been done with the help of statistical software called SPSS 22 and Mini Tab 14.

1.9 Research Model

The study has developed a research model for the functional Relationship of e-banking services with traditional banking services and it is depicted in fig. 1.2.

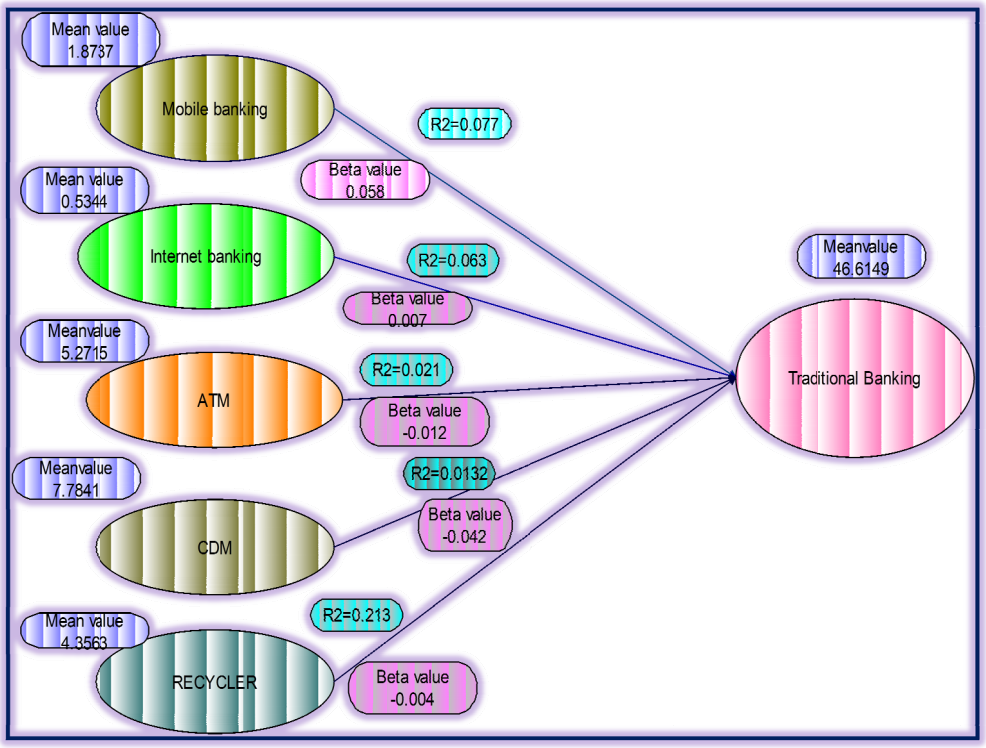


Figure 1.2 Research Model

The above model provides the form and degree of relationship between cost per transaction of Mobile, Internet, ATM, CDM, Recycler services with Traditional banking service. For the purpose of analysis of research model, the statistical technique of Simple Linear Regression Coefficients is used. As only a single variable of transaction cost is considered for model fitting, Limiting case of multiple regression coefficients, Simple linear regression is used for analysis.

1.10 Reference Period

The study was based on both primary and secondary data. The secondary data were collected from MBPM Department,LHO, TVM, Regional Business Offices of SBI in Kerala, various journals, Bank's websites etc. during the period from March 2013 to March 2016. The primary data were collected from branchmanagers of SBI in Kerala during the period from July 2015 to March 2016.

1.11 Limitations of the study

The present study suffers from the following limitations:-

- The Study is focused only from Bank's Point of View.
- The area of the study is limited to cost dimension of Depository transactions only.
- As unit costs of bank services are confidential and price-sensitive information, absolute numbers for unit cost findings are presented in the relative cost units.
- Cost structure of e-banking services is more complex than in a manufacturing Concern. Therefore uniform nature of cost classification could not possible.
- The beneficial aspect of the study is measured in terms of reduction in cost.

1.12 Chapter Scheme

The report of the work has been presented in eight chapters as detailed below:

Chapter 1: Introduction

The first chapter is the Introduction. It presents the significance of the study, research problem, scope of the study, objectives, hypotheses, methodological design, conceptual model and limitations of the study.

Chapter 2: Review of Literature

Review of Literature is the second chapter. It contains the relevant previous studies relating to the topic. Accordingly the chapter is divided into three sections. They are 1) Studies relating to e-banking services 2) Cost-benefit Analysis and 3) Activity Based Costing.

Chapter 3: Digitalization of e-Banking Services-An Overview:-

The chapter is divided into two sections- 1) Digitalization in banking industry which consists of concept, History and role of e-banking services and 2) Digitalization profile of State Bank Of India.

Chapter 4: Cost Structure Analysis of ATM, CDM & Recycler Services

The fourth chapter contains the cost structure analysis of ATM,CDM, & Recycler services. It also covers the comparison of transaction cost of ATM,CDM & Recycler services in volume,RBO, Module and Network levels of SBI in Kerala circle.

Chapter 5: Cost Structure Analysis of Internet and Mobile Banking Services

The fifth chapter is the analysis of Internet and Mobile banking services. It covers the analytical details of the transaction cost of the internet and the mobile banking services in four levels of State Bank of India operating in the state of Kerala.

Chapter 6: Usage Pattern of e-Banking Services

The sixth chapter deals with the growth of usage pattern of e-banking services. The chapter is divided into two sections.

Section A deals with the usage patternof ATM, CDM& Recycler services on the basis of average hit and

Section B covers usage pattern of Internet and Mobile banking services on the basis of Active users.

Chapter 7: Comparative TransactionCost Analysis

The seventh chapter deals with the comparative cost analysis of various transactionchannels SBI in Kerala. The chapter is divided into five sections.

Section A-Transaction cost analysis of traditional banking services deals with the cost elements, variables and dimensions of analysis for the cost computation of traditional banking services.

Section B- Transaction cost analysis of electronic banking servicesdeals with the variation in the transaction cost of e- banking services like ATM,Internet and Mobile banking services in four levels of SBI operating in Kerala.

Section C-Transaction cost analysis of traditional and e-banking services deals with the analysis of the transaction cost of the total services in various levelsof SBI in Kerala circle.

Section D-Comparative Cost Analysis is concerned with the effectiveness of various transaction channels of SBI in Kerala.

Section E- ABC in Banking Industry explores an awareness of activity based costing in the banking sector

Chapter 8: Summary of Findings, Conclusions and Suggestions

The Eighth and last chapter presents the major findings of the study, the conclusions based on the findings, suggestions and scope for further research.

References

Agbejule, A. (2000). An Administrative and Institutional perspective of Activity Based Costing Implementation. *Acta wasaensia No.74* , p.no.177.

Bajpai, N. (2011).*Business Research Methods.* chennai: Pearson publishers.

Blake, J. (1996). Consmption Profile costing;An enhancement to Activity Based Costing. *Journal of Bank cost and Management Accounting,Vol.11,No.2* , p.5-43.

Boardman, N. (2006). *Cost benefit snalysis,concepts and practice3rd edition.* Upper saddle River,NJ;Prentice Hall.

Emor. (March -May2002). *E-monitoring Report in Estonian.*

Hartfeil, G. (1996). Bank one measures profitability of customers,not just products. *Journal of retail banking services,vol.18,no.2* , p.23-29.

Helmi, M. N. (1996). Activity based costing in banking: A big challenge. *The journal of Bank cost and Management Accounting,Vol.9,No.2* , p.5-19.

Margherio, L. (2003). *The Emerging Digital Economy.* Retrieved from http://www.ecommercecommission.org/document/EmergingDig.pdf.

olga, L. (2003). *Hansabank ABC Hand book.* Hansabank.

Lustsik, O. (2001). *The Dynamo of e-banking.* Business week online,April 16.

Weiner, J. (1995). Activity based costing for financial institutions. *The journal of bank cost and management accounting,Vol.8,No.3* , p.19-44.

Chapter 2

Review of Literature

Contents Page No.

Chapter 2

Review of Literature

The core of the current research work is an investigation on the cost effectiveness of e-banking services of State Bank of India in Kerala. The study aims to examine the cost structure of e-banking services and traditional Banking services of SBI in Kerala. The researcher has made an attempt to review the relevant studies related to the present research work conducted so far in order to identify the research gap.

From the literature review, it is found that there are separate studies on e-banking services like, internet banking, mobile banking and ATM services in banking sector. Some studies show the relationship between cost and benefits of using e-banking services in general banking scenario. Similarly, a number of studies are done in the area of Activity Based Costing in banking industry and a few studies are there regarding cost effectiveness of e-banking services at national and international levels. Literature on the role of technology in the banking industry from the customer's point of view can generally be found, but few studies are undertaken from the bank's point of view.

For the purpose of presentation of past studies, the relevant studies are classified into the following three sections. They are

A. Studies On e-Banking Services
B. Studies On Cost-Benefit Analysis
C. Studies On Activity Based Costing

Brief reviews of the literature coming under the above stated heads are presented in an alphabetical order in the following pages.

2.1 Studies on e-banking services

Abushanab & Pearson (2007) investigated the key determinants of the adoption of internet banking in Jordan. The paper also attempted to validate the appropriateness of the United Theory of Acceptance and Use of Technology (UTAUT) within the context of internet banking. The results of the study indicated that UTAUT provides a good foundation for future technology acceptance research. The three main predictions relevant to the study were performance expectancy, effort

expectancy and social influences which were explained a significant amount of the variance in predicting a customer's intention to adopt internet banking.

Abhay Jain and Hundal (2006) examined the forces that can act as barriers in mobile banking service adoption. According to them, rapid changes in the financial services environment, increased competition by new players, product innovations, globalization and technological advancement have led to a market situation where battle for customers has become intense. In order to rise up to the challenges, service providers are even more interested to enhance their understanding of consumer behavior patterns.

Ahmad Zarkara Siam (2006) aimed at examining the effects of electronic banking on bank's profitability in Jordan. He studied about how banking sector finds itself before a new fact imposed by technology revolution and digits to change their work mechanisms from traditional means to electronic means and the challenges ahead. This study investigated the reasons behind providing e-banking services through internet, their impact on banking services in general and banks profitability in particular.

Ahmed Audu, Sany Sanum Mohammad (2010) aimed at investigating the relationship between the electronic banking facilities, customer employment sector and customer's age group choice of banks. The results showed that there is no significant relationship between electronic banking facilities and customers choice of banks. It was however found that there is significant relationship between customer employment sector and customer's age group on one hand and their choice of banks on the other hand. It was recommended that the management of Nigerian commercial banks should find the relevant factors that are considered important by customers of various age groups to appropriately segmenting the target market.

Al-Ashban and Burney (2001) conducted a study among the Saudi Arabian bank customers on the adoption of tele banking services. They explained the important factors determining e-banking adoption viz the exposure levels to the service, familiarity with the service, and the demographic factors like age, income and educational level. The study revealed that the non-usage of tele-banking services can be due to the unfamiliarity with the service and demographic factors.

Ambrose, Ekong Akpan (2012) endeavored to establish the level of efficiency and effectiveness of electronic banking in Nigeria. A survey was conducted with customers and staff of selected banks. The study revealed that the current banking operation in Nigeria is significantly adequate. It was also noted that majority of bank customers are not aware of other electronic services such as internet banking, telephone banking and point of sale (POS). It was discovered that most customers of Nigerian banks only uses ATM as the only electronic banking service. The author equally discovered that lack of power supply in the country is a major barrier to other users of electronic services. Given the associated problems of insecurity in electronic cards and frequent network failures in banking scenario, the author suggested that banks should use more efficient telecommunication equipment like fibre optic cable in data transmission to make the system operation faster and secured.

Amin (2007) conducted a study on internet banking adoption among young intellectuals in Malaysia. The aim of the study was to study technology acceptance of internet banking among under graduate students in Malaysia, using the modified Technology Acceptance Model (TAM) as the theoretical framework. The results suggested that perceived usefulness, perceived ease of use, perceived credibility had significant relationship with behavioral intention.

Anitha (2010) in her paper on mobile banking made an effort to throw more light on the study, methodology and modus operandi of mobile banking services. The paper highlighted the introduction of the new lucrative technological aspects of Mobile banking .The author opined that, with the advent of this new channel, it is possible to bank from anywhere at any time and in any condition through either SMS or WAP by linking one's bank account to a mobile phone.

Arunanchalam and Siva Subrahmanian (2007) stated that the potential competitive advantage of e-banking lies in the area of cost reduction and satisfaction of consumer needs. They included the information from International report as the banking transaction on a brick and mortar banking costs around Rs.50/- while through ATM, it costs around Rs.14/- to Rs.15/-. On the other hand internet transaction cost less than a rupee. Thus e-banking is more of a norm rather than an exception in many developed countries due to the fact that it is the cheapest way of providing banking services.

Ashish das (2009) in his paper "Customers providing benefits to banks through usage of ATM and EDC Machines" attempted to argue on how imposition of a fee for third party. An ATM transaction serves to be counterproductive to the banking system and makes the payment system inefficient. The paper explained that IBA seems to take steps to generate additional income for the banks by an easy path of levying fees which is against consumer interest. This paper quoted a statement of Shri M.D.Mallya, Chairman and MD of bank Of Baroda and the deputy chairman of IBA, on "Role of Technology in Enhancing Quality of Customer Service in Banks" at a function organized by All India Bank Depositors Association on 30June 2009. The cost of a bank transaction on manual mode is estimated to be in the range of Rs.45/- to Rs.50/- while it is around Rs.15/- on ATM and Rs.4/- on e-banking. This is consistent with the approach paper of RBI in December2007 which indicated that generally the aggregate charges per ATM transaction range from Rs.10/- to Rs.20/- for each cash withdrawal and Rs.5/- to Rs.8/- for balance enquiry. In fact depending on business strategies adopted, some banks spend as high as Rs.72/- to service a customer at counters while they spend only Rs.18/- to service him at ATM. The study highlighted the Cost on ATM as Cost of the ATM Instrument and major recurring cost involves: Expenditure on location rent, Electricity (Air conditioner), Net work communications, Security, Stationery, Maintenance cash transportation (off site location) and Switch Fee (interconnectivity of ATM networks).

Board of Governors of the Federal Reserve System (2012) stated that mobile banking and mobile payments have the potential to expand financial services to the unbanked and under banked by reducing transaction costs and increasing the accessibility of financial products and services.

Chiemeke et al (2006) conducted an empirical investigation on adoption of e-banking in Nigeria. The study identified the major inhibiting factors to internet banking adoption in Nigeria such as insecurity, inadequate operational facilities including telecommunication facilities and electricity supply and made recommendations on how Nigerian banks can narrow the digital divide. Also the report revealed that internet banking is being offered at the basic level of interactivity with most of the banks having mainly information sites and providing little internet transactional services.

Clemes et al (2006) conducted a mail survey of 1960 households in New Zealand to understand consumer's choice between electronic and non electronic banking. The decision to use electronic banking was hypothesized to be a function of service quality dimensions, perceived risk factors, user input factors, price factors, service product characteristics, individual factors and demographic variables such as age, gender, marital status, income etc. The findings reveal that the service quality perceived risk factors; user input, factors, employment and education are the dominant variables that influence consumer's choice of electronic banking and non electronic banking channels.

Cyril et al (2011) identified factors affecting internet banking adoption among young adults. They remarked that banks should use wide advertisement media to introduce internet banking services and educate potential customers about how to become internet banking users, the range of services internet banking provides and the benefits of internet banking. They can also launch campaigns to raise awareness to more people, about time saving, convenience at anywhere, anytime, low costs and information availability. The campaigns can be used to mostly educate more on the relative advantage of using the system as well as how to handle and protect those regarding security and privacy issues. Campaigns can also be used to boost the general computer self-efficacy of the consumers through demonstrations at bank branches using a one-on- one consultancy system

Deepjyothi Choudhary and Dibyajyoti Bhattarcharjee (2015) reviewed the existing literature and tried to find the adoption characteristics and attitude of bank customers towards e-banking delivery channels. The study also found out certain socio - economic characteristics and demographic characteristics of bank customers in the context of electronic banking adoption and usage. The study also throws light upon the existing positive relationships between e-banking satisfaction and spread of word of mouth and also the positive role played by e-banking delivery channels in developing loyalty

Deyoung (2001) found that the average one year old internet only banks earned significantly lower profits than the average one year old branching bank due to low business volumes and high noninterest expenses. It supported the proposition regarding the internet only banks, fast growth but low or no profits.

Dhandayuthapani (2012) measured, in his study, eight dimensions of e-banking service quality and its effect on customer satisfaction. The study was conducted as a survey that examined customer's satisfaction with e-banking practices in public and private sector banks located in Thanjavur district of Tamil Nadu state in India. The study also focused with the hurdles of electronic banking. Major hurdles identified were customer skills, security risks, fraud in transactions, fake bank web site/email, use of Trojan programs and technological issues. The study revealed that dissatisfied level is highest in case of ATMs in the public sector banks as compared to private sector banks whereas in case of internet banking and mobile banking, dissatisfied level is highest in public sector banks when compared to private sector banks.

Dhekra Azouzi (2009) aimed in his paper the impact of current and prompt technological revolution attiring the whole world on the Tunisian banking sector. This study traced to understand the customers behavior regarding the adoption of electronic banking. To achieve this purpose, an empirical research is carried out in Tunisia and it revealed that panoply of factors is affecting the customer's attitude towards e-banking. Furthermore, this study showed that despite the presidential incentives and in spite of being fully aware of the e-banking benefits, numerous respondents are still using the conventional banking

Divya Singhal and Padmanabhan (2008) explored the major factors responsible for internet banking based on respondent's perception on various internet applications. Internet banking is becoming increasingly popular because of convenience and flexibility. The paper provided a framework of the factors which are taken to assess the internet banking perception. This study aimed to explore the major factors responsible for internet banking based on respondent's perception on various internet applications. It also tried to examine whether there is any relation with the demographic variables and respondent's perception about internet banking and whether the user and non-user perception differs. The paper concluded that, Internet banking is increasingly becoming a "need to have" than a "nice to have" service.

Elisha Menson (2010) empirically examined the impact of e-banking in Nigeria's economy using Kaiser-Mayer-Olkin (KMO) approach and Bartlett's Test of Sphericity which supports the use of factor analysis in order to extract independent

variables associated with e-banking. The paper explored the major factors responsible for internet banking based on respondent's perception on various e-banking applications. It also provided a framework of the perception. The results of the study showed that e-banking served several advantages to Nigerian banking sector. The customer's perception is that e-banking provides convenience and flexible advantages. It also provides transaction related benefits like easy transfer, speedy transaction, less cost and time saving. However the study showed that the Nigerian customers had security, access and not enough knowledge regarding e-banking services rendering by banking sectors in Nigeria. The study suggested that critical infrastructure like power and telecommunication should be provided with high level of stability to ensure the application of e-banking in Nigeria.

Fida Hussain Chandio (2011) developed and tested a model for Online Banking Information System (OBIS) acceptance. The model integrated key constructs from the information system acceptance research stream into the theoretical frame of the TAM and other theories from social psychology such as the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB) and TAM-2. OBIS acceptance was determined by eight main factors, which included perceived usefulness, perceived ease of use, trust, technological self-efficacy, response time, output quality, accessibility and terminology clarity. The results suggested that beliefs of usefulness, ease of use and trust jointly influence the behavioral intentions towards online banking information system acceptance.

Gareth James Peevers (2010) investigated the usability issues surrounding SMS banking. It identified three general functions of SMS in electronic banking: transactions, communication/ CRM and security. Three empirical usability evaluations that explored customer's perceptions and attitudes of using three functions of SMS banking were presented. The researcher founded that usability is a significant factor in the low customer adoption of SMS banking. It also showed that related to usability issues, customer concerns over the security of SMS as a banking channel.

Geetika Nandan andUpadhyaya (2008) conducted a study on the internet users and found that about 23% of the online users prefer internet banking as the banking channel in India, second to ATM which is preferred by 53%. Out of the 6365 internet users sampled, 35% use online banking channels in India. It showed that a

significant number of online users do not use internet banking and hence there is a need for understanding reasons for not using it.

Gerrard et al (2006) had done a study among the non-users of internet banking services in Singapore. The key findings are that the non users perceive more security risks in using internet banking, they have no perceived need for using it, there might have a lack of knowledge regarding how to use internet banking such as the procedures involved and some of them might be unaware about the availability of the services. The additional factors they found out for the non-usage of internet banking were inertia meaning lack of motivation to find out what the internet banking offered and what needed to be done to become an internet banking user, inaccessibility referring to lack of proper internet connectivity or having no PC connection. A minority of respondents cited that the reason for the non-usage of internet services as lack of human touch and a few of them gave the reason as pricing concerns arising out of the need for buying a PC.

Gunasekharan (2011) studied the factors considered for adopting e-banking/internet banking services by bank customers, functional/psychological barriers and usefulness & benefits of e-banking. It is concluded from the results of the study that the usage of ATM, Tele-banking and Internet banking are perceived as important and the usage of these services are associated with socio-economic and demographic characteristics of the respondents. In his study, most of the customers prefer manual banking over e-banking, however, the customers tend to use e-banking and internet banking and adoption of e-banking and internet banking services among the bank customers is significantly influenced by the number of banking transactions per month. Finally it concluded that there is significant difference between public and private sector banks in respect of both services provided and services performed via e-banking/internet banking.

Gupta and Verma (2008) studied the paradigm shift in Indian banking. The study highlighted the threshold of the revolutionary era and stated that anywhere and anytime banking, telebanking, internet banking, web banking, e-banking, e-commerce, e-business are all innovative offerings to customers. The authors said that there are five principal drivers leading to paradigm shift in Indian banking which are technology, global competition, customer's policies, governance and economic

condition. Finally they concluded that Indian banking industry is recognized as one of the important pillars of the economy.

Hawans and Tony (2006)described that service quality impact on customer satisfaction which in turn affected the financial performance of banks. Keeping existing customers as well as attracting new ones is a critical concern for analyzing the service qualities of e-banking services delivered over the internet.

Hway-Boon and Yu (2003) conducted a survey to determine the factors that were essential for the successful implementation of e-channels by domestic commercial banks in Malaysia. The results suggested that bank's operation management was the main factor affecting the success of ATMs, PC and Branch Banking. They found that the most successful delivery channel used by the banks to deliver their services was bank branches followed by ATMs, Phone banking, PC banking and Banking Kiosks. They predicted ,through the survey that bankers felt that the financial services would be mostly delivered by PC banking followed by ATMs and Phone banking, Banking Kiosks and lastly branch network in future years.

Joseph et al (1999) investigated the influence of internet on the delivery of banking services. They found six underlying dimensions of e-banking service quality such as convenience and accuracy, feedback and complaint management, efficiency, queue management, accessibility and customization.

Joshua (2009) has tried to examine the various antecedents' demographic, behavioral and attitudinal factors that influence the adoption levels of technology enabled banking self services such as ATMs, internet banking, telebanking and mobile banking in the Indian context. It has analyzed the various consequences of adoption of TEBSS like usage patterns, customer satisfaction, quality perception, the impact of electronic banking usage on branch banking and so on. From the results of the study several managerial implications such as identification of the characteristics of the appropriate target segments, the best ways of promoting the technology enabled banking self services among them, the areas for improvement in the deployment of such services have emerged. Based on these, several suggestions are put forward to improve the adoption levels and usage of these services by banks. These could be of practical importance for bank managements in India to make informed decisions pertaining to technology enabled banking self services regarding their promotion,

deployment and provisioning. The study shows that with appropriate measures taken by banks in India, technology –enabled banking self services has the potential to revolutionize the way the Indians do banking.

Kamini Singh (2011) focused on the innovative services provided by the banks as mobile banking, phone banking, card banking, internet banking and inter-branch banking. - The study analyses the satisfaction level, usage period and user rate of account holders while using these innovative banking services. The study also focusses on the inter relationship between the groups and within the groups. The broad objective of the study has, therefore, been to assess and analyze the degree of goodness and satisfaction of innovated banking service among all holders to analyze the existing differentials in levels of innovative banking services (phone, mobile, card and internet banking and inter branch banking) provided by public and private sector banks: to analyze the various factors considered while choosing the bank.

Karja Luote, Matila and Pento (2002) tried to analyze the consumer attitudes and reactions to electronic banking channels in Finland. The paper discussed the state of internet banking in Finland and tried to investigate the customer perceptive towards it. They suggested that bank employees, particularly bank managers could improve the chances of customer adoption of internet banking by more effective customer communication.

Kerem et al (2003) stated that internet bank services are used actively and most of the payment transactions are concluded via e-channels. The growth of self-service has been exponential but access to the internet is blocking further increase in the share of internet payment. Most of the consumers who start online banking do it because they need to pay bills frequently and would like to do it with minimum effort. Besides that, people use the internet banking to keep an eye on their money matters, view their account balance and check receiving payments from other parties. On average, 95% of the total volume of all payments is effected via e-banking facilities; online and offline internet banking and other electronic channels. It can be concluded that the clients using the internet banking are generally more active in using the banking services.

Khan, Mahapatra and Sreekumar (2009) aimed at evaluating the service quality of internet banking (I-Banking) services in India from customer's perspective.

A structured questionnaire containing 44 quality items is administered to various target groups. Seven quality dimensions, viz, reliability, accessibility, user friendliness, privacy/security, efficiency, responsiveness and fulfillment are identified based on principal component factor analysis. Demographic analysis of data reveals that gender is hardly a bias for use and evaluation of service quality of I-banking in most of the cases across various categories of customers. A valid mathematical model is proposed to assess the overall service quality using regression analysis. The results show that customers are satisfied with quality of service on four dimensions such as reliability, accessibility, privacy/security, responsiveness and fulfillment but least satisfied with the "user-friendliness" dimension. The empirical findings not only prioritize different parameters but also provide guidelines to bankers to focus on the parameters on which they need to improve.

Khrais (2012) attempted to investigate the effective factors of using e-banking services for customers. He stated that advanced technology allows the banks to enhance the operations with cost cutting effectively and efficiently in order to handle daily banking affairs via online banking channel/. Customers are being facilitated by reducing their visit in banks and doing their transactions via internet or ATM machines instead of personal visits to the branches. This paper aimed to investigate the effective factors of using e-banking services for customers in Poland through personal device availability of internet, convenience and security. The result proved that they have a strong influence of facilitating customer life service easily and comfortably.

Klapper and Demirgue-Kunt (2012) explained that mobile banking is a term used for performing banking transactions or acquiring bank account information via mobile devices. According to them, new processes, products and technologies have the potential to increase financial inclusion by serving those who typically have less access to traditional banking and financial services and the mobile phone is likely the most important technology that is expanding access, especially in countries that have large under banked or unbanked populations. In short, mobile technology has the ability to extend the reach of financial services.

Laukkanen and Luronen (2005) believed that mobile banking will provide another new channel for banking services, especially for certain remote areas where

online internet is still unavailable. Strategic implications and customer perception of mobile banking services are explored with a focus on the consumer value creation and a better understanding about the customer perceived value of mobile banking services.

Lee (2009) stated that online banking has recently been an ideal solution for a large category of customers, despite its disadvantages. He remarked that direct advantages are the mainspring of electronic banking adoption: e-banking provides customers with a wide range of financial benefits such as the lower transaction handling fees, higher deposit rates, opportunities to win prizes and extra credit card bonus points. Lee added that online banking provides customers with immediate available and transparent information.

Lee (2000) presented a model of consumer adoption and diffusion of technological innovations in the USA. Diffusion of technologies such as ATMs, debit cards, smart cards, direct deposit, and direct payment were considered in the study. The model conceptualizes that an individual consumer's adoption of a technological innovation is influenced by consumer, innovation and communication factors.

Luis et al (2008) opined that e-banking provides enormous benefits to consumers in terms of the ease and cost of transactions. They said that , the range of services and products offered by different banks vary widely both in their contents and sophistication. Banks have traditionally been in the forefront of harnessing technology to improve their products and services.

Maheswari (2011) studied about the views of the customers in using the e-banking services. She identified the research area to find the geniuses of e-banking and it is found to be important to have a comparative study between the nationalized banks and the private banks on the basis of opinions of customers. She evaluated the relationship between the activities undertaken through e-banking services and the problems of e-banking services.

Malhotra and Singh (2007) conducted a survey and showed that only 48% of the commercial banks operating in India as in March end 2005 offered internet banking. A visit to the Website of all banks in India showed that all commercial banks in India offered some form of internet banking services as on Dec.2008. As in all forms of technology innovation, PSU banks have remained lethargic in the race for

adopting internet banking practices. There were very few banks like SBI, BOB, Allahabad bank, syndicate Bank, Bank of India, Union Bank of India, Canara Bank and Punjab National bank that offered internet banking services before 2003. Although almost all public sector banks have "internet banking" section on their website. Most of these banks do not match the number of online transactions provided by their private counterparts.

Manminder Singh and Tripti (2015) investigated the impact of e-banking in profitability of Indian scheduled commercial banks for the period of 2006- 2014. The study consisted of 31 banks under the four major bank groups of scheduled commercial banks in India. Multiple Regression Analysis was used to test the effect of e-banking services on the profitability of banks. The outcome generated from the analysis is that there is positive effect on nationalized and old private bank's profitability while using e-banking. It showed that increase in number of ATMs affects the profitability positively. But in case of branch banking, insignificant relationship exists between number of branches and profitability of banks.

Mathumani and Praveena (2012) pointed out that, internet offers many benefits to the banks like vast reach, reduced transaction cost, direct marketing and cross selling, build bank's brand etc. It also offers benefits to customers like reduced cost, convenience, banking with the bank and not the branch, speed, better cash management etc. The state run public sector banks are lagging behind in net banking, although modest beginning has been made by the State Bank of India.

Megha (2010) studied about internet banking services of SBI on customer perspective. She focused on the customers taste and preference towards internet banking in SBI, various risk involved in internet banking and to build up various solutions for drawbacks in internet banking of SBI. Observations are to be made on Product characteristics, Customer attitude and preferences, Benefit, Current usage status, Future demand, Improvements and innovations to be introduced, Competitor strategies, Problems, Challenges, and Solutions to overcome challenges.

Mishra (2005) described that the internet banking is a cost effective delivery channel for financial institutions. The study highlighted the advantages of internet banking, current status of internet banking in India and the mechanism to protect the customer's data.

Ojo-Aglodu, ayodele Abraham and Omah (2012) aimed to study customer's opinion regarding the adoption of various e-banking technologies in Nigeria. The result of the research finding is that there is a high adoption level of e-banking technologies in Nigeria with ATM well forward. The internet banking is gradually gaining an increasing awareness but faced with the problem of high cost of internet connectivity and lack of telecommunication infrastructure. The study equally discovered that there are no enough security measures to protect internet banking. Therefore ,researcher recommend that e-banking transaction should have desirable properties like authenticity, confidentiality, unforgivable and integrity coupled with provision of adequate telecommunication infrastructure and increased culture of internet usage.

Oyelele, Sanni and Shittu (2015) aimed at investigating the effects of customer's educational attainment on their adoption of e-banking in Nigeria and adopted the extension of Technology Adoption Model (TAM) by adding customer's educational attainment to it. The study concluded that customer's educational attainment directly influence customer's perceived usefulness and perceived ease of use and indirectly influences the level of adoption of e-banking by customers. The study recommended that banks use different customer's educational attainment levels as e-banking product designing tool, thus making adoption easier and faster and government should make efforts to improve the level of literacy especially computer literacy among citizens. This will make it easier for customers to operate, interact and access e-banking platforms in Nigeria.

Pham (2010) believed that internet is a full-fledged delivery and distribution channel supporting consumer- oriented applications aimed at effectively and efficiently providing financial products and services to customers in the banking sector.

Pramod Damle (2006), gave a brief sketch of the Indian banking, followed by efforts for computerization since 1980's and traced the major milestones of IT deployment in banks in terms of technology adoption, business implications and regulators directives. This study also highlighted some of the landmarks in Indian banking sector. In this study, the author opined that, Indian banking was responsive to the IT security implications and many tech savvy banks have constituted IT security

organization comprising various levels like Directors security committee, a separate IT security section under IT department headed by an executive etc. It has been a humble but resolute opinion of the researcher that Indian banking, despite its present efforts, still needs more efforts on educating the workforce on the topic of IT security.

Prendergast and Marr (1994) viewed that adoption of internet banking will lead to cost reduction and improved competitiveness. This service delivery channel is seen as powerful because it can retain current internet-based customers who continue using banking services from any location.

Qureshi et al (2008) studied consumer acceptance of online banking in Pakistan, a developing country. In Pakistan, the adoption ratio was found to be very high. There were many banks which provided internet banking facilities to customers. The basic purpose of their research was to evaluate the customer acceptance of online banking. The study revealed that almost 50% of the clients shifted from traditional banking to online banking system. The core reason of this transfer was perceived usefulness, security and privacy provided by online banking.

Ranjan et al (2014) designed work to find out the benefit and problems of electronic banking on banks. They stated that one of the reasons of inherent benefit of e-banking is to serve time and magnificent efficiency in speed in the transaction of banking activities and consequently enhancing the performance of banks. Another benefit is the accuracy and reliability of the information. However, they stated that, very few banks have been successful in developing effective strategies for fully exploiting the opportunities offered by the internet. Moreover, new competition from pure online banks has put the profitability of even established 'brick and mortar' banks under pressure.

Rebecca T McGregor (2013) analyzed how mobile banking technology helps under banked or unbanked population's access more secure financial services and decrease personal financial risk. The analysis examined three different types of mobile banking transactions: paying a bill, receiving money or sending money. The analysis results indicated that consumers may be increasingly turning to mobile phones to meet their personal financial needs, when traditional banking services are not generally available. It also highlighted the need for global organizations and governments to increase investment in mobile banking services and the underlying

infrastructure necessary to support these services, especially in countries where the number of ATMs and commercial bank branches are low, in order to expand consumer access to financial services.

Reibstein (2002) stated that, customer satisfaction, customer retention and new customer acquisition were the key factors in e-banking system. It was more important to point out that the acquisition costs in online banking exceeded that of a traditional offline business by 20% 40%. He contrasted internet banking with traditional banking and said that internet banking involves non-human interactions between customers and online bank information system.

Richard Nyangosi and Sumanjeet singh (2009) did a study on e-banking in Kenya. The conclusion reached is that e-banking has become a trend in the finance industry of Kenya and that the traditional banking system practiced by banks in this country has been swept away and all the banks are now focusing on differentiating products and services in order to be eligible for the tough competition.

Safeena, Abdulla and Hema (2009) determined that the consumer's perspective on internet banking adoption Information technology is considered as the key driver for the changes taking place around the world. Internet banking (IB) is the latest and most innovative service offered by the banks. The transformation from the traditional banking to e-banking has been a 'leap' change. The evolution of e-banking started from the use of ATMs and telephone banking (telebanking), direct bill payment, electronic fund transfer and the revolutionary online banking.

Sandeep Bhardwaj (2012) Research Officer, State Bank Academy opined that mobile banking has become a key delivery channel for a growing number of financial institutions. Most of the mobile banking implementations have been related to retail banking. It is understood that all aspects of financial institutions benefit from the convenience and stickiness of mobile banking. According to him, the success factors for mobile banking in micro finance depend upon mass customer's adoption, utility of mobile service for cash in and cash out transactions, inter operability of service providers like banks/micro finance institutions/mobile network operators and mobile application providers using sophisticated technology. The banks talk about a mobile payment system which is cost effective and can cover the unbanked areas.

Sathye (1999) conducted a study among Australian banking consumers about security concerns and lack of awareness about internet banking and its benefits are the major reasons for the non-adaptation of the internet banking services. Other reasons cited for non-usage were pricing concerns, lack of ease of use resistance to change and lack of access to computers/internet.

Sheshunoff (2000) stated that internet banking has advantages for banks to maintain competition, to save costs, to enhance mass customization, marketing and communication activities and to maintain and attract consumers. He further stated that the primary advantage of internet banking is to save time and cost.

Shi Yu (2009) identified and investigated the factors which influence customer's decision to use a specific form of mobile banking and specifically focused on the evaluation of SMS based mobile banking in the context of New Zealand. The results of the study showed that specific factors such as service quality and service awareness were influencing user perceptions about the usefulness of SMS based mobile banking which in turn affect intention to use and adoption.

Siva Rama Prasad (2004) in his article stated that "Commercial banks generally install their ATM in urban area only. They refuse to install the ATMs in rural and semi urban areas. This system has to be changed. The Indian banking sector has to think about installing or providing the advanced services into rural and semi urban areas.

Srivastava (2007) studied consumer perception on usage of internet banking. The study focused on the factors that drive consumers to use internet banking. How consumers have accepted internet banking and how to improve the usage rate were also another area of focus. The research found that if the skills of consumers can be upgraded, consumers will be more willing to use internet banking. In addition, the study showed that inhibitory factors like trust, gender, education, culture, religion, security and price could have only a minimal effect on the consumer mindset towards internet banking.

Sudeep (2008) identified factors influencing the adoption and usage of internet banking in India. He also examined Technology Acceptance Model can be applied in internet banking adoption and usage and developed a model to explain

behavioral intention to use internet banking. According to him, the major factors that influenced internet banking acceptance were perceived usefulness, perceived ease of use, consumer awareness, consumer security concerns, quality of facilities, subjective norms and trust& privacy.

Suganthi et al (2001) empirically investigated into the internet banking patronage. According to them, improving customer service, increasing market reach and reducing costs are basic expectations of internet banking services. If consumers are to use new technologies, the technologies must be reasonably priced relative to alternatives. Otherwise, the acceptance of the new technology may not be viable from the standpoint of the customer. Internet banking model offers advantages for both banks and customers. The internet provides the banks with the ability to deliver products and services to customers at a cost which is lower than any existing mode of delivery.

Sultan Singh and Komal (2009) presented the impact of ATM on customer satisfaction. It was a comparative study of three major banks; SBI, ICICI and HDFC. The paper involves, introduction of ATM, history of three banks compiled through literature and it also covered the review of the various services provided by the three banks under study.

Sunita Bishnoi (2013) has attempted to find out the perception of customers regarding various issues related to ATM/ Debit cards. The study concluded that ATM is very convenient mode of electronic banking. The study also highlighted the demographic relations among various issues.

Suresh Chandra Bihari (2011) studied the relationship between internet technology in banking and profitability of the customer. It was also discussed the factors contributing to the benefit/profitability of the customer. The analysis concluded that online banking has not only contributed to the ease and convenience of the customer but also increased the profitability of the customers. The most important factor contributing to the increase in profitability of the customer is “transaction ease and cost saving”.

Tagreed Al Suleimani (2013) focused on the adoption of online banking by countries in general and particularly in Saudi society. This study investigated the

different reasons for the gap between online banking and information technology and how to bridge it. It also focused on the different factors that enhance the adoption of online banking services through general users. For successful e-banking business the gap between information technology and business must be bridged. A study for different factors that enhance e-banking adoption by customers will improve e-banking business and profits.

The National Office for the Information Economy (NOIE 2000) conducted a study in Australia revealed that e-banking was particularly widespread in Australia, Korea and Scandinavian countries, Singapore, Spain and Switzerland where more than 75% of all banks offered such services. Statistics revealed that the largest increase for the period 1998- 2000 was in the use of internet banking bill payment which increased from 0.6% in May 1998 to 8% in May 2000, an increase of 81%. Banks in Australia have responded to customer demand by providing interactive services through account monitory and management services and other value added services.

Unnithan and Swatman (2001) studied drivers for change in the evolution of the banking sector and the move towards electronic banking by focusing on two economies, Australia and India. The study found that Australia is a country with internet- ready infrastructure as far as telecommunication, secure protocol, PC penetration and consumers literature are concerned. India, by comparison, is overwhelmed by weak infrastructure, low PC penetration, developing security protocols and consumer reluctance in rural sector. Although many major banks have started offering internet banking services, the slow pace will continue until the critical mass is achieved for computers, internet connections and telephones. However, the upsurge of IT professionals with growing demands force in pressuring the Government and bureaucracy in the country to support and develop new initiatives for a faster spread of internet banking.

Uppal (2011) In his paper, a comparison is made between the services of three bank groups and respondents are asked which banks, they consider, is providing better, poor or same level of services. In this regard, majority of consumers of bank groups, young or old, less educated or highly educated have given the same views. Over all, public sector banks have gained the majority of 52.67% of customers,

private sector banks 78.33% of customers and foreign banks have gained majority of 76.33% of customers. These customers felt that all banks, whether Public, private or foreign, are providing the services not different from each other. The Chi –square test revealed that the difference in the opinion of customers in significant at 1% loss in case of each bank group under study. This study concluded that all banks, whether it is public sector, private sector or foreign banks are providing e-banking services. Customers were also demanding e-banking services. But at the same time, they face many problems like poor knowledge, poor response of employees, lack of online shopping facilities, misuse of ATM cards and difficulty in opening an account etc.

Wadie Nasrie and Mohamed Zarai (2014) aimed to identify empirically the factors influencing the intention to use Internet banking in Tunisia. The impact of perceived usefulness, perceived ease of use, awareness, social norms, security and privacy and computer self efficiency on intention to use internet banking is tested through SEM techniques. The 284 self administered questionnaires were collected from Tunisian customers who are using banking services in Tunisia. The findings of the study suggested that customers intention to use internet banking can be affected by perceived usefulness and perceived ease of use of internet banking. In turn, perceived usefulness can be affected by both perceived ease of use and social influence. Customer's perceived ease of use can be determined by security and privacy and customers self efficacy and social influence. These findings may provide for banks useful guidelines for developing internet banking systems in order to deliver services effectively.

Wan et al (2005) in their study among Hong Kong bank customers , found that ATM was the most frequently adopted channel, followed by internet banking and telephone banking and branch banking and telephone banking was the least frequently adopted. Beliefs about possession about certain positive attributes of the channels were predictive about the adoption of ATM and internet banking than adoptions of branch banking and telephone banking.

Weinninger (2006) evaluated the emerging role of electronic commerce in banks. E-commerce had created new form of competition and had compelled banks to make choices about the services they offer, the size of their branch network and extent their support to inter-branch payments network. The main objective of the study was

to understand the changes that had taken place with the introduction of electronic commerce. Development of e-banking products such as electronic billing, establishing internet portals, electronic checks, ATM etc had provided additional services to customers. The author also emphasized upon the strategic and operational risks which arise in banking sector. These could be minimized with a cost efficient electronic process.

Williamson (2006) remarked that online banking is a convenient way of operating banking transactions. Online banking is a highly profitable channel for financial institutions. It provides customers, convenience and flexibility and can be provided at lower cost than traditional branch banking.

2.2 Studies on Cost -Benefit Analysis of Banking Scenario

Aki (2002) highlighted the impact of technology in banking sector. New technologies cannot replace the branch network but these can support old methods of delivering the services. The author evaluated the structural change in Finnish banking sector from the period 1993 to 2002, which showed that 42% of households have internet connections with banks and 90% have mobile banking services. The author concluded that main goals of management of technology were to improve customer satisfaction, reduce cost and develop new methods to collect and analyze the customer information.

Andre Holder (2005) reported on the presentations and discussion at the workshop conducted by the Bank of England's Monetary and Financial Statistics Division (MFSD) on cost benefit analysis of statistics. Overall, however, the uncertainty around estimates of costs and benefits meant that CBA was likely to inform decisions rather than offer a simple decision making rule.

Atul bansal (2014) made an attempt for cost benefit analysis of three major nationalized banks such as Bank of India, bank of Baroda and Dena bank. For the Cost- Benefit Analysis, eight ratios have been examined. 1) Cost of deposits (Interest on deposits as % of total deposits), 2) Cost of borrowing Funds (Interest on borrowing funds as % of total borrowing funds), 3) Return on Advances (Interest on Advances as % of Total advances), 4) Return of Investments (Interest on investments as % of total investments), 5) Total deposits as % of total liabilities, 6) Total credit as % of total

deposits, 7) Total investments as % of total deposits, 8) Credit + investments as % of total deposits. Over all, it can be concluded that cost and returns are significantly correlated with each other which shows that with the increase in cost, return also increase because the more the funds are generated either through deposits or borrowing, the more will be the investment either on term credit or securities. He added that nationalized banks prefer deposits as cheaper mode of funds mobilization and advances as more profitable utilization of funds, just because of their efficient marketing strategies and sophisticated risk management. Nationalized banks prefer borrowing funds i.e. (from RBI to mobilize funds and invest the maximum share of their funds in Government securities) as these are less risky with more returns. Banks would have adopted the effective, practical and competitive strategies to survive in the high tech banking environment.

Basu (1970) examined the role of commercial banks in the planned economy of India after nationalization. The study portrayed how the commercial banks entered a new era of "mass" banking in the place of "class" banking in the post nationalization era. The study clearly reveals that the commercial banks made remarkable progress in the field of agricultural financing.

Burnham et al (2003) identified procedural, financial and relational costs considered by consumers when switching between various types of service offerings. In this study, consumers cited various types of costs which had inhibited their use of internet banking.

Celent Communications Report (2000) developed in conjunction with Digital Insight, a financial model capturing the costs and benefits to financial institutions of implementing e-banking channels for retail and commercial customers. The model calculated net present values of the costs and revenues generated when implementing different digital insight's e-banking modules, either separately or in combination. The drivers of profitability for e-banking institutions are, increased revenues, operational and transactional cost savings, ability to generate cross sales by encouraging traffic to the Website and the ability to retain customers through target marketing and maximizing the sites stickiness value. Indeed, the expense of offering internet banking is difficult to justify for smaller institutions on the basis of cost savings alone. This model calculated implementation and monthly operation costs,

operational and transaction cost savings and new revenues attributed to e-banking activities

Chowdary (2004) has opined that the presence of the customers on the bank premises is followed by their demands for customization and responses to their demands are to be shaped to their requirements by the frontline personnel. Any service provided to the customer can be differentiated from the service provided by other service providers. It possesses some unique selling proposition.

Rajiv Srivastava (2014) has described in his paper a compound cost/benefit/risk (CBR) analysis methodology and its applications in a computing system for assessing the security threats, vulnerabilities and suggested corrective actions. These factors are analyzed, evaluated and presented in a practical meaningful perspective. The decision making factor, which justified the selection of corrective action with respect to related risk is also calculated. The priority ranking of risk is defined in terms of the likely consequences of the threat, the frequency of exposure of threat and the probability of threat sequence completion and the correction value is defined on the effectiveness and cost of applied counter measures. The methodology employed a mathematical technique that combined both objective and subjective approaches to classical risk analysis.

Durkin and Howcroft (2003) evaluated that the banker- customer relationship was improved through mobile, phone and internet banking. The paper emphasized that new technology has made the banks very competitive and profitable especially the internet has played a key role in it. Perception of bankers and customers regarding the use of internet was examined. They pointed out that as consumer usage of remote bank delivery channels increases, relationship management will become more important. Further the combination of traditional and new delivery channels can help to improve their productivity and profitability.

Emmanuel Orangi (2013) examined the relationship between Information Communication Technology (ICT) usage and efficiency in the banking industry in Kenya. The study aimed to evaluate the various factors that ICT usage has brought in place to meet productivity, customer satisfaction and service delivery in the banking industry. The study focused on licensed commercial banks in Kenya. The findings

showed that ICT adoption in banks has led to improvement of operational efficiency and reduced information costs.

Hartfeil (1996) in his article, "Determination of customer benefits and share of wallet in banking", said that the primary challenge of small banks is initial cost systems, while for bigger banks; the real challenge is to make a large number of existing diffuse systems compatible ones and to make all available new information usable. Information on profitability of customers is regarded as one of the most important types of customer satisfaction

Henk Broders and Somesh Khanna (2015) believed that the digital transformation is at an inflection point. Digital will touch every aspect of bank operations, from product development to risk management and human capital management. Successful strategies need to be based on a clear understanding of how digital creates value, granular perspectives on consumer behavior and market dynamics and careful prioritization by top management among hundreds of potential digital investments.

IBA (2009) indicated that post April 2009 the intended purpose to serve the common man was achieved through making cross ATM wage free. However, there was a small minority of users who withdrew very large sums (on account of high card limits given by some banks to privileged customers) which would create logistics problems for banks at the cost of the common user. IBA's solution in form of limiting the number of free third party withdrawals to five a month is not reasoned enough and it would lead to limiting freedom to withdraw any amount(within Rs.10000/-) more than five times in a month. If need be, for free cross ATM withdrawals, one can possibly think of limiting the total amount to, say Rs.1.5 Lakhs a month. Further more if there are severe logistic issues involved just because a small minority of users tends to withdraw very large sums on account of high card limits,RBI may think of discouraging such users by additionally limiting free cross ATM withdrawals to a total of Rs.20000/- per day. Such a move would achieve eliminating the difficulties encountered by the banks and alongside also achieve the intended purpose to serve the common man.

Joseph M and Stone G (2003) in their paper, found that customer friendly technology such as ATM , internet banking and telephone banking has been used by the banks to reduce the cost of providing services and to increase the customer loyalty and market share. Technology plays a vital role in delivery of banking services. The study highlighted that access, location, security and ease of use of ATM machines appeared to be the most important component for banking customers for the adoption of e-banking. However banks should emphasize more on providing speedy and effective service to the customers. Further, bank managers should conduct periodic marketing studies to understand the level of technological services by the customers so that adequate service could be delivered at the right time.

Kaul Urvashi (2007) in the article titled "ATM: The power of Cash", explained the importance and benefits of ATM, the player in the Indian market and presented various statistical data concerning the growth of ATM and the benefit of customers in banks.

Kamath (2015) pointed out in his paper that the biggest advantage of digitalization of banking is that process flow will be smooth, systematic, transparent and less time consuming. This will save cost and time for the banks. The branch staff will be able to invest the surplus time in other services like consultancy, cost selling, relationship building and recovery.

Kamesam (2001) highlighted the changes that took place in the Indian banking industry which emphasized in technological advancement and profitability in banks. Technology has helped in centralized storage with decentralized processing which has helped in reduction of costs and NPAs. Further emergence of services such as EDI, usage of smart cards, RTGS, e-commerce; all resulted in increasing the level of profitability and productivity and productivity of banks. The author concluded that in order to reduce crimes, security audit should be done which will be helpful in improving customer service, increase systematic efficiency and thus increased productivity and profitability.

Khalfan et al (2006) noted that reasons for e-banking infrastructure investment include the premise of transaction cost reduction by limiting overheads associated with bank staff and bank branch costs and to provide better services to

customers who increasingly desire 24 hour banking. Indeed, a common reason for bank adoption of e- banking is to maintain the bank's competitive position and image.

Machauer and Margner (2001) have founded that segmentation by expected benefits and attitudes could enhance a bank's ability to address the conflict between individual service and cost saving standardization. Using cluster analysis, segments were formed based on combinations of customer ratings for different dimensions and benefits of bank service. The clusters generated in this way were superior in their homogeneity and profile to customer segments gained by referring to demographic differences.

Michel et al (2009) adopted three broad conceptual categories related to online banking service quality. Online consumers service quality, online information system quality and banking service product quality. Online customer service quality was measured by reliability responsiveness, tangibility and empathy; online information system quality was measured by aesthetics, timeliness, contents, ease of use, security and accuracy and banking service product quality was measured by the range of services, features, functions, menu and cost of online service.

Mini Joseph (2011) studied about the policy changes and its impact on Demand and supply of Bank Credit. She attempted to assess the impact of changes in interest rates (bank rate, repo, reverse repo and actual weighted average lending rate) and the cash reserve ratio from 1 April 1996 to 31 March 2009 in the demand and supply of credit. The study has also investigated the perspectives of households in Kerala regarding interest rate on loans and their attitude towards commercial banks. The study concluded that the RBI is successful in controlling the supply of credit by making changes in the policy instruments like repo and reverse repo. Modern instruments for sterilizing the credit like LAF and MSS and also effective in controlling the day to day money supply in the economy. However the limitation cited that the changes in interest rate policies of the RBI are not properly transmitted by commercial banks. Another concern area of monetary management in India is the lack of control over the foreign banks operating in India. In an era of retail banking the effectiveness of credit control depends on the perceptions of people about interest rate and their reactions towards interest rate changes.

Neeraj Sharma (2006) promoted the extent of information system effectiveness in Indian Banking sector. The Thesis centred on the need for one evaluation model based on Key Performance Indicators (KPIs) which promoted the extent of information system effectiveness. The work is undertaken at the industry level in Chandigarh region. It was based upon one evaluation model based on KPIs. The evaluation model brought out the effectiveness score of IS at the strategic level, functional level, technical level and as a composite or integrated metric also. It was concluded that there was a need of constant monitoring and control system of IS with respect to business needs. Measuring and evaluating performance was a very critical factor for ensuring the success of any business organization and indeed for making IS payback.

Peterson et al (2011) studied and explored the challenges faced and benefits achieved from adoption and usage of e-commerce products and banking services by commercial banks in Kenya. The research showed that while the majority of the banks in Kenya have adopted e-commerce products and services, usage levels have remained relatively low as not many customers are using this innovation in Kenya.

Puri and kamath (2004) explained that banks in India have traditionally claimed the strength of their networks based on the number of branches. The logic was that the increase in branch network corresponds to more transactions, more business and therefore more profits.

Radhakrishnan (2008) stated in his study that as per the statistics, India experienced a high growth rate in the last four years, the consumers spending has claimed up to 75% as a result the banking industry is expected to grow further into the future days.

RBI Draft (2007) stated that when a customer of a different bank uses the ATM of other banks, he saves almost Rs.30/- even after shelling around Rs.17-20 as interchange and switch fees. Assuming that it indeed costs the bank around Rs.15-18 when a customer of the same bank uses its own ATM machine. It will cost the bank around Rs.17-20 when a different bank's ATM is used. This is due to a component of the cost called the switch (interconnectivity of ATM machines) fee which is the fee levied by the switch providers like National Financial Switch (NFS). Mitr, Cashnet,

Visa, MasterCard etc. and varies from 'Nil' to Rs.3/- per transaction. In order to reduce the cost of operations for the banks, The Institute for Development and Research in banking Technology (IDRBT), which is administering the NFS, has waived the switching fee since Dec 2007. Furthermore, the newly established National payments corporation of India (NPCI) handling all retail payments and settlement activities in the country is procuring Financial Switch in the IDRBT way. The cost per transaction would nearly half of the number of usage of an ATM is disabled. This aspect need to be kept in mind while RBI attempts to identify the true cost of running an ATM machine post April 2009.

RBI Report (2007) declared thatthe cost of a bank transaction on manual mode is estimated to be in the range of Rs.45/- to Rs.50/- while it is around Rs.15/- on ATM and Rs.4/- on e-banking. This is consistent with the RBI's Dec 2007 approach paper which indicated that generally the aggregate charges per ATM transaction range from Rs.10/- to Rs.20/- for cash withdrawal and Rs.5/- to Rs.8/- for balance enquiry (these being the cost/charges incurred by the card issuers bank for use of ATM of other banks). In fact , depending on business strategies adopted ,some banks spend as high as Rs.72/- to service a customer at counters while they spend only Rs.18/- to service him at ATM. Realizing the benefits bank get out of use of ATM, some banks, in order to push customers to ATM, even offer rewards.

Renil Roy (2011) concentrated on financial performance analysis of commercial banks in India. This study make an analysis of performance of SBI, PNB and ICICI banks for a time duration of five years ranging from 2009 to 2013 on the context of financial indicators and deposit products. Data analysis of deposit products comparison was analyzed using Spearman's Rank Correlation with respect to interest rates provided by these banks. The financial performance was analyzed by using financial ratio Analysis Technique. From the study, it has been revealed that the PNB become best after comparing parameters.

Ross E.B (1987) identified that an increase in customer loyalty by 5% could increase profits in banking by 50%. A more detailed analysis of customer profitability identified that a change in loyalty can have a dramatic impact on profitability. Losing most valuable customers can adversely affect the profitability significantly.

Sabate and Puente (2003) proposed that bank customers perceive a bank's reputation from four perspectives; quality of financial services, technological innovation, innovation in the product catalogue and financial transparency.

Sankaran (1999) studied the measures that would help domestic players in financial service sector to improve their competitive efficiency and thereby to reduce transaction cost. The study founded that the specific set of sources of sustainable competitive advantage relevant for financial service industry are product and process innovations, brand equity, positive influences of communication goods , corporate culture, experience effects and information technology.

Santha Vaidyalingam, mahendran Nair and mithi samudra M (2006) examined the impact of key factors to the soundness of banks. Soundness of banks is important for the economic development of a country. In this paper, they empirically examine the impact of key factors such as infrastructure (ICT infrastructure), Intellectual capital, Institutions, Integrity (governess), Interaction (strategic partnership) and Innovation on the soundness of the banks in developed, developing and under developed countries. The empirical results showed that the developments of the GIS in developing and under developed countries were significantly lower than that in developed countries. The study also showed that, well developed institutions, good integrity system and high innovative capacity contribute positively to the soundness of the banks. Key policies and strategies to facilitate the banking sector in developing and under developed countries to leapfrog countries to higher stages of financial soundness are discussed in this paper.

Schumpeter (1911) in his effort to analyze the importance of technological innovation in long run economic growth emphasized the critical role that the banking system would play in facilitating investment in innovation and productive investment by the entrepreneur.

Shahzeb Ali Malik (2010) presented the research work based on the current use of CRM within the banking industry of Pakistan and UK. He introduced a model specifically designed for banks, containing a complete view of the overall CRM activities and projects all the functional areas of CRM within a bank. The researcher highlighted techniques that would be useful for multiple case study research.

Subbiah and Jeyakumar (2008) studied about the Core banking concept adopted by banks. According to them, branch network is extensive and these branches are spread out in to the remote corners of the country. They pointed out that benefits of core banking were reduced transaction costs, increased customer satisfaction, rapid implementation of e-banking services, management of ever-increasing transaction volume and better security.

ThePEP committee on banking (1977) constituted to study productivity, efficiency and profitability of commercial banks has used four criteria, namely Productivity, Spatial social Objectives, Sectoral social objectives and Profitability. Under each criterion it used a set of indicators and examined aspects like planning, budgeting, marketing management, information system, annual accounting audit systems procedure and so on. The committee analyzed banking cost, profitability of operations, pricing of bank services, trends in earnings and expenditure etc: and made a number of recommendations. The study is experimental in nature and it categorically stated that the set of indicators used by it does not represent either the first or the last choice.

Zacharias Thomas (1997) studied the performance effectiveness of nationalized bank by taking Syndicate bank as case study in hid PhD thesis. He has examined various aspects like growth and development of banking industry, achievements of Syndicate bank in relation to capital adequacy, quality of assets, profitability, social banking, growth, productivity, and customer service and also made a comparative analysis of the performance of Syndicate bank in relation to nationalized banks. The researcher developed an Economic Management- Efficiency Evaluation Model (EMEE Model) to review and analyze the performance effectiveness of Syndicate Bank and other nationalized banks in India.

2.3 Studies on Activity Based Costing

Olga Lustsik (2004) showed how it is possible to implement ABC in banking and proves empirically that electronic channels help to reduce the costs of both banks and their clients. In this article, the author explored the implementation techniques of Activity Based Costing (ABC) in the banking sector on the example of an Estonian bank in order to analyze the cost structure for traditional and electronic channel

transactions. The detailed information provided by the ABC technique can help banks to regulate and reduce some cost components: understanding of the IT cost components of e-banking distribution channels gives an insight about the fixed and floating components of IT expenses and these can create the preconditions for cost saving.

Anna etal (2012) used a case study approach to develop an Activity Based Costing Model. It was used for estimating the cost of preserving digital research data and identifying options for improving and sustaining relevant activities. Costs of resources are being assigned to cost objects through activities and cost drivers. The unit of cost measurement is introduced to analyze the outputs of the model

Atkinson et al (2012) viewed that service companies are ideal candidates for ABC even more than manufacturing companies. When ABC is adopted in manufacturing and service sector organizations, the Government sector organizations started to adopt it. They have listed lack of clear business focus, senior management support, poor ABC model design, organizational and individual resistance to change and inappropriate delegation to consulting organizations as the main problems in ABC implementation.

Borjesson (1994) presented two case studies where activity based projects are practiced to achieve two different objectives of activity analysis, namely product costing and activity control.

Brown, Myring and Gard (1999) suggested that government organizations show interest in ABC long after the adaptation of ABC by its counterparts. They identified the competitive pressures, availability of advanced technology and the availability of wide applications as the main reasons for the Government sector to adopt ABC. They have studied how ABC could be used to improve the performance of a health care and insurance program. They stated that successful implementation of ABC is needed through careful and thoughtful steps that incorporate many aspects. Further, they emphasized that the implementation of ABC fails due to “how it was done but not what was done”.

Carmone and Salex (2008) noted that management accounting in banking institutions was introduced considerably later in comparison with companies in other

sectors. There were internal conditions that had to do with the nature of the banking business and the operations of these companies which differ from those of other sectors. This prevented the transfer of models that had basically been developed for industrial companies to the financial sector. On an internal level, the point has been made that the characteristic features of the products and the production process of banks hinder the application of management accounting technique.

Cooper and Kaplan (1992) focused on Activity Based Costing system as an alternative to the traditional costing system. Prior to the emergence of ABC system, the traditional costing system, which is commonly known as absorption costing system was the most popular cost allocation method. Traditional costing systems use volume-driven allocation bases to relate overhead costs to products or services. However the issue is that products or services do not demand resources proportional to the volume. Consequently, these systems did not report accurate product costs.

Drury (2004) opined that a cost accumulation system is needed to generate information for an organization. The traditional costing is appropriate generally when direct costs are the major cost of the product or service and the activities supporting the production of the product or service are relatively simple, low cost and homogenous across different product lines. Unlike traditional costing, ABC system traces the uses of resources to activities and links the activity costs to products, services or customers. The first stage of ABC assigns factory overhead costs to activities or activity cost centers (activity cost pools) by using appropriate activity consumption cost drivers that measure the demands of cost objects placed on the activities. Therefore by using cost drivers in both the first and second stage cost assignments, ABC systems provide more accurate measures of product or service costs for the cost of activities that are in proportional to the volume of outputs produced.

Innes and Mitchel (1990) remarked that ABC systems differ fundamentally from volume based costing systems in two ways. First, the ABC system derives cost pools as activities rather than production plant or department cost centers. Secondly, the cost drivers that the ABC system uses to assign activity costs to cost objects are drivers based on an activity or activities performed from the cost object. Therefore,

Innes and Mitchell are of the view that ABC cannot yet be viewed as having replaced more traditional costing systems in financial institutions.

Kaplan and Anderson (2004&2007) suggested that expensive data for ABC systems, time consuming design process and lack of enterprise wide ABC systems could inhibit the value of traditional ABC and suggest a time driven ABC system as a solution. They also highlighted how the profit analysis system got increased visibility after the appointment of a new CEO in financial service firm. Prior to implementing ABC, a comprehensive cost benefit analysis was performed. This action was driven by the philosophy that the benefits attainable from implementing such a costing mechanism are greater than the associated costs in the long run.

Liyanage et al (2014) examined why and how a Central Bank of a South Asian Country (CBSAC), the monetary authority and the regulatory body of finance and banking sector, adopts and implement Activity Based Costing (ABC) practices. In this paper, primary data were collected by conducting semi structured interviews and observing organizational processes. Secondary data were collected through reviewing various documents such as guidelines to activity wise time recording sheets. Annual reports and online sources included the CBSAC Website and CBSAC internet. This study demonstrated how ABC system was implemented and is continuously improved at CBSAC. It is also identified that the appointment of the new Governor in 2006 was the major driver for moving towards ABC method at CBSAC. Thus this study showed how the influence the persons with authority could bring accounting change to derive better results.

Maiyaki (2011) emphasized that, conventional cost accounting systems have neglected the huge investment and expenses in an organization's service functions. The conventional system can not accurately assign the costs by using only volume as a basis, can supply management with an incorrect picture of how costs are established. Well managed service companies with a good understanding of their market, customers and information technologies can become more profitable in a de regulated and competitive environment.

Mart Sorg and Olga Lustsik(2004) explored the implementation techniques of ABC in banking sector on an example of an Estonian bank in order to analyze the

cost structure for traditional and electronic channel transactions. The study examined developments in the profitability, profit sources and success strategies of Estonian banks. They also proved that new electronic channels provided to banks are more cost saving than traditional channels and explain the difference in the cost structure

Philip C James (2013) investigated the factors influencing the adoption of (ABC) methodology within the financial sector in Jamaica. Qualitative analysis was done using the generalized linear logistic regression model. The results showed that there were three main factors that are statistically significant in the decision to implement an ABC system are: - company's perception of the ability of ABC to assist in cost control, the proportion of overhead to total cost and finally the action of competitors, that is, whether a competitor adopts the ABC methodology.

Seward (1999) identified that ABC is a cost measurement system which provides the cost of each product, service or customer by analyzing each activity needed to produce a product or service for the customer. When indirect costs are allocated to products based on the wrong cost driver, the products will appear less or more expensive than they actually are. ABC is used to identify all activities, direct and indirect, and thus allocate the costs associated with these activities more precisely.

Turney (1989) stated that, in allocating costs to products and services, ABC uses multiple drivers where resources are linked to activities via resource drivers and activities is linked to costs via cost drivers.

Williams and Melhuish (1999) identified that there is a positive relationship between ABC evolution and the success of the government activities. ABC would enable the Government agencies to make rational decisions, plan the budgets, establish fees and increase the production.

Yereli (2009) extended the application of ABC to the health sector. When ABC was used along with conventional costing system in a Turkish hospital to calculate the cost of a Gall Bladder Surgery, the results showed that cost of the surgery using ABC was significantly different from when conventional costing system is used. The conclusion was that ABC can provide more appropriate data and

can help mangers in analyzing the costs and thus better decision making about budgeting and strategic programming is possible.

2.4 Identification of Research Gap

From the foregoing survey of literature on related area, it is found that different studies have been carried out by several researchers and institutions in the area of e-banking services at a national and international level. But no studies have been conducted on the cost structure analysis of e-banking services from the bank's point of view. Similarly, there had been no studies on the cost effectiveness of e-banking services by calculating cost per transaction of e-banking services in Kerala. In this scenario, the researcher has made a novel attempt to fill the gap.

References

A. Studies on e-Banking Services

Abhay, J., & Hundal, B. (2006). Barriers in Mobile banking Adoption in India. *The IUP Journal of Bank Management,Issue 3* , 64-73.

Abushanab, E., & Pearson, J. (2007). Internet Banking in Jordan; The Unified Theory of Acceptance and use of Technology(UTAUT)perspective'. *Journal of Systems and Information Technology,vol.9,issue-1* , 78-97.

Ahamed Audu, S. s. (2010). Effects of Electronic Banking Facilities,Employment Sector and Age group on Customer's Choice of Banks in Nigeria. *Journal of Internet Banking & Commerce,vol 15,No.1* .

AhamedZakaria, Z. (2006). Role of the Electronic Banking Services on the Profits of Jordanian Banks. *American Journal of Applied Sciences 3(9)* , 1999-2004.

Al-Ashban, A., & Burney, M. (2001). Customer Adoption of Telebanking Technology:The Case of Saudi Arabia. *International Journal of Bank Marketing* , 191-200.

Ambrose, E. (2012). Level of Efficiency and Effectiveness of Electronic Banking in Nigeria. *International Journal of Marketing and Technology,Vol.2,Issue.5* , 34-44.

Amin, H. (2007). Internet Banking Among Young Intellectuals in Malaysia. *Journal of Internet Banking and Commerce,vol.12,No.3* .

Anitha, S. (2010). Mobile Banking. *Professional Banker* , 32.

Arunachalam L, S. M. (n.d.). The Future of Internet Banking in India. *Academic Open Internet Journal,vol.20* .

Ashish, D. (2009). *Customers Providing Benefit to Banks Through Usage of ATMs and EDC Machines.* USA: The University of Akren,Ohio.

B. o. (2012). *Consumers and Mobile Financial Services.* Washington: Board of Governors of the Federal Reserve System.

Chiemeke S.C, E. A. (2006). The Adoption of Internet Banking in Nigeria: An Empirical Investigation. *Journal of Internet Banking and Commerce,vol.11,No.3.*

Cyril E.U, J. M. (2011). Factors affecting Internet Banking Adoption among Young Adults: Evidence from Malaysia. *International Conference on Social Science and Humanity*, (pp. 377-381).

DeepjyotiChoudhary, D. (2015). Salaried Employees and Adoption of e-banking Delivery Channel. *International Journal of e-Education,e-Business,e-Management and e-Learning,vol.5,no.3* , 153-164.

DeyoungR. (2001). The Financial Performance of Pure Play Internet Banks. *Economic Perspectives25(1)* , 60-75.

Dhandayuthapani, S. (2012). *E-banking practices and customer satisfaction in Thanjavur District Tamilnadu:An empirical study.* Bharathidasan University.

Dhekra, A. (2009). The Adoption of Electronic Banking in Tunisia: An exploratory study. *Journal of Internet Banking and Commerce,vol.14,No.3* .

Divya singhal, P. V. (2008). A study on Customer Perception towards Internet Banking:Identifying Major Contributing Factors. *Journal of Nepalese Business Studies,Vol.5,No.1* .

Elisha, M. (2010). E- banking in Developing Economy:Empirical Evidence from Nigeria. *Journal of Applied Quantitative Methods,Vol.5,No.2* .

Fida, H. C. (2011). *Studying Acceptance of Online Banking Information System-A Structural Equation Model.* London: Brunel University.

Gareth, J. P. (2010). *Usability Design of (SMS)Short Message Service Mobile phone Banking.* the University of Edinburgh.

Geetika, N. T., &Upadhhyay, A. (2008). Internet Banking in India:Issues &Prospectus. *The ICFAI Journal of Bank Management,Vol.7,No.2* , 47-61.

Gerrard, P., & Cunningham, J. (2003). The Diffusion of Internet Banking Among Singapore Consumers. *International Journal of Bank Marketing,vol.21,No.1* , 16-24.

Gregory, D. W. (2006). Enhanced Profitability in Online Banking. *Journal of Economic Crime Management,vol.4,issue.2* .

Gunasekaran. (2011). *An Empirical Investigationof e-banking/Internet banking from Bank Customers Perspective.* Bharathi Dasan University.

GuptaS, V. (2008). Changing Paradigm in Indian Banking. *Professional Banker,May* , 21-25.

Hawari M, W. (2006). The Effect of Automated Service Qualityon Australian Banks Financial Performance and The Mediating Role of a Customer Satisfaction. *Market Intelligence Planning,Vol.24* , 127-147.

Hway, B. O., & Yu, C. (2003). Success Factors in e-channels;Malaysian Banking Scenario. *International Journal of Bank Marketing* , 369-377.

Joseph M, S. G. (2003). An Empirical Evaluation of US Bank Customer Perception of theImpact of Technology on Service Delivery in Banking Sector. *International Journal of Retail and Distribution Management,Vol.31,No.4* , 190-202.

Joshua, A. (2009). *Adoption of Technology Enabled banking self services,antecedents and consequences.* Cochin University of science and technology.

Kaminisingh. (2011). Inn0vated technology in Banking services. *Jounrnal of internet bankig and commerce,Vol.16 No.2* .

KarjaLuoto H., M. M. (2002). Factors Underlying Attitude Formation towards Online Banking in Finland. *International Journal of Bank Marketing 20(6)* , 261-272.

Kerem K, L. O. (2003). "Development of e-Banking in a EU candidate country:An Estonian case". *Proceedings of International Atlantic Economic Society Conference.* Vienna.

Khan M.S, M. S. (2009). Service Quality evaluation in Internet banking;an empirical study in India. *International journal of Indian culture and business management,vol.2* , pp.30-46.

KhraisL.T. (2013). The Effectiveness of E-banking Environment in Customer Life Service-An empirical study. *Polish Journal of management studies,vol.8* .

Klapper, D.-K. (2012). Measuring Financial Inclusion: The Global Index Database. *World Bank Policy Research Paper 6025* . Washington.

Laukkanen T, L. J. (2005). Consumer value creation in mobile banking services. *International Journal of Mobile communications,vol.3,No.4* , 325-338.

Lee, M. (2000). Consumer Adoption in Internet Banking:Need based and /or Skill based. *Marketing Management JournalmVol.11,No.1* , 101-113.

Lee, M. (2009). Factors influencing the adoption of Internet Banking:An Integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications* .

Malhotra, P., & Singh, B. (2009). The Impact of Internet Banking on Bank Performance and Risk:The Indian Experience. *Eurasian Journal of Business and Economics,vol.2,No.4* , 43-62.

Manminder, S. s., & Tripti, w. (February,2015). Impact of e-Banking on Profitability of Commercial Banks in India. *International Journal in Management and Social Science,Vol.3,Issue 2* .

Megha, T. (2010). *A study on Internet Banking Services in SBI with special significance on the Quality.* Thrissur: College of Co-operation Banking and Management,Vellanikkara.

Mike, C., Christopher, G., Visit, L., & Amy, w. (2006). A Logic Analysis of Electronic Banking in Newzealand. *International Journal of Bank Marketing,vol.24,issue-6* , 360-383.

MishraA.K. (2005). *www.banknetindia.com.* Retrieved from http://www.banknetindia .com/banking/ibkg.html5.

Muthumani A, P. R. (2012). e-CRM in Indian Banking sector. *Banking Finance,Vol xxv,No.10* , 32-35.

N.Maheswari. (2011). *Comparative Study on e-Banking Services between nationalised and private banks in Thiruchirappalli District.* Bharathi Dasan University,Thiruchirappalli.

NOIE. (2000). *Banking on the Net National Office for the Information Economy Australia.* Australia: National Office for the Information Economy.

Ojo-Agbodu, A. A. (2012). The Adoption of e-Banking in Nigeria; Problems and Prospects. *International Journal of Marketing and Technology,Vol 2,issue 6* .

Oyeleye O, S. M. (2015). An Investigation of the Effects of Customer's Educational Attainment on their Adoption of e-Banking in Nigeria. *Journal of Internet Banking and Commerce,vol.20,No.3* .

Pham, L. (2010). A Conceptual Framework for e-Banking Service Quality in Vietnam. *The Business Studies Journal* .

Pramod, D. (2006). *A Study of Infotech(IT)Security Training Imparted in Indian Banks.* University of Pune.

Prendergast G, M. N. (1994). The Future of Self Service Technologies in Retail Banking. *The Service Industries Journal,14(1)* , 94-114.

Qureshi, T., Zafar, M., & Khan, M. (2008). Customer Acceptance of Online banking in Developing Economies. *Journal of Internet Banking and Commerce,Vol 13,No.1* .

Ranjan, J. S., Ankita, B., & Paral, C. (2014). A Study on Pre and Post Impact of e-Banking on Banking Operation. *Galaxy International Interdisciplinary Research Journal,Vol.2,No.3* .

RebeccaTMcgregor. (2013). *Mobile Banking:Increasing Access to Financial Services.* Washington DC: George Town University.

Reibston, D. (2002). What attracts customers online stores and what keeps them coming back? *Journal of the Academy of Marketing Science,Vol 30* , 465-473.

Richard Nyangosi, S. s. (2009). E-banking in Kenya. *International Journal of Electronic Finance,vol.3,No.2* , 149-165.

Safeena, A. (2010). Customer perspectives on e-business value:Case study on internet banking. *Journal of Internet banking and commerce,Vol.15 No.1* .

Sandeep, B. (2012). Will mobile companies leave the banking business to banks? *Banking Finance,vol.xxv No.11* , 25-28.

sathye. (1999). Security concerns and lack of awareness about internet banking and its benefits. *International Journal of Bank Marketing* .

Sheshunoff, A. (2000). Internet banking: An update from the frontlines. *American Bankers Association Banking journal92(1)* , 51-53.

ShiYu. (2009). *Factors influencing the use of mobile banking:The case of SMS based mobile banking.* Auckland University of Technology.

SivaRamaPrasad, P. (April-June 2004). Product Innovation,A suggestion from Reader. *Bank Quest* , 30.

Srivastava, R. (2007). Consumers perception on usage of Internet banking. *Innovative Marketing,Vol.3,Issue.4* .

Sudeep, S. (2008). Adoption and Usage of Internet banking in India. *Banking in the Era of Diverse Development Paradigms:From Financial Inclusion to Special Economic Zones* (pp. 5-10). Kochi: Department of Applied Economics,CUSAT.

Suganthi, Balachandher, & Balachandran. (2001). Internet Banking : An Empirical Investigation of Malaysia. *Journal of Internet Banking and Commerce,vol.6,No.1* .

Sultansingh, M. (2009). A comparative study of SBI,ICICI & HDFC bank. *Business Intelligence Journal,vol.2,No.2* .

Sunitha, B. (2013). Customer perception towards ATM/Debit cards. *Integral review-A Journal of Management,vol.6,No.1* , 47-60.

Suresh Chandra, B. (2011). Internet Technology and customer profitablity in Banks. *Journal of Contemporary Research in Management* .

Tagreed, A. S. (2013). *Framework for the Adoption of Online Banking.* United Kingdom: Demontfort University.

Unnithan, C., & Swatman, P. (2001). *E-banking Adoption and Dot.com Viability; AComparison of Australian and Indian Experiences in the Banking Sector.* U.S.A: Deakin University.

Wadie Nasri, M. Z. (2014). Empirical Analysis of Internet Banking Adoption in Tunisia. *Asian Economic and Financial Review* , 1812-1825.

weinninger. (2000). The Emerging Role of Banks in E-commerce. *Current Issues in Economics & Finance,vol.6,No.3* , 1-6.

Wendy, W., Chung-Leung, L., & Cheris, W. (2005). Customers Adoption of Banking Channels in Hong Kong. *International Journal of Bank Marketing,Vol.23,Issue.3* , 255-272.

B. Studies on Cost Benefit Analysis

Aki, O. (2002). Impact of Technology in Banking Sector. *Management of Technology in Banking Internet Research,vol.14,no.3* , 213-223.

Athul, B. (2014). Cost Benefit Analysis; AStudyof Selected Nationalised Banks in India. *Journal of Department of Management &Research,Integral University,Lucknow,Vol.3,Issue.1* .

Basu, C. (1970). *The Role of Commercial Banking in the Planned Economy of India.* Burdwan University.

BurnhamT.A, F. (2003). Consumer Switching Costs:A Typology,Antecedents and Consequences. *Journal of the Academy of Marketing science,Vol.31,No.2* , 109-126.

Celent, C. (2000). *Is Internet Banking Profitable?A study of Digital Insight's Offering.* www.celent .com.

Chowdhary. (2004). Privatisation,Performance and Efficiency: A study of Indian Banks. *Vikalpa,Vol.30,No.1* , 7.

Durkin G.M, H. B. (2003). Relationship Marketing in Banking sector:The Impact of New Technologies. *Marketing Intelligence and Planning* , 61-71.

EmanuelOrangiNyapara. (2013). *The Relationship between Information Communication Technology Usage on Efficiency Among Commercialbanks in Kenya.* kenya: University of Nairobi.

Hartfeil, G. (1996). Bank one measures profitability of customers,Not just products. *Journal of Retail Banking services,summer XVIII(2)* , 23.

HenkBroeders, S. (2015). Strategic Choices for Banks in the Digital Age. *Mckinsey Quarterly Journal,january* .

IBA. (2009, July). ATM Usage Free. *Reserve Bank Of India Bulletin* .

Joseph M, S. G. (2003). An Empirical Evaluation of US bank customer perception of the impact of Technology on service delivery in banking sector. *International Journal of Retail and Distriution Management,Vol.31,No.4* , 190-202.

kamath, K. (2015). Contours of Future Indian Banking Landscape. *Banking Finance* , 36-43.

KamesamV. (2001, November). Information Technology Challenges In Banks. *RBI Bullettin,vol.5,No.11* , pp. 1225-1228.

Khalfan A, Y. S. (2006). FFactors influencing the adoption of internet banking in Oman: A descriptive case study analysis. *International Journal of Financial Services Management,1(2)* , 155-172.

Machauer, A., & Morgner, s. (2001). Segmentation of Bank Customers by Expected benefits and Attitudes. *International Journal of Bank Marketing,vol.19,n0.1* , 61.

Michel R., A. N. (2009). An examination of the relationship between service quality dimensions,overall internet banking service quality and customer satisfaction. *Marketing Intelligence & Planning27(1)* , 103-126.

MiniJoseph. (2011). *Policy changes and its impact on demand and supplyof bank credit.* Mahatma gandhi university,Kottayam.

Neeraj, S. (2011, May 18). Retrieved from http://hdl.handle.net/10603/2076.

Petersonobaramaguter, m. B. (2011). E-commerce products and services in the banking industry;The adoption and usage in commercial banks in Kenya. *Journal of Electronic Banking systems.* , Article ID678961.

puri, K. (2004). Indian Banks: Bigger,Better and Remote controlled. *usiness Intelligence Journal,Vol. 2,No.2* , 279.

Radhakrishnan. (2008). Organisation Retailing in India. *Business Line* , 44-49.

RBI. (2007). *ATMs of Banks: Fair pricing and Enhanced Access-Draft Approach.* RBI.

RBI. (2007). *Report of the working group to formulate a scheme for ensuring reasonableness of bank charges.* RBI.

Renil, R. (2011). *A Comparative Analysis of SBI Deposit Products.* Thrissur: College of Co-operation ,Banking & Management,Vellanikkara.

Ross, E. (1987). Manage Customers for Profits(Not just sales). *Harvard Business Review* .

Sabate, J., & Punte, E. (2003). The Concept and Measurement of Corporate Reputation: An Application to Spanish Financial Intermediaries. *Corporate Reputation Review5(4)* , 280-301.

SankaranM. (1999). Creating and Sustaining Competitive Advantageof Financial Service Industry in India. *Indian Management* , 83-89.

Santha Vaidhyalingam, M. N. (2006). Key Drivers for Soundness of the Banking Sector:Lessons for Developing Countries. *Journal of Global Business and Technology,Vol.2,No.1* .

SchumpeterJ.A. (1911). *A Theory of Ecoomic Development.* Hardward University Press.

Shahzeb, A. M. (2010). *On the use of Customer Relationship Management in the Banking Industry: A Qualitative Case Analysis Between the Banks in Pakistan and the U.K.* London: Manchester Business School.

Srivastava, R. (2014). A Cost/Benefit/Risk(CBR) Analysis Methodology and its Application in a Computing System. *International Journal of Enhanced Research in Science Technology & Engineering,Vol.3,Issue 1* , 491-492.

Urvashi, K. (2007). ATM: The Power of Cash. *Dataquest:IT Giant* .

ZachariasThomas. (1997). *Performance Effectiveness of Nationalised Bank-A Case Study of Syndicate bank.* Kochi: Cochin University of Science and Technology.

C. **Studies on Activity Based Costing**

Anna s, P. k. (2012, May 20). *Open Access Journal.* Retrieved from SpringerLink.com.

Atkinson, A., kaplan, R., Matsumura, E., & Young, S. (2012). *Management Accounting:Information for Decision Making and Strategy Execution.* Essex:Pearson.

Brown, R., Myring, M., & Gard, C. (1999). Activity Based Costing in Govt; Possiilities and pitfalls. *Public Budgeting and Finance,19 (2)* , 3-21.

Carmona J, s. X. (2008). Costing the Banking services: A management Accounting Approach. *Journal of Money,Investment and Banking,Issue 6.*

Cooper, R., & Kaplan, R. (1992). Activity Based Systems, Measuring the Costs of Resource Usage. *Accounting Horizons,September* , 1-13.

Drury, C. (2004). *Management and Cost Accounting.* New Delhi: Thomson Learning.

Innes, J., & Mitchell, F. (1990). Activity Based Costing Research. *Management Accounting* , 20-29.

Kaplan, R., & Anderson, S. (2004). Time Driven Activity Based Costing. *Harvard Business Review* , 82.

Liyenage, M., Noopehewa, P., Perrera, & Gunarethne, N. (2014). Implimenting ABC; The case of a Central Bank in a South Asian Country. *International Journal of Information Technology and Business Management,vol.25,No.1* .

Maiyaki, A. (2011). The Practicability of Activity Based Costing in the Nigerian Retail Bank. *Business Intelligence Journal,Vol.4,No.2l* .

Mart sorg, O. L. (2004). *Banking Business in Transition Period may be highly Profitable-Estonian Experience.* Estonia: amazonaws.com.

Olga, L. (2004). *Can e-Banking Services be Profitable?* Estonia: Tartu University Press.

Philip C James. (July 2013). An Analysis of the Factors Influencing the Adoption of ABC in the Financial Sector in Jamaica. *Intnernational Journal of Business and Social Research,Volume 3,No.7* .

Seward, S. &. (1999). *ABC,The Balance Score Card and EVA,Distinguishing the means from the End,Volume.1,Issue2.*

Williams, C., & Melhuish, W. (1999). Is ABCM Destined for Success or Failure in the Federal Government. *Public Budgeting and Financing 19(2)* , 22-36.

Yereli, A. (2009). *Activity Based Costing and its Application ina Turkish UniversityHospital.* Association of Perioperative Registered Nurses,Turkey.

Chapter 3

Digitalization of e-Banking Services- An Overview

Contents **Page No.**

Chapter 3

Digitalization of e-Banking Services- An Overview

The present research work makes an attempt to investigate the cost effectiveness of e-banking services of State Bank of India in Kerala. The current chapter aims to formulate a theoretical framework regarding digitalization of e-banking services which covers, ATMs, Internet banking, Mobile banking and Branch networking. It also covers the digital banking footsteps with main focus on State Bank of India.

To serve this purpose, this chapter is fabricated by dividing into two sections.

Section A.Digitalisation in Banking Industry

Section B. Digitalisation Profile of SBI

Section A

3.1. Digitalization in Banking Industry

Information Technology is very powerful in today's world and financial institutions are the backbone of the Indian economy. Banking sector plays a significant role in the development of Indian economy. Today Indian banking industry is in the midst of an IT revolution. Nearly all the banks in India are going for information technology based solutions. The application of IT in banks has reduced the scope of traditional or conventional banking with manual operations. Banks are using new tools and techniques to find out their customers need and offer them tailor made products and services. So banks need to optionally leverage technology to increase penetration, improve their productivity and efficiency, deliver cost effective products and services, provide faster efficient and convenient customer service and thereby contribute to the overall growth and development of the country.

3.1.1. Banking Industry- A Historical Back ground

Banking system in India has evolved in the last decade of the 18th century. It has long and colorful history behind its origination. Indians had established small banks, most of which served particular ethnic and religious communities. From 1786 to now,

the journey of Indian banking system can be segregated into three distinct phases. These are:

1. Pre-Nationalization phase(Early phase from 1786 to 1969 of Indian banks)
2. Post Nationalization phase (Nationalization of Indian banks and up to 1991 prior to Indian Banking sector Reforms)
3. Banking Liberalization phase(New phase of Indian banking system with the advent of Indian financial and banking sectors reforms after 1991)

First Phase: - During those days, public has lesser confidence in the banks due to socio-economic and political-legal factors. Lack of protection of principal and interest was the key reason. Moreover these banks were privately owned and managed by them. As an aftermath, deposit mobilization was slow and funds were largely employed to small traders without any security. Therefore a large number of banks were liquidated and depositors had lost their savings. Abreast of it, the savings bank facility provided by the postal department was comparatively safer. At this phase, bringing the private banks under the control of Reserve Bank of India and making an Act in 1949 to control the operations of banking sector is a milestone.

Second phase: - Successive nationalization of banks has gained the confidence level of the people of India. The government of India took the major steps in the Indian banking sector reforms after independence. To regulate banking institutions in the country the following steps were taken by the Government of India.

Table 3.1

Banking Regulation Steps Taken by Govt. of India

1949	Enactment of Banking Regulation Act
1955	Nationalization of State Bank of India
1959	Nationalization of State bank of India's Subsidiaries
1961	Insurance cover extended to deposits
1969	Nationalization of 14 major banks
1971	Creation of credit Guarantee Corporation
1975	Creation of regional Rural Banks
1980	Nationalization of 7 banks with deposits over Rs.200 crore.

Source: Banking Finance, April 2015

After the nationalization of banks, the branches of the public sector banks of India rose to approximately 800% in deposits and advances took a huge jump by 11000%. Banking in the sunshine of government ownership gave the public implicit fails and immense confidence about the sustainability of the institutions. Nationalization of banks in 1969 and 1980 to sustain the economy was a great event in the banking history of India. Increase in deposits, loans and advances and assets after nationalization showed that public sector banks have been running smoothly to a great extent.

Third phase: - This phase has introduced many more products and functions in the banking sector in its reform measure. In 1991, under the chairmanship of Mr.M.Narasimham, a committee was set up by his name which worked for the liberalization of banking practices. With the implementation of the reforms of Narasimham committee, the operational and the financial performance of public sector banks improved further to a great extent. Deposits, loans and advances, assets, interest income, on-interest income and profit were hiked. The country was flooded with private sector banks including foreign banks and their ATM stations. Efforts were being put to give a satisfactory service to customers. Phone banking and net banking were introduced. The entire system became more convenient and swift. Time is given more importance than money.

Present Banking Scenario: - Banking system of twenty first century is full of technology savvy based with lots of products and processes. Technology enables increased penetration of the banking system, increases cost multiplier effect on growth and development. India is one of the countries that have effectively tackled huge volumes of paper instruments in cost effective manner. Development in the field of IT strongly supports in the growth and inclusiveness of the banking sector by facilitating inclusive economic growth. IT improves the front end operations with back end and helps in bringing down the transaction costs for the customers.

Use of technology in expanding banking is one of the key focus areas of banks. The banks in India are using IT not only to improve their own internal processes but also to increase facilities and services to their customers. Efficient use of technology has facilitated accurate and timely management of increased transaction volume of banks that come with larger customer base. By designing and offering

simple safe and secure technology, banks reach at doorstep of customer with delight customer satisfaction.

Table 3.2

Technological Events of Banking Sector in India

• Arrival of card based payments Debit(ATM) , Credit card	Late 1980's and 1990's
• Introduction of (ECS) Electronic Clearing Services	Late 1990's
• Introduction of (EFT) Electronic Fund Transfer	In early 2000's
• Introduction of (RTGS)Real Time Gross Settlement	March 2004
• Introduction of National Electronic Fund Transfer (NEFT) as a replacement to EFT/Special Electronic Fund Transfer	In 2005 & 2006

Source: Compiled from Banking Finance, Various Issues

3.1.2 Concept of e-Banking

The definition of electronic banking varied from time to time. Electronic banking is defined as the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels **(salehi .M 2010).** Electronic banking refers to several types of services through which bank customers can request information and carry out most retail banking services via computer television or mobile phone **(Daniel. E 1999 & Burr w.1996).** Electronic banking can also be defined as a variety of following platforms.

- Internet banking or online banking
- Telephone banking
- TV based banking
- Mobile phone banking
- Offline banking

A visible presence of e-banking was evident to the customers since 1981, with the introduction of the Automated Teller Machine (ATM). Innovative banking has grown since then, aided by technological developments in the communications and Information Technology industry.

3.1.3 History of e-Banking

Today, information technology and communication is commanding banking field. In 1980's itself Reserve Bank of India advised all banks to go for massive computerization at branch level. For this purpose, Reserve Bank of India constituted a working group to examine different issues relating to e-banking and recommend technology, security, legal standards and operational standards keeping in view the international best practices. The group was headed by the Chief General Manager-in charge of the Department of Information Technology and comprised experts from the fields of banking regulation and supervision, commercial banking, law and technology. The bank also constituted an operational group under its Executive Director comprising officers from different disciplines in the bank, who would guide implementation of the recommendations.

The Working Group, as its terms of reference, was to examine different aspects of internet banking from regulatory and supervisory perspective and recommend appropriate standards for adoption of e-banking and made some suggestions regarding association with international banking practices, risk with e-banking, security to account holder's money, proper supervision and legal framework, further adoption of new technology.

World Experience with e-Banking: - E-banking is available even to the developing countries at present. In developed countries, e-banking is being followed with new technologies. It is playing a vital role in the development of economy. In America, the number of thrift institutions and commercial banks with transactional websites is 1275. Approximately, 78% of all commercial banks with more than Rs 5 billion in assets, 43% of banks with Rs 500 million to Rs.5 billion in assets, and 10 % of banks under Rs.500 million in assets have transactional web sites.. Of the 1275 thrifts/commercial banks offering transactional internet banking, 7 could be considered "Virtual banks". Ten traditional banks have established internet branches or divisions that operate under a unique brand name.

In U.K banks are offering transactional services through a wider range of channels including Wireless Application Protocol (WAP), mobile phone and T.V. A number of non banks have approached the Financial Services Authority (FSA) about charters for virtual banks or 'clicks and mortar' operations.

There is a move towards banks establishing portals; Swedish and Finnish markets lead the world in terms of internet penetration and the range and quality of their online services. Merita Nord bank (MRB) leads in " log ins per month" with1.2 million internet customers, and its penetration rate in Finland is among the highest in the world for a bank of 'Brick and Mortar' origin. Finland was the first country in the world to take a lead in e-banking. Online banking was launched in Finland in the year 1996.

Standinaviska Easkailda Banken (SEB) was Sweden's first internet bank, having gone online in December 1996.It has 1000 corporate clients for its trading station- an internet based trading mechanism for forex dealing, stock index futures and Swedish treasury bills and government bonds. Swedbank is another large sized internet bank. Almost all of the approximately 150 banks operating in Norway had established "net banks". In Denmark, the internet banking service of Den Danske offers funds transfers, bill payments etc. Internet banking in Australia is offered in two forms: web based and through the provision of proprietary software. Initial web based products have focused on personal banking whereas the provision of proprietary software has been targeted at the business / corporate sector. Most Australian owned banks and some foreign subsidiaries of banks have transactional or interactive web sites. In Newzealand major banks offer internet banking service to customers, operate as a division of the bank rather than as a separate legal entity.

It is estimated that almost 15 % of transactions are processed on the internet. Banks in Japan are increasingly focusing on e-banking transactions with customers. World over, electronic banking is making rapid strides due to evolving communication technology. Penetration of internet banking is increasing in most countries.

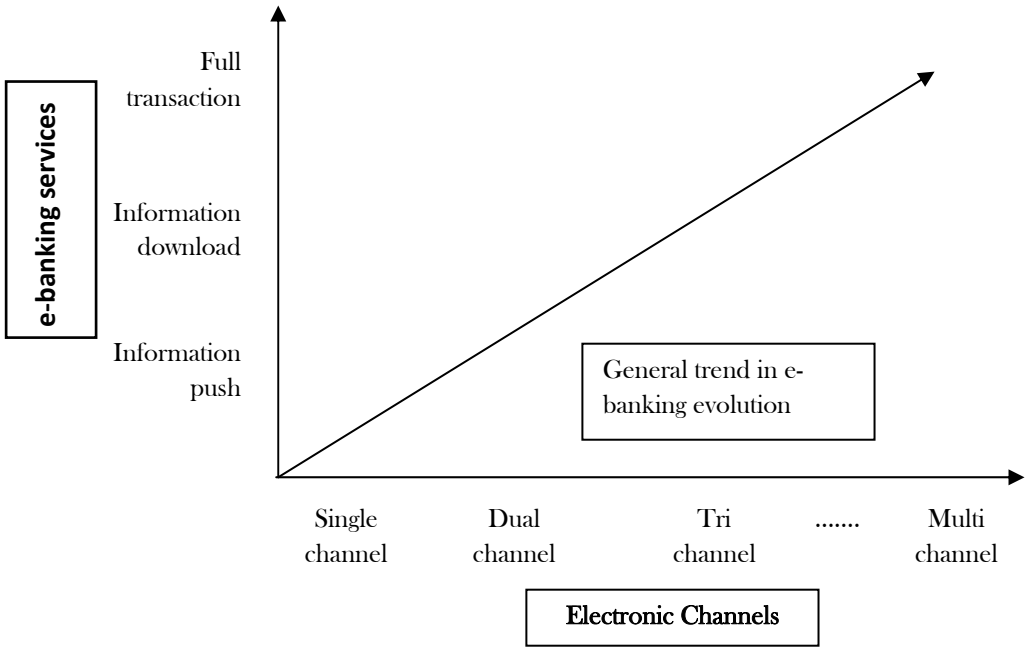


Figure 3.1 General Trend in e-Banking Evolution

e-Banking in India: - India is achieving a considerable growth rate after introducing economic reforms. The contribution of communication and technology is much more for achieving growth rate. India will become the 3rd largest country for internet users in the world. ICICI is the first bank to introduce the internet banking in early 1997. In India majority of the banks permit customers to interact and transact electronically with them. Such services include request for opening of accounts, requisition of cheque books, stop payment of cheques, viewing and printing statements of accounts, movement of funds between accounts within the same bank, querying on status of requests, instructions for opening of letters of credit and bank guarantees etc.

Internet banking, as an additional delivery channel, may therefore, be attractive/ appealing as a value added service to domestic customers. Non- resident Indians for whom it is expensive and time consuming to access their bank accounts maintained in India find net banking very convenient and useful. It is very difficult to predict how electronic banking will improve and expand in coming years. With the help of latest technology, the potential of check imaging technology can be realized. The banking sector may become more complex with further globalization, consolidation, deregulation and diversification of financial industry.

The latest technology includes broadband transmission; web TV and wireless internet access via mobile phones will give further impetus to the digital revolution. The usage of e-banking is growing in the world countries especially in under developed countries also. In India it is on fast growing. Bringing awareness among customers about the transactions through internet banking is more important. There should be proper measures to avoid the technical and other cyber cheatings to protect interest of the customers. There should be adoption of advanced technology to apply financial activities like banking and e-commerce. Then there is possibility of vital role of the e-banking in the development of the country. Indian banks offer the following e-banking products and services to their customers.

- Automated Teller Machines (ATMs)
- Internet Banking
- Mobile Banking
- Phone Banking
- Telebanking
- Electronic Clearing Services
- Electronic Clearing Cards
- Smart Cards
- Step Banking
- Electronic Fund Transfer

The three broad facilities that e-banking offers are:

1. Convenience- Complete your banking at your convenience in the comfort of your home.
2. More Qs- There are no queues at an online bank.
3. 24x7 service- Bank online services are provided 24 hours a day, 7 days a week and 52 weeks a year.

3.1.4. Digital Economy-Role of e-Banking

Advances in technology brought a lot of changes in all fields in performing their activities. Banking sector is not an exemption to it. So banks have been using

electronic and telecommunication networks for delivering a wide range of their services. The delivery channels include direct dial up connections, private networks, public networks etc and the devices include telephone, personal computers including the Automated teller machines. With the popularity of personal computers, easy access to internet and World Wide Web (www), internet is increasingly being used by banks as a channel for receiving instructions and delivering their products and services to their customers. This form of banking is generally referred to as electronic banking.

The emergence of globalization boosted up the activities of e-banking. E-banking involves consumers using the internet to access their bank account and to undertake banking transactions. At the basic level, e- banking can mean the setting up of a web page by a bank to give information about its product and services. At an advanced level, it involves provision of facilities such as accessing accounts, funds transfer, and buying financial products or services online.

The e-banking eliminates the disadvantages of mutual procedure like slowness, tardy, manipulation of records etc. In this system, the transactions can be carried out 24 hours. The customers can view their transactions, printout their statements, can transfer funds and can make payments. Besides this, many banks are providing facility to set up, amend or cancel standing orders. In India, with the advent of economic reforms introduced after 1991, banking industry has made significant progress in which e-banking is playing a crucial role. There are **five guiding principles** of strategy for innovation in digital banking.

1. **Anticipation: -** Anticipate customer needs and guide them to the relevant product or offers quickly.
2. **Insight: -** Leverage analytics, data mining and other technologies to understand customer preferences, thereby increasing the value of each customer interaction.
3. **Connected:** - Provide a seamless experience (one interaction leading to another without interruption) across channels and devices and so customers will feel positive about their digital experience with their respective banks.

4. **Relevance:** - Deliver improved service to customers by developing digital applications that recognize contextual signals and engage customers accordingly.
5. **Available:** - Deepen the relationship with customers by giving them access to virtual relationship managers and other digital tools and services across all channels and devices.

Innovation in digital banking should aim at attracting, engaging and extending customer relationships. It is time for banks to rethink how they attract and retain customers. Creating relationships with digital customers is critical if banks want to differentiate their brands and boost loyalty.

3.1.5 Digital initiatives Matrix:-

Banks in differentregions possess varying digital capabilities and maturity of transaction banking solutions, resulting in the need to adopt different digital strategies. There are two main solutions used to address the shift in digital adoption of the transaction banking business: **Digital inside-out and Digital outside-in strategies.**

Digital inside –out is defined as initiatives by financial institutions that are internally driven. Most banks in Asia are still focused on investment in internally driven digital initiative to better provide traditional transaction banking solutions. User interface enhancements and technology or system upgrades are two categories of digital inside-out strategy. **Digital outside-in** is defined as initiatives by financial institutions that are externally driven. Financial institutions explored these initiatives to augment their digital capabilities. There are three categories of Digital outside-in: financial institution- led venture capital, technology-focused venture capital, and partnership or alliances. Transaction banks need to understand the varying levels of digital technology adoption and strategies. The following figure depicts the digital initiatives matrix.

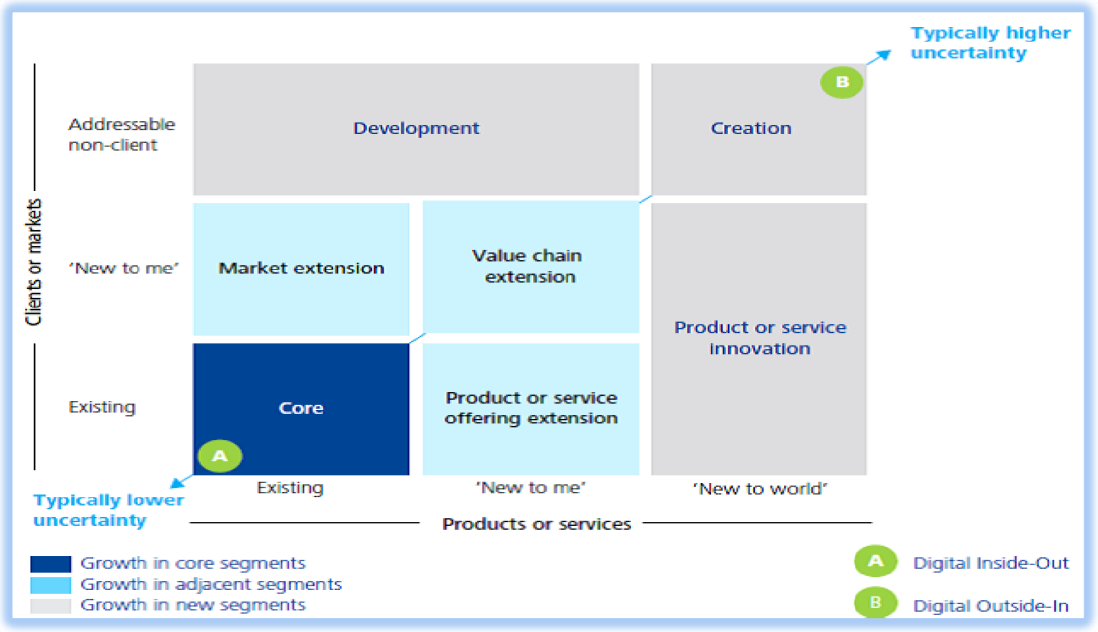


Figure 3.2 Digital Initiatives Matrix

Digital Transformation in Banking:-Today's demand of banking is 'anytime anywhere' banking. This requires innovative robust, secure, optimized and ready to meet the expectations of empowered and tech-savvy customers. Digital transformation is far beyond just moving from traditional banking to a digital world. It is a vital change in how banks and other financial institutions learn about, interact with and satisfy customers. An efficacious digital transformation begins with an understanding of digital customer behavior, preferences, choices,likes, dislikes, stated as well as unstated needs, aspirations etc. And this information leads to the major changes in the organizations, from product centric to customer centric view. The most effective way to understand and bring the organization from traditional banking to digital banking is Omni-channel approach. Omni-channel is a multichannel approach to customer service where all the channels are tightly integrated, keeping customer in the centre of the integration. In the current multi channel model, customers are directed to the least expensive channel which grounds to not only the dissatisfaction but also the channel hopping. The whole process is inefficient, costly and inconsistent. Omni-channel is not the replacement of the multichannel, but it is the enrichment. Espousal of Omni-channel is indispensable to ensure that customer experience is unified, incorporated and supports customer at the right time, in the right place as the right way. **(Sumit Kamra, Happiest Minds Technologies Pvt. Ltd.)**

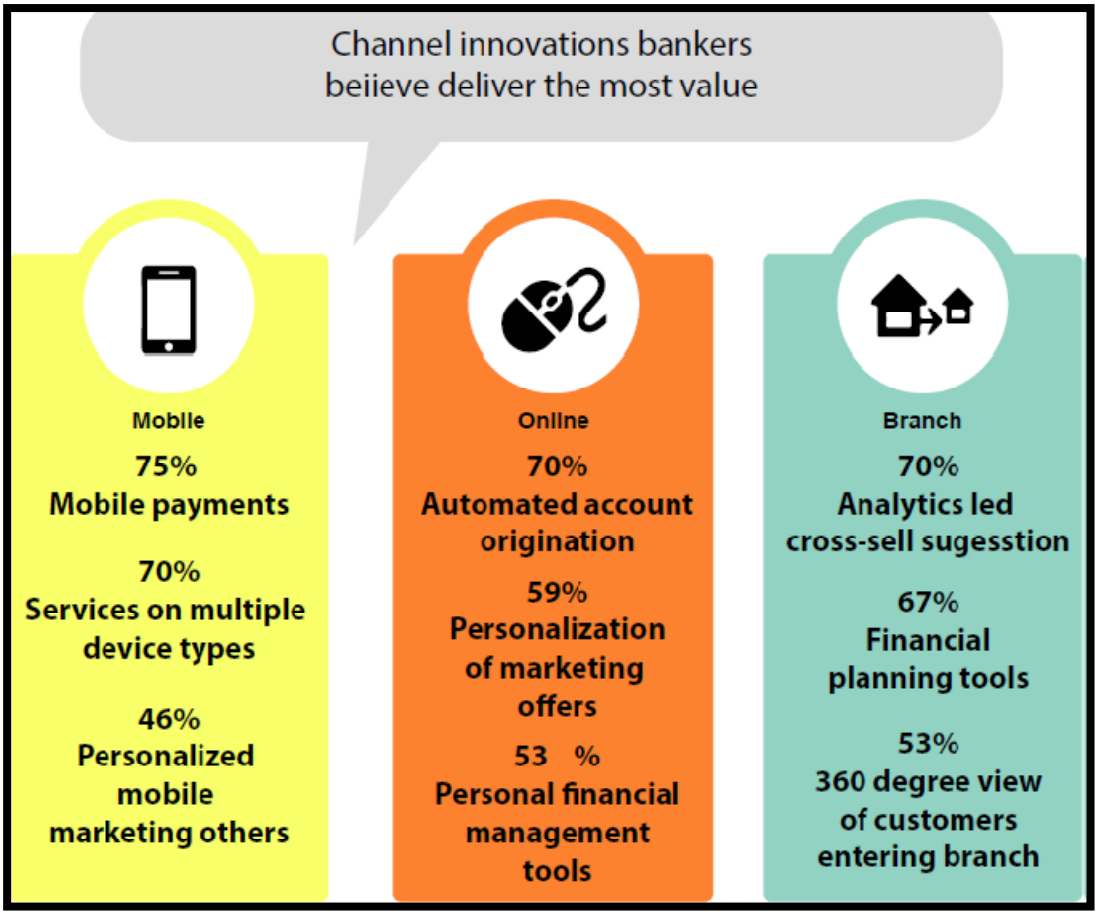


Figure 3.3 Channel Innovation Value

Some researchers cited that e-banking is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick and mortar institution and it has become a one stop service and information unit that promises great benefits for both banks and customers (**TanM & T.S.H.Teo(2000).** Some factors such as internet accessibility, awareness, attitude towards change, computer and internet access costs, trust in one's bank, security concerns, ease of use and convenience have significant effect on e-banking industry **(Sohali M.S & Shanmugam 2003).**Furthermore, online banking provides a best way of low cost channel for both transactions and building relationships**. (Boot Arnoud2000, Degryse Hans and Steven Ongena2007, Hua G 2009).**Online banking has made life much easier and banking much faster and more pleasant, for customers, it allows customers to do their banking outside of bank hours and from anywhere where internet access is available. A primary benefit for the bank is cost savings because of its use of cheapest delivery channel and reduced number of service staff and for the consumer, a primary benefit is convenience with self service.

Table 3.3

The Advantage of Operating Online Banking

Operating online banking	Advantage
Bank	-Improved market image -Reduce transaction cost -Rapid response to the market changes & customer needs -Increased market penetration -Advertise/Sell new product
Customer	-Reduce cost in accessing and using the bank service -Increase comfort and time saving(transaction can be made 24 hours a day) - Facilitate services & speed of transaction -Better administration of funds

Source: Khrais L.T (2013)

Khrais L.T (2013) fits a model of e-banking by taking into consideration four independent variables such as personal device, availability of internet, convenience and security. These variables, taken in sequential order, carefully depend on the importance of each factor to facilitate service for customer and the dependent variable represented by e-banking service.

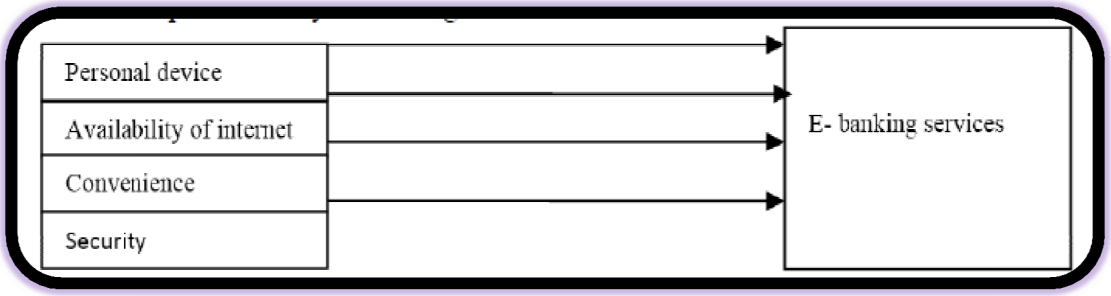


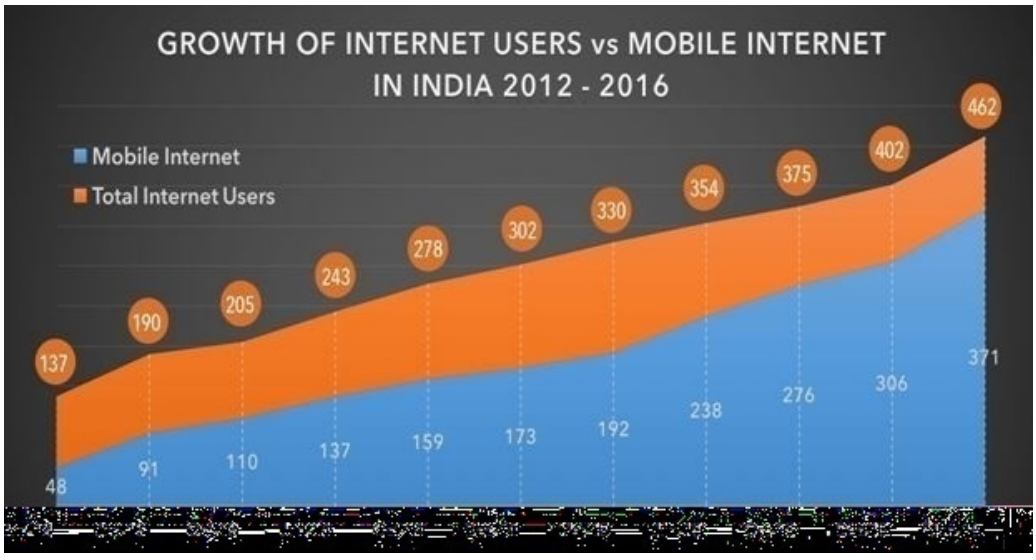
Figure 3.4 Model of e-Banking

Andreas Dombret of Bundesbank made a ***speech*** based on German banking sector but actually this applies to any country's banking sector. According to him, digitalization requires four things:

- First every bank needs a "digital agenda" and a flexible strategy.
- Second, every bank must find a balance between existing strengths and new types of banking business
- Third, every bank must be aware of the problem of IT security and must also pass this awareness on to its customers
- Fourth, every bank must modernize its IT infrastructure as necessary and ensure that the systems are secure.

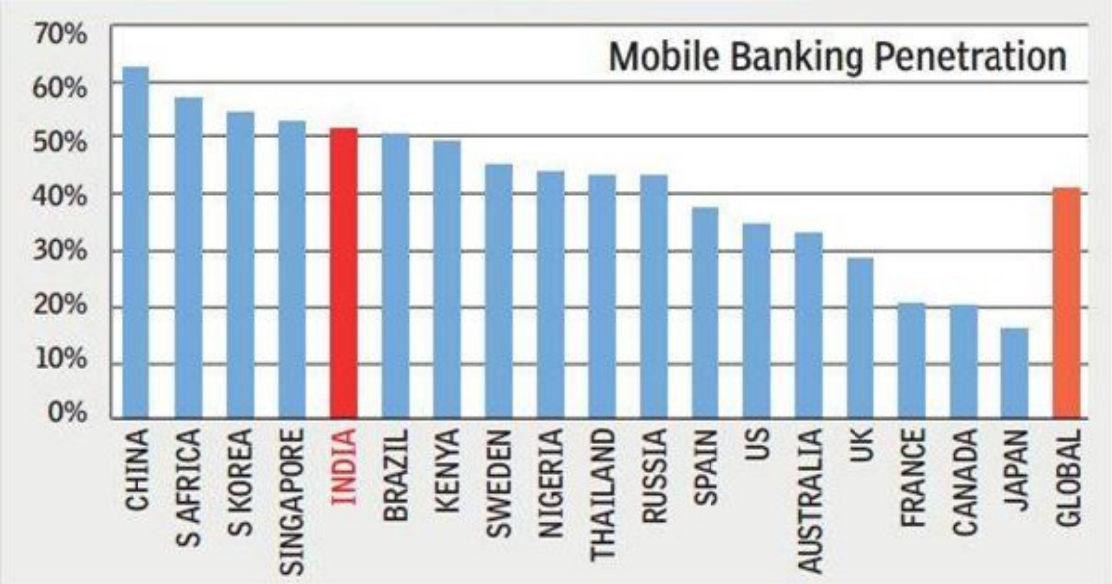
India's online user base crossed 400 million and thereafter, it has been growing in leaps and bounds. Despite the rise in internet usage, the Indian banking industry has been rather slow in terms of online penetration. Online users and banking customers have moved from desktop to handheld gadgets, thereby increasing the need for responsive websites and mobile friendly banking elements.

In order to rise above the competition, banks will be expected to make a clear customer-centric proposition and define capabilities that include digital innovation, a vision for the future, appropriate investment choices, and scalability to work towards the goal. The following **figures 3.5 & 3.6** will be justified this information.



Source: IAMAI, Feb 2016, Figures in Million Users, *Estimated Number

Fig.3.5 Online User Base of India



Source: UBS Evidence Lab

Fig.3.6 Mobile Banking Penetration

3.1.6 Automated Teller Machines

ATM means neither **"avoids traveling with money"** nor **"any time money,"** but certainly implies both. Slim ATM cards are fast replacing confounding withdrawal forms as a convenient way of getting money from banks. A smart person no longer needs to carry a wallet-full of paper money in his purse. All he needs to do is to fish out an ATM (automated teller machine) card, insert it in the slot, punch in a few details and go home with hard cash.**(Sultan singh & M.S.Komal 2009)**

Automated Teller Machines (ATMs) were the first well-known machines to provide electronic access to customers. It is operated by plastic card with its special features. The plastic card is replacing cheque, personal attendance of the customer, banking hour's restrictions and paper based verification. ATMs perform a number of banking functions – such as withdrawing cash from one's account, making balance inquiries and transferring money from one account to another – using a plastic, magnetic-strip

card and personal identification number issued by the financial institution. **The Indian ATM industry** has seen explosive growth in recent times. ATMs represent the single largest investment in the electronic channel services for the Banks. In India, HSBC set the trend and set up the first ATM machine here in 1987. Since then, they have become a common sight in many of our metros. Automated Teller Machines (ATMs) have gained prominence as a delivery channel for banking transactions in India. While the ATM is a great service for customers, for the banks it means immense savings on the cost of operations. While a typical cash transaction carried out in a banks branch premise would cost Rs 40, that in an ATM will only cost Rs18 translating into a cost saving of Rs 22 per transaction**. (Sultan Singh & M.S.Komal 2009)**

ATM Networks: - The ATMs of a bank are connected to the accounting platform of the bank through ATM switches. The inter-bank ATM networks facilitate the use of ATM cards of one bank at the ATM(s) of other banks for basic services like cash withdrawal and balance enquiry. Banks owning the ATMs charge a fee for providing the ATM facility to the customers of other banks. The ATM deploying bank recovers this feefrom the card issuing banks referred to as 'interchange fee'. Banks with larger ATM network treat interchange fee as an important stream of revenue. Inter-connectivity of ATM Networks provides access to the customers to use any ATM in the country irrespective of the bank with which the customer is banking. There are a number of ATM network switches such as Cash Tree, BANCS, Cashnet Mitr and National Financial Switch (NFS). In addition, most ATM switches are also linked to VISA or Master Card gateways. Providing relief to millions of users, the RBI has also said from April 1, 2009, customers using the inter-bank ATMs (ATMs of other banks) for cash withdrawals or balance enquiries will not be charged any fee. As of now, customers have to pay Rs 50 as annual charges for using the ATM facility of their bank, while charges ranging from Rs 20-Rs 50 per transaction are levied for the inter-bank ATM transactions. Customers are also paying anything between Rs 10- Rs 20 for making balance enquiries through interbank ATMs. **Simhan Raja (2003)** in his article says: "Shared ATM networks gain favour." He has explained the "importance of shared network of ATM of Indian public and private sector banks as a part of customer benefits and ease"

Kinds of ATM

The first ATM installed in India was by HSBC in 1987 at Mumbai. There are different kinds of ATMs used by the banks for the customers. Fig.3.7 shows the kinds of ATM according to location, links, card insertion and loading of cash.

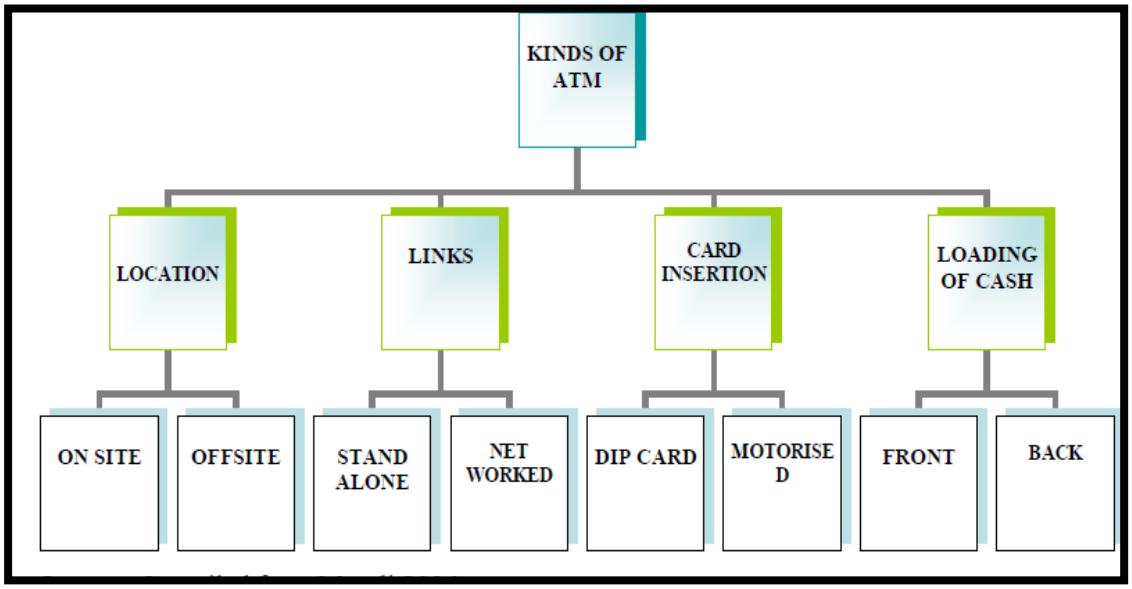


Figure 3.7 Kinds of ATM

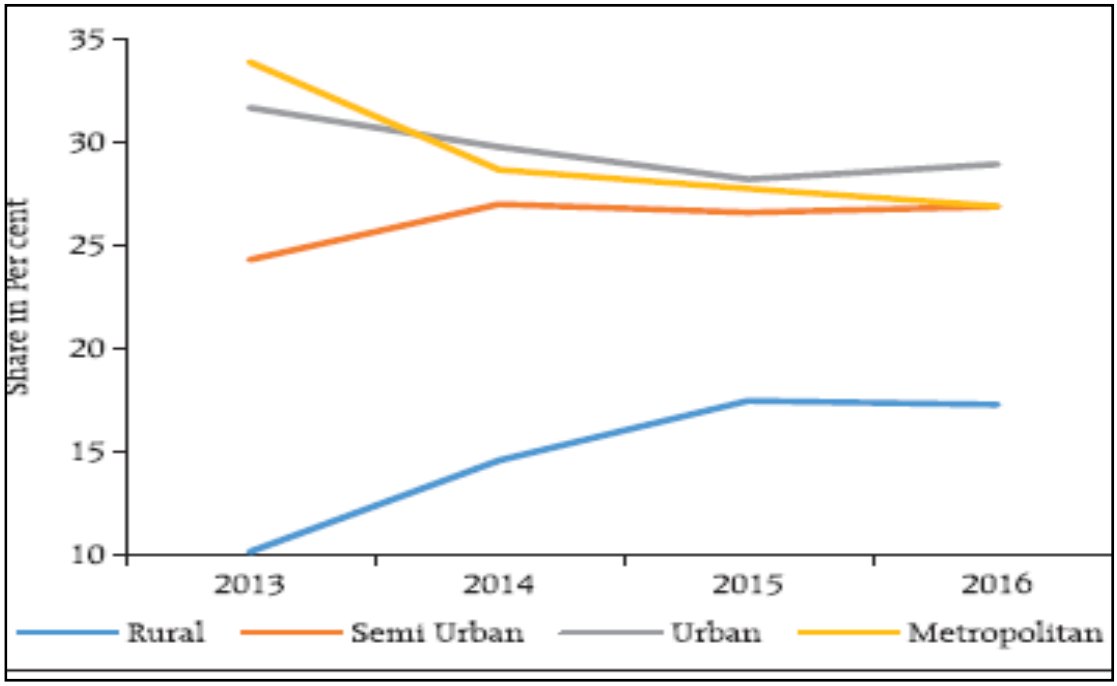
(A) Onsite and Offsite ATMs :- ATMs which are situated at the premises of the bank are known as onsite ATMs and one that are located at some busy places are known as offsite ATMs like food worlds, railway station, bus stops, shopping malls, petrol pumps etc.

(B) Stand alone and Net-worked: - These which are not linked to the hub of the bank to which it belongs are stand alone ATMs. But these ATMs are not popular now a days.Net-worked ATM on the other hand are those which are linked to the branch and also linked to the branches across the country which means a customer of a particular bank can withdraw money from any branch of any bank at any city.

(C) Dip-card and Motorized: -Where the customer is required to dip the card and take it back to do the transaction is known as dip card. The sensors of the machine identify the customer and greet him with the voice. On the other hand, motorized ATMs are very prevalent among all. In this,customer inserts the card in the machine and takes it back when the transaction is over. In some machines, the card is taken back immediately whereas in some machines, the card automatically comes out when cash is withdrawn.

(D) Front and Back: -Cash has to be regularly loaded in the ATM machines. In the front loading the door of the ATM compartment is closed and cash is loaded whereas in back loading, it is done behind the ATM and a message is displayed "please wait for some time. Some services are being carried on".

Geographical distribution of ATM: - Regional distribution of ATMs became more balanced with the share of metropolitan, urban and semi-urban centres in total installed ATMs varying between 26.0 per cent and 29.0 per cent. However, metropolitan centers witnessed a marginal decline in the share of ATMs to 26.9 per cent in March 2016 from 27.7 per cent during the previous year. Semi-urban and urban centers registered a marginal increase in their share of ATMs



Figre 3.8 Graphical Distribution of ATM

Growth in ATMs: - The geographic reach of ATMs increased further as the number of ATMs installed increased to around 0.2 million as at end March 2016, an increase of 9.7 per cent over the previous year. Public Sector Banks maintained more than a 70 per cent share in the total number of ATMs. Foreign Banks, however, continued to post a decline in the number of ATMs.

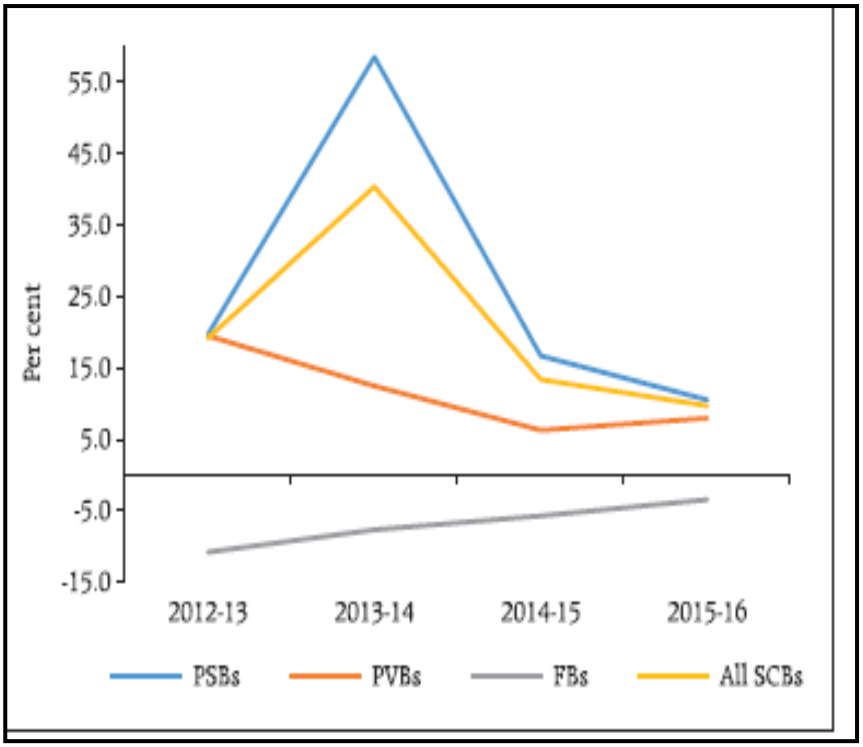


Figure 3.9.Growth in the Number of ATMs

3.1.7. Internet Banking

The idea of Internet banking according to **Essinger (1999)** is: "to give customers access to their bank accounts via a web site and to enable them to enact certain transactions on their account, given compliance with stringent security checks". To the Federal Reserve Board of Chicago's Office of the Comptroller of the Currency (OCC) Internet Banking Handbook (2001), Internet Banking is described as "the provision of traditional (banking) services over the internet". Internet banking by its nature offers more convenience and flexibility to customers coupled with a virtually absolute control over their banking. Service delivery is informational (informing customers on bank's products, etc) and transactional (conducting retail banking services). As an alternative delivery conduct for retail banking, it has all the impact on productivity imputed to Telebanking and PC-Banking. Besides that, it is the most cost-efficient technological means of yielding higher productivity. Furthermore, it eliminates the barriers of distance / time and provides continual productivity for the bank to unimaginable distant customers.

Banks have traditionally been in the forefront of harnessing technology to improve their products, services and efficiency. They have, over a long time, been using electronic and telecommunication networks for delivering a wide range of value added products and services. The delivery channels include direct dial – up connections, private networks, public networks etc and the devices include telephone, Personal Computers including the Automated Teller Machines, etc. With the popularity of PCs, easy access to Internet and World Wide Web (WWW), Internet is increasingly being used by banks as a channel for receiving instructions and delivering their products and services to their customers. This form of banking is generally referred to as Internet Banking, although the range of products and services offered by different banks vary widely both in their content and sophistication.

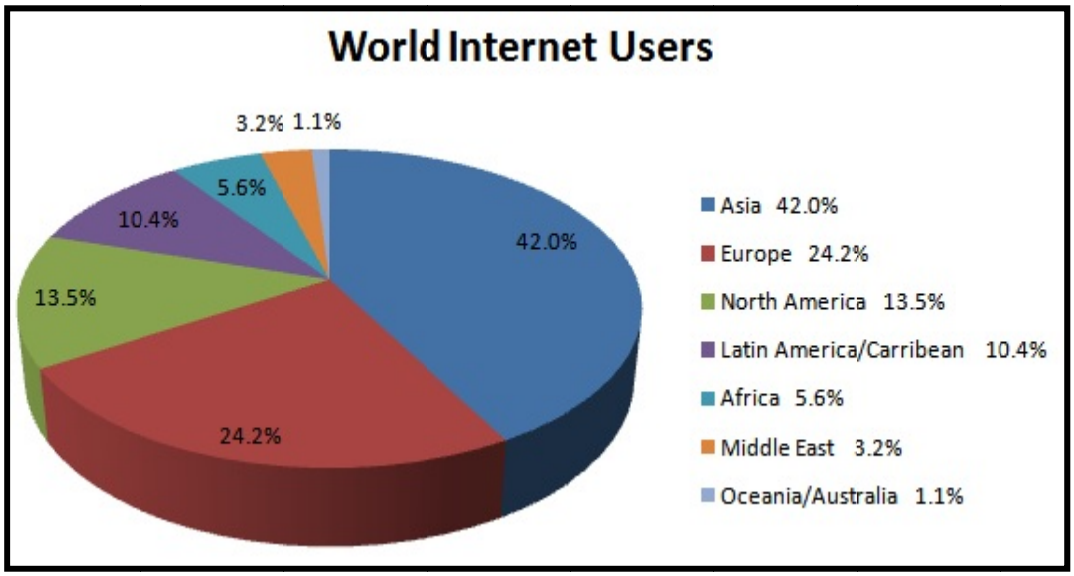


Fig 3.10 World Internet Users

The internet users in various countries have immense growth potential. But only a small percentage of internet users did banking online. Further incentives provided by banks would dissuade customers from visiting physical branches and thus get hooked to the convenience of arm-chair banking. The facility of accessing their accounts from anywhere in the world by using a home computer with Internet connection, is particularly fascinating to Non-Resident Indians and high net worth individuals having multiple bank accounts. Costs of banking service through the Internet form a fraction of costs through conventional methods. Rough estimates assume teller cost at Re.1 per transaction, ATM transaction cost at 45 paise, phone

banking at 35 paise, debit cards at 20 paise and Internet banking at 10 paise per transaction. The cost-conscious banks in the country have therefore actively considered use of the Internet as a channel for providing services. Fully computerized banks, with better management of their customer base are in a stronger position to cross-sell their products through this channel. **(Source: India Research May 29, 2000, Kotak Securities)**

3.1.8 Mobile Banking

In India mobile banking is considered the next big step in banking expansion particularly in the rural sector. Mobile banking provides a banking interface at low transaction cost using technology. Cost of an ATM transaction is five times that of a mobile banking transaction and transaction at a bank branch is almost 15 times more expensive. Kenya was the first country to use money transfer through mobile phones known as M-Pesa.

For the rapid expansion of mobile banking in India, a pro-active participation of big technology players and communication companies with the banking system is important. Today there are over 470 million mobile phone users versus less than 200 million bank account holders. Banking license to a joint venture between one Phone Company and an existing commercial bank with a specific mandate for inclusive banking can speed up the spread of mobile banking in the country. Mobile banking is the most viable option for financial inclusion as it involves less transaction cost.

India is one of the countries having the highest number of mobile users. As per CAFRAL 2013 Report, out of 100 Indians 72 use mobile but only 2.2% use mobiles to pay bills and 0.6 % use mobiles for banking transactions. People in rural area constitute only 38.89% of total mobile users in India. In future the mobile user segment in rural area will increase and provide good opportunity for banks to launch mobile enabled rural banking products and services

3.1.9. Comparison Models of Traditional Costing with ABC

As defined in banking, *Activity-Based Costing* (ABC) is a system for the calculation of the cost of products and services, while the cost components arise from the activities related to the development, administration, and sale of the

product(Luštšik, 2003). In banking, the information received by means of the ABC technique is essential for a number of fields:

a. Bank service cost – based on this information, bank service pricing decisions can be made; also, economic consequences of providing special client fee rates can be evaluated.
b. Bank service cost components – based on this information, cost-increasing components can be identified (and influenced).
c. Efficiency of bank processes – by analyzing this information, decisions can be made in respect of processes related to bank products (overlapping of processes in different structural units, process inadequacy in certain fields, etc.).
d. Input for profitability calculations – product costs calculated with the ABC methodology is applied. Information on product profitability is essential for making decisions on the issues of product vitality and usefulness from the viewpoint of the bank. The knowledge of segment profitability guides the focus to profitable client groups of the bank, enables the evaluation of the profitability of clients in the client manager portfolio, and provides necessary information to segment managers for decision making.

The comparison models of Traditional and ABC are shown in the following figure3.11

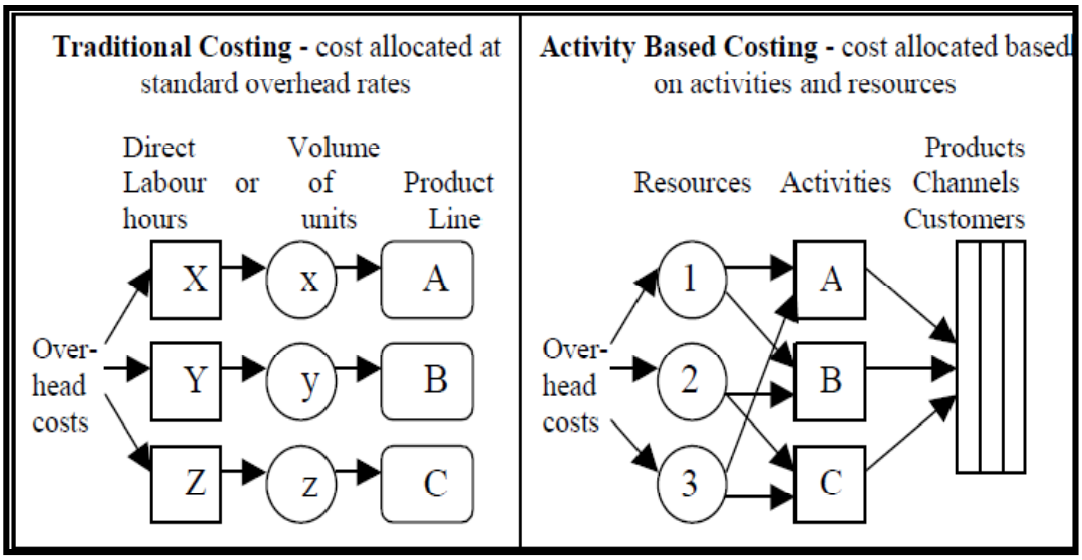


Figure 3.11 Cost Allocation Model under two approaches: Traditional costing and ABC

3.1.10 Cost Assignment View

According to Turney (1991), ABC has two main views: cost assignment and process view.

1. Cost assignment view: Cost assignment view reflects the organization's need to trace or allocate resources to activities or cost objects (including customers as well as products and channels) in order to analyze critical decisions about such things as pricing, product mix, sourcing, and distribution channel management. The underlying assumption is that cost objects (customers, products, channels) create the need for activities and activities create the need for resources.

2. Process view: Process view reflects the organization's need for information about events that influence the performance of activities and activity performance — that is, what causes work and how well it is done. Organizations use this information to help improve performance and thus increase the value received by customers.

The **cost assignment view** is constructed from 3 main building blocks:

1. *Resources* are economic elements that are applied or directed to the performance of activities: they are the sources of costs.

2. Resources flow to *Activities*, which are processes or procedures that cause work to be performed in an organization.

a. Various factors, which are referred to as *resource drivers*, are used to assign the costs of resources toactivities.

b. *Activity driver* is a measure of the use of the activity by the cost objects.

3. *Cost object* is any activity, organizational unit, contract, or other work unit for which a separate measurement of cost is desired. It is, in short, the reason why work is performed in the company and may be either a product or a customer.

The diagrammatic representation of the cost assignment view is depicted in the following figure 3.12.

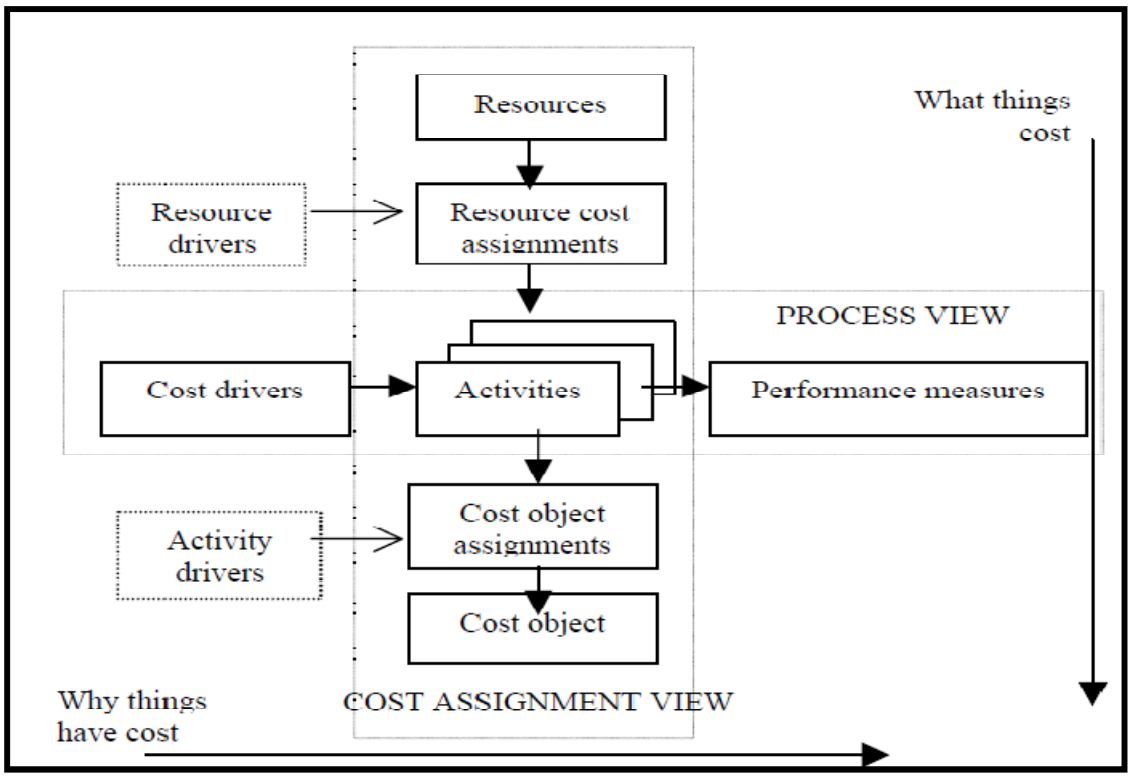


Fig.3.12 Cost Assignment view

3.1.11 Cost Allocation Chain

Indirect cost accounts are grouped in the cost pools according to similarities in cost allocation principles. **Direct cost accounts**, such as losses and fee costs, are allocated directly to the corresponding products and/or channels. Some costs (**Business sustaining costs**) are not considered as bank product expenses. Business sustaining costs are costs that are not taken into account in the calculations of bank services unit cost, bank clients' profitability and bank channels' effectiveness (**Luštšik, 2003**). The major groups of Business sustaining costs are the internal and external audit, board expenses, brand management, investor relations, general sponsorship, financial accounting, general risk management activities, and liquidity management. On an average, business sustaining costs do not exceed 10% of total costs. In accordance with the ABC pattern, the cost allocation chain of HANSABANK model is shown in the following figure 3.13.

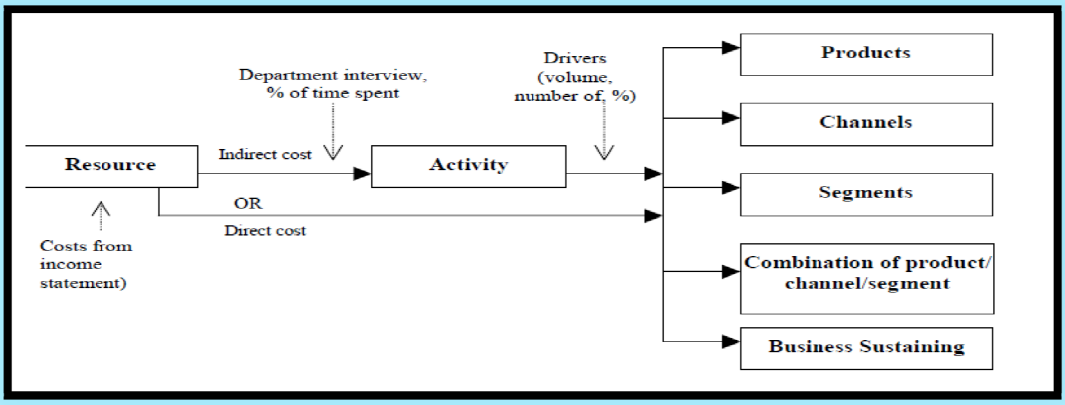


Figure 3.13 Cost allocation chain in HANSABANK ABC model

3.1.12 Key Electronic Banking Services

On the basis of the various electronic banking information from various sources, the following table illustrates key electronic banking services and its definition.For the purpose of extent of e-banking services, 48 services have been considered. These have been divided into four major categories, i.e., internet banking, phone banking, mobile banking, and ATM. **Table 3.4** give a brief description of these services.

Table 3.4

Key Electronic Banking Services

Service code Number	Electronic Banking Service	Definition
1	Balance enquiry and Statement	Check out transaction in bank account with a real time balance
2	Transaction history	Check out past transaction from the date of account opening
3	Online transfer of funds	Transfer of funds to any bank account of that particular bank or any other bank
4	Card to card fund transfer	Transfer of funds having visa, debit card holders or credit card holders
5	Pre paid mobile recharge	Recharge pre-paid mobile online anywhere, anytime in a few minutes

Service code Number	Electronic Banking Service	Definition
6	Buy and sell Mutual Fund	Online buying and selling of mutual fund
7	Send money order anytime	Get it door delivered to any destination in India
8	Open Fixed deposit and Recurring deposit	Apply online to fixed deposit and recurring deposit
9	Request of Cheque book	The cheque is delivered on the address upon request
10	Stop Payment request	Issue instructions to stop payment of a particular cheque
11	Request of Debit cards	Apply online ATM/Debit card
12	Monthly Bank account statement by E-mail	Free statement of bank account on e-mail address
13	Reissue and upgrade of ATM/Debit Card	Get ATM / debit card reissued or upgrade current ATM/ Debit Card
14	Link bank account to ATM/Debit Card	Link multiple bank accounts to a single ATM/ Debit Card
15	Renewal/ premature closure of FD/ RD	Renew current FD account or request its premature closure
16	Deactivate/ Activate ATM/ Debit Card	Activate/deactivate ATM/ Debit Card
17	Change Password	Change of log-in password and transaction password
18	Demat holdings	Provide to demat account details and transactions
19	Loan Details	View details related to loan account like typeof loan, date of sanction, date of maturity,rate of interest
20	Interest rate updates	Know rate of interest on deposit and loanscheme.
21	Bills Payment	Paying of bills of utility (electricity andtelephone), bank credit, mobile bills, insurance premium
22	Online shopping	Pay e-shopping bills

Service code Number	Electronic Banking Service	Definition
		through internetbanking
23	Ticket Booking	Booking of railway or air-ticket online
24	Mobile Top-up	Recharge pre paid mobile anytime,anywhere by log in to internet banking
25	Share Trading	Trade in security market online, through theunique three-in-one account that integratebanking, broking and demat account
26	Online tax payments	Online payment of service tax, income tax,central excise duty
27	Convert to EMI	Converting any transaction above Rs.2000on a credit card into easy EMI. EMI repayments are easiest and provide tenureranging between 3 to 24 months
28	Online loans	Get loans as fast as you click
29	Customer Correspondence	E-mail correspondence between customerand bank for transaction queries
30	Demonstration of Internet banking	Provide demonstration of internet bankingservices on banks website
31	Corporate Internet Banking	Internet banking services to corporatecustomers
Phone Banking Services		
32	Enquire your Account balance	Get the details of savings, current and fixeddeposit account balance
33	Statement of Account	Get cheque book or latest account statementdelivered at your door step
34	Request for Fund Transfer	Transfer money from one account toanother. Both accounts must be linked to customer ID
35	Stop cheque payment instructions	Stop payment of a single cheque or series ofcheques, 24 hours a day
36	Mobile Banking Registration	Get registration for mobile banking throughphone banking.

Service code Number	Electronic Banking Service	Definition
37	Latest Interest and Exchange Rates	Get latest interest rates on deposits and foreign exchange rates by talking to phone banker
Mobile Banking Services		
38	Account Balance	Get information of updated balance without using internet or phone banking
39	Making Payment	Make payment of all bills via mobilebanking.
40	Details of credit card balance	Knowing the credit card balance withoutmaking a phone call or logging on the internet.
41	Loan Information	Mobile banking for loans avails for loandocuments via mobile phone
42	I-Mobile	All internet banking transactions can be done on mobile phone
43	Purchase and Redemption of Mutual Fund units	Buying, selling and redemption of mutual fund units
44	Last three transactions	One can check the balance of last threetransactions
ATMs		
45	24 hours access to Cash	Any time withdrawal of cash
46	Transfer fund between accounts	Transfer of funds from one account toanother account in the same branch
47	View account balances and mini statement	Can view minimum last three transactionsand current balance
48	Pin change option	Change the personal identification number of ATM/ debit card

Section B

3.2 Digitalization Profile of SBI

The State Bank of India (SBI) is the oldest and largest bank in the country. Its origin goes back to the first decade of the 19th century, when the Bank of Calcutta was established on 2 June 1806. The bank got its present name after an Act of Parliament in May 1955 and the State Bank of India was constituted on 1 July 1955. Today, SBI has a phenomenal 9,559 branches and its ATM network is spread across 6,473 of its own locations& total 8,000ATMs including of those of its associate banks.

- State Bank of India is a successor to Imperial Bank of India, which was established in 1921.
- The bank came into being on 1.7.1955 through the State Bank of India Act, 1955.
- States of India joined the State Bank Group as subsidiaries under the State Bank of India (Subsidiaries Banks) Act, 1959.
- State Bank of India has the following FiveAssociate Banks (Abs) at present with controlling interest ranging from 75% to 100%.

  State Bank of Bikaner and Jaipur (SBBJ)

  State Bank of Hyderabad (SBH)

  State Bank of Mysore (SBM)

  State Bank of Patiala (SBP)

  State Bank of Travancore (SBT)

3.2.1 Evolution of SBI

The origin of State Bank of India goes back to the first decade of the nineteenth century with the establishment of the Bank of Calcutta in Calcutta on 2 June 1806. Three years later the bank received its charter and was re-designed as the Bank of Bengal (2 January 1809). A unique institution, it was the first joint-stock bank of

British India sponsored by the Government of Bengal. The Bank of Bombay (15 April 1840) and the Bank of Madras (1 July 1843) followed the Bank of Bengal. These three banks remained at the apex of modern banking in India till their amalgamation as the Imperial Bank of India on 27 January 1921.

Primarily Anglo-Indian creations, the three presidency banks came into existence either as a result of the compulsions of imperial finance or by the felt needs of local European commerce and were not imposed from outside in an arbitrary manner to modernize India's economy. Their evolution was, however, shaped by ideas culled from similar developments in Europe and England, and was influenced by changes occurring in the structure of both the local trading environment and those in the relations of the Indian economy to the economy of Europe and the global economic framework.

Establishment: - The establishment of the Bank of Bengal marked the advent of limited liability, joint-stock banking in India. So was the associated innovation in banking, viz. the decision to allow the Bank of Bengal to issue notes, which would be accepted for payment of public revenues within a restricted geographical area. This right of note issue was very valuable not only for the Bank of Bengal but also its two siblings, the Banks of Bombay and Madras. It meant an accretion to the capital of the banks, a capital on which the proprietors did not have to pay any interest. The concept of deposit banking was also an innovation because the practice of accepting money for safekeeping (and in some cases, even investment on behalf of the clients) by the indigenous bankers had not spread as a general habit in most parts of India. But, for a long time, and especially upto the time that the three presidency banks had a right of note issue, bank notes and government balances made up the bulk of the investible resources of the banks.

The three banks were governed by royal charters, which were revised from time to time. Each charter provided for a share capital, four-fifth of which were privately subscribed and the rest owned by the provincial government. The members of the board of directors, which managed the affairs of each bank, were mostly proprietary directors representing the large European managing agency houses in India. The rest were government nominees, invariably civil servants, one of whom was elected as the president of the board.

First Five Year Plan: - In 1951, when the First Five Year Plan was launched, the development of rural India was given the highest priority. The commercial banks of the country including the Imperial Bank of India had till then confined their operations to the urban sector and were not equipped to respond to the emergent needs of economic regeneration of the rural areas. In order, therefore, to serve the economy in general and the rural sector in particular, the All India Rural Credit Survey Committee recommended the creation of a state-partnered and state-sponsored bank by taking over the Imperial Bank of India, and integrating with it, the former state-owned or state-associate banks. An act was accordingly passed in Parliament in May 1955 and the State Bank of India was constituted on 1 July 1955. More than a quarter of the resources of the Indian banking system thus passed under the direct control of the State. Later, the State Bank of India (Subsidiary Banks) Act was passed in 1959, enabling the State Bank of India to take over eight former State-associated banks as its subsidiaries (later named Associates).

The State Bank of India was thus born with a new sense of social purpose aided by the 480 offices comprising branches, sub offices and three Local Head Offices inherited from the Imperial Bank. The concept of banking as mere repositories of the community's savings and lenders to creditworthy parties was soon to give way to the concept of purposeful banking sub serving the growing and diversified financial needs of planned economic development. The State Bank of India was destined to act as the pacesetter in this respect and lead the Indian banking system into the exciting field of national development.

3.2.2 Information Technology Profile of SBI

Information Technology profile is divided into two parts like ANYTIME CHANNELS and INFORMATION TECHNOLOGY.

As the digital economy flourishes, SBI is embracing and evolving a digital business modeland has grown its technology and channel platforms proportionately. India is rapidly advancing towards becoming a first world nation, and today, it is focusing on new opportunities such as Digital India, Smart Cities, BharatNet etc. As a result, Indians are increasingly using the internet, social media and their smart phones to do their banking. They are increasingly demanding an end-to-end experience and

greater consistency when doing their banking via their mobile, iPad, or even a PC. Similarly, corporates, SMEs and public institutions are leveraging the Internet to conduct their business more efficiently and economically. New "disruptive" businesses are altogether redefining how people go about doing routine chores. Not to be left behind, millions from rural India have become more financially literate and are using the formal banking system to have a more direct relationship with their money and social benefits.

Keeping with the tradition of adapting SBI product lines and services to changing requirements, SBI is committed to engage with young generation as early as possible. With the expansion of "sbiINTOUCH" branches across 70 districts of the country, they took an assertive step in being the new benchmark in branch banking. Today, within a short span of two years, SBI has 122 "sbiINTOUCH" branches that are already being experienced by thousands of banking customers. "SbiINTOUCH" realizes the vision for integrating the huge network of bank ecosystem and the digital/ mobile platforms together to provide a world class banking experience to the customer.

The Bank is currently the market leader for mobile banking services in India with 1.77 crore users and a market share of 35.97% in terms of value of transactions. Similarly, SBI recognized the trend towards cashless society early and has taken concerted steps to be at the forefront of establishing a deep ecosystem for plastic money. Today, it has the largest comprehensive electronic infrastructure in the country to accept payment through Cards. With more than 3 lakh POS terminals deployed in the market, SBI is amongst the top four transaction acquirers in India with the largest number of merchant relationships amongst Public Sector Banks. When it comes to issuing cards to SBI customers, through the joint venture SBICPSL, the SBI Group is the 3rd largest Credit Card issuing company with a base of 35 lakh users and 12% market share in terms of spends. As regards debit cards, SBI alone has a base of more than 23 crore users. The expansion pattern of Digital footprints of SBI is depicted in the following figure.3.14

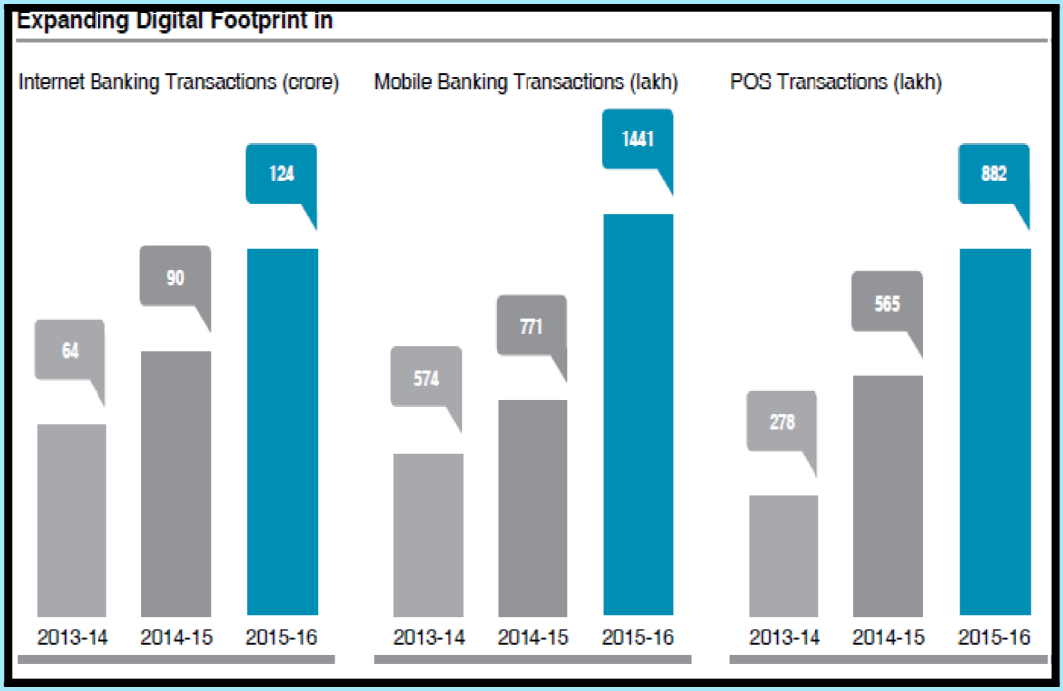


Fig.3.14 Digital Footprint of SBI

Many customers still visit branches for their routine transactions because they feel electronic channels are complex and risky. It is the responsibility of SBI, to inform and educate customers on how to make full use of the technologies around them to make their lives easier and to help themselves for whatever banking action they need to take on a 24X7 basis. With the main objective of imparting financial literacy and facilitating effective use of financial services by the common man, SBI has set up 385 Technology Learning Centres (TLCs) across the length & breadth of the country for conducting interactive learning sessions and demos of the Bank's various tech-channels.

3.2.2a Anytime Channels

Any Time Channels or Alternate channels are mainly concentrated on electronic banking services like ATM/CDM/RECYCLER, Internet banking, mobilebanking etc. The following figure 3.15 explains the growth pattern of ATM/CDM/RECYLER machines during the three year period.

ANYTIME CHANNELS

As on	ATMs	Kiosks (MFK + SSK)	Cash Deposit Machines (CDMs), Recyclers	Total (SBI)
31.3.2014	40768	2583	1516	44867
31.3.2015	42454	2595	1849	46898
31.3.2016	42740	2595	5753	51088

Fig.3.15 AnyTime Channels

1. ATM s/ Recyclers:-State Bank of India, along with itsAssociate Banks has one of the largest

ATM networks in the world with more than 59000 ATMs including Kiosks, Cash Deposit Machines and Recyclers as on 31.3.2016.

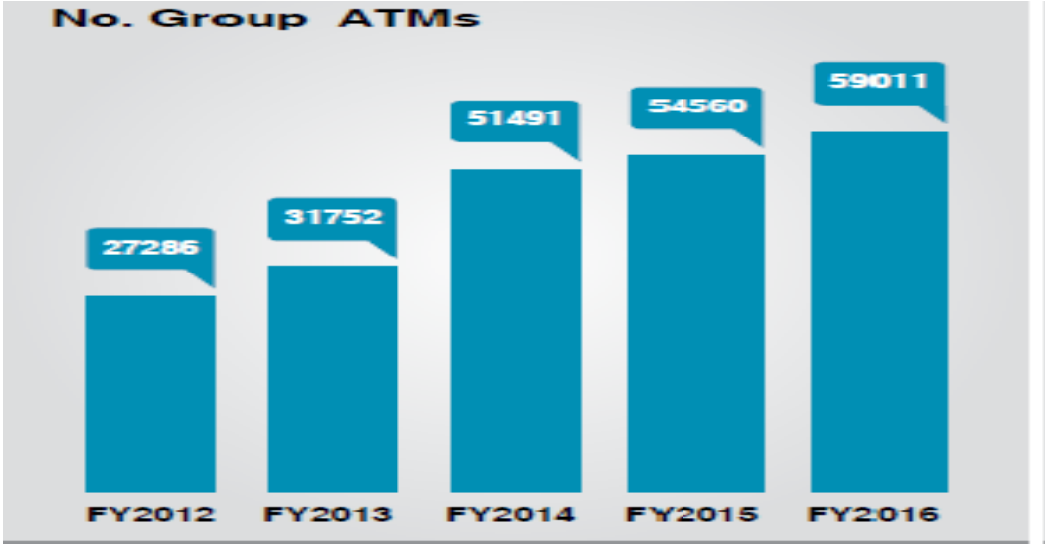


Fig.3.16 ATM Growth Pattern

2. SWAYAM: Barcode based Passbook Printing Kiosks , Bank has rolled out more than6,000 SWAYAMs (Barcode based Passbook Printing Kiosks) at its branches and onsite/offsite lobbies. Using these kiosks, customers can print their passbooks on their own using barcode technology.

(₹in Crores)

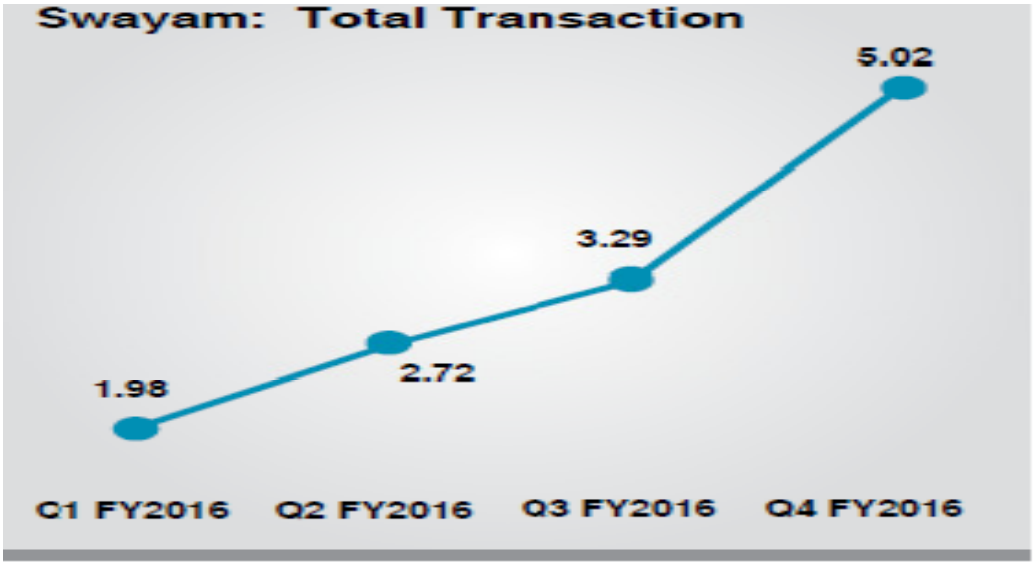


Fig.3.17 Growth pattern of SWAYAM

3. Internet Banking &e-Commerce:-State Bank Net Banking website'www.onlinesbi.com' is the eighth mostpopular online global financial siteand the only Financial site from Indiato figure in the list of Top 10 global financial sites (Source IIFL). This highly secured and cost-effective channel has enabled around 124 crore transactions during FY2016, recording 39% growth over the previous year.

4. Mobile Banking: - State Bank, the Banker to digital India, has changed the way its customers dobanking. Bridging the gap between Customers and Bank, SBI's innovativeapplications have brought Banking closer to the customer 'on the go'.Superior customer experience and trust in State Bank has made the leader inMobile Banking across the banking sector. State Bank has leaped to the numberone position in terms of value of transactions with a quantum jump in market sharefrom 9.82% in March 2015 to 35.97% in Dec'15, while consistently maintainingthe number one position in terms of volumes with 38.44%. Market share in December' 2015. The following figures3.18 & 3.19 reveal this growth pattern of Mobile banking.

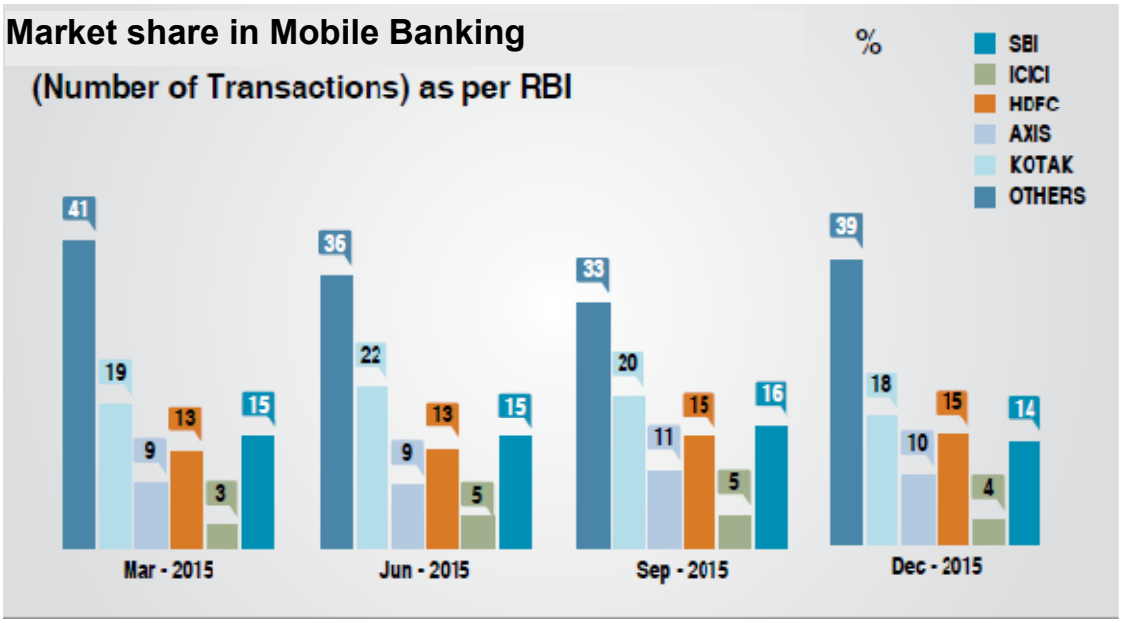


Fig.3.18 Market share in Mobile banking

State Bank saw astronomical growth in all the facets of its Mobile Banking applications during FY2016 over FY2015. The volume of transactions saw a growth of 86.87% and value of transactions multiplied manifold to grow by 721%.

(in crore)

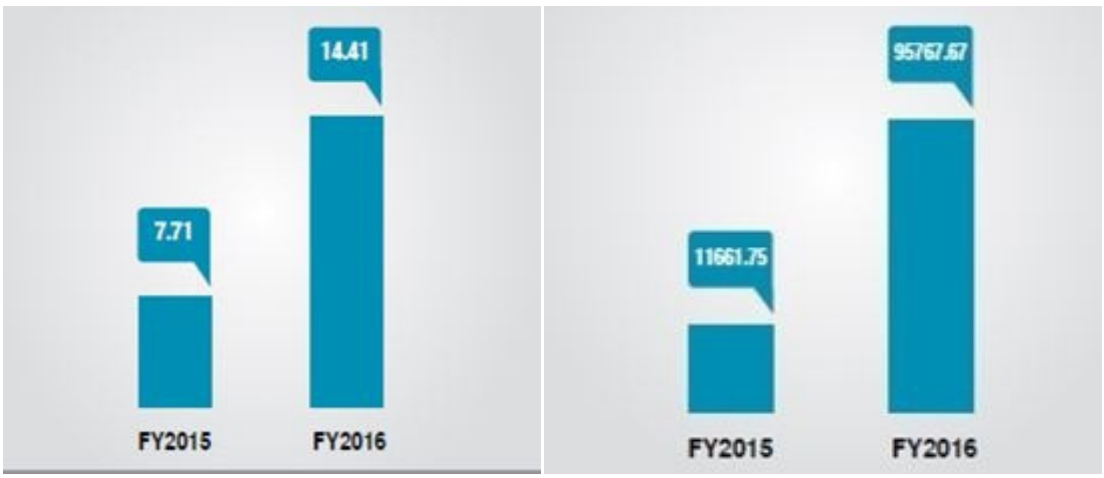


Fig.3.19 Growth in Transaction Volume & Value of Mobile Banking

6. State Bank Buddy: Latest addition to State Bank's plethora oftechnology offerings is its Mobile Wallet **"State Bank Buddy"**. Within 7 months of launch, Buddy user registration hascrossed 26.60 lakh. The wallet hasseen more than 48 lakh transactionsto the tune of 230.71 crore, out ofwhich 11.47 crore are

merchanttransactions, up to 31st March, 2016.Buddy is the product designed for thetech savvy generation, the youth ofthe country, who are in touch with the world through their Mobiles. A user can"Send & Ask Money" by knowing justthe mobile number of the counter party,Recharge mobile/DTH, Pay utility bills, Shop online and Book a Flight, Bus,Hotel, Movie tickets, online food andbuy gifts through State Bank Buddywallet. Buddy marketplace boasts ofpartnership with some of the biggestand the most popular names in thee-Commerce industry. State Bank's various Mobile applicationscan be viewed and downloaded from the "State Bank App Kart", which isavailable on both iOS & Android

7. Digital Banking - "sbiINTOUCH" "India on the Go" is epitomized by India's ever increasing Gen-Y and Gen-Z fast trackpopulation, who are quick to absorb new technologies and who are verycomfortable using digital channels for almost all day-to-day activities in life. State Bank's "SMART" strategy is to provide this Digital Banking experience to suchpeople through our futuristic branches with the sub-brand "sbiINTOUCH". Thesebranches are equipped with state-of-the-art devices/kiosks, allowing customersto transact on a self-service mode. Besides onsite support, advisory services areavailable through Remote Expert on hi-definition video conference.

The first set of 7 "sbiINTOUCH" branches, under the sub-brand "sbiINTOUCH" was launched on 1st July, 2014. These are opened as working pilots in New Delhi, Mumbai, Kolkata, Chennai, Ahmadabad and Bengaluru. During FY2016, State Bank has opened 115 sbiINTOUCH Branches to provide digital experience to customers across the country. These branches are available in 70 districts of the country. Going forward, State Bank intends to continue its journey of expanding this digital footprint even more widely.

8. Other Recent Initiatives: - A Mobile App **"State Bank No Queue"** was launched during the year 2016. This Appenables customers to self-generatee-tokens for availing select bankingservices at select branches. This helpsin reducing waiting time that customershave to endure. It also reducescrowding at a branch as the token isgenerated before the customer reachesthe branch. **"SBI Quick"** was launched as a onestop application for all Non-Financialtransactions. Now a customer canregister/ deregister for Missed callBanking, do Balance enquiry, get MiniStatement, block ATM card,

apply forHome/ Car Loan & view PM SocialSecurity schemes by logging intoSBI Quick.

Customer Experience Excellence Project (CEEP): During FY2016, State Bankaccelerated the roll out of CustomerExperience Excellence Project (CEEP).Under this initiative, 2674 brancheswere covered during the year and the total number of branches under CEEP stands at 3006 as on 31st March, 2016. The core objective of the CEEP is to improve crowd management; achieve reduction in wait times and reduction in the service time (processing time); migration of customers to the usage of Anytime Channels such as ATM, CDM, Recyclers, Swayam and Electronic Cheque Deposit Machine; and streamlining the process of Account Opening.

Some key initiatives introduced by CEEP include:

- Provision of all anytime channel machines viz. ATM, CDM / Recycler, Electronic Cheque Drop Box Machine (ECDM), SWAYAM Bar coded Passbook Printer and Internet enabled PC with printer for online opening of accounts at select branches which have high walk in customers .
- Provision of integrated Queue Management System (QMS) and a customer Feedback TAB to these branches for better crowd management through real time monitoring and branch choreography to tackle peak level crowd.
- Introducing Grahak Mitras to facilitate issue of tokens and facilitate migration of customers to Anytime Channels.
- Standardized Single Window Operator (SWO) roles in branches and creation of Service Desks for non cash transactions
- Creation of an Account Opening Cell to streamline the account opening process.
- Standardized process for sales management and cross selling.

3.2.2 b Information Technology

State Bank of India is a strong proponent of leveraging information technology to deliver convenience to its customers. State Bank has been offering innovative and cutting-edge productsto its customers with the objective of enabling banking transactions at any time and from anywhere. State Bank's technology strategy has evolved in tune with the current consumer trendsof social collaboration, mobility, cloud based platforms and big data analytics. Digitization and excellence in

operations have been core to bank's strategy in providing convenience to customers. It has resulted in a reduction in turnaround time and extended benefits to Bank's customers. State Bank's Core Banking Solution (CBS) environment is based on an architecture that supports one billion accounts, over 250 million transactions per day and delivering a throughput of over 17,000 transactions per second. Biometric authentication as a second-factor authentication has been implemented in branches for all CBS users. The process for systematic and proactive risk identification, assessment, measurement, monitoring and mitigation of various risks in the IT vertical has been initiated.

1. ATM s: New Developments in ATM

- **PRM:** Proactive Risk Management tool has been integrated with ATM Switches for Fraud Monitoring.
- **RTO Reduction**: Recovery Time Objective (RTO), i.e. time taken for switching over to Disaster Recovery site in case of need, for Base 24 Switch was reduced from 180 minutes to 60 minutes by parallelization of activities and semi-automation of process using scripts.
- **Base 24 ATM Switch Up gradation**: Up gradation of ATM Base 24 Switch has been done (with the procurement and installation of CPUs and HSMs within the timelines) to enable State Bank to increase the number of ATMs to the extent of 90000.
- **Chip enabled EMV Card Migration**: EMV card migration for all variants completed on 01.12.2015. 1st Bank to do so in Indian banking industry against regulatory advisory to complete this exercise by Feb16.
- **Tele banking** registration through ATM has been enabled.
- **Cash transfer** from Card to Account through ATM has been introduced.
- **D e-hot listing (Unblocking) of ATM Cards** through INB has been introduced.
- **Green Personal Identification Number (PIN)-** State Bank Debit card holder has been facilitated with a simpler process of Debit card PIN generation through various channels like IVR, INB instantaneously.

The project offers several benefits including:

- For Bank - savings of approx. 100 crore in printing and dispatch cost.

- For customers – convenience, less waiting time, particularly beneficial for NRI customers.
- For Branches – No custody of PINs (risk reduction / mitigation).
- Green Banking – Paperless initiative to considerably reduce carbon foot print.
- Operational man power reduction could be used for other beneficial operational analysis.
- Instant Money Transfer (IMT)
- Card less Withdrawal- A Beneficiary customer who does not possess card can withdraw cash at ATM after receiving PIN from the benefactor.
- Quick Cash- Quick Cash facility to the end customer has been provided. This facility shall allow the customer to withdraw a pre-set favourite amount every time he visits ATM.
- Display of free transactions – The customer shall be informed about the number of free transaction left with him on ATM machine.

2. Internet Banking:- The Corporate Internet Banking (CINB)is well suited to small, medium andlarge Corporate. It has also beenimmensely successful in establishingtraction with Government Treasury& Accounts Departments as well.Online collection of fees/funds foran institution, Corporate and Government Departments is being facilitated through Multi Option Payment System (MOPS), State Bank Collect and merchant acquisition through independent aggregators. Internet based solutions also cater to the e-Tendering, e-Auction and bulk payments related requirements of the Government / PSUs / Large and Medium Corporate. Some of the new features launched in Net Banking in FY2016 are:

- Overdraft against TDR/STDR/e-TDR/e-STDR through onlinesbi.com.
- Registration of PMJJBY & PMSBY through INB (Furthering Govt. Initiatives).
- Mobile number captures / changes through INB.
- Resetting of profile password at any SBI Branch (only from home branch (previously).
- Top-Up / recharge through RINB Portal.
- SBI General Insurance Renewal.
- Smart OTP for Retail INB.

- Activation of ATM card through INB.
- SBI Quick Transfer (Without Adding Beneficiary) in onlinesbi.com (Small transfers).
- CINB Online Registration.
- CINB SARAL – Digital Signature Certificate enabled online payments.
- Thomas Cook Recurring Deposit -creation of holiday savings account.
- SBI Exclusif: Wealth Management -access to Miles portal & video assist for wealth management customers.
- Issuance of debit card through INB
- Online Overdraft creation for Diamond and platinum variant CSP account holders.
- Pehla Kadam Pehli Udaan (Allowing minors to create e-TDR / e-STDR / e-RD through INB).

3. Tab BANKING

Savings Bank Account Opening: State Bank has launched Tab Banking services for opening accounts using Tab in Offline Mode. Staff will completeall account opening formalities byusing tab, including taking photograph,uploading of KYC documents.Thereafter the account opening detailswill be loaded in CBS platform andaccount number will be advised tocustomer.

DIA - Lite Version for Mobiles &Desktop:-The Digital Inspection App Lite versionfor SME has been launched for mobilephones. Field officers can capturethe photographs with date, time andgeo-coordinates using the MobileApp and then continue the data entryfor inspection in the Desktop site.All features provided in the tab areavailable in the desktop site.

4. FOREIGN OFFICES (ITFO)

- Finacle Core Migration Project: Successfully migrated all 26 countries from Finacle version 7.6.1 to latest and powerful version 10.2.13 during FY2016
- E-Trade for Foreign Offices (FO): Successfully launched the separate and dedicated software platform for trade finance for all FO's during the FY2016
- Finassure: Launched a dedicated proactive monitoring service namely Finassure for monitoring critical applications of Foreign Offices
- SBI, South Korea: The 194th foreign branch of SBI went live in FY2016

- EOD Automation: Launched automated solution for EOD operations for Foreign Offices in 12 countries
- Anti Money Laundering Solution AMLOCK: Successfully rolled out for all FO's
- Business Continuity Plan (BCP) ISO 22301: Business Continuity Plan certified for ISO22301
- Compliance: Proved higher security standards set by local and foreign regulator

5. Core banking automation: Setting up of Alternate Disaster Recovery Site (HOT Site): In view of criticality of Core Banking application, State Bank has set up an AlternateDisaster Recovery Site (Hot Site) withthe entire processing environment and incloser proximity to production site forresuming the Core Banking Operations in a short time span of 1 hour.

DB Layer Refresh & All-Flash Storage: TheDatabase layer of Core banking application refreshed with the latest processorIntel chip 9560 Superdome at bothprimary and DR site. It also migrated the production environment with all flash-storage replacing the old spinningdisks. The benefits of introducing newtechnology of all-flash storage gave30% gain in batch jobs; around 40%gain in transaction response time; andnew set up can cater to the businessneed of 750+million accounts for SBI.

Incontinuation of the journey "Bankers to Digital India" State Bank of India has made significant technological advancements and adoptions in FY 2016. As a result the following Awards were received by State Bank of India.

Table 3.5

List of Technology Awards

Award	Category
IMC IT Awards 2015	• Analytics
IDRBT Banking Technology Excellence Awards FY2015	• Electronic payment systems (among large public and private sector banks) • Managing IT infrastructure (among large public and private sector banks)
2015 Gartner Financial	• Most innovative Digital Customer Service

Award	Category
Services Cool Business Awards	Enhancement SBI in Touch(Winner)-Digital Branch • Most Innovative New Digital Product-SBI Quick (Runner Up)
Skoch Smart Technology Awards 2015	• Best Smart Technology 2015 (SSK & GRC) 2 awards • Best Digital Banking 2015 (SBI Digital In-Touch Branch) • Best Financial Inclusion Technology 2015 (Kiosk Banking & Direct Benefit Transfer) 2 awards
IDC Insights Award	• Excellence in innovation (Quick Overdraft facility through Internet Banking)
IBA Banking Technology Awards 2016	• Best Financial Inclusion Initiative • Best Risk Management, Fraud and Cyber Security Initiatives • Best Technology Bank of the Year (Runner-up)

Source: Annual Report 2015-16.

The theoretical background relating to digitalization, particularly e-banking services is depicted in the present chapter. The next section starts with the analysis of the work, which was presented in objective wise. The first objective of the study is to examine the cost per transaction of ATM/CDM/Recycler machines of State Bank of India in Kerala that has been attempted in the next chapter.

References

Boot, A. (2000). Relationship Banking: What Do We Know? *Journal of Financial Intermediation* , 7-25.

Burr, W. (1996). Wie Informations technik die bank organisation ve randern konnte. *Bank and Market,vol.11* , 28-31.

Celent, R. (2014). A Crucial Strategy for Bank Branches in 2014. *Bank Technology,April 17* .

Daniel, E. (1999). Provision of Electronic Banking in the U.K and the Republic of Ireland. *International Journal of Bank Marketing 17(2)* , 78-82.

Degryse, H., & steven, O. (2007). The Impact of Bank Competition on Bank Orientation. *Journal of Financial Intermediation,Vol.16 (3)* , 399-424.

Essinger, J. (1999). *The Virtual Banking Revolution, The Customer,the Bank and the Future.* London,U.K: International Thomson Business Press.

Fida, H. C. (2011). *Studying Acceptance of Online Banking Information System-A Structural Equation Model.* London: Brunel University.

Gow, K. (1997). Risk Vs Opportunity. *The Premier 100 Supplement to Computer World* , 24.

Hua, G. (2009). An Experimental Investigation of Online Banking Acceptance in China. *Journal of Internet Banking and Commerce 14(1)* .

Kamath, K. (2015). Contours of Future Indian Banking Landscape. *Banking Finance* , 47-52.

Khrais, L. (2013). The Effectiveness of E-banking Environment in Customer Life Service-An Empirical study. *Polish Journal of Management Studies,vol.8* , 112-114.

Murali, S. (2006, March). Measurement Customer Satisfaction: Need of the hour. *The Professional Banker* , pp. 1-7.

Raffish, N., & Turney, P. (1991). The CAM-1,Glossary of ABM. *Arlington Tex.CAM-1* .

Salehi, M. (2010). e-Banking in Emerging Economy: Empirical Evidence of Iran. *International Journal of Economics and Finance* .

Seward, S. &. (1999). *ABC,The Balance Score Card and EVA,Distinguishing the Means from the End,Volume.1,Issue2.*

Simhan, R. (2003, April 29). Shared ATM Networks Gain favours. *Business Time,Internet Edition* .

Sohali, M., & Shanmugham, B. (2003). E-banking and Customer Preferences in Malaysia: An Empirical Investigation. *Information Sciences,150(1)* , 2017-217.

Sultansingh, M. (2009). Impact of ATM on Customer Satisfaction,A Comparative Study of SBI,ICICI & HDFC Bank. *Business Intelligence Journal,vol.2,No.2* , 277.

Tagreed, A. S. (2013). *Framework for the Adoption of Online Banking.* United Kingdom: Demontfort University.

Tan, M., & Teo, T. (2000). Factors Influencing the Adoption of Internet Banking. *Journal of Association of Information Systems,vol.1,No.5* , 1-42.

Chapter 4

Cost Structure Analysis of ATM, CDM & Recycler Services

Contents **Page No.**

Section A

Section B

Chapter 4

Cost Structure Analysis of ATM, CDM & Recycler Services

In the previous chapter, a theoretical review of the concepts of digitalization in banking industry and the role of e-banking services especially, ATM, Internet banking and mobile banking have been narrated. In addition to this an overview of the digital economy and digital transformation in banking has done. It also covers the digitalization and Information Technology profiles of State Bank of India.

The first objective of the present investigation is to analyze the cost structure of ATM, CDM & RECYCLER services of SBI operating in the state of Kerala. In order to fulfill this objective , activity based comparison on (four level basis) volume wise, RBO wise,Modulewise and Network wise has been attempted. For this purpose data have been collected from entire (463) branches of SBI operating in the state of Kerala. All the basic source of data were collected from the MBPM Department, Local Head Office, SBI, Thiruvananthapuram and the relevant information from Regional Managers of 13 Regional Business Offices of SBI operating in the state of Kerala. Discussions with various branch managers were made for getting branch level information for the cost computation purpose. The data have been analyzed with the help of mathematical and statistical tools like percentages, averages, non parametric tests such as Kruskal Wallis and Mann Whitney U test.

For the purpose of discussion, the chapter is divided into three sections; Section A deals with cost structure of ATM services, Section B deals with cost structure of CDM services and Section C deals with cost structure of Recycler services of State Bank of India operating in the state of Kerala.

Section A

4.1 Cost structure of ATM services

The State Bank of India has one of the largest ATM networks in the world with more than 59000 ATMS as on 31.3.2016.As per RBI, State Bank Group's ATM network transacts 50.83 % of the country's total ATM transactions as on December,2015. On an average, over 11.61 million transactions per day are routed

through SBI ATM network with an average hit of more than 214 transactions per day per ATM. In Kerala circle, total number of ATMs stood at 1661 as on 31.3.2016. The current chapter tries to examine transaction cost of ATM services in four levels such as, Volume, RBO, Module, and Network levels of SBI operating in Kerala circle.

Before entering into the analysis based on objectives, it is quite relevant to examine the methodology adopted for calculating the cost per transaction of ATM services of SBI in Kerala, as presented below:-

4.1.1 ATM service cost elements, variables and dimensions of Analysis

The cost of ATM services of SBI in Kerala is computed for four year period 2013 - 2016. Table 4.1shows the cost elements, variables and dimensions of analysis for the computation of the transaction cost of ATM services.

Table 4.1

Classification of Cost Elements, Variables and Dimensions of ATM Services

Elements of Cost	Variables	Dimensions of Analysis
1.Machine cost 2.Rent 3.Electricity 4.Airconditioner 5. Replenishment 6.AMC	1. Operation cost 2. Number of Hits 3. Number of machines	1.Volume (LVB, MVB, HVB) 2.RBO 3.Module 4. Network

Source: Survey Data

From the Table 4.1 it is clear that there are six cost elements used for the computation of total cost of ATM services. **Operation cost** is calculated by taking these cost elements like machine cost, rent, electricity, airconditioning Charges, cash replenishment charges and annual maintenance contract charges (AMC). In banking terminology, the number of transaction is the number of hits in an ATM machine. The number of "hits" per day is multiplied by the total working days to arrive at the monthly hit for calculating cost per transaction. For the volume wise analysis, entire branches of SBI in Kerala (463) are divided into three sections like, Low Volume Branches (LVB), Medium Volume Branches (MVB) and High Volume Branches

(HVB). In case of volume wise ATM cost calculation, ATM machine at the branch premises alone is considered. The formula for calculating transaction cost is as follows:

TC = Operation cost/ Number of transactions

When more than one ATM machine is operated in a bank branch location, RBO level calculation is required. There are thirteen RBOs operating in the state of Kerala. RBO level transaction cost is calculated by following formula:

TC= Average cost per ATM*Number of Machines per RBO / Number of transactions

The operation cost is calculated by taking the average cost of an ATM machine multiplied by the total number of ATM machines under each RBO. In the case of number of transactions, average "hit" for each RBO is considered. Out of 13 RBO, one RBO at Shornur is established only in 2015, therefore the total Cost is calculated for 4 years from March 2013 to March 2016 and RBO at Shornur is calculated only for 2 years; from March 2015 to March 2016. These 13 RBOs are again classified into four Modules like, Thiruvananthapuram, Ernakulum, Thrissur and Kozhikode for analysis purpose. For the Network analysis the entire branches of SBI are grouped into two categories like network1 and network 2.Network1 includes Thiruvananthapuram module to Ernakulum module and Network2 includes Thrissur module to Kozhikode module.

4.1.2. Volume wise classification

In the case of volume wise classification of SBI branches in Kerala circle is classified in to three broad categories, viz, Low Volume Branches(LVB), Medium Volume Branches(MVB), and High Volume Branches(HVB).All the three types of branches are selected as comparison points for the cost computation of ATM services in the present study. The number and percentage of each category of volume of branches are shown in the table 4.2.

Table 4.2

Volume Wise Classification of SBI Branches for the Cost Computation of ATM Services

Type of Volume branch	Number	Percent	Period
LVB	251	54.21	2013-2016 (4 years)
MVB	199	42.98	
HVB	13	2.81	
TOTAL	463	100	

Source: MBPM Department, LHO, TVM.

Table 4.2 reveals the proportion of branches on the basis of volume of business of State Bank of India taken for analysis purpose. It shows that 54.21 percent, 42.98 percent and 2.81 percent branches included LVB, MVB and HVB respectively. Low Volume branches are those classifications of banking branches which include in scale1&scale 2 of Rs. 15 crores to Rs. 30 crores of volume of business having average transaction per day varies from 200 to 300. Out of 463 branches 251 branches are fallen into this category. Medium Volume branches are those classifications of banking branches which include in scale 3& scale 4 of Rs. 35 crores to Rs. 75 crores of volume of business having average transaction per day varies from 300 to 500. Out of 463 branches 199 branches belong to this category. High Volume branches are those classifications of banking branches which include in scale 5 of Rs. 75 crores to Rs. 100 crores of volume of business having average transaction per day is more than 500. Out of 463 branches 13 branches are belong this category. The cost of ATM services of SBI in Kerala, are computed for four years from 2013 March to 2016 March.

a) Average operation cost of ATM services

Table 4.3 gives the Average operation cost of ATM services which comprises four years of average total of LVB, MVB and HVB separately. The table is shown as follows:-

Table 4.3

Average Operation Cof ATM Services

Type of Branch	Number of branches	Total operation Cost(Rs.)	Average operation cost(Mean Value)
LVB	251	7941467	31639.31
MVB	199	6565283	32991.37
HVB	13	455433	35033.31
Total	463	14962183	32315.73
Average operation cost=14962183/463=32316			

Source: Computed and Compiled from MBPM Department, LHO, TVM.

Table 4.3 reveals that, highest operation cost is for HVBs and lowest in LVBs. It also highlighted that, average operation cost per ATM service is Rs. 32316 in volume level classification.

b) Average Number of Transactions of ATM Services

In banking terminology, number of transactions occurring in an ATM service is called as number of hits. The monthly number of hits is taken for the computation of cost per transaction of ATM services. The following table shows the average hit per day of LVB, MVB and HVB separately.

Table 4.4

Average Number of Transactions of ATM services per day

Type of Branch	2013	2014	2015	2016	Total	Average	Percentage	Average
LVB	168	200	221	244	833	208	30	235
MVB	193	216	231	258	898	225	32	
HVB	240	268	286	290	1084	271	38	
Total	601	684	738	792	2815	704	100	

Source: Survey Data

The Audited annual report 2015-16 of SBI states that, average hit rate is more than 214 transactions per day per ATM in an All India basis. The above table reveals that, the average hit rate touched to 235 transactions per day per ATM in Kerala Circle. Therefore, in the case of number of transactions, Kerala circle surpasses the all India average.

c) Transaction Cost Analysis of ATM Services of SBI in Kerala

In order to test whether the transaction cost of ATM services significantly differs on the basis of Volume, RBO, Module and Network, certain statistical tests are used. The data summarized in number, mean and standard deviation. The central value of cost is inferred using mean and the dispersion from these central values are quantified in standard deviation. Since there is much variation in four years, the average transaction cost is also computed.

The mean and standard deviation of transaction cost of ATM services in volume level is given in the following table 4.5.

Table 4.5

Volume Wise Descriptive Statistics of Transaction Cost of ATM Services

Type	Number	Transaction cost of 2013(Rs.)		Transaction cost of 2014(Rs.)		Transaction cost of 2015(Rs.)		Transaction cost of 2016(Rs.)		Average Transaction cost (Rs.)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
LVB	251	6.8845	2.02746	5.4781	1.03659	4.9004	0.81120	4.3825	0.63650	5.4036	0.92439
MVB	199	6.1106	1.36989	5.3367	1.12914	4.8342	0.79623	4.4070	0.75889	5.1642	0.80786
HVB	13	4.9231	0.49355	4.3077	0.48038	4.1538	0.37553	4.0769	0.27735	4.3620	0.25675

Source: Survey Data

Table 4.5 reveals that, mean transaction cost of ATMs is larger in LVB in all the individual years and the average of four years. The mean value of HVBs is smaller than LVBs and MVBs in all the individual years and in average of the four years. This means that transaction cost of LVBs are higher and low transaction cost are enjoyed by HVBs.

In order to test whether the given data is normally distributed, Kolmogorov Smirnov test is conducted and the results are given in table 4.6 below.

Table 4.6

Result of Normality Test of Transaction Cost of ATM Services in Volume level

Period	Skewness	Kurtosis	Kolmogorov Smirnov Test Statistic	P-value
2013	2.179	8.659	5.008	.000
2014	1.636	5.015	6.866	.000
2015	1.029	2.056	5.459	.000
2016	0.987	8.265	7.938	.000
Average	1.586	2.986	3.270	.000

Source: Survey Data

The test reveals that none of the variables are Normal (p-value<0.05). Hence, non-parametric tests are applied to reach inference.

In order to test the hypothesis, 'There is no significant difference in the Transaction cost of ATM services in Volume level'Kruskal Wallis test isused and the result is presented in Table 4.7.

Table 4.7

Kruskal Wallis Test for Transaction Cost of ATM Services in Volume level

Type	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	37.849	.000**	Rejected
2014	23.654	.000**	Rejected
2015	13.394	.001**	Rejected
2016	4.104	.128	Accepted
Average	34.407	.000**	Rejected

Source: Survey Data **Significant at 5% level

The test reveals that there is significant difference in the transaction cost of ATMs with regard to volume level in 2013, 2014, 2015 and the hypothesis is rejected. Whereas, in 2016, transaction cost has no significant difference as the p value is less than 0.05 in an average of four years and can be concluded that there is significant difference in the volume level transaction cost of ATM services.

4.1.3 RBO wise Classification

In the case of RBO wise classification, SBI branches in Kerala circle are classified into 13 groups. The number and percentage of branches included in each category of RBOs are shown in the table 4.8.

Table 4.8

RBO Wise Classification of SBI branches for the Cost Computation of ATM Services

Name of RBO	Number Of Branches				Percentage	Period
	LVB	MVB	HVB	Total		
TVM	28	20	3	51	11	2013-2016(4 years)
KLM	29	10	-	39	8	
APA	12	28	-	40	9	
EKM-1	24	12	2	38	8	
EKM-2	35	10	-	45	10	
EKM-3	13	12	1	26	6	
KTM	11	17	1	29	6	
PKD	18	11	1	30	7	
TSR	22	14	1	37	8	
CLT-1	22	16	1	39	8	
CLT-2	15	17	1	33	7	
KNR	16	11	2	29	6	
SHR	6	21	1	27	6	2015-2016(2 years)
Total	251	199	13	463	100	

Source: Survey Data

From the above table it is very clear that more number of branches was included in Thiruvananthapuram RBO and comparatively less number of branches comeunder Ernakulam-3, Kottayam, Kannur and Shornur RBOs. The total Cost is calculated for 4 years from March 2013 to March 2016. Out of 13 RBOs, one RBO at Shornur is established only in 2015 and its cost is calculated for two years ie.2015 and 2016 only.

a) RBO wise Operation cost of ATM Services

When more than one ATM machines are operated in a bank branch location, RBO level calculation is required. RBO wise cost of ATM Services, along with the average, is presented in table 4.9.

Table 4.9

RBO Wise Operation cost of ATM Services

Name of RBO	Number of ATMs				Operation Cost=(Avge O.cost perATM(32316)*No.of Machines)				Total	%
	2013	2014	2015	2016	2013	2014	2015	2016		
TVM	85	162	166	198	2746860	5235192	5364456	6398568	19745076	12
KLM	50	99	104	123	1615800	3199284	3360864	3974868	12150816	8
APA	54	113	116	140	1745064	3651708	3748656	4524240	13669668	8
EKM-1	52	101	121	136	1680432	3263916	3910236	4394976	13249560	8
EKM-2	55	106	118	132	1777380	3425496	3813288	4265712	13281876	8
EKM-3	50	106	110	125	1615800	3425496	3554760	4039500	12635556	8
KTM	51	97	101	116	1648116	3134652	3263916	3748656	11795340	7
PKD	61	112	121	145	1971276	3619392	3910236	4685820	14186724	9
TSR	50	95	108	116	1615800	3070020	3490128	3748656	11924604	7
CLT-1	65	104	114	120	2100540	3360864	3684024	3877920	13023348	8
CLT-2	42	73	73	80	1357272	2359068	2359068	2585280	8660688	5
KNR	63	127	132	148	2035908	4104132	4265712	4782768	15188520	9
SHR	-	--	76	82	------	---------	2456016	2649912	5105928	3
Total	**678**	**1295**	**1460**	**1661**	**21910248**	**41849220**	**47181360**	**53676876**	**164617704**	**100**

Source: Survey Data

The operation cost is calculated by taking the average cost of an ATM machine multiplied by the total number of ATM machines under each RBO. The Table 4.9 reveals that, highest percentage of operation cost occurrs in

Thiuvananthapuram RBO and lowest in Shornur RBO. Six RBOs like Kollam, Alappuzha, Ernakulam-1, 2, 3 and Calicut-1 showed the same operation cost.

b) RBO wise Number of Transactions of ATMs

In banking scenario, number of transactions occurring in an ATM service is called as number of hits. The monthly number of hits is taken for the computation of cost per transaction of ATM services. The following table 4.10 presents the monthly average hit and percentage of transactions in each RBO separately.

Table4.10

RBO Wise Number of Transactions of ATM Services

Name of RBO	2013	2014	2015	2016	Total	Percentage
TVM	568650	918540	1005960	1247400	3740550	12
KLM	375000	647460	773760	922500	2718720	9
APA	383940	569520	720360	924000	2597820	8
EKM-1	365040	618120	740520	864960	2588640	8
EKM-2	371250	515160	654900	780120	2321430	8
EKM-3	307500	407040	495000	607500	1817040	6
KTM	304470	500520	487830	598560	1891380	6
PKD	468480	692160	776820	978750	2916210	9
TSR	294000	481650	537840	619440	1932930	6
CLT-1	520650	751920	800280	885600	2958450	10
CLT-2	289800	448950	499320	576000	1814070	6
KNR	457380	678180	689040	852480	2677080	9
SHR	**……**	…….	440040	487080	927120	3
Total	4706160	7229220	8621670	10344390	30901440	100

Source: Survey Data

From the Table 4.10 it is clear that highest percent of transactions are in Thiruvananthapuram RBO and lowest in Shornur RBO.Thiruvananthapuram RBO

accounts for the highest percentage of transactions followed by Calicut, Kannur, and Kollam respectively.

C) RBO wise Analysis of Transaction cost of ATM services

The descriptive statistics of the transaction cost of ATM services in RBO level is given in the following table 4.11.

Table 4.11

Descriptive Statistics of Transaction Cost of ATMs at RBO level

Name of RBO	No.of branches	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	51	6.6471	1.83110	5.4902	1.10223	4.8235	.79261	4.3333	.58878	5.3218	.93624
KLM	39	6.3333	1.45699	5.3590	1.03840	4.8974	.71800	4.4103	.63734	5.2262	.82151
ALP	40	6.1250	1.45333	5.2500	1.05612	4.8750	.75744	4.2000	.85335	5.1268	.79558
KTM	29	6.6207	1.590465	5.2414	.91242	4.7586	.87240	4.3793	.72771	5.2224	.83880
EKM1	38	6.3947	2.47735	5.3421	1.52946	4.6316	.97040	4.3947	.88652	5.2127	1.20662
EKM2	45	7.1778	2.03703	5.4444	.98985	4.8667	.89443	4.4444	.86748	5.4594	.96312
EKM3	26	6.1923	1.16685	5.1154	.51590	4.7308	.53349	4.2692	.53349	5.0460	.49342
TSR	37	7.1892	2.51482	5.6486	1.22964	4.9189	.79507	4.4865	.69208	5.4938	1.04515
SHR	27	7.0000	2.16617	5.7407	1.58339	5.1111	1.05003	4.5556	.64051	5.5715	1.00793
PKD	30	6.5000	1.35824	5.6000	.93218	5.0000	.69481	4.6000	.62146	5.4120	.76204
CLT-1	39	5.9231	1.20054	5.4103	.81815	5.0000	.76089	4.4103	.54858	5.1664	.71632
CLT2	33	6.3939	1.53987	5.2424	.83030	4.7879	.78093	4.3333	.54006	5.2360	.79369
KNR	29	5.7241	5.7241	5.0000	1.00000	4.6552	.66953	4.2069	.49130	4.9536	.64870
Total	463	6.4968	1.80292	5.3844	1.08269	4.8510	.80410	4.3844	.68624	5.2715	.88403

Source: Survey Data

Table 4.11 reveals that highest average transaction cost in four years stood at Shornur RBO (5.5715) followed by Thrissur (5.4938) and Ernakulam-2(5.4594) RBOs. Lowest mean value stood at Kannur (4.9536**)** followed by Ernakulam-3 (5.0460**)** and Alappuzha. **(**5.1268**).**Similarly, S.D also highest in Ernakulam-1(1.20662) followed by Thrissur (1.04515) and Shornur (1.00793).In individual years also Thrissur and Shornur RBOs are highest in mean value. Kannur stood at lowest mean value in all the individual years. Another noted fact is that, mean value reduces yearby year on account of increased transaction year by year.

To check whether the data is normally distributed, Kolmogorov Smirnov test is conducted and the result is shown below:-

Table 4.12

Normality Test of Transaction Cost of ATM Services at RBO level

Period	Skewness	Kurtosis	Kolmogorov Smirnov Test Statistic	P-value
2013	-2.801	8.618	1.202	.111
2014	-1.723	4.832	.979	.293
2015	.152	-.427	.837	.486
2016	.412	-.298	.822	.509
Average	.487	-.221	.391	.998

Source: Survey Data

The test reveals that none of the variables are Normal (p-value<0.05). Therefore, non-parametric test is used for analyzing cost of transactions based on selectedindependentvariables. In order to test the hypothesis, 'There is no significant difference in the Transaction cost of ATM services in RBO level'Kruskal Wallis test was used and the result is presented in Table 4.13.

Table 4.13
Kruskal Wallis Test for Transaction Cost of ATM Services in RBO level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	11.000	0.358	Accepted
2014	10.742	.378	Accepted
2015	11.000	.358	Accepted
2016	10.318	.413	Accepted
Average	10.654	.385	Accepted

Source: Survey Data

Test reveals that there is no significant difference in the transaction cost of ATM services at RBO level and the hypothesis is accepted.

4.1.4 Module wise Classificationof ATM Services

In the case of module wise classification, SBI branches in Kerala circle are classified into four broad categories, viz. Thiruvananthapuram, Ernakulam, Thrissur and Kozhikode**.** The number and percentage of branches included in each module are shown in the table 4.14.

Table 4.14

Module wise classification of SBI branches for the cost computation of ATM services

Module	RBOs	Branches	Percentage	period
Thiruvananthapuram	TVM,KLM,ALP	130	28	2013-2016(4years)
Ernakulam	EKM.1,EKM2,EKM3, KTM	138	30	
Thrissur	TSR,SHR,PKD	94	20	
Kozhikode	CLT1,CLT2,KNR	101	22	
	Total	463	100	

Source: Survey Data

From the Table 4.14 it is evident that 30 % of branches come under Ernakulam Module, 28% branches come under Thiruvananthapuram Module, 22 % branches are in Kozhikode module and only 20 % are coming under Thrissur Module.

a) Module wise Operation Cost of ATM services

The Table 4.15 represents the number of ATMs, Average of operation cost of ATM services in individual years and total operation cost in percentages for each Module.

Table 4.15

Module wise Operation Cost of ATM services

Module	Number of ATMs				Operation cost=Avge operation cost per ATM(32316)* No.of ATMs				Total	Mean Value
	2013	2014	2015	2016	2013	2014	2015	2016		
TVM	189	374	386	461	6107724	12086184	12473976	14897676	45565560	11391390
EKM	208	410	450	509	6721728	13249560	14542200	16448844	50962332	12740583
TSR	111	207	305	343	3587076	6689412	9856380	11084388	31217256	7804314
CLT	170	304	319	348	5493720	9824064	10308804	11245968	36872556	9218139
Total	678	1295	1460	1661	21910248	41849220	34093380	53676876	164617704	41154426

Source: Survey Data

Table 4.15 discloses that highest operation cost are in Ernakulam module and lowest operation cost in Calicut module. Ernakulam accounts for 35 % of the operation cost, Thiruvananthapuram accounts for the lowest cost of 15% of the operation cost.

b) Module wise Number of Transactions of ATM Services

The monthly number of hits is taken for the computation of cost per transaction of ATM services. The following table gives the monthly hit per module separately.

Table 4.16

Module wise Number of Transactions of ATM Services

Module	2013	2014	2015	2016	Total	percentage(%)
TVM	1327590	2135520	2500080	3093900	9057090	29
EKM	1348260	2040840	2378250	2851140	8618490	28
TSR	762480	1173810	1754700	2085270	5776260	19
KOD	1267830	1879050	1988640	2314080	7449600	24
Total	4706160	7229220	8621670	10344390	30901440	100

Source: Survey Data

Table 4.16 shows that number of transactions are more in Thiruvananthapuram module and lower transactions occur in Thrissur module.

c) Module wise Analysis of Transaction cost of ATM services

The descriptive statistics of transaction cost of ATM services at the Module level is given in the table 4.17.

Table 4.17

Descriptive Statistics of Transaction Cost of ATM Serivces in Module level

Module	N	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	130	6.3923	1.61627	5.3769	1.06578	4.8615	.75487	4.3154	.69365	5.2331	.85822
EKM	138	6.6594	1.97612	5.3116	1.08608	4.7536	.85275	4.3841	.78603	5.2638	.94974
TSR	94	6.9149	2.10304	5.6596	1.24911	5.0000	.84242	4.5426	.65031	5.4900	.94437
CLT	101	6.0198	1.31894	5.2376	.88486	4.8317	.74926	4.3267	.53120	5.1281	.72638
Total	463	6.4968	1.80292	5.3844	1.08269	4.8510	.80410	4.3844	.68624	5.2715	.88403

Source: Survey Data

Table 4.17 reveals that highest mean value in an Average of four years and in individual years stood at Thrissur Module. Similarly Lowest mean value stood at Kozhikode module. S.D is highest in Ernakulum module in almost all the individual years and in average of four years, followed by Thrissur Module. The nature of mean value is reduced in manner after each individual year in all the regions/modules.

In order to test the hypothesis, ‘There is no significant difference in the Transaction cost of ATM services in Module level’ Kruskal Wallis test is applied and the result is presented in Table 4.18.

Table 4.18

Kruskal Wallis Test for Transaction Cost of ATMs in Module level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	13.450	.004	Reject
2014	8.076	.044	Reject
2015	6.621	.085	Accept
2016	9.852	.020	Reject
Average	12.224	.007	Reject

Source: Survey Data

The test reveals that there is significant difference in the transaction cost of ATMs with regard to Module level in 2013, 2014, 2016 and hence the hypothesis is rejected through these years. In 2015, transaction cost has no significant difference.

4.1.5 Network level Classification of ATM Services

For the Network analysis the entire branches of SBI are grouped into two categories like Network1 and Network 2.Network1 includes Thiruvananthapuram module to Ernakulum module and Network2 includes Thrissur module to Kozhikode module. The number and percentage of branches comes under each network is shown in the table 4.19.

Table 4.19

Network Wise Classification of SBI Branches for the Cost Computation of ATM Services

Network	RBOs	Modules	Branches	Percentage	Period
Network-1	TVM,KLM,EKM1,2,3, & KTM	TVM,EKM	268	58	4years
Network-2	PKD,TSR,CLT1,2,KNR &SHR	TSR,KOD	195	42	
Total	13	4	463	100	

Source: Survey Data

Based on the four year data considered for transaction cost analysis, network 1 accounts for 52% and the remaining 48 % by Network 2

a) **Network level Operation Cost of ATM services**

Table 4.20

Network Wise Operation Cost of ATM Services

Network	No.Of ATMs				Operation cost=Avge operation cost per ATM(32316)* No.of ATMs				Total in %	Mean Value
	2013	2014	2015	2016	2013	2014	2015	2016		
Network-1	397	784	836	970	12829452	25335744	27016176	31346520	59	24131973
Network-2	281	511	624	691	9080796	16513476	20165184	22330356	41	17022453
Total	678	1295	1460	1661	21910248	41849220	47181360	53676876	100	41154426

Source: Survey Data

Table 4.20 shows that highest operation cost are suffered by network-1 and in network-2, only 41% have occurred.

b) **Network level Number of Transactions of ATM Services**

Network level number of transactions is given in the following table 4.21.

Table 4.21

Network Wise Number of Transactions of ATM Services

Network	2013	2014	2015	2016	Total	%
Network-1	2675850	4176360	4878330	5945040	17675580	57
Network-2	2030310	3052860	3743340	4399350	13225860	43
Total	4706160	7229220	8621670	10344390	30901440	100

Source: Survey Data

It is evident from the Table 4.21 that, 57% of number of transactions is in Network -1 and 43% 0f transactions are in Network-2

c) **Network wise Analysis of Transaction cost of ATM services**

The descriptive statistics of Transaction Costs of ATM Services for the period under study along with the average amount is presented in table 4.22

Table 4.22

Descriptive Statistics of Transaction Cost of ATMs in Network level

Network	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Network-1	269	6.5465	1.88540	5.3383	1.07588	4.7993	.80382	4.3494	.73594	5.2482	.91883
Network2	194	6.4278	1.68426	5.4485	1.09162	4.9227	.80104	4.4330	.60921	5.3038	.83464
Total	463	6.4968	1.80292	5.3844	1.08269	4.8510	.80410	4.3844	.68624	5.2715	.88403

Source: Survey Data

As per the table it is clear that the average transaction cost of ATM Services in network 2 is highest, while the S.D of transaction cost is higher in network 1. In order to test the hypothesis,‘ There is no significant difference in the Transaction cost of ATM services in Network level’ Mann Whitney U test is used and the result is presented in Table 4.23.

Table 4.23

Mann whitney U Test for Transaction Cost of ATMs in Network level

Type	Mann-Whitney U	Wilcoxon W	Z	p-value	Decision
2013	8.500	29.500	-1.734	.083	Accepted
2014	8.000	29.000	-1.660	.097	Accepted
2015	16.500	37.500	-.254	.799	Accepted
2016	15.000	36.000	-.506	.613	Accepted
Average	12.000	33.000	-.961	.337	Accepted

Source: Survey Data

Test reveals that there is no significant difference between Network-1 & 2 in the transaction cost in all the individual years and in an average of four years. Therefore hypothesis is accepted.

4.1.6 Comparison of ATM operation cost, Number of Transactions & Transaction cost among Different levels of SBI in Kerala

Comparison is made in respect of operation cost, number of transactions and transaction cost which are expressed in the following table 4.24

Table 4.24

Comparative Analysis of ATM Services

Dimensions of analysis	Operation cost		Number of transactions		Transaction cost	
	High	Low	High	Low	High	Low
Volume	HVB	LVB	HVB	LVB	LVB	HVB
RBO	TVM	SHR	TVM	SHR	SHR	KNR
Module	EKM	KOD	TVM	TSR	TSR	KOD
Network	1	2	1	2	2	1

Source: Survey Data

Table 4.24 reveals the comparison levels of ATM services in four dimensions like, Volume,RBO,Module and Network on the basis of Mean value and percentage summarized from the previous tables.From the above table it is very clear that if the numbers of transactions are high, Transaction cost will be reduced. On the other hand if the number of transactions is in low, transaction cost will be higher. Therefore it is concluded that there is an inverse relationship between number of transactions and Transaction cost of ATM services.

To sum up, the hypothesis formulated and tested by using various statistical test are shown in the precise form in the Table 4.25

Table4.25

Summarised Result of Hypotheses Testing-ATM Services

Sl.No	Hypothesis	Statistical test	Result
1	There is no significant difference in the transaction cost of ATM services in Volume level	Kruskal wallis test	Rejected
2	There is no significant difference in the transaction cost of ATM services inRBO level	Kruskal wallis test	Accepted
3	There is no significant difference in the transaction cost of ATM services in Module level	Kruskal wallis test	Rejected
4	There is no significant difference in the transaction cost of ATM services in Network level	Mann whitney U test	Accepted

From the analysis, the researcher comes to a conclusion that there is significant difference in the ATM services in Volume level and Module level. But there is no significant difference seen in RBO level and Network level.

Section B

4.2 Cost Structure of CDM Services

The Cash Deposit Machine better known as CDM is an ATM like machine that allows depositing cash directly into account using the ATM cum Debit card. This machine can be used instantly to credit account without visiting the branch. The transaction receipt also gives updated account balance. The first CDM was installed at Nanthancode, Thiruvananthapuram in 2013. Some of the salient features of CDM are:-

- Instant credit of cash deposit into account
- Quick and convenient way to deposit cash
- Paperless transaction
- The per transaction limit is Rs.49,900/-
- Up to 200 currency notes can be deposited in a single transaction
- The CDM only accepts denominations of Rs.1000/-, Rs.500/- & Rs.100/-

4.2.1. CDM service Cost elements, Variables and Dimensions of Analysis

In current research context, the researcher identified the following cost elements, variables and levels of study for computing the transaction cost of CDM services.

Table 4.26

Classification of Cost Elements, Variables and Dimensions of Analysis of CDM Services

Cost elements (CDM)	Variables	Dimensions of Analysis
1.Machine cost 2.Electricity 3.AMC	1. Operation cost 2. Number of Hits 3. Number of machines	1. Volume 2. RBO 3. Module 4. Network

Source: Survey Data

From the Table 4.26, it is clear that there are three cost elements used for the computation of total cost of CDM services. **Operation cost** is calculated by taking these cost elements like Machine Cost, Electricity, and Annual Maintenance Contract Charges (AMC). The formula for calculating transaction cost is as follows:

TC = Operation cost/ Number of transactions

The CDM transactions are recorded in terms of number of "hits". The total number of CDMs established by SBI in the year 2013 in Kerala circle was only 19. In 2014, it was raised to 113. In 2015 the majority of CDMs were converted into Recycler Machines. Therefore the number of CDMs reduced to 19 again. In 2016 there were no changes in the number of CDMs. From January 2017 onwards, all CDMs were converted to Recyclers. The period of data collection is from March 2013 to March 2016. Therefore the CDM cost calculation was done through 19 numbers in 2013, 113 numbers in 2014 and 19 in 2015 and 2016. Cost calculation of CDM was also depending upon these numbers. Cash replenishment charges, Air conditioning charges and Rent were exempted from the CDM cost calculation. In CDM, cash replenishment is not required, only cash removal is required for which there is no extra charge for the banks. CDM was placed in the ATM room, so there is no further

need for allocating 'rent' and Air conditioning charges for it. Cost of a CDM machine is Rs.880000/-. It is divided by its estimated life of 5 years and also divided by 12 months for getting monthly cost. Electricity charges are around Rs.2000/-, AMC cost was 20% of the machine cost. But in the initial years it was exempted and only a small amount comes, an amount of Rs.2200/-, in general as AMC. Then the computed amount is the total operation cost which was further divided by monthly average "hit" as number of Transactions. Therefore, the transaction cost varies in accordance with the number of "hits". All the branches of SBI in Kerala did not possess the CDM machines and therefore it is not reliable for statistical analysis. However, the number and percentage of the distribution of CDM services in various levels of the SBI in Kerala Circle are as follows:

4.2.2. Volume wise classification

In the case of volume wise classification, SBI branches in Kerala circle are classified into three broad categories, viz, Low Volume Branches (LVB), Medium Volume Branches(MVB), and High Volume Branches(HVB).. The number and percentage of each category of volume of branches are shown in the table 4.27.

Table 4.27

Volume Wise Classification of SBI Branches for the Cost Computation of CDM Services

Type	2013	2014	2015	2016	Total	percentage
LVB	---	25	----	---	25	14%
MVB	10	76	10	10	106	64%
HVB	9	9	9	9	36	22%
Total	19	110	19	19	167	100%

Source: Survey Data

The Table 4.27 reveals the number and percentage of the distribution of CDM machines on the basis of volume of business of SBI. Out of 463 branches, CDM machines are operating only in 167 branches (36%). Low Volume branches are those classifications of banking branches which include in scale1&scale 2 of 15 crores to 30 crores of volume of business having average transaction per day varying from 200 to

300. Out of 167 CDM installed branches, 25 branches come under the Low Volume category only in 2014. Medium Volume branches are those classifications of banking branches which include in scale 3& scale 4 of 35 crores to 75 crores of volume of business having average transaction per day varying from 300 to 500. Out of 167 CDM installed branches, CDMs are operated in 76 medium Volume branches in 2014 and in 10 branches each in all other years of 2013, 2015 and 2016. High Volume branches are those classifications of banking branches which include in scale 5 of 75 crores to 100 crores of volume of business having average transaction per day more than 500. Out of 167 CDM installed branches, CDMs are operated only in 9 High Volume Branches. The cost of CDM services of SBI in Kerala, are computed for four years from 2013 March to 2016 March. The Cash Deposit Machines were distributed on a trial basis in order to overcome the limitation of ATM for extending the facility of depositing cash instantly. In an average of four years only 36% of branches were distributed Cash Deposit Machines. Therefore all branches of SBI did not possess the CDM service and so it is not reliable for statistical analysis. From 1st January,2017 onwards, all CDMs are converted in to Recycler Machines.

a) Volume wise Average operation cost of CDM services

The Table 4.28 represents the Average operation cost of CDM services which comprises average of four individual years of LVB, MVB and HVB separately. The table is shown as follows:-

Table 4.28

Volume wise Average Operation Cost of CDM Services

Type	2013	2014	2015	2016	Total	Average(Mean value)	Volume Average
LVB	----	21447	---	----	21447	21447	21066
MVB	18568	21483	21750	21697	83498	20875	
HVB	18669	21540	21656	21644	83509	20877	
Total	37237	64470	43406	43341	188454	63199	
Average Operation Cost per cash Deposit Machine=21066Rs.							

Source: Computed and Compiled from MBPM Dept., LHO, TVM.

The above Table 4.28 reveals that Average operation cost of a Cash Deposit machine is reached to Rs.21201.The highest average operation cost is in LVB and lowest is in MVBs. It was comparatively lesser than ATM service which stands for Rs.32316.

b) Volume wise Average number of Transactions of CDM services

In banking terminology, number of transactions occuring in a CDM service is called as number of hits. The monthly number of hits is taken for the computation of cost per transaction of CDM services. The following table gives an idea about the average hit per day of LVB, MVB and HVB separately.

Table 4.29

Volume Wise Monthly Average Number of Transactions of CDM Services

Type of Branch	2013	2014	2015	2016	Total	Average	Volume Average/month=4358 Volume Average/day = 4358/30=145
LVB	----	2940	----	-----	2940	2940	
MVB	4152	3368	6699	6726	20945	5236	
HVB	4717	4077	5237	5567	19598	4900	
Total	8869	10385	11936	12293	43483	13076	

Source: Survey Data

The Table 4.29 proves that, the average hit rate touches to 145 transactions per day per CDM in Kerala Circle. This hit rate shows that usage of CDMs is comparatively lower than that of ATMs. Cash Deposit Machines are not used by the customers frequently. Moreover, highest number of transactions in MVBs as the meanvalue is 5236 followed by the mean value 4900 in HVBs and lowest transactions in LVBs as the mean value is 2940.

c) Volume wise Transaction Cost Analysis of CDM services of SBI in Kerala

Due to the wide variation in the distribution of Cash Deposit Machines, it is not reliable for statistical analysis**.** Out of 463 branches, CDMs are established only in 167 branches in a total of four years. The common formula for transaction cost calculation is used as follows:

Operation cost/ Number of transactions. The monthly cost and monthly average hit is used for the calculation of transaction cost of CDM services. The transaction cost are shown in the following Table 4.30

Table 4.30

Volume Wise Transaction Cost of CDM Services

Type	2013	2014	2015	2016	Total	Average
LVB	----	7	-----	-----	7	7
MVB	4	6	3	3	16	4
HVB	4	5	4	4	17	4.25
Total	8	18	7	7	40	15.25
Volume Average transaction cost per CDM=15.25/3=5Rs.						

Source: Computed and Compiled from MBPM Dept, LHO, TVM.

Table 4.30 reveals that, Volume wise transaction cost of CDMs is way larger in LVBs. Transaction cost is same in MVBs and HVBs. The average volume wise transaction cost per CDM stood at Rs.5.

4.2.3 RBO wise Classification

In the case of RBO wise classification, SBI branches in Kerala circle are classified into 13 in number. The number and percentage of Cash Deposit Machines included in each category of RBOs are shown in the table 4.31.

Table 4.31

RBO Wise Classification of CDM Services

Name of RBO	Number Of Cash Deposit Machines				Total	Percentage
	2013	2014	2015	2016		
TVM	3	8	3	3	17	10
KLM	1	7	1	1	10	6
APA	1	12	1	1	15	9
EKM-1	3	9	3	3	18	11
EKM-2	2	7	2	2	13	8
EKM-3	1	5	1	1	8	5
KTM	1	9	1	1	12	7
PKD	2	9	1	1	13	8
TSR	1	15	1	1	18	11
CLT-1	1	9	1	1	12	7
CLT-2	1	12	1	1	15	9
KNR	2	11	2	2	17	10
SHR	……..	……..	1	1	2	1
Total	19	113	19	19	170	100

Source: Survey Data

From the above table 4.31, it is clear that highest number of CDMs are included in EKM-1RBO and Thrissur RBO (18machines each) followed by TVM and Kannur RBOs (17 machines each), CLT-2 & APA (15 machines each), EKM-2 & PKD (13 machines each), KTM & CLT-1 (12 machines each), KLM (10 machines), EKM-3 (8machines) and only 2 machines at SHR RBO.

a) RBO wise Operation cost

The Table 4.32 represents the RBO wise operation cost of CDM services which comprises four years of average total of 13 RBOs separately. When more than one CDM machine may be operated in a bank branch location, RBO level calculation is required. RBO level operation cost was calculated by taking in to consideration the number of CDM machines multiplied with year wise Average total cost. (**Average**

Total Cost*Number of Machines). The result of the RBO wise Operation cost calculation is shown in the Table.4.32.

Table 4.32

RBO Wise Operation Cost of CDM Services

Name of RBO	Operation Cost=(Average Total. cost *No. of Machines)				Total	%
	2013	2014	2015	2016		
TVM	55845	171840	65115	65016	357816	10
KLM	18615	150360	21705	21672	212352	6
APA	18615	257760	21705	21672	319752	9
EKM-1	55845	193320	65115	65016	379296	11
EKM-2	37230	150360	43410	43344	274344	8
EKM-3	18615	107400	21705	21672	169392	5
KTM	18615	193320	21705	21672	255312	7
PKD	37230	193320	21705	21672	273927	8
TSR	18615	322200	21705	21672	384192	11
CLT-1	18615	193320	21705	21672	255312	7
CLT-2	18615	257760	21705	21672	319752	9
KNR	37230	236280	43410	43344	360264	10
SHR	……	…….	21705	21672	43377	1
Total	353685	2427240	412395	411768	**3605088**	**100**
RBO wise Average Operation cost=901272/13=69328						

Source: Survey Data

The operation cost is calculated by taking the year wise operation cost of CDM machine multiplied by the year wise total number of CDM machines under each RBO. The Table 4.32 reveals that, highest percentage of operation cost occurred in EKM-1 & Thrissur RBO, followed by Thiruvananthapuram RBO and Kannur RBO. The lowest operation cost can be observed in EKM-3 RBO and Shornur RBO. Out of 13 RBOs, one RBO at Shornur is established only in 2015, therefore the Total

Cost is calculated for 4 years from March 2013 to March 2016 and RBO at Shornur is calculated only for 2 years; from March, 2015 to March, 2016.

b) RBO wise Number of Transactions of CDM services

In banking scenario, the number of transactions occuring in a CDM service is called as number of hits. The monthly number of hits is taken for the computation of cost per transaction of CDM services. The following table gives an idea about the monthly average hit and percentage of transactions in each RBO separately.

Table4.33

RBO wise Number of Transactions of CDM services

Name of RBO	2013	2014	2015	2016	Total	Percentage
TVM	6750	31440	11790	11250	61230	10
KLM	2310	22470	4320	4260	33360	5
APA	570	25920	1320	1500	29310	5
EKM-1	3690	32670	13950	13500	63810	10
EKM-2	2640	29610	26580	21000	79830	13
EKM-3	750	17250	7260	7050	32310	5
KTM	900	39420	7590	7440	55350	9
PKD	2280	25110	4020	3840	35250	6
TSR	930	33300	9210	8400	51840	8
CLT-1	1470	31860	4590	4350	42270	7
CLT-2	2190	61920	3690	3600	71400	11
KNR	4500	24090	10980	10740	50310	8
SHR	……	…….	8670	7590	16260	3
Total	28980	375060	113970	104520	622530	100
RBO wise Average Number of transactions=155632.5/13=11972.						

Source: Survey Data

The table 4.33 clearly shows that the highest percent of transactions are in EKM-2 RBO, followed by CLT-2 and the lowest category of transaction cost can be observed in Kollam, Alappuzha, EKM-3 and Shornur RBO.

c) RBO wise Analysis of Transaction cost of CDM services of SBI in Kerala

Statistical analysis is not possible in CDM services as it is not distributed in all branches. Out of 463 branches, CDMs are established only in 167 branches but the number of machines comes to 170 in a total of four years. Therefore, the variation of transaction cost of CDM services in RBO level is needed which are given in the following table 4.34.The common formula for transaction cost calculation is used as follows:

Operation cost/ Number of transactions. The monthly cost and monthly average hit is used for the calculation of transaction cost of CDM services. The transaction costs are shown in the following Table 4.34

Table 4.34

RBO wise Transaction Cost of CDM services

Name of RBO	2013	2014	2015	2016	Total	Average
TVM	8	5	5	4	22	5
KLM	8	5	5	4	22	5
APA	28	9	14	12	63	15
EKM-1	15	5	4	4	28	7
EKM-2	14	5	2	2	23	5
EKM-3	24	6	2	2	34	8
KTM	20	4	3	3	30	7
PKD	16	7	5	5	33	8
TSR	20	9	2	2	33	8
CLT-1	12	6	4	4	26	6
CLT-2	8	4	5	6	23	5
KNR	8	7	4	4	23	5
SHR	……	…….	2	2	4	2
Total	181	72	57	54	364	86
RBO Average transaction cost per CDM=86/13=6Rs.						

Source: Computed and Compiled from MBPM Dept, LHO, TVM.

Table 4.34 reveals that, RBO wise transaction cost of CDMs is higher in Alappuzha. It reached to 15 Rs. followed by EKM-3,Palakkad and Thrissur which indicate the same level of transaction cost of Rs.8. Apart from the Transaction cost of Shornur RBO(Rs.2), Lowest category of Transaction cost can be seen in TVM,Kollam,EKM-2 ,CLT-2 and KNR(Rs.5). The average RBO wise transaction cost per CDM stood at Rs.6.

4.2.4 Module wise Classification

In the case of module wise classification, SBI branches in Kerala circle are classified into four broad categories, viz. Thiruvananthapuram, Ernakulam, Thrissur and Kozhikode**.** The number and percentage of Cash Deposit Machines included in each module are shown in the table 4.35.

Table 4.35

Module Wise Classification of CDM Services

Module	Number Of Cash Deposit Machines					
	2013	2014	2015	2016	Total	Percentage
Thiruvananthapuram	5	27	5	5	42	25%
Ernakulam	7	30	7	7	51	30%
Thrissur	3	24	3	3	33	19%
Kozhikode	4	32	4	4	44	26%
Total	19	113	19	19	170	100

Source: Survey Data

From the Table 4.35 it is evident that 51 % of CDMs are distributed in the Ernakulum Module, 44% CDMs come under Kozhikode Module, 42 % Machines are in Thiruvananthapuram module and only 33 % are included in Thrissur Module.

a) Module wise operation cost of CDM services

The Table 4.36 represents the Module wise operation cost of CDM services of four individual years. The table is shown as follows:-

Table 4.36

Module Wise Operation Cost of CDM Services

Module	2013	2014	2015	2016	Total	Percentage	(Mean value)
Thiruvananthapuram	93075	579960	108525	108360	889920	25	222480
Ernakulam	130305	644400	151935	151704	1078344	30	269586
Thrissur	55845	515520	65115	65016	701496	19	175374
Calicut	74460	687360	86820	86688	935328	26	233832
Total	353685	2427240	412395	411768	3605088	100	901272
Module wise Average Operation cost=901272/4=225318							

Source: Computed and Compiled from MBPM Dept., LHO, TVM.

Table 4.36 shows that Highest operation cost in Ernakulam Module as the mean value is 269586 followed by Calicut module (Mean value=233832) and TVM (Mean value=222480) whereas lowest operation cost in Thrissur module as the mean value is 175374.

b) Module wise Number of Transactions of CDM services

The Table 4.37 represents the Module wise Number of transactions of CDM services of four individual years. Monthly number of transactions which means monthly average hit is taken for cost computation. The table showing monthly number of transactions in four individual years is as follows:-

Table 4.37

Module wise Number of Transactions of CDM services

Module	2013	2014	2015	2016	Total	Percentage	Average
Thiruvananthapuram	9630	79830	17430	17010	123900	20	30975
Ernakulam	7980	118950	55380	48990	231300	37	57825
Thrissur	3210	58410	21900	19830	103350	17	25837
Calicut	8160	117870	19260	18690	163980	26	40995
Total	28980	375060	113970	104520	622530	100	155632
Module wise Average number of transactions=155632/4=38908							

Source: Computed and compiled from MBPM Dept., LHO, TVM.

Table 4.37 reveals that the number of transactions was highest in EKM module as the mean value is 57825 followed by Calicut (40995), TVM (30975)

whereas lowest number of CDM transactions in Thrissur module as the mean value is 25837.

c) Module wise Transaction cost Analysis of CDM services

The same formula for transaction cost calculation is used as **Operation cost/Number of transactions** in Module level.The monthly cost and monthly average hit is used for the calculation of transaction cost of CDM services. The transaction cost are shown in the following Table 4.38.

Table 4.38

Module Wise Transaction Cost of CDM Services

Module	2013	2014	2015	2016	Total	Average
Thiruvananthapuram	9	7	6	6	28	7
Ernakulam	15	5	2	3	25	6
Thrissur	16	8	2	3	29	7
Calicut	8	5	4	4	21	5
Total	48	25	14	16	103	25
Module wise Average Transaction cost=25/4=6 Rs.						

Source: Computed and Compiled from MBPM Dept., LHO, TVM.

The Table 4.38 depicted the dimension of modulewise transaction cost. It is clear from the table thathighest mean value of the transaction cost of CDM service of Rs. 7 each in Thiruvananthapuram and Thrissur module and Calicut Module has lowest transaction cost as its mean value is Rs. 5.The module wise comparison of CDM services revealed that, Calicut module is the most cost effective in CDM services of SBI in Kerala.

4.2.5 Network Wise Classification of CDM Services

For the Network analysis the entire branches of SBI are made to fall into two categories like network1 and network 2.Network1 includes Thiruvananthapuram module to Ernakulum module and Network2 includes Thrissur module to Kozhikode module. The number and percentage of branches included in each network are shown in the table 4.39.

Table 4.39

Network Wise Classification of CDM Services

Network	Number Of Cash Deposit Machines					
	2013	**2014**	**2015**	**2016**	**Total**	**Percentage**
Network-1	12	57	12	12	93	55%
Network-2	7	56	7	7	77	45%
Total	19	113	19	19	170	100%

Source: Survey Data

Table 4.39 discloses that 55% of Cash Deposit machines are distributed in network-1 and 45 % of CDMs come under the network-2 category. Majority of the Cash Deposit machines can be seen in network-1 which means more number of CDMs was established from the Districts of Thiruvananthapuram to Ernakulum.

a) Network wise Operation cost of CDM services

The Table 4.40 represents the Network level operation cost of CDM services of four individual years. The operation cost is computed same as in the case of RBO and Module wise classification. The result of the operation cost is shown in the table 4.40

Table 4.40

Network WiseOperation Cost of CDM Services

Network	Operation cost=Avge of total cost * No. of CDMs				Total	Percentage	Average
	2013	2014	2015	2016			
Network-1	223380	1224360	260460	260064	1968264	55%	492066
Network-2	130305	1202880	151935	151704	1636824	45%	409206
Total	353685	2427240	412395	411768	3605088	100%	901272
Network level Average Operation cost=901272/2=450636							

Source: Computed and Compiled from MBPM Department, LHO,TVM.

Table 4.40 shows that highest operation cost (55%) can be observed in network-1 and only 45% in network-2.

b) Network wise Number of Transactions of CDM services

For the cost computation of CDM services, monthly number of transactions was put into consideration. Network level Number of transactions is given in the following table 4.41.

Table 4.41

Network Wise Number of Transactions of CDM Services

Network	2013	2014	2015	2016	Total	%	Average
Network-1	17610	198780	72810	66000	355200	57%	88800
Network-2	11370	176280	41160	38520	267330	43%	66832
Total	28980	375060	113970	104520	622530	100%	155632
Network level Average Number of transactions=155632/2=77816							

Source: Survey Data

It is evident from the Table 4.41 that, 57% of number of transactions are in Network -1 and 43% of transactions are in Network-2.

c) Network wise Analysis of Transaction cost of CDM services of SBI in Kerala

The transaction cost of CDM services in Network level is given in the following table 4.42.

Table 4.42

Network WiseTransaction Cost of CDM Services

Network	2013	2014	2015	2016	Total	Average
Network-1	12.6	6	3.5	3.9	26	6.5
Network2	11	6.8	3.7	3.9	25.4	6.35
Total	23.6	12.8	7.2	7.8	51.4	12.85
Network level Average Transaction cost=12.85/2=(6.4)6Rs.						

Source: Survey Data

The Table 4.42 reveals that highest averageTransaction cost in Network-1 (Rs.6.5) than in Network -2(Rs.6.35).

4.1.6 Comparison of CDM operation cost, Number of Transactions & Transaction cost among Different levels of SBI in Kerala

Comparisons were made in respect of operation cost, number of transactions and transaction cost which are expressed in the following table 4.43.

Table 4.43

Comparative Analysis of CDM Services

Dimensions of Analysis	Operation cost		Number of transactions		Transaction cost	
	High	Low	High	Low	High	Low
Volume	LVB	MVB	MVB	LVB	LVB	MVB&HVB
RBO	EKM-1&TSR	SHR	EKM-2	SHR	APA	SHR
Module	EKM	TSR	EKM	TSR	TVM&EKM	TSR
Network	2	1	1	2	1	2

Source: Survey Data

Table 4.43 depicts the comparison levels of CDM services in four dimensions like, Volume, RBO, Module and network on the basis of Mean values and percentages from the previous tables. Transaction cost depends upon two variables, like operation cost and number of transactions. The table 4.43 pointed out that, if the number of transactions is higher, then transaction cost will be reduced. At the same time, if the number of transactions and operation cost are both in lower level, then transaction cost will automatically be in lower level.

Section C

4.3 Cost Structure of RECYCLER Services

State Bank of India is a starting proponent of leveraging information technology to deliver convenience to its customers. SBI has been offering innovative

and cutting edge products to its customers with the objective of enabling banking transactions at any time and from anywhere. Digitalization and excellence in operations has been core to bank's strategy in providing convenience to customers. It has resulted in a reduction in turnaround time and an extended benefit to bank's customers. Convenient banking services and efficient bank operations are key to enhancing customer satisfaction and Recycler machines are an important channel to deliver valuable services for banks. Recycler machines can efficiently manage customer cash deposits and withdrawals through the same machine.

Cash Recycling Machine is an upward trend for ATMs, and so banks are looking to cash recycling technologies as a way to control costs. Cash Recyclers are new generation secure ATMs authorized by Reserve Bank of India (RBI) that allow quick deposits, counting and authentication up to 200 currency notes at an incredible span of 8-10 seconds. The cash Recycler Machine is a self service terminal that let to make deposit and withdrawal transactions of cash. All successful transactions are immediately credited or debited in real time and customers will be issued an acknowledgement slip confirming the transaction. Some of the salient features of this product are:-

- Cash recyclers are able to accept cash from customers and dispense as well.
- Machines are supported with Bill Validation Technology to ensure genuineness of currency.
- Counterfeit Recognition and retention (as per RBI Note Authentication and fitness Sorting parameters) with accuracy along with 100% trace for serial number of the currency notes to the account of the customers, i.e. all counterfeit notes that are rejected/not given value can be traced to the customer accounts.
- Cash deposit with debit card up to Rs.2,00,000/- (2 Lacs) per day where PAN is registered and Rs.49,999/- where PAN is not registered in account.
- Card less transaction (by feeding account number) up to Rs. 20,000/- per day.
- If customer deposits over the permissible limit then the RECYCLER rejects the transaction and notes are presented back to the customer.

- Upon Cash deposit, RECYCLER counts the notes and displays the count denomination wise and the total amount inserted in RECYCLER for deposit, Customer has to confirm the same.
- Fake note, Suspicious Note is impounded and receipt will be given to the customer.
- Torne/Mutilated/Taped notes are not accepted by this machine.
- The machines will accept the Rupee notes in the denominations of 1000, 500, 100.

Other Services Available on Cash Recycler:-

- Cash deposit & withdrawals
- PIN Change
- Balance Enquiry
- Mini Statement of Account
- Donations
- Payment of fees etc.

SBI has decided to procure Recycler machines in 2015. SBI has so far installed 4953 Recyclers to provide customers 24*7 cash withdrawal and cash deposit facilities. However, in Kerala Circle, SBI has distributed only 151 Recycler machines within two years begining from 2015 and in 2016.But in 2017 January onwards, all branches of SBI in Kerala have been converting ATMs into Recyclers. During the data collection period (2013 March to 2016 March) all the SBI branches were not possessed with the Recycler Machines and hence it is not reliable for statistical analysis. However the operation cost elements, variables for transaction cost calculation and dimensions of study are as follows:-

4.3.1. Cost Elements, Variables and Dimensions of Recycler Services

In current research context, the researcher identified the following cost elements, variables and dimensions for computing the transaction cost of RECYCLER services calculation which are shown in Table 4.44.

Table 4.44

Classification of Cost Elements, Variables and Dimensions of RECYCLER Services

Cost elements(RECYCLER)	Variables	Dimensionsof Analysis
1. Machine cost 2. Electricity 3. Rent 4. AMC	1. Operation cost 2. Number of Hits 3.Number of machines	1.Volume 2. RBO 3. Module 4. Network

Source: Survey Data

From the Table 4.44 it is clear that there are Four cost elements used for the computation of total cost of RECYCLER services. **Operation cost** is calculated by taking these cost elements like Machine Cost, Electricity, Rent and Annual Maintenance Contract Charges (AMC) . In the case of Recycler cost calculation, the same formula of CDM cost was applied as **Total Operating cost/ Number of transactions.** The cost of the Recycler machine is Rs.1108695/- It was divided by its estimated life of 5 years and also divided by 12 months to get monthly cost. Electricity charges are below Rs.2000/-. 1/3rd of the rent of ATM was charged for the Recycler. 20% of the machine cost was charged as AMC charges. The total of these cost elements are considered as Operation Cost which was divided by the monthly average “hit “for computing cost per transaction of Recycler. The Total number of Recyclers installed by SBI in Kerala circle in 2015 & 2016 was only 151 in number. The period of data collection is from March 2013 to March 2016. SBI installed recycler machines only in 2015. Therefore the Recycler cost calculation was done through 151 numbers in 2015 and 2016. All the branches of SBI in Kerala did not possess the Recycler machines and therefore it is not reliable for statistical analysis. However, the number and percentage of the distribution of Recycler services in various levels of the SBI in Kerala Circle are as follows:

4.3.2. Volume wise classification

In the case of volume wise classification, SBI branches in Kerala circle are classified in to three broad categories, viz, Low Volume Branches (LVB), Medium

Volume Branches (MVB), and High Volume Branches (HVB). The number and percentage of each category of volume of branches are shown in the table 4.45.

Table 4.45

Volume Wise Classification of Recycler Services

Type	Number of branches	Number of Recycler Machines in 2015 &2016	percentage
LVB	251	50	34%
MVB	199	88	60%
HVB	13	8	6%
Total	463	146	100%
Total SBI branches in Kerala= 463 Recycler installed branches in Kerala= 146 (32%)			

Source: Survey Data

The Table 4.45 reveals the number and percentage of the distribution of Recycler machines on the basis of volume of business of SBI. Out of 463 branches, Recycler machines are operating only in 146 branches (32%). Low Volume branches are those classifications of banking branches which include in scale1&scale 2 of 15 crores to 30 crores of volume of business having average transaction per day varying from 200 to 300. Out of 146 Recycler installed branches, 50 branches come under the Low Volume category in 2015 & 2016. Medium Volume branches are those classifications of banking branches which include in scale 3& scale 4 of 35 crores to 75 crores of volume of business having average transaction per day varying from 300 to 500. Out of 146 Recycler installed branches, Recyclers are operated in 88 medium Volume branches in 2015 and 2016. High Volume branches are those classifications of banking branches which include in scale 5 of 75 crores to 100 crores of volume of business having average transaction per day more than 500. Out of 146 Recycler installed branches, Recyclers operate only in 8 High Volume Branches. The cost of Recycler services of SBI in Kerala, are computed for two years, 2015 & 2016. The Recycler Machines were distributed on a trial basis for extending the facility of depositing and withdrawing cash instantly by using the same machine. SBI installed

Recycler machines only in 2015.In an average of two years only 32% of branches were distributed Recycler Machines. Therefore all branches of SBI did not possess the Cash Recyclers and so it is not reliable for statistical analysis. During 1st January, 2017 onwards, all CDMs are converted into Recycler Machines.

a) Volume Wise Average Operation Cost of Recycler Services

The Table 4.46 represents the Average operation cost of Recycler services which comprises average of two years of LVB, MVB and HVB separately. The table is shown as follows:-

Table 4.46

Volume Wise Average Operation Cost of Recycler Services

Type	2015	2016	Total	Average(Mean Value)	Volume Average
LVB	27090	27144	54234	27117	27357
MVB	27438	27467	54905	27453	
HVB	27503	27503	55006	27503	
Total	82031	82114	164145	82073	
Average Operation Cost per cash Recycler Machine=82073/3=27357Rs.					

Source: Computed and Compiled from MBPM Dept., LHO, TVM.

The above Table 4.46 reveals that Average operation cost of a Cash Recycler machine is reached to Rs.27357.The highest average operation cost is in HVB and lowest is in LVBs. It was comparatively lesser than ATM service which stands for Rs.32316, but higher than CDM service which stands for 21066Rs.

b) Volume Wise Average Number of Transactions of Recycler Services

The number of transactions occurred in a Recycler service is called as number of hits. The monthly number of hits is taken for the computation of cost per transaction of Cash Recycler services. The following table gives an idea about the monthly hit and average hit per day of LVB, MVB and HVB separately.

Table 4.47

Volume Wise Monthly Average Number of Transactions of Recycler Services

Type of Branch	2015	2016	Total	Average	Volume Average/month=8404 Volume Average/day = 8404/30=280
LVB	7010	7919	14929	7465	
MVB	8761	9340	18101	9051	
HVB	8505	8888	17393	8697	
Total	24276	26147	50423	25213	

Source: Survey Data

The Table 4.47 reveals that, the average hit rate is touched to 280 transactions per day per Cash Recycler machine in Kerala Circle. This hit rate showed that usage of Recycler Machines is comparatively higher than that of ATMs & CDMs. It indicates that the Cash Recyclers are more attractive and popular one. The table also makes clear that, Average numbers of transactions are higher in MVB followed by HVB.The lowest number of transactions can be seen in LVBs.

c) Volume Wise Transaction Cost Analysis of Recycler Services of SBI in Kerala

Out of 463 branches, Cash Recyclers are established only in 146 branches within two years of 2015 and 2016. The common formula for transaction cost calculation is used as follows:

Operation cost/ Number of transactions. The monthly cost and monthly average hit is used for the calculation of transaction cost of Recycler services. The transaction costs are shown in the following Table 4.48.

Table 4.48

Volume Wise Transaction Cost of Recycler Services

Type	**2015**	**2016**	**Total**	**Average**
LVB	3.9	3	6.9	3.5
MVB	3	2.9	5.9	2.9
HVB	3	3	6	3
Total	9.9	8.9	18.8	9.4
Volume Average transaction cost per CDM=9.4/3=3Rs.				

Source: Computed and Compiled from MBPM Dept, LHO, TVM.

Table 4.48 makes clear that, Volume wise transaction cost of Cash Recyclers is larger in LVBs followed by HVBs and MVBs. The average volume wise transaction cost per Recycler machine stood at Rs.3.

4.3.3 RBO Wise Classification of Cash Recycler Services

In the case of RBO wise classification, SBI branches in Kerala circle come under 13 RBOs. Out of 463 branches, Cash Recyclers are established only in 146 branches but a total of 151 machines are distributed in RBO level. The number and percentage of Cash Recycler Machines included in each category of RBOs are shown in the table 4.49.

Table 4.49

RBO Wise Classification of Cash Recycler Services

Name of RBO	Number of branches	Number Of Cash Recycler Machines	Percentage
		2015 & 2016	
TVM	51	17	11
KLM	39	14	9
APA	40	17	11
EKM-1	38	8	5
EKM-2	45	7	5
EKM-3	26	10	7
KTM	29	11	7
PKD	30	8	5
TSR	37	12	8
CLT-1	39	13	9
CLT-2	33	10	7
KNR	29	16	11
SHR	27	8	5
Total	463	151	100

Source: Survey Data

From the above table 4.49, it is very clear that more number of Recyclers (17 machines each) was included in Thiruvananthapuram and Alappuzha RBOs, followed by Kannur (16 machines) and Kollam (14 machines). Comparatively less number of Machines was included under Ernakulam-2 RBO (only 7).

a) RBO Wise Operation Cost of Recycler Services

The Table 4.50 represents the RBO wise operation cost of Recycler services which comprises two years of average total of 13 RBOs separately. When more than one Recycler machine may be operated in a bank branch location, RBO level calculation is required.

Table 4.50

RBO Wise Operation Cost of Cash Recycler Services

Name of RBO	Operation Cost=(Average Total. cost *No. of Machines)		Total	Percentage	Average(Mean Value)
	2015	2016			
TVM	464491	465086	929577	11	464788
KLM	382522	383012	765534	9	382767
APA	464491	465086	929577	11	464788
EKM-1	218584	218864	437448	5	218724
EKM-2	191261	191506	382767	5	191384
EKM-3	273230	273580	546810	7	273405
KTM	300553	300938	601491	7	300746
PKD	218584	218864	437448	5	218724
TSR	327876	328296	656172	8	328086
CLT-1	355199	355654	710853	9	355427
CLT-2	273230	273580	546810	7	273405
KNR	437168	437728	874896	11	437448
SHR	218584	218864	437448	5	218724
Total	4125773	4131058	8256831	100	4128416
RBO wise Average Operation cost=4128416/13=317570Rs.					

Source: Survey Data

RBO level operation cost was calculated by taking into consideration the number of Recycler machines multiplied with year wise Average total cost. (Average Total Cost*Number of Machines.)The result of the RBO wise Operation cost calculation is shown in the Table.4.50.

Table 4.50 shows the operation cost which are calculated by taking the year wise operation cost of Recycler machines multiplied by the year wise total number of Recycler machines under each RBO. The Table 4.50 reveals that, highest percentage of operation cost (11%) is occurred in Thiruvananthapuram, Alappuzha & Kannur RBOs, followed by Kollam RBO and CLT-1 RBO. The lowest operation cost (5%) can be observed in EKM-1, EKM-2, Palakad and Shornur RBO.

b) RBO wise Number of Transactions of Recycler services

As stated earlier, the number of transactions occuring in a Recycler service is also called as number of hits. The monthly number of hits is taken for the computation of cost per transaction of Recycler services. The following table gives an idea about the monthly average hit and percentage of transactions in each RBO separately.

Table 4.51

RBO Wise Number of Transactions of Recycler Services

Name of RBO	2015	2016	Total	Percentage	Average
TVM	82620	113220	195840	9	97920
KLM	68040	100800	168840	8	84420
APA	82620	131580	214200	10	107100
EKM-1	38880	82080	120960	6	60480
EKM-2	34020	68880	102900	5	51450
EKM-3	48600	98100	146700	7	73350
KTM	53460	107910	161370	8	80685
PKD	38880	72720	111600	6	55800
TSR	58320	92880	151200	7	75600
CLT-1	63180	143130	206310	10	103155
CLT-2	48600	125400	174000	8	87000
KNR	77760	146880	224640	11	112320
SHR	38880	62160	101040	5	50520
Total	733860	1345740	2079600	100	1039800
RBO wise Average Number of Transactions=1039800/13=79985					

Source: Computed and Compiled from MBPM Dept., LHO, TVM.

The table 4.51 cleared that highest percent of transactions (11%) are in Kannur RBO, followed by CLT-1 and Alappuzha (10%). The lowest number of transactions (5%) can be observed in EKM-2 and Shornur RBOs.

c) RBO wise Analysis of Transaction cost of Recycler services of SBI in Kerala

Statistical analysis is not possible in Cash Recycler services as it is not distributed in all branches. Out of 463 branches, Cash Recyclers are established only in 146 branches but the number of machines comes to 151 in a total of two years of 2015 & 2016. Therefore, the variation of transaction cost of Recycler services in RBO level is needed which are given in the following table 4.52.The common formula for transaction cost calculation is Operation cost/ Number of transactions. The monthly cost and monthly average hit is used for the calculation of transaction cost of Recycler services. The transaction cost are shown in the following Table 4.52

Table 4.52
RBO Wise Transaction Cost of Recycler Services

Name of RBO	2015	2016	Total	Average
TVM	5.6	4	9.6	5
KLM	5.6	4	9.6	5
APA	5.6	3.5	9.1	5
EKM-1	5.6	2.6	8.2	4.5
EKM-2	5.6	2.8	8.4	4.5
EKM-3	5.6	2.8	8.4	4.5
KTM	5.6	2.8	8.4	4.5
PKD	5.6	3	8.6	4.5
TSR	5.6	3.5	9.1	5
CLT-1	5.6	2.5	8.1	4.5
CLT-2	5.6	2.2	7.8	4
KNR	5.6	3	8.6	4.5
SHR	5.6	3.5	9.1	5
Total	72.8	40.2	113	56.5
The Average RBO wise Transaction cost=56.5/13=4.3=4Rs.				

Source: Computed and Compiled from MBPM Dept, LHO, TVM.

Table 4.52 reveals that, RBO wise transaction cost of Recycler is higher in TVM, Kollam, Alappuzha, Thrissur and Shornur which indicate the same level of transaction cost of Rs.5 followed by EKM-1,EKM-2,EKM-3,Kottayam,Palakad, CLT-1 and Kannur which indicate the same level of transaction cost of Rs.4.5. The lowest category of Transaction cost can be seen in CLT-2(Rs.4). The average RBO wise transaction cost per Recycler machine stood at Rs.5.

4.3.4 Module Wise Classification

In the case of module wise classification, SBI branches in Kerala circle are classified into four broad categories, viz. Thiruvananthapuram, Ernakulam, Thrissur and Kozhikode. The number and percentage of Cash Recycler Machines included in each module are shown in the table 4.53.

Table 4.53

Module Wise Classification of Recycler Services

Module	Number of branches	Number Of Cash Recycler Machines	Percentage
		2015 & 2016	
Thiruvananthapuram	130	48	32%
Ernakulam	138	36	24%
Thrissur	94	28	18%
Kozhikode	101	39	26%
Total	463	151	100

Source: Survey Data

From the Table 4.53 it is evident that 32 % of Recycler Machines are distributed in the Thiruvananthapuram Module, 26% Machines come under Kozhikode Module, 24 % Machines are in Ernakulam module and only 18 % are included in Thrissur Module.

a) Module Wise Operation Cost of Recycler Services

The Table 4.54 represents the Module wise operation cost of Recycler services of two individual years. The table is shown as follows:-

Table 4.54

Module Wise Operation Cost of Recycler Services

Module	2015	2016	Total	Percentage	Average(Mean value)
Thiruvanantha-puram	1311504	1313184	2624688	32%	1312344
Ernakulam	983628	984888	1968516	24%	984258
Thrissur	765044	766024	1531068	18%	765534
Kozhikode	1065597	1066962	2132559	26%	1066280
Total	4125773	4131058	8256831	100	4128416
Module wise Average Operation Cost=4128416/4=1032104					

Source: Computed and Compiled from MBPM Dept, LHO, TVM.

Table 4.54 shows that highest operation cost (32%) comes under Thiruvananthapuram Module followed by Kozhikode (26%) and Ernakulam (24%). Lowest operation cost can be seen in Thrissur Module, only 18%.

b) Module wise Number of Transactions of Recycler services

The Table 4.55 represents the Module wise Number of transactions of Cash Recycler services of two individual years of 2015 and 2016. Monthly number of transactions, which means monthly average hit, is taken for cost computation. The table showing monthly number of transactions in two individual years is as follows:-

Table 4.55

Module Wise Number of Transactions of Recycler Services

Module	2015	2016	Total	Percentage	Average
Thiruvananthapuram	233280	345600	578880	28%	289440
Ernakulam	174960	356970	531930	26%	265965
Thrissur	136080	227760	363840	17%	181920
Kozhikode	189540	415410	604950	29%	302475
Total	733860	1345740	2079600	100	1039800
Module wise Average Number of transactions= 259950					

Source: Computed and Compiled from MBPM Dept., LHO, TVM.

The table 4.55 reveals that highest numbers of transactions occurin Kozhikode module (29%) followed by Thiruvananthapuram (28%) and Ernakulam Module (26%).The lowest numbers of tansactions are in Thrissur module (17%).

c) Module wise Transaction cost of Recycler services

The common formula for transaction cost calculation is used as Operation cost/Number of transactions in Module level. The monthly cost and monthly average hit is used for the calculation of transaction cost of Cash Recycler services. The transaction cost which are shown in the following Table 4.56.

Table 4.56

Module Wise Transaction Cost of Recycler Services

Module	2015	2016	Total	Average
Thiruvananthapuram	5.6	3.8	9.4	4.7
Ernakulam	5.6	2.8	8.4	4.2
Thrissur	5.6	3.4	9	4.5
Kozhikode	5.6	2.6	8.2	4.1
Total	22.4	12.6	35	17.5
Module wise Average Transaction cost=17.5/4=4.3=4 Rs.				

Source: Computed and compiled from MBPM Dept., LHO, TVM.

The Table 4.56 depicts the level of Transaction cost in each module and its average. The highest transaction cost (Rs.4.7) is in Thiruvananthapuram module and lowest catagory of transaction cost (Rs.4.1) can be seen at KozhiKode Module. Module wise Average transaction cost stood at Rs.4.

4.3.5 Network Wise Classification of Recycler Services

For the Network analysis, the entire branches of SBI are made to fall into two categories Network1 and Network 2. Network1 includes Thiruvananthapuram module to Ernakulum module and Network2 includes Thrissur module to Kozhikode module. The number and percentage of branches and Recycler machines included in each network are shown in the table 4.57.

Table 4.57

Network Wise Classification of Recycler Services

Network	Number of branches	Number Of Cash Recycler Machines	Percentage
		2015 & 2016	
Network-1	298	84	56%
Network-2	165	67	44%
Total	463	151	100%

Source: Survey Data

Table 4.57 discloses that 56% of Cash Recycler machines are distributed in network-1 and 44 % of Recyclers come under the network-2 category. Majority of the Cash Recycler machines can be seen in network-1 which means more number of Recyclers was distributed from the Districts of Thiruvananthapuram to Ernakulum.

a) Network Wise Operation cost of Recycler services

The Table 4.58 represents the Network level operation cost of Recycler services for the years 2015 and 2016. The operation cost is computed same as in the case of RBO and Module wise classification. The result of the operation cost is shown in the table 4.58.

Table 4.58

Network Wise Operation Cost of Recycler Services

Network	Operation cost=Avge. of total cost * No. of Recyclers		Total	Percentage	Average(Mean value)
	2015	2016			
Network-1	2295132	2298072	4593204	56%	2296602
Network-2	1830641	1832986	3663627	44%	1831814
Total	4125773	4131058	8256831	100%	4128416
Network level Average Operation cost=2064208 Rs.					

Source|: Computed and Compiled from MBPM Department, LHO, TVM.

Table 4.58 shows that highest operation cost (56%) can be observed in network-1 and only 44% in network-2.

b) Network Wise Number of Transactions of Recycler Services

For the cost computation of Cash Recycler services monthly number of transactions was put into consideration. Network level Number of transactions is given in the following table 4.59.

Table 4.59

Network Wise Number of Transactions of Recycler Services

Network	2015	2016	Total	Percentage	Average
Network-1	408240	702570	1110810	53%	555405
Network-2	325620	643170	968790	47%	484395
Total	733860	1345740	2079600	100%	1039800
Network level Average Number of Transactions =1039800/2=519900.					

Source: Computed and Compiled from MBPM Dept.LHO, TVM.

It is evident from the Table 4.59 that, 53% of number of transactions are in Network -1 and 47% of transactions are in Network-2.

c) Network Wise Analysis of Transaction Cost of Recycler Services of SBI in Kerala

The transaction cost of Cash Recycler services in Network level is given in the following table 4.60.

Table 4.60

Network Wise Transaction Cost of Recycler Services

Network	2015	2016	Total	Average
Network-1	5.6	3.3	8.9	4.45
Network2	5.6	2.8	8.4	4.2
Total	11.2	6.1	17.3	8.65
Network level Average Transaction cost=8.65/2=(4.3)=4 Rs.				

Source: Survey Data

The Table 4.60 reveals that highest level of Transaction cost (4.45)in Network-1 & lowest in Network -2(4.2).The Average transaction cost per recycler in network level reached to Rs.4.

4.3.6 Comparison of Operation Cost, Number of Transactions & Transaction Cost of Reycler services

Comparison were made in respect of operation cost, number of transactions and transaction cost which are expressed in the following table 4.61.

Table 4.61

Comparative Analysis of Recycler Services

Dimension sof Analysis	Operation cost		Number of transactions		Transaction cost	
	High	Low	High	Low	High	Low
Volume	HVB	LVB	MVB	LVB	LVB	MVB
RBO	TVM,APA &KNR	EKM-1,EKM-2,PKD &SHR	KNR	EKM-2&SHR	TVM.KLM,APA,TSR &SHR	CLT-1&CLT-2
Module	EKM	TSR	EKM	TSR	TVM&EKM	TSR
Network	2	1	1	2	1	2

Source: Survey Data

Table 4.61 reveals the comparison levels of Recycler services in four dimensions like Volume, RBO, Module and Network.The comparison of operation cost is high or low on the basis of Mean value and percentage basis from the previous tables of Recycler services.The above table points out that the operation cost and Number of transactions are the important two major elements determining the transaction cost. If the number of transactions is higher, transaction cost will automatically be lower. But, if both the operation cost and number of transactions are higher, the transaction cost will automatically be higher or vice versa.

Table 4.62

Comparison of Average Operationcost, Number of Transactions & Transaction Cost of ATM, CDM, Recycler Services of SBI in Kerala

Catagory	Operation cost			Number of transactions			Transaction cost		
	ATM	CDM	Recycler	ATM	CDM	Recycler	ATM	CDM	Recycler
Volume	32316	21066	27357	5386	4358	8404	6	5	3
RBO	12662900	69328	317570	2377033	11972	79985	5	6	4
Module	41154426	225318	1032104	7725360	38908	259950	5	6	4
Network	82308852	450636	2064208	15450720	77816	519900	5	6	4

Source: Computed and Compiled from MBPM Department, LHO, TVM

Transaction cost is depending upon two variables operation cost and number of transactions. The table 4.61 points out that, if the number of transactions is higher, then transaction cost will be reduced. At the same time, if the number of transactions and operation cost are both in lower levels, then transaction cost will automatically be in lower level.

The comparison level of CDM, Recycler section shows the need for statistical tests to reveal the difference in transaction cost to be significant or not. As CDM & Recycler machines are not distributed in all branches of SBI in all the four years, individual variation in years can not be checked. However, the average transaction cost variation in RBO level can be checked. The statistical analyses are as follows:-

In order to test the hypothesis, 'There is no significant difference in the average transaction cost of CDM & Recycler services in RBO level of SBI in Kerala'Kruskal Wallis test was used and the result is presented in Table 4.63.

Table 4.63

Kruskal Wallis Test for the Average Transaction Cost of CDM & Recycler Services

Type	N	Mean	S.D	Chi-square Value (Kruskal Wallis)	p-value	Decision
CDM	13	7.7122	3.5934	11.000	0.443	Accept
Recycler	13	4.2123	.27081	12.000	0.446	Accept

Source: Computed and Compiled from MBPM Department, LHO, TVM

The test reveals that there is no significant difference in the Average transaction cost of CDM & Recycler services of SBI in Kerala. As the distribution of CDM& Recycler machines were not equal, only RBO level analysis is taken into consideration. As P value is greater than 0.05 in both CDM & Recycler services null hypothesis is accepted. Therefore there is no significant difference in the average transaction cost of these services.

From the analysis, the researcher comes to a conclusion that there is no significant variation in the transaction cost of ATM, CDM & Recycler services of SBI in Kerala circle. In fact, CDM & Recdyclers are cost saving e-banking services than on ATM services. Due to the lesser number of machines and non-usage of customers, number of transactions is lower in CDM & Recycler services. Therefore, there is no significant variation can be found in the transaction cost of CDm& Recycler services.

The descriptive analysis regarding the transaction cost of ATM, CDM& Recycler services are discussed in the present chapter. Now it is worthwhile to examine the level of transaction cost of other e-banking services like Internet banking and Mobile banking. That has been attempted in the ensuing chapter.

Chapter 5

Cost Structure Analysis of Internet and Mobile Banking Services

Contents **Page No**

Section A

Section B

Chapter 5

Cost Structure Analysis of Internet and Mobile Banking Services

The previous chapter attempted to analyse the cost structure of ATM, CDM & Recycler services of State Bank of India in Kerala circle. Now it is worthwhile to examine the cost structure of other e-banking services like internet banking and mobile banking services. The present chapter attempts to accomplish this specific objective.

Here also, in order to fulfill this objective, volume wise, RBO wise, Module wise and Network wise comparison has been attempted. For this purpose data have been collected from the total of 463 SBI branches of the state of Kerala. Data have been collected from the MBPM Dept., LHO, TVM and 13 RBOs of SBI operating in the state of Kerala with the help of a structured schedule. The data have been analysed with the help of mathematical and statistical tools like percentages, Averages, Chi-square test, Kruskal Wallis test and Mann whitney U test. The chapter is divided into two sections for the proper arrangement. Section A deals with cost structure of Internet banking services and section B covers cost structure of Mobile banking services.

Section A

5.1 Cost Structure Analysis of Internet Banking Services

Internet banking service is one of the best cost effective channels of SBI. Internet banking service is available through the Bank's website "https://www.onlinesbi.com". State Bank of India's Net Banking website 'www.onlinesbi.com' is the eighth most popular online global financial website and the only financial site from India to figure in the list of top 10 global financial sites (Source IIFL). This highly secured and cost effective channel provides robust and customer friendly net banking services, continuously keeping an eye on evolving consumer trends, characterized by increasing adoption of digital channels.

Internet banking would free both bankers and customers of the need for proprietary software to carry on with their online banking transaction. Internet is now considered to be a strategic weapon for banks to satisfy the ever changing customer's demand and innovative needs. Adequate legal framework and maximum security are

the two essential factors for internet banking. The major functionalities and value added features of internet banking are pointed out in the following table 5.1

Table 5.1

Functionalities & Value added features of Internet banking

Functionalities	Value added features
• Funds transfer between own accounts. • Third party transfers to accounts maintained at any branch of SBI • Group Transfers to accounts in State Bank Group • Inter Bank Transfers to accounts with other Banks • Online standing instructions for periodical transfer for the above • Credit PPF accounts across branches • Request for Issue of Demand Draft • Request for opening of new accounts • Request for closure of Loan Accounts • Request for Issue of Cheque Book	• Utility bill payments • Online Ticket Booking for travel by Road, Rail and Air • SBILIFE, LIC and other insurance premia payments • SBI and other Mutual funds Investments • SBI and other Credit Card dues payments • Tax Payment Income, Service, State Govt • Customs Duty Payment • Online Share Trading (eZ-trade@SBI) • Online Application for IPO • Fee Payment to select educational institutions including IITs and NITs

Source: Compiled from SBI website & Annual report 2015-16.

The present study makes an effort to identify the cost benefit aspect of internet banking from the bank's point of view. In the case of internet banking cost calculation, branch wise cost elements did not exist. Therefore All India Level SBI total cost, total transactions and total users were collected from the Annual Reports of four years from 2013 to 2016. The Transaction cost of internet banking was calculated by the following two methods.

Method 1: (Cost/user x Active Users)/12

Method 2: (Active Users x Transaction/user x Cost/ transaction)/12

By dividing the All India level SBI Total cost with Total Users, cost per user was derived. Branch level actual users were multiplied with this cost per user and dividing by 12 to get transaction cost. On the other hand, All India Level SBI total cost is divided by total transactions, to get cost per transaction. All India SBI level Total Transactions was divided by total users, and thus transaction per user can be obtained. This transaction per user was multiplied with the actual users in a branch, to get the branch level number of transactions. This branch level number of transactions were multiplied further with cost per transaction and the same was divided by 12 (months) to get transaction cost of Internet banking. Both these methods reached to the same figure of internet banking transaction cost. The following table 5.2 explains the different variables used for the calculation of transaction cost of Internet banking services.

Table 5.2

Cost Elements & Variables forthe Transaction Cost of Internet Banking Services

Year	Total Users(T.U)	Total transactions (T.T)	Total cost(T.C)	Cost/user (T.C/T.U)	Cost/transaction (T.C/T.T)	Transaction/user (T.T/T.U)
2013	13000000	42000000	4090000	0.314615	0.0974	3
2014	17700000	64000000	4142000	0.234011	0.0647	4
2015	22000000	90000000	3543000	0.161045	0.0394	4
2016	25500000	124000000	2868000	0.112471	0.0231	5

Source: Compiled data from Annual Reports and MBPM Dept. of SBI, LHO, TVM.

The Table 5.2 shows the various cost elements, which is used for the cost computation of Internet banking services. The above table reveals that, Total users, Total transactions and Total cost are the major cost elements used for the transaction cost analysis. The cost per user, Cost per transaction and the transaction per user are the important variables used for the cost computation of internet banking services of 463 branches of SBI operating in the state of Kerala.

The transaction cost of Internet banking services were calculated for four years from 2013 to 2016. The table 5.2 reveals that, Total Users and Total transactions are increasing from year to year but at the same time, the Total cost is reduced from year

to year. Similarly, the variables like cost/user and cost/transaction are decreasing in nature but Transaction per user is in increasing trend. This shows a healthy symptom for the growth of internet banking services of State Bank of India.

5.1.1 Cost Analysis of Internet Banking Services

In order to test whether the transaction cost of Internet banking services is significantly different among various categories like Volume, RBO, Module and Network, the statistical tests are used. The data is summarized using number, mean and Standard deviation. The central value of cost is inferred using mean and the dispersion from these central values are quantified in S.D. Since there is much variation in four years, the average transaction cost is also computed.

5.1.2 Volume Wise Analysis of Transaction Cost of Internet Banking Services of SBI in Kerala

In the case of volume wise classification, SBI branches in Kerala circle are classified into three broad categories, viz, Low Volume Branches(LVB), Medium Volume Branches(MVB), and High Volume Branches(HVB).Out of 463 branches of SBI, Low volume category include 251 branches, Medium volume category involves 199 branches and High volume category involves only 13 branches. The mean and standard deviation of transaction cost of Internet banking services in volume level is given in the following table 5.3

Table 5.3

Volume Wise Descriptive Statistics of Transaction Cost of Internet Banking Services

Type	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
LVB	251	.3963	.22767	.3364	.21222	.2855	.16504	.4731	.31405	.3734	.19825
MVB	199	.8135	.36788	.7126	.30894	.5921	.30366	.6387	.30782	.6896	.29225
HVB	13	1.3769	.37404	1.3031	.31915	1.0977	.13615	1.2908	.18035	1.2662	.19822
Total	463	.6032	.38580	.5252	.34560	.4400	.29974	.5673	.34142	.5344	.31371

Source: Survey Data

Table 5.3 reveals that mean value is highest in HVBs in an average of four years and in individual years than in LVBs and MVBs. At the same time, S.D is highest in MVBs in the Average level and almost same in individual years.

With an aim to test whether the given data is normally distributed, Kolmogorov Smirnov test is conducted, the results are given in the following table 5.4.

Table 5.4

Result of Normality Test of Transaction Cost of Internet Banking Services in Volume level

Period	Skewness	Kurtosis	Kolmogorov Smirnov Test Statistic	P-value
2013	1.044	.323	4.024	.000
2014	1.006	.404	3.381	.000
2015	1.022	.129	4.051	.000
2016	.871	.853	2.313	.000
Average	.881	-.024	3.002	.000

Source: Survey Data

The test reveals that none of the variables are Normal (p-value<0.05). So non-parametric test are used for checking the variation of transaction cost in different categories.

To test the hypothesis, 'There is no significant difference in the Transaction cost of Internet banking services in Volume level'Kruskal Wallis test was used and the result is presented in Table 5.5.

Table 5.5
Kruskal Wallis Test for the Transaction Cost of Internet Banking Services in Volume Level

Year	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	160.257	.000**	Reject
2014	179.681	.000**	Reject
2015	143.340	.000**	Reject
2016	69.651	.000**	Reject
Average	149.687	.000**	Reject

Source: Survey Data Significant at 5% level

Kruskal Wallis test proved that there is significant difference in the transaction cost of Internet banking services with regard to volume level in 2013, 2014, 2015, and 2016 and in an average of four years. So, rejecting the hypothesis that 'there is no significant difference in the Transaction cost of Internet banking services in Volume level'.

The volume wise comparison of the transaction cost of Internet banking is diagrammatically presented in Figure 5.1

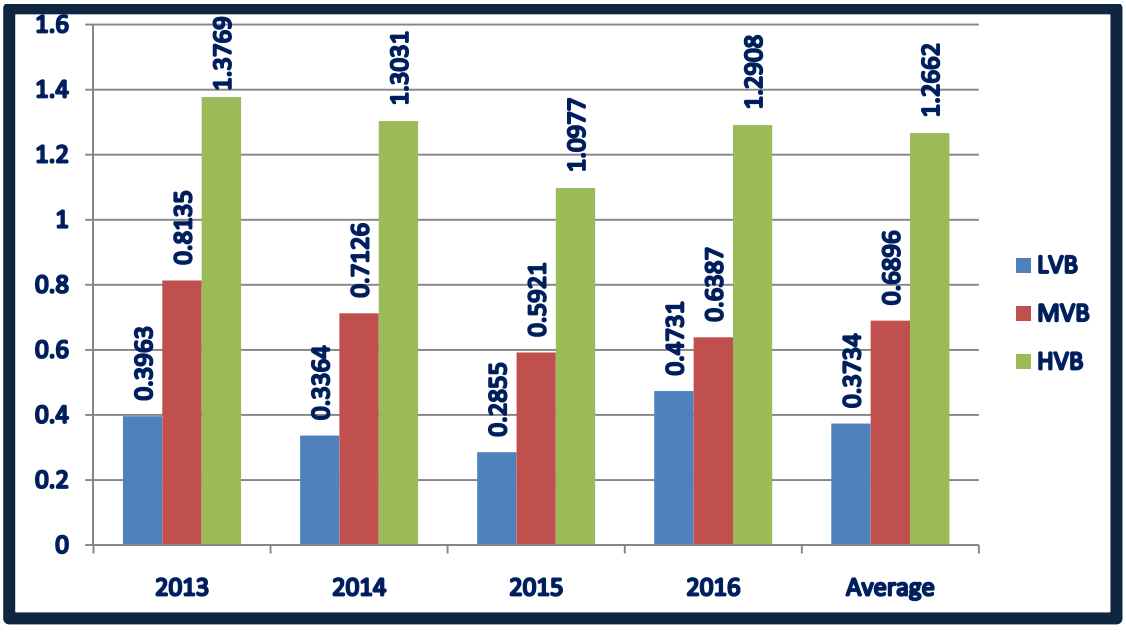


Figure 5.1 Volume wise Transaction cost of Internet banking services.

5.1.3 RBO wise Analysis of Transaction cost of Internet banking services of SBI in Kerala

In the case of RBO wise classification, SBI branches in Kerala circle are classified into 13 groups. State Bank of India is operating in Kerala circle, through 13 Regional Business Offices. The RBO level Transaction cost calculation is an important indicator to control the cost saving aspect of e-banking services of SBI. The mean and S.D of transaction cost of internet banking services are shown in the following table 5.6.

Table 5.6

RBO Wise Descriptive Statistics of Transaction Cost of Internet Banking Services

Name of RBO	No.of branches	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	51	.7308	.45537	.6535	.44557	.5222	.34164	.6855	.36486	.6484	.36521
KLM	39	.5262	.32374	.4197	.26465	.3495	.20862	.6431	.29677	.4849	.21637
ALP	40	.7800	.41843	.6820	.35456	.5643	.26229	.6762	.35792	.6762	.29759
KTM	29	.8093	.40047	.6490	.31043	.6286	.33634	.7121	.33517	.7000	.30089
EKM1	38	.5476	.45449	.4634	.37652	.4403	.30528	.5442	.38397	.4992	.35270
EKM2	45	.5462	.34878	.4084	.26850	.4107	.28780	.4824	.30845	.4624	.28381
EKM3	26	.5912	.32124	.4992	.28435	.4635	.27154	.5612	.30014	.5300	.28106
TSR	37	.5364	.32844	.5636	.37880	.3353	.25819	.4883	.33723	.4814	.30462
SHR	27	.4981	.27515	.4656	.26289	.3230	.19068	.3789	.23536	.4178	.22211
PKD	30	.4480	.21051	.4057	.23165	.2907	.20033	.4717	.32283	.4043	.21143
CLT-1	39	.5359	.37789	.4662	.30163	.3749	.30148	.5026	.32886	.4700	.31048
CLT2	33	.5915	.37340	.5626	.36828	.4779	.32593	.5744	.34425	.5518	.33754
KNR	29	.6493	.43211	.5538	.37713	.5186	.36039	.5807	.34638	.5759	.36944
Total	463	.6032	.38580	.5252	.34560	.4400	.29974	.5673	.34142	.5344	.31371

Source: Survey Data

Table 5.6 reveals that highest mean value stood at Kottayam and Alappuzha in an average of four years and in almost all individual years. Lowest mean value shown at palakkad and shornur in an average of four years and in individual years. S.D value is highest in Kannur and Thiruvananthapuram in an average of four years.

Kruskal Wallis test is used to test the hypothesis, 'There is no significant difference in the Transaction cost of Internet banking services in RBO level' and the result is presented in Table 5.7.

Table 5.7

Kruskal Wallis Test for the Transaction Cost of Internet Banking Services in RBO level

Year	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	30.273	.003**	Reject
2014	33.591	.001**	Reject
2015	48.845	.000**	Reject
2016	40.980	.000**	Reject
Average	38.777	.000**	Reject

Source: Survey Data **Significant at 5% level

Test reveals that there is significant difference in the transaction cost of internet banking services in RBO level and so rejecting the hypothesis in all the years and in an average of four years.

The RBO wise comparison of the Average transaction cost of Internet banking is diagrammatically presented in Figure 5.2

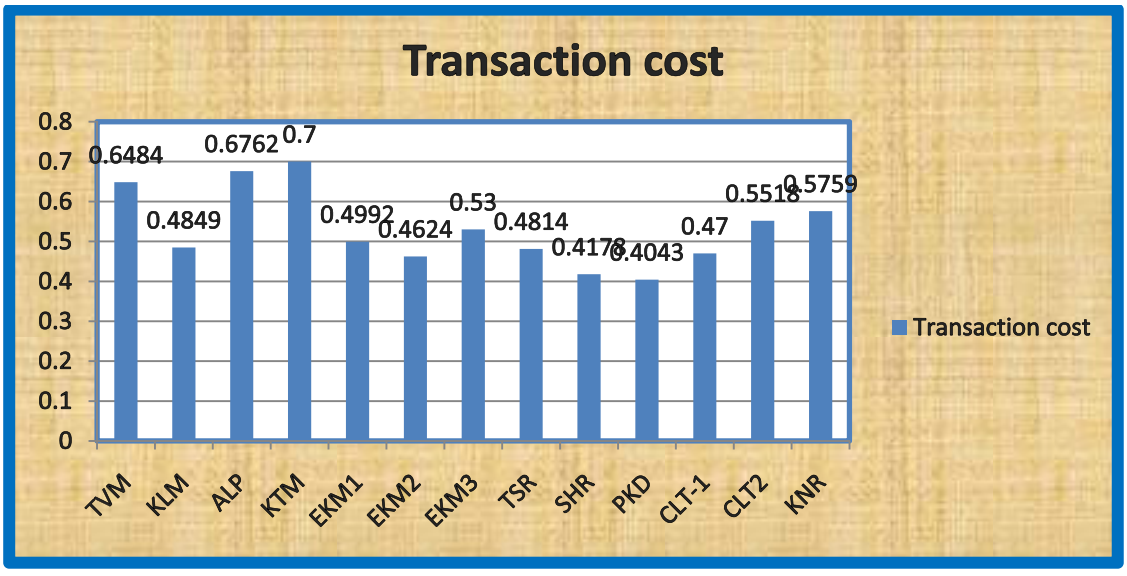


Figure 5.2 RBO wise AverageTransaction cost of Internet banking services.

5.1.4 Module Wise Analysis of Transaction Cost of Internet Banking Services of SBI in Kerala

In the case of module wise classification, SBI branches in Kerala circle are classified into four broad categories, viz. Thiruvananthapuram, Ernakulam, Thrissur and Kozhikode. The mean and standard deviation of transaction cost of Internet banking services in module level is given in the following table 5.8.

Table 5.8

Module Wise Descriptive Statistics of Transaction cost of Internet Banking Services

Module	N	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	130	.6845	.41885	.5922	.38544	.4833	.29479	.6699	.34146	.6079	.31454
EKM	138	.6104	.39668	.4912	.32192	.4746	.30832	.5625	.34162	.5352	.31660
TSR	94	.4968	.27892	.4842	.30921	.3173	.22057	.4512	.30657	.4381	.25409
CLT	101	.5867	.39138	.5232	.34644	.4501	.32971	.5487	.33766	.5274	.33687
Total	463	.6032	.38580	.5252	.34560	.4400	.29974	.5673	.34142	.5344	.31371

Source: Survey Data

The Table 5.8 reveals that highest mean value stood at Thiruvananthapuram module and lowest can be found in Thrissur module by calculations made for ech year and four years separately.

Kruskal Wallis test is used to test the hypothesis, 'There is no significant difference in the Transaction cost of Internet banking services in Module level' and the result is presented in Table 5.9.

Table 5.9

Kruskal Wallis Test for the Transaction Cost of Internet Banking Services in Module level

Year	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	8.144	.043**	Reject
2014	5.495	.139**	Reject
2015	23.567	.000**	Reject
2016	28.840	.000**	Reject
Average	17.164	.001**	Reject

Source: Survey Data **Significant at 5% level

Test reveals that there is significant difference in the transaction cost of internet banking services in Module level and so rejecting the hypothesis by calculations made for an average and four years separately.

The Module wise comparison of the transaction cost of Internet banking is diagrammatically presented in Figure 5.3.

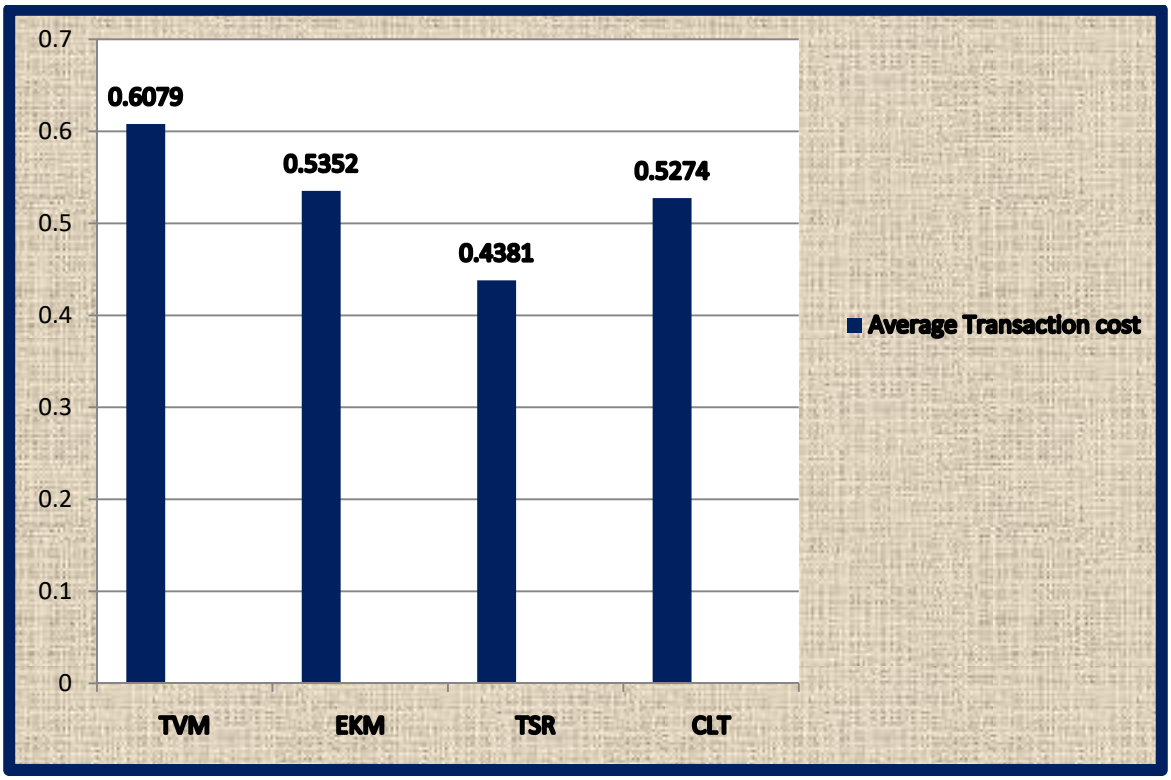


Figure 5.3 Module wise AverageTransaction cost of Internet banking services.

5.1.5 Network Wise Analysis of Transaction Cost of Internet Banking Services of SBI in Kerala

For the Network analysis the entire branches of SBI are made to fall into two categories like Network1 and Network 2.Network1 includes Thiruvananthapuram module to Ernakulum module and Network2 includes Thrissur module to Kozhikode module or from the districts of Thiruvananthapuram to Ernakulam involves Network-1 and from Thrissur to Kasargod districts termed as Network-2 category.The mean and standard deviation of transaction cost of Network level are shown in the following table 5.10.

Table 5.10

Network Wise Descriptive Statisticsof Internet Banking Services

Network	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Network-1	269	.6463	.40851	.5402	.35709	.4788	.30130	.6146	.34512	.5705	.31711
Network2	194	.5438	.34448	.5046	.32896	.3868	.28998	.5022	.32605	.4848	.30281
Total	463	.6032	.38580	.5252	.34560	.4400	.29974	.5673	.34142	.5344	.31371

Source: Survey Data

The Table 5.10 reveals that Mean value and S.D is highest in Network-1 in an average of four years and in all the individual years when compared with network-2.Mann-whitney U test was used to test the hypothesis 'There is no significant difference in the transaction cost of Internet banking services in network level'and the result is presented in Table 5.11.

Table 5.11

Mann-whitney U test for the Transaction Cost of Internet Banking Services in Network level

Year	Mann-whitney U	Wilcoxon w	Z values	p-value	Decision
2013	23147.000	42257.000	-2.104	.035**	Reject
2014	25848.500	44958.500	-4.051	.843	Accept
2015	20375.500	39485.500	-4.034	.000**	Reject
2016	20396.500	39506.500	-3.104	.000**	Reject
Average	21718.500	40828.500	-3.104	.002**	Reject

Source: Survey Data ** Significant at 5% level

The test shows that p value is less than 0.05 in all the years except in 2014. In an average of four years, p value is less than 0.05 and rejecting the hypothesis.Hence, it is concluded that there is no significant difference in the transaction cost of internet banking services of SBI in network level.

The Network wise comparison of the transaction cost of Internet banking is diagrammatically presented in Figure 5.4.

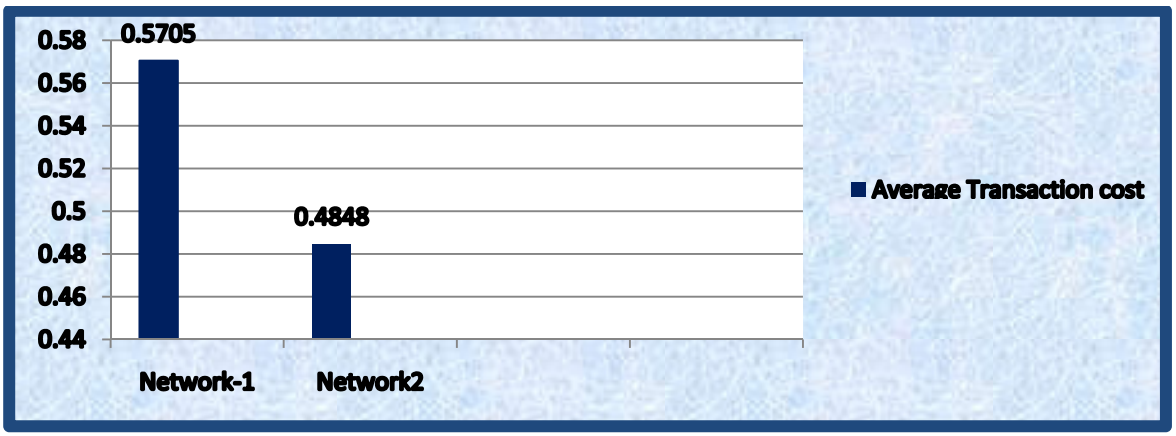


Figure 5.4 Network wise Average Transaction cost of Internet banking services.

5.1.6 Hypotheses Testing: Internet Banking

To conclude, the hypothesis formulated and tested in connection with Internet banking by using various statistical tests are shown in the precise form in the following table 5.12.

Table 5.12

Result of Hypotheses testing- Internet Banking Services

S.l.No	Hypotheses	Statistical test	Result
1.	There is no significant difference in the Transaction cost of Internet banking services inVolume level	Kruskal wallis test	Rejected
2	There is no significant difference in the Transaction cost of Internet banking services in RBO level	Kruskal wallis test	Rejected
3	There is no significant difference in the Transaction cost of Internet banking services in Module level	Kruskal wallis test	Rejected
4	There is no significant difference in the Transaction cost of Internet banking services in Network level	Mann-whitney U test & Wilcoxon w test	Rejected

The hypotheses testing of internet banking service shows that, the transaction cost of Internet banking services differ from various levels such as Volume, RBO, Module and Network levels of SBI in Kerala circle.

Section B

5.2 Cost structure of Mobile Banking Services

Banking through electronic channels has gained increasing popularity in recent years. E-banking provides alternatives for faster delivery of banking services to a wide range of customers. State Bank of India is now awarded as the Best bank in the public sector (BFSImagazine).SBI has launched e-banking facilities to enhance convenience to the customers and save on cost &time per transaction.SBI gives more importance to mobile banking nowadays. Their quoting on mobile banking is *"State Bank Freedom-Your Mobile Your Bank"* Away from home, balance enquiries can be made and/or money sent to the loved ones or bills can be paid anytime 24x7!!! That is what State Bank Freedom offers convenient, simple, secure, anytime and anywhere banking. The major functionalities and Business rules of different types of Mobile banking services are pointed out in the following table 5.13

Table 5.13

Functionalities and Business rules of Different types of Mobile Banking Services

Types of mobile banking services	Functionalities	Business rules
1. Mobile Banking Service over Application/ Wireless Application Protocol (WAP) The service is available on java enabled /Android mobile phones (with or without GPRS) /i-phones where the user is required to download the application on to the mobile handset. The service can also be availed via WAP on all phones (java/non java) with GPRS connection.	1. Funds transfer (within and outside the bank) 2. Immediate Payment Services (IMPS): 3. Enquiry services (Balance enquiry/ Mini statement) 4. Cheque book request 5. Demat Enquiry Service 6. Bill Payment (Utility bills, credit cards, Insurance premium), Donations, Subscriptions 7. Mobile /DTH Top up 8. M Commerce (Merchant payments, SBI life insurance premium)	1. All Current/ Savings Bank Account holders in P segment and Current accountholders in SME segment are eligible. 2.Transaction limit per customer per day is Rs.50,000/- with a calendar month limit of Rs.2,50,000/- 3. All customers can avail the Service irrespective of their telecom service provider. 4. The Service is free of charge. SMS/GPRS cost will be borne by the customer.

Types of mobile banking services	Functionalities	Business rules
2. Mobile Banking Service over SMS: The service is available on all phones. we can send keywords as SMS to 9223440000. Ordinary SMS charges are applicable.	1.Enquiry Services (Balance Enquiry/Mini Statement) 2.Prepaid Mobile / MobiCash wallet Top up 3.DTH Recharge 4.IMPS Fund transfer – (Mobile number & MMID and Account Number & IFS Code) 5.Change MPIN 6.IMPS Merchant payments	1.All Current/ Savings Bank Account holders in P segment and Current accountholders in SME segment are eligible. 2. Transaction limit per customer per day is Rs.1,000/- with a calendar month limit of Rs.5,000/- . However, customers desiring to transact up to Rs.5000/- per day or Rs25,000/- per month may do so after obtaining an One Time Password (OTP) 3.Service available over all telecom service providers. 4.The Service is free of charge. SMS cost will be borne by the customer. 5.As a precaution, Customers are requested to delete all the messages sent to the number 9223440000, once the response for their request has been received.

Types of mobile banking services	Functionalities	Business rules
3. Mobile Banking Service over USSD (Unstructured Supplementary Service Data) The service is available on all phones except CDMA phones. Downloading of application is not required. Subscribers have to dial *595# to avail the service.	1.Enquiry Services (Balance Enquiry/Mini Statement) 2.Mobile Top up 3.Funds Transfer (within Bank)	1.All Current/ Savings Bank Account holders in P segment and Current accountholders in SME segment are eligible. 2.Transaction limit per customer per day is Rs.1,000/- with a calendar month limit of Rs.5,000/- 3.The Service is available for subscribers of select telecom operators only. 4.The Service is free of charge. USSD session charges will be borne by the customer. 5.The service is session based and requires a response from the user within a reasonable time. 6.Cash Back Scheme for Promotion of Bill payments
State Bank Buddy	Features	Needed things
A mobile walletavailable in 13 languages.Anyone/Anytime? Anywhere.	1.send money 2.Ask money 3.Recharge	1.If you are an Indian Nationalhaving a mobile number and above the age of 10 years, then you are

Types of mobile banking services	Functionalities	Business rules
	4.Paybills 5.Flight & hotel 6.cinema	eligible to download and use state bank Buddy services. 2.A smart phone with Android operating system (version 3 or above) 3.Access to internet data services either through wireless facility or 4G/3G/2G/Wi-Fi

Source: Compiled from SBI website and Annual Report 2015-16.

5.2.1Cost Structure of Mobile Banking Services

In the present research work, there is an attempt made to analyze the level of Transaction cost of Mobile banking services of SBI operating in the state of Kerala. Generally the transaction cost was calculated by using the formula (Operation Cost)/ (Number of Transactions). But in the case of Mobile banking cost calculation, it was not possible to know the branch wise operation cost and number of transactions. Therefore, Total cost, Total users and Total number of Transactions were collected from the Annual Reports during the study period ranging from March 2013 to March 2016. By apportioning All India Level SBI Total cost with Total Users, the cost per user was obtained. Similarly, total Cost is divided by the total transactions, and then cost per transaction was derived. Total transactions were divided by the total users, and the transaction per user can be obtained. Thus, with the help of these variables like cost per user, cost per transaction and transaction per user, transaction cost of each branch was calculated by using the following formula. (Cost/user x Active users)/12 or (Active users x transaction/user x cost/transaction)/12. The following table 5.14 explains the different variables used for the calculation of transaction cost of Mobile banking services.

Table 5.14

Cost Elements & Variables for Cost Computation of Mobile Banking Services

Year	Total Users(T.U)	Total transactions(T.T)	Total cost(T.C)	Cost/user (T.C/T.U)	Cost/transaction (T.C/T.T)	Transaction/user (T.T/T.U)
2013	6200000	33200000	3362000	0.5423	0.10127	5
2014	9500000	57400000	3274000	0.3446	0.05704	6
2015	13500000	77100000	3459000	0.2562	0.04486	6
2016	27000000	144100000	3585000	0.1328	0.0249	5

Source: Computed and Compiled from Annual Reports and MBPM Dept. of SBI, LHO, TVM.

The Table 5.14 indicates the various cost elements, which are used for the cost computation of mobile banking services. From the above table it is realized that, Total users, Total transactions and Total cost are the major cost elements used for the transaction cost analysis. The cost per user, Cost per transaction and the transaction per user are the important variables used for the cost computation of mobile banking services of 463 branches of SBI operating in the state of Kerala.

The transaction cost of mobile banking services were calculated for four years from 2013 to 2016. The table 5.14 reveals that, Total Users and Total transactions are increasing from year to year but at the same time, the Total cost is reduced nature from year to year. Similarly, the variables like cost/user and cost/transaction are decreasing nature but Transaction per user is increasing trend. This shows a healthy symptom for the growth of mobile banking services of State Bank of India. At the same time, this growth in cost elements and variables are comparatively lower than that of Internet banking.

5.2.2 Volume wise Analysis of Transaction Cost of Mobile Banking Services of SBI in Kerala

The volume wise analysis is done by classifying into three groups lie Low Volume ranches, Medium volume branches and High volume branches. The data summarized using Number, mean and Standard deviation. The central value of cost is inferred using mean and the dispersion from these central values are quantified in Standard deviation. Since there is much variation in four years, the average transaction cost is also computed. The mean and standard deviation of the transaction cost of mobile banking services are shown in the following table 5.15

Table 5.15

Volume Wise Descriptive Statistics of Transaction Cost of Mobile Banking Services

Type	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
LVB	251	.740654	.9511514	1.160214	1.2066155	1.672845	2.6090827	1.878947	2.6506898	1.3628	1.63955
MVB	199	1.007764	1.2820216	2.082366	2.4772475	2.766942	3.5397154	3.259283	4.2729717	2.2793	2.49389
HVB	13	2.436685	2.2711617	3.733509	2.6539077	7.143016	6.8044247	8.802486	8.1896756	5.5269	4.27393
Total	463	.903080	1.1887615	1.628812	1.9832716	2.296685	3.3501659	2.666620	3.8622355	1.8737	2.27657

Source: Survey Data

Table 5.15 makes clear that mean value is highest in HVBs in an average of four years and in individual years than in LVBs and MVBs. At the same time standard deviation is highest in MVBs in the Average level and almost same in individual years.

In order to test whether the given data is normally distributed, Kolmogorov Smirnov test is conducted.The results are given in the following table 5.16

Table 5.16

Result of Normality Test of Transaction Cost of Mobile Banking Services in volume level

Period	Skewness	Kurtosis	Kolmogorov Smirnov Test Statistic	P-value
2013	3.751	22.633	5.062	.000
2014	4.585	38.619	4.516	.000
2015	4.164	23.092	5.347	.000
2016	4.850	39.377	5.290	.000
Average	4.089	28.563	4.498	.000

Source: Survey Data

The test reveals that none of the variables are Normal (p-value<0.05). So non-parametric test are used for checking the variation of cost of transaction in different categories.

To test the hypothesis'There is no significant difference in the Transaction cost of Mobile banking services in Volume level' Kruskal Wallis test is used and the result is presented in Table 5.17.

Table 5.17

Kruskal Wallis Test for the Transaction Cost of Mobile Banking Services in Volume level

Year	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	13.947	.001**	Reject
2014	33.726	.000**	Reject
2015	38.393	.000**	Reject
2016	39.353	.000**	Reject
Average	42.032	.000**	Reject

Source: Survey Data **Significant at 5 % level

The test shows that there is significant difference in the transaction cost of Mobile banking services with regard to volume level in 2013, 2014, 2015, and 2016 and in an average of four years.Since the p value is less than 0.05, hypothesis in these four years and the average level is rejected.The Volume wise comparison of the transaction cost of Mobile banking is diagrammatically presented in Figure 5.5.

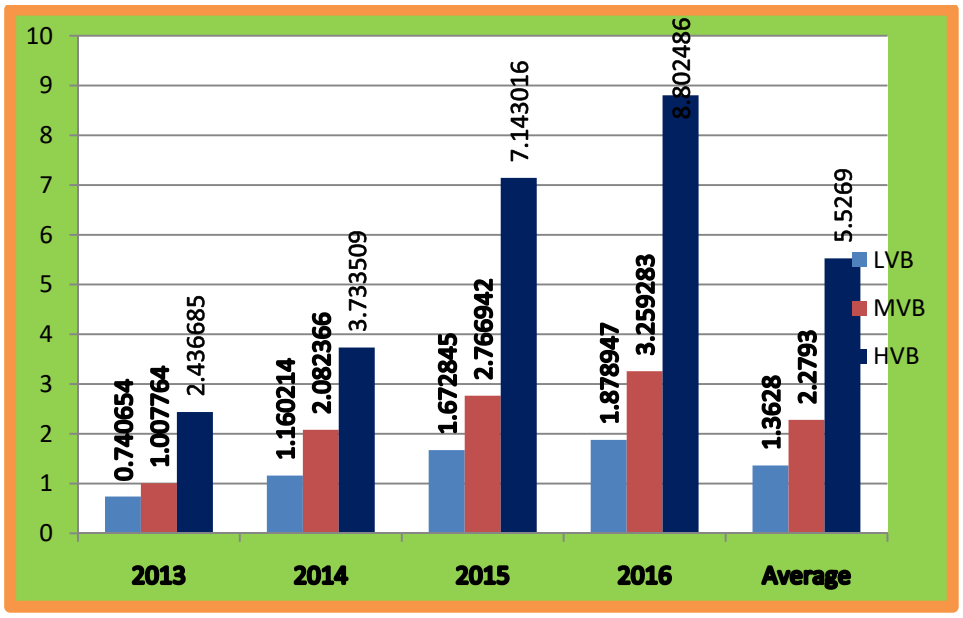


Figure5.5 Volume wise Transaction Cost of Mobile Banking Services

5.2.3 RBO wise Analysis of Transaction cost of Mobile banking services of SBI in Kerala

The mean and standard deviation of transaction cost of internet banking services are shown in the following table 5.18.

Table 5.18

RBO Wise Descriptive Statistics of Transaction cost of Mobile Banking Services

Name of RBO	No.of branches	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	51	.930345	1.5569454	2.070605	3.3645060	5.9029588	.8265796	4.312891	7.5144061	2.7453	4.21101
KLM	39	1.724103	2.1118055	1.94333	1.4986894	2.5465184	.4077693	3.588405	4.1066009	2.5203	2.12809
ALP	40	1.018993	1.1556593	2.252311	2.1747058	3.8030747	.6013189	3.123321	3.4831349	2.4410	2.37348
KTM	29	.553166	.5897576	1.177491	1.3550562	1.3281363	.2466287	2.116814	2.0625168	1.3307	1.18698
EKM1	38	.418585	.5242169	2.255221	3.1968029	2.9345195	.4760419	2.113088	3.1061539	1.6624	2.25106
EKM2	45	.648701	.6982038	1.103459	1.1134641	1.2712781	.1895110	1.592350	1.9571687	1.1631	1.09369
EKM3	26	.413646	.3992328	.504797	.3453176	.6709804	.1315901	1.420552	2.6620502	.7688	.94575
TSR	37	.664015	.7846787	.984434	.8926274	2.2951254	.3825209	2.062051	1.9038964	1.4397	1.28492
SHR	27	.701253	.5136016	1.468939	1.1685316	1.8618006	.3583037	2.537121	2.8469257	1.6722	1.32168
PKD	30	1.756314	1.6380208	2.897777	1.8667826	6.2513689	1.1413386	4.539894	4.4871621	3.5090	3.11408
CLT-1	39	.789055	.7219580	1.341707	1.3590209	1.3927534	.2230190	2.188564	3.5167978	1.4759	1.51376
CLT2	33	.833323	.8459926	1.327845	1.1141360	1.1744202	.2014114	2.502275	2.3186548	1.5750	1.11515
KNR	29	1.246570	1.1582963	1.397342	1.3564093	2.1073260	.3913206	1.729927	2.0442575	1.5210	1.55825
Total	463	.903080	1.1887615	1.628812	1.9832716	3.3501659	.1556954	2.666620	3.8622355	1.8737	2.27657

Source: Survey Data

Table 5.18 remarks that highest mean value stood at Palakkad RBO in an average of four years and in almost all individual years. Lowest mean value is shown at EKM-3 RBO in an average andcal culated in all the individual years.

Kruskal Wallis test was used to test the hypothesis ‘There is no significant difference in the Transaction cost of Mobile banking services in RBO level and the result is presented in Table 5.19.

Table 5.19

Kruskal Wallis Test for the Transaction Cost of Mobile Banking Services in RBO level

Year	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	62.944	.000**	Reject
2014	60.767	.000**	Reject
2015	60.107	.000**	Reject
2016	52.415	.000**	Reject
Average	61.988	.000**	Reject

Source: Survey Data **Significant at 5% level

Test reveals that there is significant difference in the transaction cost of Mobile banking services in RBO level and so rejecting the Hypothesis in all the years and in an average of four years. The RBO wise comparison of the Average transaction cost of Mobile banking is diagrammatically presented in Figure 5.6

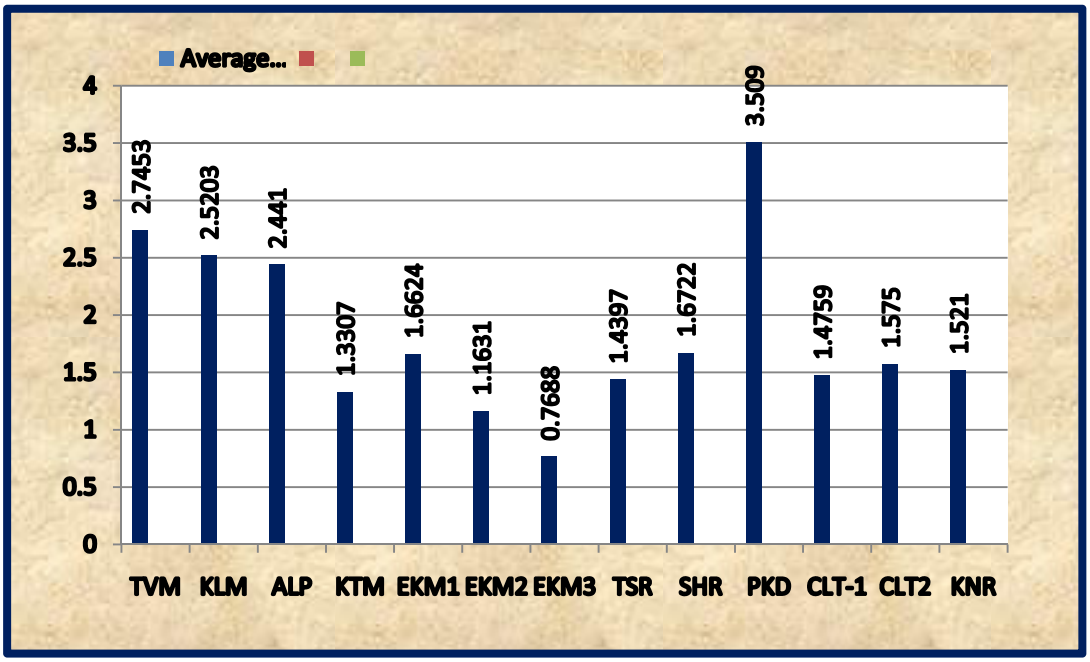


Figure 5.6 RBO wise Average Transaction cost of Mobile banking services.

5.2.4 Module wise Analysis of Transaction cost of Mobile banking services of SBI in Kerala

In the case of module wise classification, SBI branches in Kerala circle are classified into four broad categories, viz. Thiruvananthapuram, Ernakulam, Thrissur and Kozhikode. The mean and standard deviation of transaction cost of Mobile banking services in module level is given in the following table 5.20.

Table 5.20

Module Wise Descriptive Statistics of Transaction cost of Mobile Banking Services

Module	N	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	130	1.195749	1.6670287	2.088335	2.5482957	3.324155	4.4622270	3.729524	5.5476390	2.5842	3.15090
EKM	138	.520974	.5844878	1.323377	1.9858639	1.389418	1.8532711	1.813587	2.4674430	1.2615	1.51614
TSR	94	1.027181	1.1877278	1.742304	1.5714831	2.930025	4.1308260	2.999279	3.3461471	2.1747	2.24603
CLT	101	.933889	.9173152	1.352904	1.2693871	1.637185	1.5537359	2.162737	2.7678888	1.5218	1.39405
Total	463	.903080	1.1887615	1.628812	1.9832716	2.296685	3.3501659	2.666620	3.8622355	1.8737	2.27657

Source: Survey Data

The Table 5.20 reveals that highest mean value stood at Thiruvananthapuram module and lowest can be found in Ernakulum module in all the individual years and standardly in four years. In order to test the hypothesis, 'There is no significant difference in the Transaction cost of Mobile banking services in Module level'Kruskal Wallis test was used and the result is presented in Table 5.21.

Table 5.21

Kruskal Wallis Test for the Transaction Cost of Mobile banking services in Module level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	27.512	.000**	Reject
2014	27.022	.000**	Reject
2015	42.535	.000**	Reject
2016	33.830	.000**	Reject
Average	40.261	.000**	Reject

Source: Survey Data Significant at 5% level

Test points out that there is significant difference in the transaction cost of internet banking services in Module level and so rejecting the hypothesis in all the years and in four years span.

The Module wise comparison of the Average transaction cost of Mobile banking is diagrammatically presented in Figure 5.7.

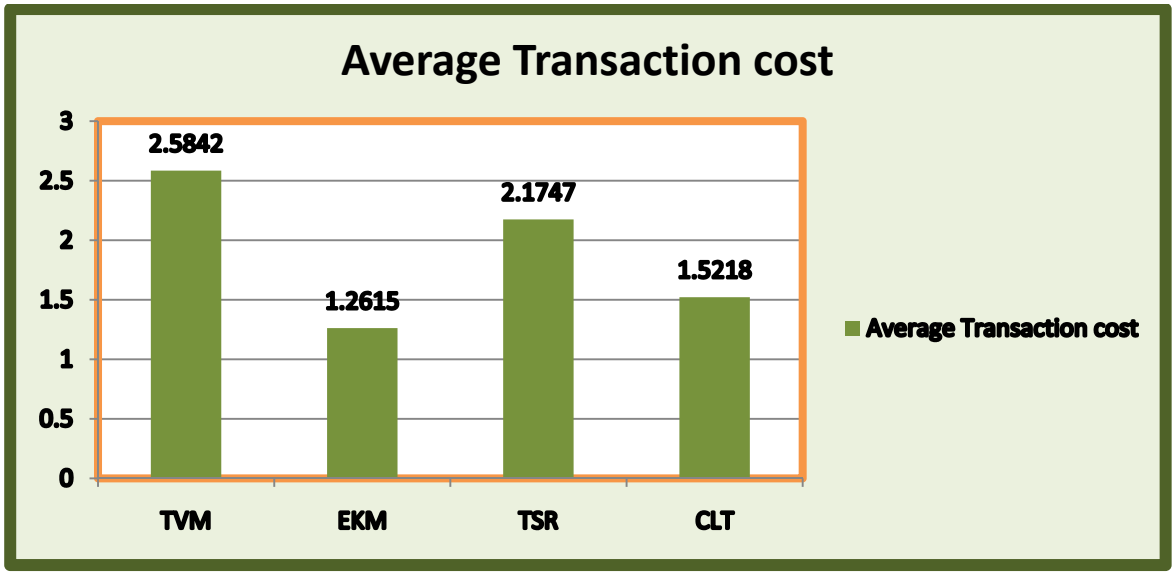


Figure 5.7 Module wise Average Transaction cost of Mobile Banking services

5.2.5 Network wise Analysis of Transaction cost of Mobile banking services of SBI in Kerala

For the Network analysis the entire branches of SBI are made to fall in to two categories like Network1 and Network 2.Network1 includes Thiruvananthapuram module to Ernakulum module and Network2 includes Thrissur module to Kozhikode module or from the districts of Thiruvananthapuram to Ernakulam involves Network-1 and from Thrissur to Kasargod districts termed as Network-2 category. The mean and standard deviation of transaction cost of Network level are shown in the following table 5.22.

Table 5.22

Network Wise Descriptive Statistics of Transaction Cost of Mobile Banking Services

Network	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Network-1	269	.848290	1.2775373	1.694439	2.3038424	2.327910	3.5101208	2.742959	4.3489899	2.742959	4.3489899
Network2	194	.978382	1.0532124	1.538618	1.4311006	2.253770	3.1253825	2.561703	3.0779572	2.561703	3.0779572
Total	463	.903080	1.1887615	1.628812	1.9832716	2.296685	3.3501659	2.666620	3.8622355	2.666620	3.8622355

Source: Survey Data

The Table 5.22 reveals that Mean value andstandard deviation is highest in Network-1 in an average of four years and in all the individual years when compared with network-2.In order to test the hypothesis‘There is no significant difference in the Transaction cost of Mobile banking services in Network level’ Mann-whitney U test was used and the result is presented in Table 5.23.

Table 5.23

Mann-whitney U Test for the Transaction Cost of Mobile Banking Services in Network level

Year	Mann-Whitney U	Wilcoxon W	Z	p-value	Decision
2013	22006.500	58052.500	-2.903	.004**	Reject
2014	25302.000	61348.000	-.583	.560	Accept
2015	24264.000	60310.000	-1.313	.189	Accept
2016	24418.000	60464.000	-1.204	.228	Accept
Average	24296.000	60342.000	-1.290	.197	Accept

Source: Survey Data **Significant at 5% level

The test shows that, p value is less than 0.05 in 2013 only and in all other years and in an average, p value is not less than 0.05. Therefore, rejecting the hypothesis in 2013 and accepting hypotheses in all the other years and so reached a conclusion that there is no significant difference in the transaction cost of Mobile banking services of SBI in Network level.

The Network wise comparison of the Average transaction cost of Mobile banking is diagrammatically presented in Figure 5.8

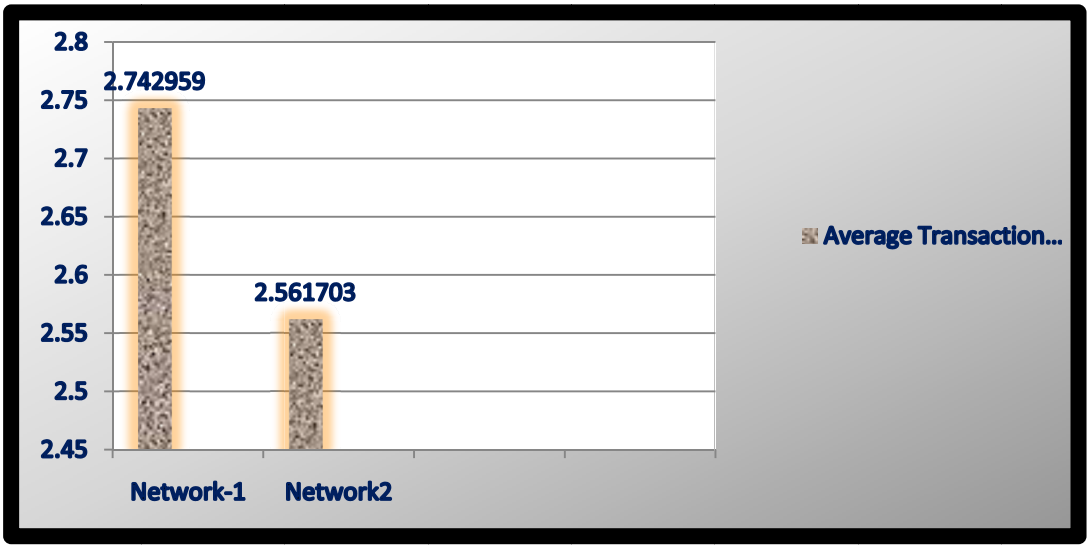


Figure 5.8 Network wise Average Transaction cost of Mobile banking services

5.2.6 Comparative Analysis of Internet & Mobile Banking Services

In order to sum up the cost structure analysis of Internet and Mobile banking services, the comparison points of variables of transaction cost of these services are considered. The results are shown in the following table 5.24.

Table 5.24

Comparison of Variables and Transaction Cost of Internet & Mobile Banking Services

Year	Cost/User		Cost/transaction		Transaction/User		Transaction Cost	
	I.B	M.B	I.B	M.B	I.B	M.B	I.B	M.B
2013	0.314615	0.54226	0.0974	0.10127	3	5	0.60	0.90
2014	0.234011	0.3446	0.0647	0.05704	4	6	0.53	1.63
2015	0.161045	0.2562	0.0394	0.04486	4	6	0.44	2.30
2016	0.112471	0.1328	0.0231	0.02488	5	5	0.57	2.67
Average	0.205535	0.318965	0.05615	0.05702	4	6	0.54	1.88

Source: Survey Data

The Table 5.24 reveals that, variables like cost/user and cost/transaction are in decreasing trend from 2013 to 2016. But at the same time transaction/user is in increasing trend. Variations can be observed in the level of transaction cost of both the services of internet banking and Mobile banking services. The average transaction cost of Internet banking stood at only 0.54 paisa. At the same time the average transaction cost of mobile banking services reached to Rs.1.88. Therefore, it is concluded that, the most cost effective channel of State Bank of India is internet banking in comparison of four years data of internet and mobile banking services.

5.2.7 Hypotheses Testing: Mobile banking services

To bring to an end, the hypotheses formulated and tested with Mobile banking services are shown in a short form in the table 5.25

Table 5.25

Result of Hypotheses testing- Mobile Banking Services at a Glance

S.l.No	Hypotheses	Statistical test	Result
1.	There is no significant difference in the Transaction cost of Mobile banking services inVolume level	Kruskal wallis test	Rejected
2	There is no significant difference in the Transaction cost of Mobile banking services in RBO level	Kruskal wallis test	Rejected
3	There is no significant difference in the Transaction cost of Mobile banking services in Module level	Kruskal wallis test	Rejected
4	There is no significant difference in the Transaction cost of Mobile banking services in Network level	Mann-whitney U& Wilcoxon w test	Accepted

The Table 5.25 shows a summary of the hypothesis testing of transaction cost of Mobile banking services. The table reveals that in case of different levels of comparison there is significant difference can be observed in Volume level, RBO level and Module level. But in case of network level comparison there is no significant difference in the transaction cost of Mobile banking services.

Thus the analysis of the transaction cost of Internet banking and Mobile banking in various levels of SBI in kerala circle is discussed in the present chapter. Now it is worthwhile to examine the growth of usage pattern of e-banking services like ATM, CDM, Recycler, Internet banking and Mobile banking. That has been attempted in the ensuing chapter.

Chapter 6

Usage Pattern of e-Banking Services

Contents **Page No.**

Section A

Section B

Chapter 6

Usage Pattern of e-Banking Services

The previous chapter attempted to analyze the cost dimensions of Internet and mobile banking services of State Bank of India in Kerala circle. Now it is worthwhile to examine the usage pattern of e-banking services like ATM, CDM, Recycler, Internet banking, Mobile banking services of SBI operating in the state of Kerala. The present chapter attempts to accomplish this specific objective.

For this purpose, data have been collected from the total 463 branches of SBI operating in the state of Kerala. The basic level of information was collected from MBPM Department, LHO, TVM and 13 Regional Business Offices of SBI operating in Kerala circle. The data have been analyzed with the help of mathematical and statistical tools like, percentages, Averages, Index number and Chi-square test of independence.

The chapter is divided into two sections for the proper arrangement. Section A deals with Usage pattern of ATM, CDM &Recycler services and section B covers Usage pattern of Internet and Mobile banking services.

Section A

6.1 Usage Pattern of ATM, CDM & Recycler services

Automated Teller Machines have the first well known electronic machines to provide electronic access to customers in banking industry. ATMs have gained prominence as a delivery channel for banking transactions in India. It is a computerized device that enables bank customers to withdraw cash outside banking hours. In India, HSBC set the trend and set up the first ATM in 1987. ATM allow on to do a number of banking functions-such as withdrawing cash from one's account, making balance enquiries and transferring money from one account to another-using a plastic, magnetic strip card and PIN issued by the financial institution.While the ATM is a great service for the customers, for the banks it means immense savings on cost of operations. The geographic reach of ATMs increased further as the number of ATMs

installed increased around 0.2 million as at the end of March, 2016, an increase of 9.7 % over the previous year.

CDM is ATM like machine that allows depositing cash directly in to account using the ATM cum Debit card. The first cash Deposit Machine was installed at Nanthancode at Thiruvananthapuram in 2013.

Cash recycling machine is an upward trend for ATM. The banks are looking to cash recycling technologies as a way to control cost. The cash Recycling Machine is a self service terminal that let to make deposit and withdrawal transactions of cash.

6.1. 1 Evaluation of the Usage pattern of ATM, CDM & Recycler Services

For the purpose of analyzing usage pattern of ATM, CDM & RECYCLER Services, Total number of Machines, Average hit and Total number of Transactions for four years were collected. Due to the conversion of CDM into Recycler, wide variation can be seen in number of machines and total transactions. Therefore consistent nature of comparison is possible only with the average hit of the machines. Thus the average hits of ATM, CDM &RECYCLER machines have been taken for statistical analysis. The Measurement and comparison of ATM, CDM & RECYCLER average hits were based on the 4 years data varying from March 2013 to March 2016. The average hit of ATM, CDM & RECYCLER services were analyzed on Volume Level, RBO Level, Module wise and Network Level.

a) Total Number of Machines

The distribution of ATM, CDM & Recycler Machines of SBI in Kerala circle during the study period ranging from 2013 to 2016 was shown in the following table 6.1. ATM machines have a long back history in operation. CDMs are installed only at 2013 whereas Recyclers are initiated only from the year of 2015 onwards. But the remarkable thing among these machines, that, the introduction of Recyclers reduced the importance of ATMs and CDMs and so 1st January, 2017 onwards, all branches of SBI in Kerala were replaced Recyclers.

Table 6.1

Total Number of Machines

Year	ATM	CDM	RECYCLER	Total
2013	678	19	…..	697
2014	1295	113	……	1408
2015	1460	19	151	1630
2016	1661	19	151	1831
All India level total machines at 31 st March, 2016=48493. Total Machines in Kerala circle at 31st March, 2016=1831(3.77%)				

Source: Survey Data

Table 6.1 shows the differences in the distribution of total number of machines in ATM, CDM & Recycler services of State Bank of India in Kerala circle in various years. The audited Annual Report 2015-16 stated that, SBI has one of the largest ATM networks with 48493 Machines including Cash Deposit Machines and Recyclers as on 31st March, 2016. Out of this 48493 machines, Kerala circle possess only 1831 machines. It stands only a small percentage (3.77%). In the case of ATM services, machines are increasing trend from 2013 to 2016.From the above table it is clear that, 983 machines were increased from the year 2013 to 2016. But the CDMs are not installed in every branch. It was operated only on a trial basis in order to extend the depositing facility of cash. Gradually, it was converted in to recyclers since 2015 onwards. On 1st January, 2017 onwards all CDMs are converted in to Recyclers. The proportion of the installation of ATM, CDM & Recycler machines are shown in the diagram 6.1.

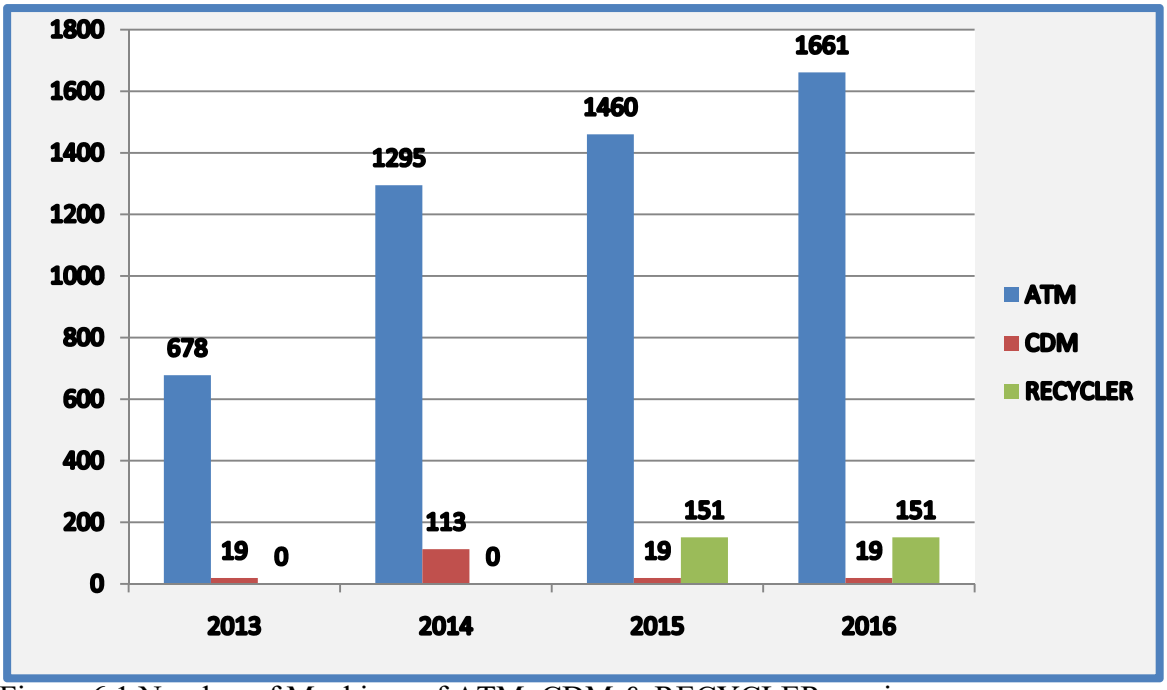


Figure 6.1 Number of Machines of ATM, CDM & RECYCLER services

b) Average Hit/day

The average hit indicates the usage of Machines for different purposes. There is a standard fixed by the bank in the case of average hit. The average hit per day to be touched is on minimum 100 hits, unless otherwise it will be a loss making machine. The pattern of the average hit is shown in the following table 6.2

Table 6.2

Average Hit/day

Year	ATM	CDM	RECYCLER
2013	230	48	….
2014	187	114	….
2015	197	200	281
2016	208	185	304
Average	206	137	293

Source: Survey Data

It is clear from the table 6.2 that, all machines of ATM, CDM& Recycler services cover the minimum standard hit of 100 hits per day except CDM in 2013.It is because of the installation of CDM only in the middle of the year 2013. It is quite obvious from the table that the number of hits per ATM is in reducing nature from the

year 2013 to 2016. But in CDM and Recycler services it shows an upward trend. Therefore,it is inferred from the data is the inception of Recycler services reduced the importance of ATM and CDM machines.The service wise average hit per day in various years is diagrammatically presented in figure 6.2.

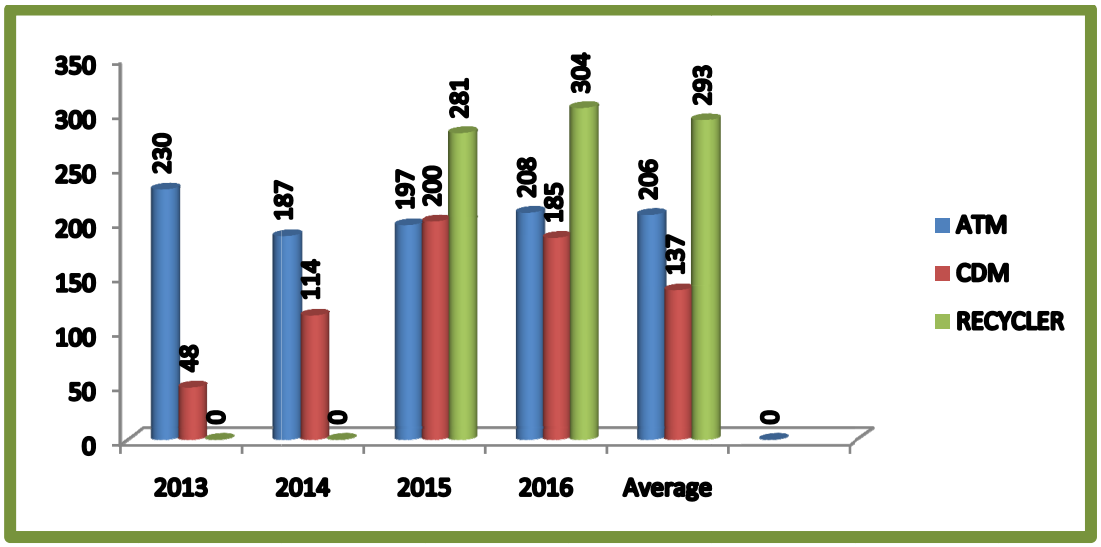


Figure 6.2 Average hit of ATM, CDM& RECYCLER services

c) Total Number of Transactions

Total Number of Transactionsindicates one of the variables for determining the usage pattern of ATM,CDM & Recycler services.It includes depository transactions and all other extending facilities of these services like PIN change,balance enquiry,utility payments etc.The total number of transactions recorded in each year of ATM, CDM & Recycler services are shown in the following table 6.3

Table 6.3

Total Number of Transactions

Year	ATM	Index Number	CDM	Index Number	RECYCLER	Index Number
2013	390028	100	2903	100	….	---
2014	569240	145.95	30110	1037.20	….	---
2015	647405	165.99	8767	301.99	94954	100
2016	706931	181.75	8040	276.95	96578	101.71

Source: Survey Data

Table 6.3 explains the changes in the Total Number of Transactions of ATM,CDM & Recycler services on the basis of the statistical measure 'Index Number'. Index numbers are the indicators which measure percentage changes in a variable (or a group of variables) over a specified time."An index number is a statistical measure, designed to measure changes in a variable, or a group of related variables with respect to time, geographical location or other characteristics such as income, profession, etc."**(Spiegel)**

The changes in the Total number of transactions of ATM, CDM & Recycler services are measured by using index number which is calculated by taking 2013 as the base year. From the above table it is observed that, 45.95%, 65.99% and 81.75 % increase in 2014, 2015 and 2016 respectively with regard to Total number of transactions of ATM services. In the case of CDM services, wide variation can be observed in the total number of transactions especially in 2014.It is also to be noted that, the changes in the number of CDM transactions show a decreasing nature from 2013 to 2016. Recycler Machines were installed only in 2015 which show a small percentage of increase of 1.71 % in 2016 when compared to the previous year of 2015.

The proportion of the total number of transactions in each service is shown in the diagram 6.3.

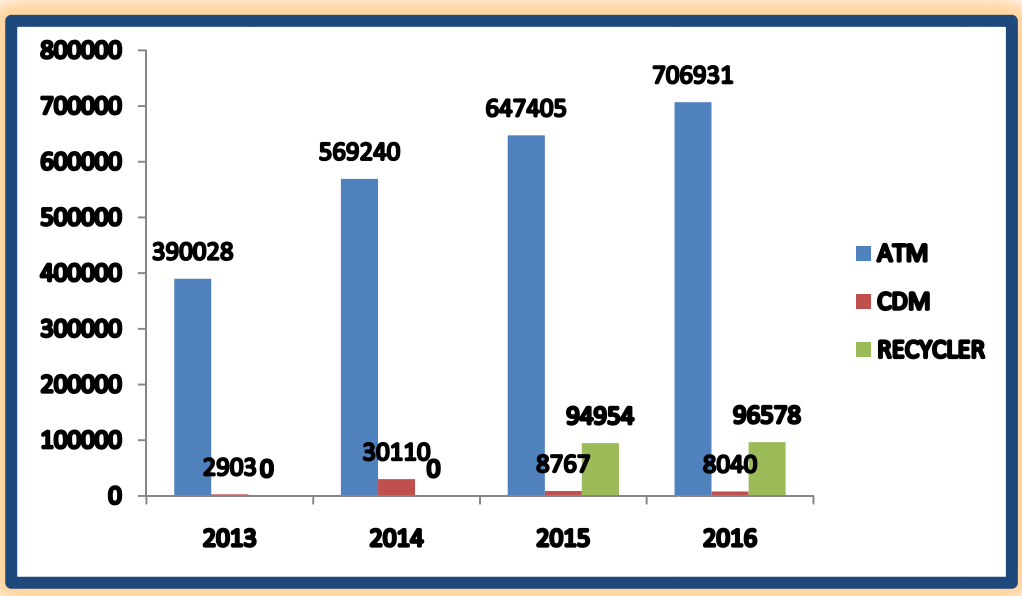


Figure 6.3 Number of transactions of ATM, CDM & RECYCLER services.

6.1.2 Evaluation of the usage pattern of ATM services on the basis of Average hit.

From the previous explanation it is mentioned that the variables taken for the usage pattern were number of machines, total number of transactions and average hit. Among these variables,average hit is considered to be the most prominent one and the testing of the growth of ATM services based on average hit were done in four levels like,volume,RBO,Module and Network which are shown below:

a) Volume Level

In the case of volume level, the association between average hit of ATM services and various catagories of low, Medium and High volume catagories is assessed by using a hypothesis that, there is no significant association between average hit of ATM services and volume level of ATM services.For testing the hypothesis, the chi-square test of independence was used and the result is shown in Table 6.4.

Table 6.4

Volume Wise Average hit of ATM Services

Volume	N	Hit2013	Hit2014	Hit2015	Hit2016	Chi-square Value	P- value
LVB	251	42170	50118	55454	61176	162.4145	0.000**
MVB	199	38513	42956	45907	51326		
HVB	13	3123	3480	3714	3771		
Total	463	83806	96554	105075	116273		

Source: Survey Data **significant at 5% level

The table 6.4 shows the chi square value as 162.4145 with a significant p value (0.000). Since the p value is less than 0.01 the null hypothesis is rejected at the 1% level of significance. Hence, it is concluded that there is significantassociation between average hit and volume level of ATM services. It isalso clear that there is significantgrowth observed between average hit of ATM services and various catagories of volume level of ATM services.

b) RBO Level

As already stated in the previous chapters, there are 13 Regional Business Offices of SBI operating in the state of Kerala. In order to check the association between Average hit of ATM services and various RBOs, a hypothesis is stated that, there is no significant association in the Average hit of ATM services in RBO level.Chi-square test of independence is used for testing the stated hypothesis and the result is presented in table 6.5.

Table 6.5

RBO wise Average hit of ATM Services

RBO	N	Hit2013	Hit2014	Hit2015	Hit2016	Chi-square Value	P-value
TVM	51	8910	10358	11453	12757	419.0582	0.000**
KLM	39	7141	8123	8885	9662		
APA	40	7673	8649	9210	12173		
EKM-1	38	7105	8082	8970	9563		
EKM-2	45	7168	8857	9819	10801		
EKM-3	26	4787	5534	6080	6713		
KTM	29	5024	6087	6647	7276		
PKD	30	5386	6048	6629	7125		
TSR	37	6309	7458	8193	8785		
CLT-1	39	7866	8470	8886	9525		
CLT-2	33	5980	7008	7542	8042		
KNR	29	5941	6563	7028	7525		
SHR	27	4516	5317	5733	6326		
	463	83806	96554	105075	116273		

Source: Survey Data **Significant at 5% level

The table 6.5 shows the association of average hit of ATM services in 13 Regional Business Offices of SBI operating in the state of Kerala. Since the p value is less than 0.01& 0, 05, the null hypothesis is rejected at 1% and 5% level of significance. It can also

be seen that that there is significant growth of average hit in RBO level of ATM services in Kerala.

c) **Module level**

In the case of Module level, the association between average hit of ATMservices and four modules of SBI in Kerala like, Thiruvananthapuram, Ernakulam, Thrissur and Kozhikode is assessed by using a hypothesis that, there is no significant association between average hit and Module level of ATM services.For testing the hypothesis, the chi-square test of independence is used and the result is shown in Table 6.6.

Table 6.6

Module Wise Average hit of ATM Services

Module	N	Hit 2013	Hit 2014	Hit 2015	Hit 2016	Chi-square Value	P-value
Thiruvananthapuram	130	23724	27130	29548	34592	200.7305	0.000**
Ernakulam	138	24084	28560	31516	34353		
Thrissur	94	16211	18823	20555	22236		
Kozhikode	101	19787	22041	23456	25092		
Total	463	83806	96554	105075	116273		

Source: survey Data **Significant at 5% level

The table 6.6 shows the differences in the average hit of ATM services in four modules of SBI in Kerala.The above table indicates that the chi square value as 200.7305 with a significant p value (0.000). Since the p value is less than 0.01 and 0.05 the null hypothesis is rejected at the 1% and 5% level of significance. Hence, it is concluded that there is significantassociation between average hit and Module level of ATM services. It is also clear that, there is significant growth observed in the Average hit of ATM services in module level of SBI in Kerala circle.

d) Network level

There are two networks of SBI operating in Kerala namely Network-1 and Network-2. In the previous chapters, it is already mentioned that,network-1 includes the districts from Thiruvananthapuram to Ernakulam and network -2 includes the districts from Thrissur to Kasargode. In order to check the association of average hit of ATM services in network level, a hypothesis is formed as, there is no significant association in the Average hit of ATM services in network level.Chi-square test of Independence is used for testing hypothesis and the result is shown in the following table of 6.7.

Table 6.7

Network wise Average hit of ATM services

Network	N	Hit2013	Hit2014	Hit2015	Hit2016	Chi-square Value	P-value
Network-1	268	48074	56003	61439	69284	110.6574	0.000**
Network-2	195	35732	40551	43636	46989		
Total	463	83806	96554	105075	116273		

Source: Survey Data **Significant at 5% level

The Chi-square test of independence proves that there is significantassociation inthe average hit of ATM services in network level. This is because, here the result shows that p value is less than 0.01. Hence the null hypothesis is rejected at the 1% and 5% level of significance.From the test result, it can be said that there is significant growth in the average hit of ATM services in network level.

6.1.3 Assessment of CDM services based on Average hit

As in the case of ATM services, usage pattern of CDMs were also prominently based on the average hits. The four levels of analysis were made in the case of average hit of CDM services which are as follows:-

a) Volume Level

In the case of volume level, the association between average hit of CDM services and various catagories of Low, Medium and High volume catagories is assessed by using a hypothesis that, 'there is no significant association between average hit of CDM services and volume level of CDM services'. For testing the hypothesis, the chi-square test of independence is used and the result is shown in Table 6.8.

Table 6.8

Volume Wise Average hit of CDM Services

Volume	N	Hit2013	Hit2014	Hit2015	Hit2016	Chi-square Value	P- value
LVB	251	2450	2450	0	0	3838.069	0.000**
MVB	199	14392	8533	2233	2242		
HVB	13	5879	1223	1571	1670		
Total	463						

Source: Survey Data **Significant at 5% level

The table 6.8 shows the chi square value as 3838.069 with a significant p value (0.000). Since the p value is less than 0.01 the null hypothesis is rejected at the 1% level of significance. Hence, it is concluded that there is significantassociation in the average hit of CDM services in volume level. So it is clear that growth of average hit of CDM services and volume is dependent or there is significant difference can also be noted in the growth and volume level of CDM services.

b) RBO Level

For the assessment of CDM services in RBO level, the variable of average hit is considered for determining the usagepattern of CDM services of SBI in Kerala. In order to check the association between average hit of CDM services and various RBOs, a hypothesis is stated that, there is no significant association in the average hit of CDM services in RBO level.Chi-square test of independence is used for testing the stated hypothesis and the result is presented in table 6.9.

Table 6.9

RBO wise Average hit of CDM Services

RBO	Hit2013	Hit2014	Hit2015	Hit2016	Chi-square Value	P- value
TVM	585	1048	740	694	46864.58	0.000**
KLM	199	748	132	44		
EKM-1	112	859	218	253		
EKM-2	333	1312	674	464		
EKM-3	210	1088	633	885		
KTM	179	990	191	242		
PKD	104	576	188	307		
TSR	87	655	159	289		
CLT-1	208	586	165	134		
CLT-2	249	627	151	153		
KNR	286	949	424	306		
SHR	247	2065	129	141		
Total	2799	11503	3804	3912		

Source: Survey Data **Significant at 5% level

The table 6.9 shows the difference in the average hit of CDM services and CDM distributed Regional Business Offices of SBI operating in the state of Kerala. Since the p value is less than 0.01& 0.05, the null hypothesis is rejected at 1% and 5% level of significance. Hence, it is inferred that there is significant growth of average hit in RBO level of CDM services in Kerala.

c) Module level

In the case of Module level, the association between average hit of CDMservices and four modules of SBI in Kerala like, Thiruvananthapuram, Ernakulam, Thrissur and Kozhikode is assessed by using a hypothesis that there is no significant association between average hit and Module level of CDM services.For testing the hypothesis, the chi-square test of independence was used and the result is shown in Table 6.10.

Table 6.10

Module Wise Average hit of CDM Services

Module	N	Hit 2013	Hit 2014	Hit 2015	Hit 2016	Chi-square Value	P-value
Thiruvananthapuram	130	784	2655	872	738	741.3397	0.000**
Ernakulam	138	834	3966	1716	1844		
Thrissur	94	399	1868	512	730		
Kozhikode	101	782	3717	704	600		
Total	463	2799	12206	3804	3912		

Source: Survey Data **Significant at 5% level

The table 6.10 shows the chi square value as 741.3397 with a significant p value (0.000). Since the p value is less than 0.01 and 0.05 the null hypothesis is rejected at the 1% and 5% level of significance. Hence, it is concluded that there is a significant difference in the growth of average hit of CDM services in Module level. So it is clear that growth of average hit of CDM services and module is dependent or there is significant association between growth and Module level of CDM services of SBI in Kerala circle.

d) Network level

In the case of network level, the association between average hit of CDM services and the two networks namely, network-1 and network-2 is assessed by using a hypothesis that, there is no significant association between average hit of CDM services and network level of CDM services.For testing the hypothesis, the chi-square test of independence is used and the result is shown in Table 6.11.

Table 6.11

Network Wise Average hit of CDM Services

Network	N	Hit2013	Hit2014	Hit2015	Hit2016	Chi-square Value	P-value
Network-1	268	1674	6682	2504	2739	360.2763	0.000**
Network-2	195	1125	5524	1300	1173		
Total	463	2799	12206	3804	3912		

Source: Survey Data **Significant at 5% level

The Chi-square test of independence proves that there is significant association in the average hit of CDM services and network level. This is because, here the result shows the p value is less than 0.01. Hence the null hypothesis is rejected at the 1% and 5% level of significance. The test revealed that there is significant growth in the average hit of CDM services in network level of SBI in Kerala.

6.1.3 Average hit Apparaisal of Recycler services

The Recycler machines were installed only from the year of 2015.Therefore, the average hit based on these two yearswere taken in to consideration for the analysis in four levels like volume,RBO,Module and Network which are shown below;-

a) Volume Level

In the case of volume level, the association between average hit of Recycler services and various catagories of low, medium and high volume catagories is assessed by using a hypothesis that, there is no significant association between average hit of Recycler services and volume level. For testing the hypothesis, the chi-square test of independence was used and the result is shown in Table 6.12.

Table 6.12

Volume Wise Average hit of Recycler Services

Volume	N	Hit2015	Hit2016	Chi-square Value	P- value
LVB	251	25698	27396	15.79578	0.000**
MVB	199	2268	2370		
HVB	13	39650	42965		
Total	463	11684	13199		

Source: Survey Data **Significant at 5% level

The table 6.12 shows the chi square value as 15.79578 with a significant p value (0.000). Since the p value is less than 0.01 the null hypothesis is rejected at the 1% level of significance. Hence, it is concluded that there is a significant asociation in the average hit of Recycler services in volume level. So it is also clear that there is significant growth of average hit of Recycler services observed in volume level of Recycler services.

b) RBO Level

In the case of RBOlevel analysis,a hypothesis is tested by using chi-square test of independence. The stated hypothesis is that there is no significant association in the average hit of Recycler machines and in various RBOs in Kerala. The test result is shown in the following table 6.13.

Table 6.13

RBO Wise Average hit of Recycler Services

RBO	N	Hit2015	Hit2016	Chi-square Value	P- value
TVM	51	3014	3362	83.76466	0.000**
KLM	39	3589	4137		
APA	40	3542	3600		
EKM-1	38	2624	2736		
EKM-2	45	2239	2295		
EKM-3	26	2194	2287		
KTM	29	2701	3101		
PKD	30	1856	2074		
TSR	37	2241	2422		
CLT-1	39	4342	4402		
CLT-2	33	4140	4180		
KNR	29	4140	4590		
SHR	27	39650	42965		

Source: Survey Data **Significant at 5% level

The table 6.13 shows the difference in the growth of average hit of Recycler services in 13 Regional Business Offices of SBI operating in the state of Kerala. Since the p value is less than 0.01& 0, 05, the null hypothesis is rejected. Hence, it is concluded that there is significant association and growth can be observed in RBO level average hit of Recycler services in Kerala.

c) Module level

In Module level the hypothesis is stated as, there is no significant association in the Average hit of Recycler services in Module level. In order to test this hypothesis, chi-square test of independence was used.The result is shown below in Table 6.14.

Table 6.14

Module Wise Average hit of Recycler Services

Module	N	Hit 2015	Hit 2016	Chi-square Value	P- value
Thiruvananthapuram	130	10599	10918	57.61516	0.000**
Ernakulam	138	6798	7597		
Thrissur	94	12622	13172		
Kozhikode	101	39650	42965		
Total	463	9631	11278		

Source:Survey Data **Significant at 5% level

The table 6.14 shows the chi square value as 57.61516 with a significant p value (0.000). Since the p value is less than 0.01 and 0.05 the null hypothesis is rejected. Hence, it is concluded that there is a significant association andgrowth can be seen in the average hit of Recycler services in Module level. So it is clear that growth of average hit of Recycler services and module is dependent or there is significant association between growth and Module level of Recycler services of SBI in Kerala circle.

d) Network level

In the case of network level, the association between average hit of Recycler services and the two networks namely, network-1 and network-2 is assessed by using a hypothesis that, there is no significant association between average hit of Recycler services and network level of SBI in Kerala.For testing the hypothesis, the chi-square test of independence is used and the result is shown in Table 6.15.

Table 6.15

Network Wise Average hit of Recycler Services

Network	N	Hit2015	Hit2016	Chi-square Value	P- value
Network-1	268	20831	22786	19030.57	0.000**
Network-2	195	18819	20179		
Total	463	39650	42965		

Source: Survey Data **Significant at 5% level

The Chi-square test of independence proves that there is significant association in the average hit of Recycler services in network level. This is because, here the result shows the p value is less than 0.01. Hence the null hypothesis is rejected and found thst there is significant growth in the average hit of Recycler services of SBI in network level operating in the state of Kerala.

Section B

6.2 Usage Pattern of Internet and Mobile Banking Services

Internet banking and Mobile banking services are the best cost effective channels of SBI. These services are provided to enhance convenience to the customers and save on cost and time per transaction. The Bank's internet banking solution is a comprehensive product for both retail and corporate users. The Bank's Net Banking Platform 'onlinesbi.com' provides secured and hassle-free on-line banking services to its retail and corporate customers, including PSUs and Government Agencies. www.onlinesbi.com, the Internet banking portal of the bank, enables its retail banking customers to operate their accounts from anywhere, anytime, removing the restrictions imposed by geography and time. It's a platform that

enables the customers to carry out their banking activities from their desktop or mobile, aided by the power and convenience of the Internet. The State Bank is the market leader in mobile banking with a market share of 57% in transaction volume and 17% share in terms of value. The purpose of this section is to identify the growth pattern of internet banking and mobile banking transactions of SBI occurred during the period of 2013 march-2016 March in Kerala.

In the present research work, there is an attempt made to analyse the usage pattern of internet banking and mobile banking services of SBI in Kerala circle. The measurement and comparison of the growth of usage pattern of internet and mobile banking services were spread in 5 elements through the periods of March 2013 to March 2014 and March 2014 to March 2015 and March 2015 to March 2016.

6.2.1 Usage Pattern Variables of I.B & M.B Services

The different variables collected for the analysis of the usage pattern of I.B & M.B services are pointed out in the following table 6.16.

Table 6.16

Variables & Dimensions of Analysis for Internet and & Mobile Banking Services

Internet Banking Variables	Mobile banking Variables	Dimensions of Analysis
1.Registered users 2.Active users 3. Retail counts 4.Corporate counts 5. Log in success counts	1.Registered users 2.No.of Deregistration 3. Net Registration 4. Application based counts 5. Non application based counts	1.Volume 2. RBO 3. Module 4. Network

Source: Survey Data

The various elements for the usage pattern of Internet banking services were registered users, active users, number of retail transactions and number of corporate transactions and log in success count. Among these elements, number of active users is the actual parameter for internet banking cost calculations.

The various elements for the usage pattern of Mobile banking services were Registration, Deregistration, Net registration, Application based transaction and Non application based transactions. Among these variables the number of net registration are the real users of mobile banking services of each branch, which was considered for the mobile banking cost calculation. Therefore, Statistical analysis was made on the basis of Actual users of Internet and Mobile banking services. The Measurement and comparison of Internet and Mobile banking actual users were based on the 4 years data varying from 2013 to 2016. The actual users of internet and Mobile banking services were carried on Volume Level, RBO Level, Module wise and Network Level.

6.2.2 Internet Banking service Variables

The variables used for the usage pattern of Internet banking services are shown in the following table 6.17.

Table 6.17

Usage Pattern Variables of Internet Banking Services

Year	Reg.users	Active users	Retail counts	Corporate counts	Log in success
2013-14	109636	12472	11620667	2562118	16735031
2014-15	123819	15193	17387503	3831284	22535845
2015-16	139933	28043	24975970	5389693	37440680
Total	373388	55708	53984140	11783095	
Average	124463	18569	17994713	3927698	25570518
Percentage	15%		82%	18%	

Source: Survey Data

Table 6.17 reveals the trend of growth of usage pattern variables of Internet banking services. Out of the total registered users of internet banking only 15 % of the people are active users. In the case of total transactions 82 % contributes to retail transactions which mean individual dealings. The balance of 18 % contributes to corporate transactions which mean dealing with firms. The internet banking service facility of State Bank of India can be predicted as a smart one by looking over the

counts of Log in success variable. It reached to more than 2 crores in an average of four years in Kerala circle.

6.2.3 Mobile Banking service variables

The variables used for the evaluation of Mobile banking services are shown in the following table 6.18.

Table 6.18

Usage Pattern Variables of Mobile Banking Services

Year	Registration	Deregistration	Net Registration(Active users)	Application Based counts	Non - application counts
2013-14	35384	9167	26259	15019	11240
2014-15	62546	12744	49802	43407	6395
2015-16	124252	12669	111583	81380	30203
Total	222182	34580	187644	139806	47838
Average	74061	11527	62548	46602	15946
Percentage	85%			75%	25%

Source: Survey Data

Table 6.18 shows the usage pattern variables of Mobile banking services. Out of the total registration of mobile banking services 85 % of the people are active users and the balance of 15 % are not used well and so it becomes deregistered. In the case of total transactions, 75% contributes to application based transactions which mean Mobile banking facility is used by filling application with the banks. The balance of 25% contributes to non application based transactions, which mean, mobile banking facility is used by downloading software or any other mode of application softwares.

6.2.4 Summative Evaluation of Active Users of Internet banking services

The usage pattern of Internet Banking services are based on a number of variables like, registered users, active users, number of retail transactions and number of corporate transactions and log in success count.However, the evaluation of Internet banking service is made on the basis of Active users. The dimensions of the

evaluation of internet banking services are in four levels likeVolume,RBO, Module and network separately.

a) Volume level

In volume level, the stated hypothesis for the evaluation of usage pattern based on active users in internet banking services is shown below:

H0: There is no significant association in the Active users of Internet banking services based on Volume level.Chi-square test is used for testing this hypothesis and the result is shown in the table 6.19.

Table 6.19

Volume Wise Active Users of Internet Banking Services

Volume	N	Users2013	Users2014	Users2015	Users2016	Chi-square Value	P-value
LVB	251	3807	4331	5346	12680	701.2172	0.000**
MVB	199	6178	7272	8783	13573		
HVB	13	683	869	1064	1790		
Total	463	10668	12472	15193	28043		

Source: Survey Data **Significant at 5% level

The table 6.19 shows the chi square value as 701.2172 with a significant p value (0.000). Since the p value is less than 0.05 the null hypothesis is rejected at the 5% level of significance. Hence, it is concluded that there is a significant association in the active users of I.B services based on volume level. So it is also clear that there is significant growth in the active users of I.B services and so active users and volume is dependent or there is significant association between growth and volume level of I.B services.

b) RBO level

The stated hypothesis in RBO level is that,'There is no significant association in the Actual users of Internet banking services based on RBO level'. The dependency of the hypothesis is tested by using Chi-square test of independence and the result is presented in table 6.20.

Table 6.20

RBO Wise Active Users of Internet Banking Services

RBO	N	Hit2013	Hit2014	Hit2015	Hit2016	Chi-square Value	P- value
1TVM	51	1424	1709	1985	3731	359.1038	0.000**
2KLM	39	784	840	1016	2678		
3APA	40	1191	1399	1682	2886		
4EKM-1	38	795	903	1246	2209		
5EKM-2	45	940	942	1380	2317		
6EKM-3	26	587	665	899	1556		
7KTM	29	738	1041	901	1875		
8PKD	30	513	626	651	1510		
9TSR	37	738	1041	901	1875		
10CLT-1	39	799	933	1092	2096		
11CLT-2	33	768	980	1212	2084		
12KNR	29	719	823	1120	1798		
13SHR	27	514	645	650	1098		
	463	10668	12472	15193	28043		

Source: Survey Data **Significant at 5% level

The table 6.20 shows the level of association in the active users of I.B services spread in 13 Regional Business Offices of SBI operating in the state of Kerala. Since the p value is less than 0.05, the null hypothesis is rejected at 5% level of significance. Hence, it is concluded that there is significant association in the active users based on RBO level of I.B services in Kerala.It can also be revealed that there is significant growth in the active users of I.B services based on RBO level and so growth of active users of I.B services and RBO level is dependent and there is significant association between the growth of active users and RBO level of I.B services.

C) Module level

The usage pattern of internet services is mainly based on the variable active users.The relationship of active users of I.B serivces are measured on the basis of four modules like Thiruvananthapuram, Ernakulam Thrissur and Kozhikode. For this,a

hypothesis is stated that'there is no significant association in the actual users of module wise Internet services of SBI in Kerala'.Test result through chi square test of independence are depicted in the following table 6.21.

Table 6.21

Module wise Active Users of Internet Banking Services

Module	N	Users2013	Users2014	Users2015	Users2016	Chi-square Value	P- value
Thiruvananthapuram	130	3399	3948	4683	9295	140.6715	0.000**
Ernakulam	138	3218	3476	4884	8287		
Thrissur	94	1765	2312	2202	4483		
Kozhikode	101	2286	2736	3424	5978		
Total	463	10668	12472	15193	28043		

Source: Survey Data **Significant at 5 % level

The table 6.21 shows the chi square value as 140.6715 with a significant p value (0.000). Since the p value is less than 0.05 the null hypothesis is rejected at 5% level of significance. Hence, it is concluded that there is a significant association in the active users of I.B services on the basis of Module level. So it is clear that growth of active users of I.B services and modulewise classification is dependent or there is significant association between growth and Module level of I.B services of SBI in Kerala circle.

d)Network level

The network wise usage pattern of I.B services are based on the active users in the I.B services of SBI in Kerala. The stated hypothesis for the evaluation of internet banking services based on active users is that, "there is no significant association in the actual users of Internet banking services based on Network level". The stated hypothesis is tested with the help of Chi-square test and the result is shown in table 6.22.

Table 6.22

Network Wise Active Users of Internet Banking Services

Network	N	Users2013	Users2014	Users2015	Users2016	Chi-square Value	P-value
Network-1	268	6617	7424	9567	17582	40.20159	0.000**
Network-2	195	4051	5048	5626	10461		
Total	463	10668	12472	15193	28043		

Source: Survey Data ** Significant at 5% level

The Chi-square test of independence proves that there is significant association in the active users of internet banking services based on network level. This is because, here the result shows the p value is less than 0.05. Hence the null hypothesis is rejected and also found out that there is significant growth in the active users of internet banking services of SBI based on network level in Kerala circle.

6.2.5 Evaluation of Mobilebanking services based on Active users

The various elements for the usage pattern of Mobile banking services were Registration, Deregistration, Net registration, Application based transaction and Non application based transactions. Among these variables the number of net registration are the real users of mobile banking services of each branch, which was considered for the evaluation of mobile banking services. The dimensions for the evaluation of mobile banking services in four levels like Volume, RBO, Module and network separately.

a) **Volume level**

The volume wise evaluation of mobile banking services based on active users were carried on by stating a hypothesis that, there is no significant association in the active users of mobile banking services based on volume level.Chi-square test is used for testing this hypothesis and the result is shown in the table 6.23.

Table 6.23

Volume WiseActive Users of Mobile Banking Services

Volume	N	Users2013	Users2014	Users2015	Users2016	Chi-square Value	P- value
LVB	251	4114	10140	19665	42623	373.9552209	0.000**
MVB	199	4438	14429	25788	58618		
HVB	13	701	1690	4349	10342		
Total	463	9253	26259	49802	111583		

Source: Survey Data **Significant at 5%level

The table 6.23 shows the chi square value as 373.9552209 with a significant p value (0.000). Since the p value is less than 0.05 the null hypothesis is rejected. Hence, it is concluded that there is a significant association in the active users of M.B services based on volume level. So it is clear that growth of active users of M.B services and volume is dependent or there is significant association between growth and volume level of M.B services.

a) RBO level

RBO wise evaluation of mobile banking services based on actual users was carried on through the hypothesis as, 'There is no significant association in the actual users of Mobile anking services on the basis of RBO level.The test result of chisquare test of independence are enlisted in the following table 6.24.

The table 6.24 shows the associaltion in the active users of M.B services in 13 Regional Business Offices of SBI operating in the state of Kerala. Since the p value is less than 0, 05, the null hypothesis is rejected at 5% level of significance. Hence, it is concluded that there is significant difference between growth of active users and RBO level of Mobile banking services in Kerala.

Table 6.24

RBO wise Active Users of Mobile Banking Services

RBO	N	Users2013	Users2014	Users2015	Users2016	Chi-square Value	P- value
TVM	51	1050	3677	8765	19879	325488.8	0.000**
KLM	39	1488	2639	5162	12648		
APA	40	902	3137	6312	11291		
EKM-1	38	352	2984	3322	7257		
EKM-2	45	646	1729	2755	6476		
EKM-3	26	238	457	900	3338		
KTM	29	355	1189	2003	5548		
PKD	30	1166	3027	6804	12309		
TSR	37	529	1234	3453	6709		
CLT-1	39	681	1822	2893	7714		
CLT-2	33	627	1572	2609	7689		
KNR	29	800	1411	2319	4534		
SHR	27	419	1381	2505	6191		
Total	463	9253	26259	49802	111583		

Source: Survey Data **Significant at 5%level

C**) Module level**

The module wise analysis of the usage pattern of Mobile banking services are also based on the active users. The number of active users in the four modules like Thiruvannathapuram, Ernakulam, Thrissur and Kozhikode are shown in the following table 6.25. The analysis is based ona hypothesis that 'There is no significant

association in the active users of Mobile banking services based on Module level. The level of association between active users and four modules were tested through the Chi-square test of Independence and the result of which are shown in the following table 6.25.

Table 6.25

Module Wise Active Users of Mobile Banking Services

Module	N	Users2013	Users 2014	Users2015	Users2016	Chi-square Value	P-value
Thiruvananthapuram	130	3440	9453	20239	43818	904.5882	0.000**
Ernakulam	138	1591	6359	8980	22619		
Thrissur	94	2114	5642	12762	25209		
Kozhikode	101	2108	4805	7821	19937		
Total	463	9253	26259	49802	111583		

Source: Survey Data **Significant at 5% level

The table 6.25 shows the chi square value as 904.5882 with a significant p value (0.000). Since the p value is less than 0.05 the null hypothesis is rejected at the 5% level of significance. Hence, it is concluded that there is a significant association in the active users of Mobile banking services based on Module level.It is also clear that there is significant growth in the active users of M.B services and so active users and module is dependent or there is significant association between growth and Module level of M.B services of SBI in Kerala circle.

d)Network level

The network level usage pattern of Mobile banking services were analysed on the basis of active users. The association of various years of active users on the basis of network level are stated in the following hypothesis that, “There is no significant association in the active users of mobile banking services and network level”. The hypothesis is tested through Chi-square test of Indepenedence and the result is shown in the following table 6.26.

Table 6.26

Network Wise Active Users of Mobile Banking Services

Network	N	Users2013	Users2014	Users2015	Users2016	Chi-square Value	P-value
Network-1	268	5031	15812	29219	66437	37071.05	0.000**
Network-2	195	4222	10447	20583	45146		
Total	463	9253	26259	49802	111583		

Source: Survey Data **Significant at 5% level

Table 6.26 shows that there is significant association in the active users of mobile banking services in network level. As the chi square value is 37071.05 with significant p value less than 0.05 the null hypothesis is rejected at 5% level of significance.The above table reveales that there is significant growth in the active users of Mobile banking services based on the network level. So it is concluded that the growth of active users and network level are dependent or there is significant association between them in Kerala circle.

6.2.6 Hypotheses Testing: Usage Pattern of e-Banking Services

To conclude, the hypotheses formulated and tested in connection with the usage pattern of E-banking services are shown in the precise form in the following table 6.27.

Table 6.27

SummarizedResult of Hypotheses Testing: Usage Pattern of e-Banking Services

S.L No.		Hypotheses	Statistical test	Result
1	A	There is no significant association in the average hit of ATM service in Volume level	Chi-square test of Independence	Rejected
	B	There is no significant association in the average hit of ATM service in RBO level	Chi-square test of Independence	Rejected
	C	There is no significant association in	Chi-square test	Rejected

S.L No.		Hypotheses	Statistical test	Result
		the average hit of ATM service in Module level	of Independence	
	D	There is no significant association in the average hit of ATM service in Network level	Chi-square test of Independence	Rejected
2	A	There is no significant association in the average hit of CDM service in Volume level	Chi-square test of Independence	Rejected
	B	There is no significant association in the average hit of CDM service in RBO level	Chi-square test of Independence	Rejected
	C	There is no significant association in the average hit of CDM service in Module level	Chi-square test of Independence	Rejected
	D	There is no significant association in the average hit of CDM service in Network level	Chi-square test of Independence	Rejected
3	A	There is no significant associationin the average hit of RECYCLER service in Volume level	Chi-square test of Independence	Rejected
	B	There is no significant association in the average hit of RECYCLER service in RBO level	Chi-square test of Independence	Rejected
	C	There is no significant association in the average hit of RECYCLER service in Module level	Chi-square test of Independence	Rejected
	D	There is no significant association in the average hit of RECYCLER service in Network level	Chi-square test of Independence	Rejected
4	A	There is no significant association in the Active users of Internet banking service in Volume level	Chi-square test of Independence	Rejected

S.L No.		Hypotheses	Statistical test	Result
	B	There is no significant association in the Active users of Internet banking service in RBO level	Chi-square test of Independence	Rejected
	C	There is no significant association in the Active users of Internet banking service in Module level	Chi-square test of Independence	Rejected
	D	There is no significant association in the Active users of Internet banking service in Network level	Chi-square test of Independence	Rejected
5	A	There is no significant association in the Active users of Mobile banking service in Volume level	Chi-square test of Independence	Rejected
	B	There is no significant association in the Active users of Mobile banking service in RBO level	Chi-square test of Independence	Rejected
	C	There is no significant association in the Active users of Mobile banking service in Module level	Chi-square test of Independence	Rejected
	D	There is no significant association in the Active users of Mobile banking service in Network level	Chi-square test of Independence	Rejected

The Table 6.27 shows a summary of the hypothesis testing of usage pattern of e- banking services. The table reveals that in case of different levels of comparison there is significant difference can be observed in Volume level, RBO level, Module level and network level.

Thus the analysis of the usage pattern of e-banking services like ATM,CDM,Recycler,Internet banking and Mobile banking in various levels of SBI in Kerala circle is discussed in the present chapter.The work will not be a full fledged one unless an attempt has been made to evaluate the effectriveness of e-banking services with traditional banking services. That has been attempted in the next chapter.

Chapter 7

Comparative Transaction Cost Analysis

Contents **Page No.**

Chapter 7

Comparative Transaction Cost Analysis

In the previous chapters a detailed analysis of cost structure and usage pattern of e-banking services like ATM, CDM, Recycler, Internet and Mobile banking services have been attempted. However, the work will not be complete without the analysis on the effectiveness of e-banking services with the traditional banking services. Therefore the present chapter attempts to fulfill this.

In order to accomplish the objective of measuring the effectiveness of e-banking services with traditional banking, a comparison has been attempted based on the transaction cost. The statistical tools like Mean, Standard deviation, Kruskal Wallis test, Mann Whitney U test, Wilcoxon signed Rank test and Simple linear regression coefficients have been used for analysis purposes. The chapter also introduces a research model, in which the functional relationship of e-banking services with traditional banking services is measured.Regression coefficients have been used for fixing the research model. SPSS 22 and MiniTab 14 are used for the analysis.

For the purpose of discussion, the chapter is divided into five sections. Section A deals with the Traditional banking services. Section B deals with e- banking services, Section C Total cost, Section D is concerned with the comparative cost analysis and Section E is that of ABC in Banking Industry.

Section A

7.1Transaction Cost Analysis of Traditional Banking Services

The current section tries to attempt the variation in transaction cost of traditional banking services in four levels such as, Volume, RBO, Module, and Network levels of SBI operating in Kerala circle.

Before entering into the analysis based on objectives it is quite relevant to examine the methodology adopted for calculating the transaction cost of Traditional banking services of SBI in Kerala. It has been presented below:-

7.1.1 Traditional banking service cost elements, variables and dimensions of analysis

The cost of traditional banking services of SBI in Kerala is computed for four years from 2013 to 2016. The Table 7.1shows the cost elements, variables and dimensions of analysis for the computation of the transaction cost of traditional banking services.

Table 7.1

Classification of Cost Elements, Variables and Dimensions of Analysis of Traditional Banking Services

Cost elements	Variables	Dimensions of analysis
1.Staff wages 2.Electricity 3.Telephone 4.Rent & Tax 5. Stationary 6.Repairs&Maintenance	1. Bifurcated total cost 2.Number of Depository Transactions	1.Volume (LVB, MVB, HVB) 2.RBO 3.Module 4. Network

Source: Survey Data

From the Table 7.1, it is clear that the cost elements taken for computing transaction cost of traditional banking services were staff wages, electricity, telephone, rent/tax, stationary and repairs/maintenance. The total of these operations cost is to be bifurcated on the basis of energy utilization of employees. Because all types of banking transactions were not considered in this study, only depository transactions have been considered for computation purpose. This bifurcation was done in the proportion of 60:40. The total number of transactions was also bifurcated on the basis of deposits and advances in the 2/3rd measurement. Therefore, Cost per Transaction = (Bifurcated Operation Cost)/ (Bifurcated Total number of Transactions).

In banking terminology, the transaction cost of traditional banking activity is known as footfall. All India Level SBI rate of footfall is Rs.45/-. Generally it may vary from Rs.40/- to Rs.60/-.

7.1.2 Volume Wise Analysis of Traditional Banking Services

Volume wise classification of SBI branches in Kerala circle are classified in to three broad categories, viz, Low Volume Branches (LVB), Medium Volume Branches (MVB), and High Volume Branches (HVB).

Statistical tests are used to test whether the transaction cost of traditional banking services differs among various categories like Volume, RBO, Module and Network. The data were summarized using Number, mean and Standard deviation. The central value of cost is inferred using mean and the dispersion from these central values are quantified in Standard deviation. Since there is much variation in four years, the average transaction cost is also computed.

The Mean and standard deviation of transaction cost of traditional banking services is given in the following table 7.2.

Table 7.2

Volume WiseDiscriptive StatisticsofTransaction Cost of Traditional Banking Services

Type	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
LVB	251	51.6255	7.18966	47.1076	6.62785	43.5498	7.02343	39.0558	6.70559	45.3388	6.50201
MVB	199	48.2764	8.44226	46.4121	8.68943	44.3367	8.81586	43.2864	9.50191	45.5937	8.54140
HVB	13	94.0000	25.60273	90.3846	28.59935	82.6923	27.58437	80.6923	25.19056	86.8833	26.14168
Total	463	51.3758	11.43839	48.0238	11.37731	44.9870	11.00334	42.0432	11.27184	46.6149	10.90208

Source: Survey Data

Table 7.2 reveals that Mean transaction cost of traditional banking services is higher in HVBs than that of LVBs and MVBs. Mean transaction cost is smaller in LVBs in an average of four years. The table also proves that transaction cost shows a reduced trend from 2013 to 2016.

In order to test whether the given data is normally distributed, Kolmogorov Smirnov test is conducted; the results are given in table 7.3 below.

Table 7.3

Result of Normality Test of Transaction Cost of Traditional Banking Services

Period	Skewness	Kurtosis	Kolmogorov Smirnov Test Statistic	P-value
2013	2.733	16.695	3.124	.000
2014	3.100	19.172	3.247	.000
2015	2.763	18.061	2.848	.000
2016	2.406	13.280	2.707	.000

Source: Survey Data

The test reveals that none of the variables are Normal (p-value<0.05). Hencenon-parametric test is used for checking the variation of cost of transaction in different catagories.

Kruskal Wallis test is used to test the hypothesis, 'There is no significant difference in the Transaction cost of traditional banking services in Volume level' and the result is presented in Table 7.4.

Table 7.4

Kruskal Wallis Test for the Volume wise Transaction Cost of Traditional Banking Services

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	56.253	.000**	Reject
2014	29.663	.000**	Reject
2015	30.320	.000**	Reject
2016	56.521	.000**	Reject
Average	30.977	.000**	Reject

Source: Survey Data **significant at 5 % level

The test reveals that there is significant difference in the transaction cost of traditional banking services with regard to volume level in 2013, 2014, 2015 and

2016. As the p value is less than 0.05 rejecting hypothesis in these four years and in an average of four years.

7.1.3 RBO wise Analysis of Traditional Banking Services

In the case of RBO wise classification, SBI branches in Kerala circle are classified into 13 groups. The Mean and S.D of transaction cost of Traditional banking services in RBO level is given in the following table 7.5.

Table 7.5

RBO wise Descriptive Statistics of Transaction Cost of Traditional Banking Services

Name of RBO	No.of branches	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	51	50.15825	13.8552948	47.13853	13.6230604	43.81520	12.6720931	39.84375	11.3392052	45.23893	12.6094743
KLM	39	52.85821	8.2038714	48.66220	7.3850765	44.26945	7.0548778	40.10642	7.3776975	46.47407	6.9452133
ALP	40	45.91347	8.6614895	43.18152	8.7451964	40.69756	8.8299338	38.71112	9.0849838	42.12592	8.5070485
KTM	29	50.79737	11.5863789	47.79258	11.3823683	45.55035	10.1775048	42.30917	10.3154493	46.61237	10.6086247
EKM1	38	51.60586	10.2359413	47.50975	9.7204683	44.99651	8.7394164	41.75103	9.3679311	46.46579	8.8845209
EKM2	45	53.51817	6.4004220	49.11510	5.9293091	47.16639	6.8014855	43.07977	6.8393685	48.21986	5.9388644
EKM3	26	51.57282	6.7313558	48.33396	6.4702001	46.02650	6.1810920	42.72036	6.6582574	47.16341	6.1255731
TSR	37	52.90802	13.0629382	50.21242	15.2936692	47.77020	16.8359783	44.93575	16.4021093	48.95660	15.2465837
SHR	27	47.13411	8.3365093	43.51364	7.6647357	39.94429	8.1069948	38.04656	8.6759393	42.15965	7.9663984
PKD	30	51.09911	10.6690150	47.96809	11.1679567	43.29514	9.4704807	41.32293	12.7294192	45.92132	10.8458107
CLT-1	39	54.57905	16.6172858	51.47892	16.1404262	48.30433	14.6351568	45.74152	13.8907776	50.02596	15.0645584
CLT2	33	53.98521	11.2378551	51.31179	10.6512387	47.77947	10.1653533	45.30305	12.1346725	4959488	10.2944190
KNR	29	50.88375	15.0116780	47.83953	14.8129417	44.15616	13.8485318	43.15407	15.3783825	46.50838	14.5086260
Total	463	51.38106	11.4423766	48.05303	11.3757752	44.97833	10.9771862	42.04703	11.2600075	46.61486	10.9020805

Source: Survey Data

The table 7.5 makes clear that highest mean percent of transactions are in Calicut-1 RBO and lowest in Shornur RBO in an average of four years.

The hypothesis, 'There is no significant difference in the Transaction cost of traditional banking services in RBO level' is tested with Kruskal Wallis test and the result is presented in Table 7.6.

Table 7.6

Kruskal Wallis Test for the RBO wiseTransaction Cost of Traditional Banking Services

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	38.981	0.000**	Reject
2014	33.682	0.001**	Reject
2015	37.701	0.000**	Reject
2016	25.186	0.014**	Reject
Average	33.945	0.001**	Reject

Source: Survey Data **Significant at 5 % level

As the p value is less than 0.05, hypothesis is rejected in all the years and in an average of four years. Thus it is concluded that there is significant difference in the transaction cost of traditional banking services in RBO level.

7.1.4 Module wise Analysis of Traditional banking services

In the case of module wise classification, SBI branches in Kerala circle are classified into four broad categories, viz. Thiruvananthapuram, Ernakulum, Thrissur and Calicut.

The Mean and standard deviation of transaction cost of Traditional banking services in Module level is given in the following table 7.7.

Table 7.7

ModuleWise Descriptive Statistics ofTransaction Cost of Traditional Banking Services

Module	N	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	130	50.4846	11.00827	47.1000	10.52266	43.5692	9.87043	40.0308	9.20308	45.3130	9.74058
EKM	138	52.7609	8.42100	48.8768	7.91787	46.8043	7.30549	43.1739	7.64248	47.9080	7.30188
TSR	94	49.0213	11.44973	45.9255	12.72136	42.7234	13.13241	40.4362	13.96890	44.5362	12.66265
CLT	101	52.8218	14.76712	50.0000	14.44299	46.4356	13.64069	44.5842	14.15151	48.4582	13.87622
Total	463	51.3758	11.43839	48.0238	11.37731	44.9870	11.00334	42.0432	11.27184	46.6149	10.90208

Source: Survey Data

Table 7.7 reveals that highest mean value in an Average of four years and in individual years stood at Kozhikode Module. Similarly Lowest mean value stood at Thrissur module in almost all the individual years and in a span of four years. The nature of mean value is reduced in manner after each individual year in all the regions/modules.

Kruskal Wallis test is used to test the hypothesis, 'There is no significant difference in the Transaction cost of traditional banking services in Module level'and the result is presented in Table 7.8.

Table 7.8

Kruskal Wallis Test for the Transaction Cost of Traditional Banking Services in Module level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	21.498	0.000**	Reject
2014	17.212	0.001**	Reject
2015	27.468	0.000**	Reject
2016	20.424	0.000**	Reject
Average	21.147	0.000**	Reject

Source: Survey Data **Significant at 5 % level

The test reveals that there is significant difference in the transaction cost of traditional banking services with regard to Module level in 2013, 2014, 2015 and 2016. As the p value is less than 0.05 in all the years, the hypothesis is rejected.

7.1.5 Network Wise Analysis of Traditional Banking Services

For the Network analysis, the entire branches of SBI are grouped into two categories Network1 and Network 2. Network1 includes Thiruvananthapuram module to Ernakulum module and Network 2 includes Thrissur module to Calicut module.

The Mean and standard deviation of transaction cost of Traditional services in Network level is given in the following table 7.9.

Table 7.9

Network wise Descriptive Statisticsof Transaction Cost of Traditional Banking Services

Network	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Network-1	269	51.6567	9.80988	48.0149	9.29821	45.2351	8.77949	41.6493	8.56546	46.6492	8.65370
Network2	194	50.9897	13.3746	48.0359	13.75761	44.6462	13.4928	42.5846	14.18060	46.5676	13.4159
Total	463	51.3758	11.4389	48.0238	11.37731	44.9870	11.0034	42.0432	11.27184	46.6149	10.9028

Source: Survey Data

The Table 7.9 reveals that Mean value is highest in Network-1 in an average of four years than in network-2.

To test the hypothesis, ‘There is no significant difference in the Transaction cost of Traditional banking services in Network level’Kruskal Wallis test is used and the result is presented in Table 7.10.

Table 7.10

Mann Whitney U Test for theTransaction Cost of Traditional Banking in Network level

Period	Mann whitney u	Wilcoxon W	Z	p-value	Decision
2013	25747.000	44857.000	-.269	.788	Accept
2014	25283.000	61329.000	-.596	.551	Accept
2015	2.5944.000	45054.000	-.135	.893	Accept
2016	24191.000	60237.000	-1.364	.173	Accept
Average	25564.000	61604.000	-.403	.687	Accept

Source: Survey Data

Table 7.10 points out that p value is more than 0.05 inall the individual years and in an average of four years. Thereforehypothesis is accepted in all the years. As the p value is more than 0.05 in an average of four years, it is concluded that there is no significant difference in the transaction cost of traditional banking services in network level.

To sum up, the hypotheses formulated and tested by using various statistical tests are shown in the precise form in the Table 7.11.

Table 7.11

Summarised Result of Hypotheses Testing-Traditional Banking Services

Sl.No	Hypothesis	Statistical test	Result
1	There is no significant difference in the transaction cost of Traditional banking services in Volume level	Kruskal wallis test	Rejected
2	There is no significant difference in the transaction cost Traditional banking services in RBO level	Kruskal wallis test	Rejected
3	There is no significant difference in the transaction cost of Traditional banking services in Module level	Kruskal wallis test	Rejected
4	There is no significant difference in the transaction cost of Traditional banking services in Network level	Mann whitney U test Wilcoxon& Z	Accepted

From the analysis, the researcher comes to a conclusion that there is significant difference in the Traditional banking services in Volume level, RBO level and Module level. But there is no significant difference in Network level.

Section B

7.2Transaction Cost Analysis of Electronic Banking Services

The current section tries to examine the variation in transaction cost of electronic banking services like ATM, Internet banking and mobile banking services in four levels such as, Volume, RBO, Module, and Network levels of SBI operating in Kerala circle.CDM & Recycler machines were not distributed in all the branches during the study period. Therefore it is not included in the total e-banking services analysis. However, the average transaction cost analysis of CDM, & Recycler services has been done individually in the previous chapter 4 of the cost structure analysis.

The transaction cost analysis of e-banking services in various levels of SBI in Kerala circle are as follows:-

7.2.1 Volume Level

Volume wise classification of SBI branches in Kerala circle are classified in to three broad categories, viz, Low Volume Branches (LVB), Medium Volume Branches (MVB), and High Volume Branches (HVB).

The statistical tests are used to test whether the transaction cost of e- banking services is different among various categories like Volume, RBO, Module and Network. The data summarized using Number, mean and Standard deviation. The central value of cost is inferred using mean and the dispersion from these central values are quantified in Standard deviation. Since there is much variation in four years, the average transaction cost is also computed.

The mean and standard deviation of transaction cost of e-banking services is given in the following table 7.12.

Table 7.12

Volume wise Descriptive Statistics of Transaction Cost of e-Banking Services

Type	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
LVB	251	7.959752	2.0581034	6.985082	1.5244177	6.867003	2.6738655	6.763420	2.7707346	2.381271	.6065207
MVB	199	7.819437	2.0169106	8.090029	2.5930560	8.209986	3.5327168	8.393640	4.3262048	2.709424	.8429293
HVB	13	8.722544	2.1429871	9.429349	2.7830161	1.235093	6.9037102	1.413092	8.4355861	3.719479	1.4669014
Total	463	7.920861	2.0440430	7.528624	2.1767589	7.598201	3.3974496	7.670961	3.9837590	2.559887	.7901060

Source: Survey Data

Table 7.12 reveals that, Average mean transaction cost of e- banking services is larger in HVBs (3.719479) than that of MVBs (2.709424) andLVBs (2.381271).Average mean transaction cost is smaller in LVBs in almost all individual years and four years span of time. The table also proves that transaction cost shows a reduced trend from 2013 to 2016.

Kruskal Wallis test was used to test the hypothesis, 'There is no significant difference in the Transaction cost of e- banking services in Volume level'and the result is presented in Table 7.13.

Table 7.13

Kruskal Wallis Test for the Transaction Cost of e-Banking Services in Volume Level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	3.341	.188	Accept
2014	40.851	.000**	Reject
2015	52.745	.000**	Reject
2016	58.087	.000**	Reject
Average	42.640	.000**	Reject

Source: Survey Data ** Significant at 5 % level

The test reveals that there is significant difference in the transaction cost of e-banking services with regard to volume level except in 2013. As the p value is less than 0.05 hypotheses is rejected in these three years and in an average of four years.

7.2.2 RBO level

In the case of RBO wise classification, SBI branches in Kerala circle are classified into 13 groups. The mean and std.dev of transaction cost of e- banking services in RBO level is given in the following table 7.14

Table 7.14

RBO wise Descriptive Statistics of Transaction cost of e- Banking Services

Name of RBO	No.of branches	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	51	8.257953	2.1514419	8.188596	3.4165196	9.071783	5.8817396	9.296832	7.7268315	2.901264	1.4068210
KLM	39	8.79800	2.5579168	7.680327	1.5337027	7.963674	2.3966540	8.614427	4.0971895	2.754703	.7007006
ALP	40	7.923761	1.9903337	8.172709	2.1081511	8.783133	3.6444131	8.118163	3.3230689	2.749814	.7507722
KTM	29	7.496228	1.3262122	7.003351	1.6819345	6.854751	1.4955064	7.189976	2.0911831	2.378692E0	.4503129
EKM1	38	7.372918	2.1215104	8.201254	3.5917124	7.13017	3.1082654	7.174474	3.4566674	2.489902	.8440939
EKM2	45	8.206801	2.1213261	7.039559	1.5952491	6.640973	1.7038197	6.511700	2.5026506	2.366586	.5561315
EKM3	26	7.166864	1.4813184	6.277613	1.0488779	5.977316	1.1250061	6.268899	2.9920703	2.140891	.4434019
TSR	37	8.154928	2.2085012	7.213172	1.0873042	7.396208	2.4365413	7.122630	2.1171305	2.490578	.4241525
SHR	27	8.018717	2.7418352	7.499504	1.6528165	7.263780	1.8911400	7.487691	2.8308961	2.522474	.4581051
PKD	30	8.324332	2.2190316	8.570715	2.1696452	9.990049	6.3295468	9.540878	4.5003810	3.035498	1.1023407
CLT-1	39	7.026461	1.2747806	7.027526	1.5475418	6.821285	1.5455467	7.195091	3.5915233	2.339197	.5310439
CLT2	33	7.873313	1.5838712	7.21477	1.4599940	7.021145	1.4290908	7.624623	2.3823186	2.477822	.4451345
KNR	29	7.978864	1.5141490	7.182492	1.5506066	6.985274	2.2247798	6.724678	2.1351731	2.405942	.5325027
Total	463	7.920861	2.0440430	7.528624	2.1767589	7.598201	3.3974496	7.670961	3.9837590	2.559887	.7901060

Source: Survey Data

The table 7.14 makes clear that highest mean percent of transactions are in Palakkad RBO (3.035498) and lowest in EKM-3 RBO (2.140891) in an average of four years.

To test the hypothesis, ‘There is no significant difference in the Transaction cost of e- banking services in RBO level’ Kruskal Wallis test is used and the result is presented in Table 7.15.

Table 7.15

Kruskal Wallis Test for theTransaction Cost of e- Banking Services in RBO Level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	28.461	0.005**	Reject
2014	39.811	0.000**	Reject
2015	48.266	0.000**	Reject
2016	48.332	0.000**	Reject
Average	46.481	0.000**	Reject

Source: Survey Data ** Significant at 5 % level

As the p value is less than 0.05, hypothesis is rejected in all the years and in a period of four years. Hence it is concluded that, it was concluded that, there is significant difference in the transaction cost of e- banking services in RBO level.

7.2.3 Module Level

In the case of module wise classification, SBI branches in Kerala circle are classified in to four broad categories, viz. Thiruvananthapuram, Ernakulam, Thrissur and Calicut.

The mean and standard deviation of transaction cost of e-banking services in Module level is given in the following table 7.16.

Table 7.16

Module WiseDescriptive Statistics ofTransaction Cost of e-Banking Services

Module	N	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TVM	130	8.317140	2.2446302	8.031227	2.5717745	8.650535	4.3971043	8.729443	5.6277623	2.810695	1.0428276
EKM	138	7.631927	1.8954695	7.208282	2.3529545	6.695568	2.0943515	6.790994	2.8138593	2.360564	.6188359
TSR	94	8.170030	2.3551758	7.734218	1.7482018	8.194484	4.1776504	8.008696	3.3921452	2.675619	.7571674
CLT	101	7.579526	1.5031998	7.134002	1.5070879	6.934530	1.7165099	7.204524	2.8455024	2.404382	.5029013
Total	463	7.920861	2.0440430	7.528624	2.1767589	7.598201	3.3974496	7.670961	3.9837590	2.559887	.7901060

Source: Survey Data

Table 7.16 reveals that highest mean value in an Average of four years stood at Thiruvananthapuram Module. Similarly Lowest mean value stood at Ernakulam module in an average of four years.

Kruskal Wallis test was used to test the hypothesis, 'There is no significant difference in the Transaction cost of e- banking services in Module level' and the result is presented in Table 7.17.

Table 7.17

Kruskal Wallis Test for theTransaction Cost of e-Banking Services in Module Level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	9.728	.021**	Reject
2014	24.808	.000**	Reject
2015	35.851	.000**	Reject
2016	29.717	.000**	Reject
Average	35.301	.000**	Reject

Source: Survey Data ** Significant at 5 % level

The test reveals that there is significant difference in the transaction cost of traditional banking services with regard to Module level in 2013, 2014, 2015 and 2016. As the p value is less than 0.05 in all the years, hypothesis is rejected.

7.2.4 Network level

For the Network analysis the entire branches of SBI are grouped in to made ttwo categories viz: Network1 and Network2. Network1 includes Thiruvananthapuram module to Ernakulum module and Network2 includes Thrissur module to Kozhikode module.

The mean and standard deviation of transaction cost of e-banking services in Network level is given in the following table 7.18.

Table 7.18

Network Wise Descriptive Statistics of Transaction Cost of e- Banking Services

Network	Number	Transaction cost of 2013		Transaction cost of 2014		Transaction cost of 2015		Transaction cost of 2016		Average Transaction cost	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Network-1	269	7.96430	2.0965398	7.607472	2.4912053	7.643873	3.5426333	7.731287	4.5063099	2.578912	.8790416
Network2	194	7.861151	1.9733974	7.420259	1.6498972	7.535431	3.1950883	7.588052	3.1359703	2.533741	.6496096
Total	463	7.920861	2.0440430	7.528624	2.1767589	7.598201	3.3974496	7.670961	3.9837590	2.559887	.7901060

Source: Survey Data

The Table 7.18 reveals that Mean value is highest in Network-1(2.578912) than in network-2 (2.533741).

Kruskal Wallis test was used to test the hypothesis, 'There is no significant difference in the Transaction cost of e- banking services in Network level' and the result is presented in Table 7.19.

Table 7.19

Kruskal Wallis Test for theTransaction Cost of e- Banking Services in Network Level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	.023	.878	Accept
2014	.000	.985	Accept
2015	.238	.626	Accept
2016	1.355	.244	Accept
Average	.186	.666	Accept

Source: Survey Data

Table 7.19 points out that, p value is greater than 0.05 in all the individual years and in an average of four years. Therefore, the hypothesis is accepted in all the years.

As the p value is more than 0.05 in all the individual years and in an average of four years, it is concluded that there is no significant difference in the transaction cost of e- banking services in network level.

To sum up, the hypotheses formulated and tested by using various statistical tests are shown in the precise form in the Table 7.20.

Table 7.20

Summarised Result of Hypotheses Testing-e-Banking Services

Sl.No	Hypotheses	Statistical test	Result
1	There is no significant difference in the transaction cost of e-banking services in Volume level	Kruskal Wallis test	Rejected
2	There is no significant difference in the transaction cost e-banking services in RBO level	Kruskal Wallis test	Rejected
3	There is no significant difference in the transaction cost of e-banking services in Module level	Kruskal Wallis test	Rejected
4	There is no significant difference in the transaction cost of e-banking services in Network level	Kruskal Wallis test	Accepted

From the analysis, the researcher comes to a conclusion that there is significant difference in the transaction cost of Traditional banking services in Volume level, RBO level and Module level. But there is no significant difference seen in Network level.

Section C

7.3 Transaction Cost Analysis of Traditional and e-Banking Services

This section tries to analyse the transaction costs of traditional and electronic banking services in four levels such as, Volume, RBO, Module, and Network levels of SBI operating in Kerala circle.

The transaction cost analysis of Traditional and e-banking services in various levels of SBI in kerala circle are as follows:-

7.3.1 Volume level

In the case of volume wise classification of SBI branches in Kerala circle are classified in to three broad categories, viz, Low Volume Branches (LVB), Medium Volume Branches (MVB), and High Volume Branches (HVB).

In order to test whether the transaction cost of traditional and e- banking services in total is significantly differ among various categories like Volume, RBO, Module and Network, the statistical tests are used. The data is summarized by usingnumber, mean and standard deviation. The central value of cost is inferred using mean and the dispersion from these central values are quantified in standard deviation. Since there is much variation in four years, the average transaction cost is also computed.

The mean and standard deviation of transaction cost of traditional and e-banking services is given in the following table 7.21.

Table 7.21 reveals that, Mean transaction cost of total banking services is larger in HVBs (90.60278) than MVBs (48.27119) and LVBs (47.74544). Besides, the Mean transaction cost of traditional banking services (86.8833) and e-banking services (3.719479) is also highest in HVBs. Similarly, Mean transaction cost of total banking services is smaller in LVBs (47.74544) than MVBs (48.27119) and HVBs (90.60278). At the same time, Mean transaction cost of LVBs is smaller in traditional services (45.3388), e-banking services (2.381271) and in total banking services (47.74544). Hence, it is concluded that LVBs are the most cost effective branches in volume wise analysis of transaction cost of traditional services.

Table 7.21

VolumeWise Descriptive Statistics of Transaction Cost of Traditional & e-Banking Services

Type	Number	Average Transaction cost of Traditional services		Average Transaction cost of e-banking services		Average Transaction cost in total	
		Mean	SD	Mean	SD	Mean	SD
LVB	251	45.3388	6.50201	2.381271	.6065207	47.74544	6.4601956
MVB	199	45.5937	8.54140	2.709424	.8429293	48.27119	8.7153016
HVB	13	86.8833	26.14168	3.719479	1.4669014	90.60278	26.9101623
Total	463	46.6149	10.90208	2.559887	.7901060	49.17475	11.1220798

Source: Survey Data

To test whether the given data is normally distributed, Kolmogorov Smirnov test is conducted; the results are given below in table 7.22.

Table 7.22

Result of Normality Test of Transaction Cost of Traditional and e- Banking services in Volume Level

Period	Skewness	Kurtosis	Kolmogorov Smirnov Test Statistic	P-value
2013	2.694	15.799	2.874	0.000
2014	3.182	19.346	2.995	0.000
2015	2.933	17.688	2.993	0.000
2016	2.551	12.222	2.607	0.000
Average	2.976	18.026	2.892	0.000

Source: Survey Data

The test reveals that none of the variables are Normal (p-value<0.05). So that non-parametric test is used for checking the variation of cost of transaction in different catagories.

Kruskal Wallis test was used to verify the hypothesis, 'There is no significant difference in the Transaction cost of traditional & e- banking services in Volume level'and the result is presented in Table 7.23.

Table 7.23

Kruskal Wallis Testfor the Transaction Cost of Traditional & e-Banking Services in Volume Level

Period &Type	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	50.095	.000**	Reject
2014	28.111	.000**	Reject
2015	34.010	.000**	Reject
2016	63.627	.000**	Reject
Average	31.593	.000**	Reject
Traditional services	30.977	.000**	Reject
E-banking services	42.640	.000**	Reject

Source: Survey Data **Significant at 5% level

The test reveals that there is significant variation in the transaction cost of total banking including traditional banking services and e-banking services with regard to volume level in 2013, 2014, 2015 and 2016. As the p value is less than 0.05 hypothesis is rejected in these four years and in an average of four years.

7.3.2 RBO level

In the case of RBO wise classification, SBI branches in Kerala circle are classified into 13 groups. The mean and standard deviation of transaction cost of traditional & e- banking services in RBO level is given in the following table 7.24.

Table 7.24

RBO wise Descriptive Statistics of Transaction cost of Traditional &e- banking Services

Name of RBO	No.of branches	Average Transaction cost of Traditional services		Average Transaction cost of e-banking services		Average Transaction cost in total	
		Mean	SD	Mean	SD	Mean	SD
TVM	51	45.23893	12.6094743	2.901264	1.4068210	48.14020	13.3044353
KLM	39	46.47407	6.9452133	2.754703	.7007006	49.22877	6.8056760
ALP	40	42.12592	8.5070485	2.749814	.7507722	44.87573	8.7626561
KTM	29	46.61237	10.6086247	2.378692	.4503129	48.99106	10.7716705
EKM1	38	46.46579	8.8845209	2.489902	.8440939	48.95569	9.1468753
EKM2	45	48.21986	5.9388644	2.366586	.5561315	50.58645	6.1218928
EKM3	26	47.16341	6.1255731	2.140891	.4434019	49.30430	6.1901572
TSR	37	48.95660	15.2465837	2.490578	.4241525	51.44718	15.3993170
SHR	27	42.15965	7.9663984	2.522474	.4581051	44.68213	8.1388358
PKD	30	45.92132	10.8458107	3.035498	1.1023407	48.95682	11.0749037
CLT-1	39	50.02596	15.0645584	2.339197	.5310439	52.36515	15.3900911
CLT2	33	4959488	10.2944190	2.477822	.4451345	52.07270	10.3896209
KNR	29	46.50838	14.5086260	2.405942	.5325027	48.91432	14.8178516
Total	463	46.61486	10.9020805	2.559887	.7901060	49.17475	11.1220798

Source: Survey Data

The table 7.24 makes it clear that highest mean value ofTotal transactions are in Calicut-1 RBO, followed by Calicut-2 RBO (52.07270) and lowest in Shornur RBO (44.68213). But in the case of e-banking services mean transaction cost is higher in PKD RBO (3.035498) and lowest in EKM-3 RBO (2.140891). However, the mean transaction cost of traditional banking services, is higher in CLT-1 RBO (50.02596) and lower mean value (42.12592) in Alappuzha RBO.

With an aim to test the hypothesis, 'There is no significant difference in the Transaction cost of Traditional & e- banking services in RBO level'Kruskal Wallis test was used and the result is presented in Table 7.25.

Table 7.25

Kruskal Wallis Test for the Transaction Cost of Traditional &e- Banking Services in RBO level

Period	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	38.731	.000**	Reject
2014	25.511	.013**	Reject
2015	23.250	.026**	Reject
2016	13.329	.346	Accept
Average	30.257	.003**	Reject
Traditional services	33.945	.000**	Reject
E-banking services	46.481	.000**	Reject

Source: Survey Data Significant at 5 % level

As the p value is less than 0.05, the hypothesis is rejected in all the years, except in 2016. As the P value is less than 0.05 in an average of four years, it is concluded that, there is significant difference in the transaction cost of traditional banking & e-baning services in RBO level.

7.3.3 Module Level

In the case of module wise classification, SBI branches in Kerala circle are classified into four broad categories, viz. Thiruvananthapuram, Ernakulam, Thrissur and Calicut.

The mean and standard deviation of transaction cost of Traditional & e-banking services in Module level is given in the following table 7.26.

Table 7.26

Module WiseDescriptive Statistics ofTransaction Cost of Traditional & e-Banking Services

Module	N	Average Transaction cost of Traditional services		Average Transaction cost of e-banking services		Average Transaction cost in total	
		Mean	SD	Mean	SD	Mean	SD
TVM	130	45.3130	9.74058	2.810695	1.0428276	47.46232	10.4242499
EKM	138	47.9080	7.30188	2.360564	.6188359	49.56057	8.1158429
TSR	94	44.5362	12.66265	2.675619	.7571674	48.67979	12.4623665
CLT	101	48.4582	13.87622	2.404382	.5029013	51.28655	13.6940227
Total	463	46.6149	10.90208	2.559887	.7901060	49.17475	11.1220798

Source: Survey Data

Table 7.26 reveals that highest mean value in total banking services(51.28655) at Calicut Module and Lowest mean value (47.46232) at Thiruvananthapuram module. In the case of e-Banking services highest mean transaction cost(2.810695) is in TVM module and lowest in EKM module. The table also makes it clear that, the highest mean transaction cost of traditional services is in Calicut module (48.4582) and lowest (44.5362) is in Thrissur module.

Kruskal Wallis test was used to test the hypothesis, ‘There is no significant difference in the Transaction cost of Traditional & e- Banking services in Module level’and the result is presented in Table 7.27

Table 7.27

Kruskal Wallis Test for the Transaction Cost of Traditional & e-Banking services in Module level

Year	Chi-square Value (Kruskal Wallis)	p-value	Decision
2013	5.095	.165	Accept
2014	3.492	.322	Accept
2015	4.919	.178	Accept
2016	5.122	.163	Accept
Average in total services	8.732	.033**	Reject
Traditional services	21.147	.000**	Reject
E-banking services	35.301	.000**	Reject

Source: Survey Data Significant at 5 % level

Table 7.27 shows that, there is no significant difference in the module wise transaction cost of total banking services in individual years like 2013, 2014, 2015 and 2016. But in an average of four years,p value is less than 0.05,in total banking services and traditional & e-banking services separately, then rejecting the null hypothesis and concludes that, there is significant difference in the transaction cost of traditional & e-banking services of SBI in Kerala.

7.3.4 Network level

For the Network analysis the entire branches of SBI are made to fall into two categories network1 and network 2.Network1 includes Thiruvananthapuram module to Ernakulum module and Network2 includes Thrissur module to Kozhikode module.

The mean and standard deviation of transaction cost of Traditional & e-banking services in Network level is given in the following table 7.28.

Table 7.28

Network wise Descriptive Statistics of Transaction Cost of Traditional & e-Banking Services

Network	Number	AverageTransaction cost of Traditional services		Average Transaction cost of e-banking services		Average Transaction cost in total	
		Mean	SD	Mean	SD	Mean	SD
Network-1	269	46.6492	8.65370	2.578912	.8790416	48.54276	9.3488898
Network2	194	46.5676	13.41559	2.533741	.6496096	50.04332	13.1524146
Total	463	46.6149	10.90208	2.559887	.7901060	49.17475	11.1220798

Source: Survey Data

The Table 7.28 reveals that Mean value is highest in Network-2 in an average of four years than in network-1.

Mann Whitney U test was used to test the hypothesis, There is no significant difference in the Transaction cost of traditional&e- banking services in Network level and the result is presented in Table 7.29

Table 7.29

Mann Whitney U Test for theTransaction Cost of Traditional & e- banking Services in Network Level

Year	Mann whitney U	Wilcoxon W	Z	p-value	Decision
2013	25622.000	44732.000	-.357	.721	Accept
2014	25522.000	61568.000	-.428	.669	Accept
2015	25747.000	44857.000	-.269	.788	Accept
2016	24289.000	60335.000	-1.295	.195	Accept
Average in total banking services	25601.000	61647.000	-.372	.710	Accept
Traditional services	25564.000	61604.000	-.403	.687	Accept
E-banking services	25524.000	61564.000	-.431	.666	Accept

Source: Survey Data

Table 7.29 pointed out that,p value is greater than 0.05 in total banking services and traditional & e-banking services separately. Therefore, it is concluded that there is no significant difference in the transaction cost of total banking services, traditional banking & e-banking services in network level.

To sum up, the hypothesis formulated and tested by using various statistical tests are shown in the precise form in the Table 7.30.

Table 7.30

Summarized Result of Hypothesis Testing

Sl.No	Hypothesis	Statistical test	Result
1	There is no significant difference in the transaction cost of Traditional& e-banking services in Volume level	Kruskal wallis test	Rejected
2	There is no significant difference in the transaction cost of traditional& e-banking services in RBO level	Kruskal wallis test	Rejected
3	There is no significant difference in the transaction cost oftraditional & e-banking services in Module level	Kruskal wallis test	Rejected
4	There is no significant difference in the transaction cost of Traditional &e-banking services in Network level	Mann whitney U test Wilcoxon& Z	Accepted

From the analysis, the researcher comes to a conclusion that there is significant difference in the Transaction cost of Traditional banking services & e-banking services in Volume level, RBO level and Module level. But there is no significant difference in Network level.

Section D

7.4 Comparative Cost Analysis

The present study intended to analyse the comparative transaction cost of various transaction channels of SBI operating in the state of Kerala. None of the

studies have been conducted so far to analyse the variation of transaction cost or cost Dynamics of various e-banking services and traditional banking services.

In the present research work the researcher has made an attempt to analyse the variation in transaction cost of e-banking services with traditional banking services of SBI in Kerala circle. In order to check the significant variation in the transaction cost of various banking services of SBI, nonparametric test of Kruskal Wallis is used. Hypothesis is as follows:-

H0: There is no significant difference in the comparative transaction cost of various banking services.

The result of the analysis is shown in the following table 7.31.

Table 7.31

Kruskal Wallis Test for the Comparative Transaction Cost of Banking Services

Banking services	Chi-square value (Kruskal wallis)	P value	Decision
Mobile banking	1591.577	0.000**	Reject
Internet banking			
ATM			
Traditional banking			
CDM			
Recycler			

Source: Survey Data **Significant at 5 % level

Table 7.31 makes it clear that p value is less than 0.05 and the hypothesis is rejected stating that there is no significant difference in all banking services of SBI. Therefore, it can be said that there is significant difference in thecomparativecost analysis of various transaction channels of SBI in Kerala.

The comparative cost of various transaction channels is analysed using mean score, standard deviation and Mannwhitney U test.Mann Whitney is used for

measuring the cost effectiveness in between various banking services is significant or not. The mean, standard deviation and test result value of transaction cost of various transaction channels are depicted in the following tables 7.32 and 7.33.

Table 7.32

Mean and Standard deviation of the Transaction Cost of Various Banking Services of SBI in Kerala

Banking services	N	Mean	S.D
M.B	463	1.8737	2.27657
I.B	463	0.5344	0.31371
M.B	463	1,8737	2.27657
ATM	463	5.2715	0.88403
MB	463	1.8737	2.27657
TRD	463	46.6149	10.90208
M.B	463	1.8737	2.27657
CDM	13	7.7841	3.60531
M.B	463	1.8737	2.27657
RECYCLER	13	4.3563	0.28090
I.B	463	0.5344	0.31371
ATM	463	5.2715	0.88403
IB	463	0.5344	0.31371
TRD	463	46.6149	10.90208
I.B	463	0.5344	0.31371
CDM	13	7.7841	3.60531
IB	463	0.5344	0.31371
RECYCLER	13	4.3563	0.28090
ATM	463	5.2715	0.88403
TRD	463	46.6149	10.90208
ATM	463	5.2715	0.888403
CDM	13	7.7841	3.60531
ATM	463	5.2715	0.88403
RECYCLER	13	4.3563	0.28090
TRD	463	46.6149	10.90208
CDM	13	7.7841	3.60531
TRD	463	46.6149	10.90208
RECYCLER	13	4.3563	0.28090
CDM	13	7.7841	3.60531
RECYCLER	13	4.3563	0.28090

Source: Survey Data

Table 7.33

Comparative Cost Analysis of Transaction Channels of SBI in Kerala Circle

Mann whitney	MB	IB	ATM	TRAD	CDM	REC
MB	---xxxx---	U=49409.500 W=156825.500 Z=-14.198 P=.000	U=12842.000 W=120258.000 Z= -23.183 P= .000	U=2.000 W=107418.000 Z=-26.339 P =.000	U=266.000 W=107682.000 Z= -5.609 P=.000	U=514.000 W=107930.000 Z= -5.102 P=.000
IB	U=49409.500 W=156825.500 Z=-14.198 P=.000	---xxxxxx---	U=.000 W=107416.000 Z= -26.340 P=.000	U=.000 W=107416.000 Z= -26.340 P=.000	U=.000 W=107416.000 Z= -6.154 P=.000	U=.000 W=107416.000 Z= -6.154 P=.000
ATM	U=12842.000 W=120258.000 Z= -23.183 P= .000	U=.000 W=107416.000 Z= -26.340 P=.000	----- xxxxx-	U=0.000 W=107416.000 Z=-26.339 P=.000	U=861.000 W=108277.000 Z=-4.392 P=.000	U=647.000 W=738.000 Z=-4.830 P=.000
TRAD	U=2.000 W=107418.000 Z=-26.339 P =.000	U=.000 W=107416.000 Z= -26.340 P=.000	U=0.000 W=107416.000 Z=-26.339 P=.000	xxxxxxx	U=.000 W=91.000 Z=-6.153 P=.000	U=.000 W=91.000 Z=-6.153 P=.000
CDM	U=266.000 W=107682.000 Z= -5.609 P=.000	U=.000 W=107416.000 Z= -6.154 P=.000	U=861.000 W=108277.000 Z=-4.392 P=.000	U=.000 W=91.000 Z=-6.153 P=.000	-----xxxx--	U=13.000 W=104.000 Z= -3.668 P=.000
REC	U=514.000 W=107930.000 Z= -5.102 P=.000	U=.000 W=107416.000 Z= -6.154 P=.000	U=647.000 W=738.000 Z=-4.830 P=.000	U=.000 W=91.000 Z=-6.153 P=.000	U=13.000 W=104.000 Z= -3.668 P=.000	--- xxxxxx-

Source: Survey Data

Table 7.33 shows that p value is less than 0.05 in all combinations of transaction channels. Therefore, it is concluded that cost effectiveness is ensured in all types of banking services or transaction channels of SBI in Kerala circle. The table 7.34 proves the most cost effective transaction channel of SBI through its mean value. On the basis of the mean value, the ranking of banking services of SBI are given below:-

Table 7.34

Ranking of Transaction channels of SBI in Kerala

Transaction channels	Mean value	Rank
M.B	1.8737	2
I.B	0.5344	1
ATM	5.2715	4
CDM	7.7841	5
Recycler	4.3563	3
Traditional	46.6149	6

Source: Survey Data

It is clear from the table 7.34, the most cost effective banking service of SBI is internet banking services followed by Mobile banking, recycler services, ATM, CDM and traditional banking services.

7.4.1 Research Model

Even though all banking services are independent, the association among them cannot be neglected. To test the functional relationship between e-banking services and traditional banking, it is conducted linear regression Analysis and the developed research model for the study is given in Figure 7.1.

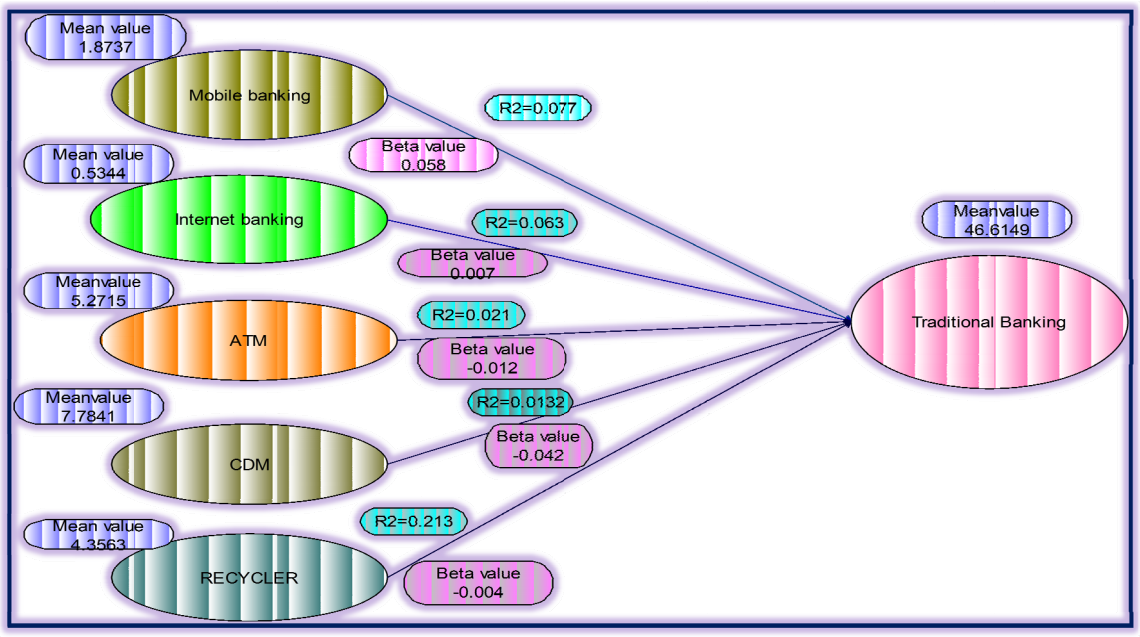


Figure 7.1 Research Model

The above model provides the functional relationship between cost per transaction of Mobile, Internet, ATM, CDM, Recycler services with Traditional banking services. For the purpose of analysis of research model, the statistical technique Simple Linear Regression Coefficient is used. As only a single variable of transaction cost is considered for model fitting, Limiting case of multiple regression coefficients, simple linear regression is used for analysis. Average cost per transaction of Internet service (0.5344ps) is lowest followed by that of Mobile banking (Rs.1.8737), Recycler (4.3563 Rs), ATM (Rs.5.2715), CDM (Rs.7.7841) whereas cost of traditional banking is very large (Rs.46.6149) compared to other services. Both the R2 and the path coefficients (Beta values) indicate how well the model is performing. R2 shows the predictive power of the model and the values should be interpreted in the same way as R2 in a regression analysis. The model fit findings are shown in the following Table 7.35.

The table 7.35 reveals among others, the degree of association between Traditional banking and Mobile banking (coefficient of determination R2=0.077). 8% of variation in Mobile banking cost can be explained by Traditional banking cost. Further unit of increase in Traditional banking cost increases the mobile banking cost, at a rate of Rs. 0.058. On analyzing the functional relationship between Traditional banking and Internet banking (coefficient of determination R2=0.063), 6% of

variation in Internet banking cost can again be associated with Traditional banking cost. The remaining unit of increase in Traditional banking cost increases the internet banking cost of Rs.0.007. On similar grounds, the degree of association between Traditional banking and ATM (coefficient of determination R2=0.021) shows 2% of variation in ATM cost that can be explained by Traditional banking cost. Additional unit of increase in Traditional banking cost increases the ATM cost by Rs.0.012. Similar study in the case of CDM shows the degree of association between Traditional banking and CDM (coefficient of determination R2=0.132). 13% of variation in CDM cost can be attributed to Traditional banking cost. More unit of increase in Traditional banking cost increases the CDM cost by Rs.0.042. Next to analyze is the degree of association between Traditional banking and Recycler (coefficient of determination R2=0.213). Here, 21% of variation in Recycler cost accounts for the Traditional banking cost. The unit of increase that follows in Traditional banking cost increases the Recycler cost by Rs.0.04.

Table 7.35

Model Fit Findings

SL.No.	Model fit findings	R2 value
1	MBC=0.825+0.058 TBC	0.077
2	IBC=0.198+0.007TBC	0.063
3	ATM C=5.824+0.012 TBC	0.021
4	CDMC=11.162+0.042TBC	0.132
5	RECYC=4.540+0.04TBC	0.213

Source; Survey Data

In the research model, the functional relationship or degree of association between e-banking services and traditional banking services of SBI was analysed as hypotheses to be tested in the study.

The summarised results for the hypotheses in the model are shown in the Table 7.36.

Table 7.36

Result of Hypotheses testing: Research Model

Sl.No	Hypotheses	Beta value	P value	Remarks
1	H0: There is no association or functional relationship between Mobile banking & Traditional banking services.	0.058	.000**	Significant
2	H0: There is no association or functional relationship between Internet banking & Traditional banking services.	0.007	.000**	Significant
3	H0: There is no association or functional relationship between ATM service & Traditional banking services.	0.012	.002**	Significant
4	H0: There is no association or functional relationship between CDM services & Traditional banking services.	0.042	.223	Insignificant
5	H0: There is no association or functional relationship between Recycler services & Traditional banking services.	0.004	.112	Insignificant

**significant at 5% level

It is clear from the table 7.36 that three hypotheses are rejected and all these paths have a significant relationship. But two hypotheses related to CDM and Recycler had no significant difference. Thus the model proves that, in various transaction channels, CDM & Recycler services have not much association or functional relationship than that of ATM, Internet and Mobile banking services. The CDM and Recycler machines were not distributed in all the branches, the difference in the distributed branches statistically proved insignificant. The proposed outcome of the above research model would therefore be to include Recycler machines (the better cost saving option among the two) in all the breanches of SBI, Kerala circle expeditely.

Section E

7.5 ABC in Banking Industry

In this section the researcher explores an awareness of activity based costing in the banking sector on the example of SBI in order to analyse the cost structure for traditional and electronic channel transactions.

ABC is a new dimension of cost analysis that was first presented in a formal way by Professor Robert Kaplan, Robin Cooper and Thomas Johnson in Harvard in 1987(Agbejule, 2000). It has since been developed in many organizations mainly in manufacturing industries.ABC is a cost measurement system that provides the cost of each product analyzing each activity needed to produce a product.

As defined in Banking, ABC is a system for the calculation of the cost of products and services, while the cost components arise from the activities related to the development, administration and sale of the product (Lustsik, 2003).

7.5.1. Cost Dynamics

As bank services are a lot more complex than the products of a manufacturing company, a different approach is needed for defining the cost objects. The cost of a bank's product varies mainly according to the channel where it is affected. The channels comprise two major groups' like the traditional channels and e-channels. The traditional channels are defined on the basis of the type of human assistance. E-channels are divided in to three, ATM, CDM &Recycler, Internet banking and mobile banking. Transaction cost of each banking service is computed by using the formula:- Operation cost/ Number of Transactions. The cost allocation chain of SBI in the form of ABC model is depicted in the following figure7.2.

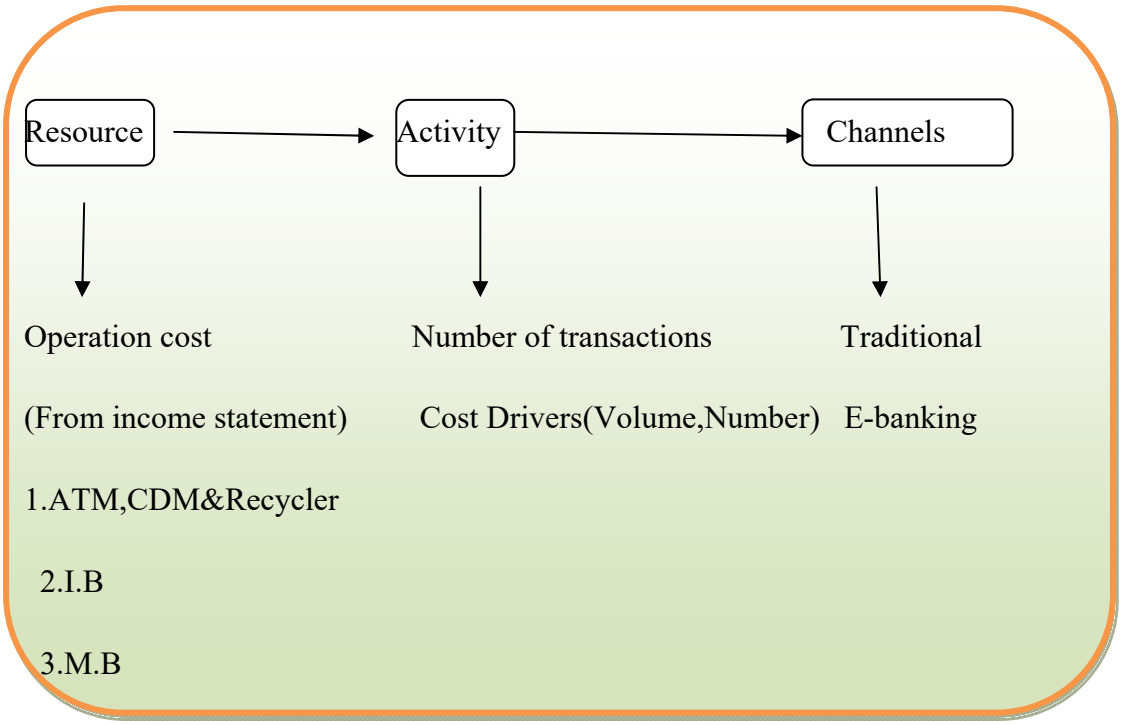


Figure 7.2 Cost Allocation chain of SBI in ABC model

On the basis of the cost allocation chain, the cost dynamics of different transaction channels of SBI in Kerala circle during 2013-2016 are shown in the following table7.37.

Table 7.37

Cost Dynamics of Transaction channels

Channels	2013	2014	2015	2016	Average
Traditional	51	48	45	42	46.5
ATM	6	5	5	4	5
CDM	5	8	4	5	5.5
Recycler	---	----	6	4	5
Internet Banking	0.60	0.53	0.44	0.57	0.54
Mobile banking	0.90	1.63	2.30	2.67	1.88

Source: Survey Data

Table 7.37 depicts the unit cost structure of various transaction channels of SBI in Kerala. It means, how much cost incurred by bank for each transaction channel for

conducting one unit of transaction. In an average, Rs.46.50 cost is incurred by bank for making one transaction in traditional channels. In the case of ATM, CDM & Recycler transactions cost incurred by bank will become Rs.5, Rs.5.5 and Rs.5 respectively. The cost per unit of transaction of internet banking is 0.54 Paisa and in the case of mobile banking, it will reach to Rs.1.88. The above table also makes it clear that, the most cost effective channel of SBI during the period of 2013-2016 is internet banking.

The comparison of the result of unit cost component of traditional and e-channels is summarized in the following figure7.3

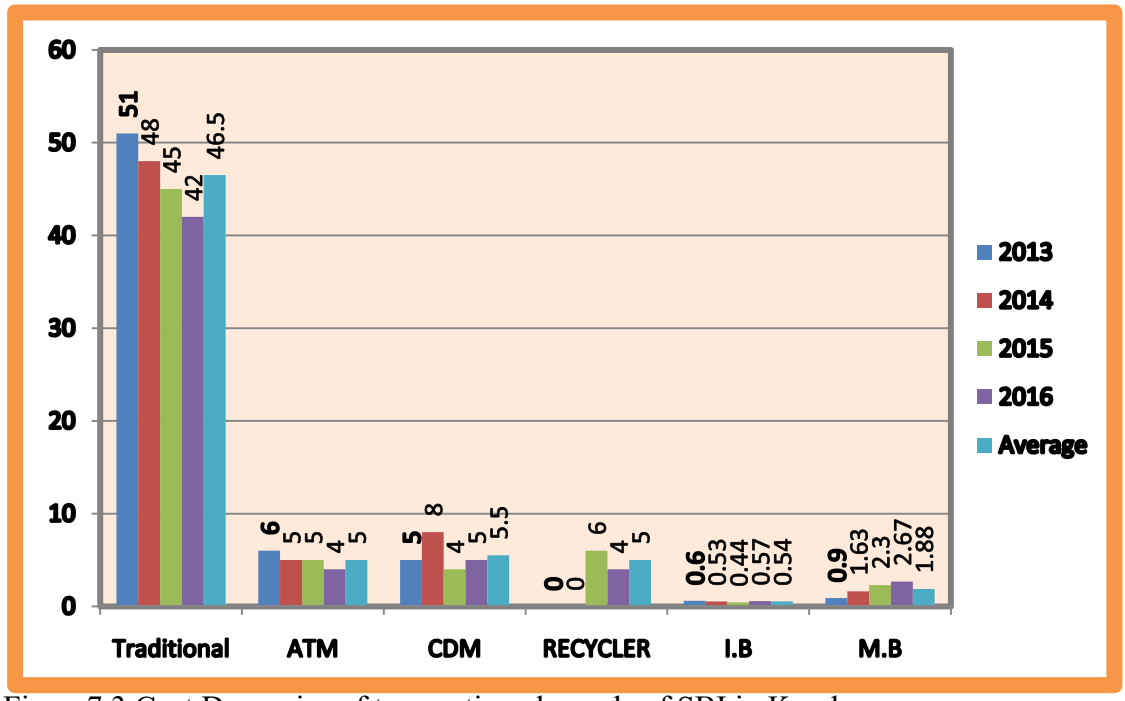


Figure7.3 Cost Dynamics of transaction channels of SBI in Kerala.

7.5.2 Cost Components of Transaction Channels of SBI in Kerala Circle

In order to understand the cost structure of e-banking transactions, a detailed analysis of unit cost components has to be conducted. A number of separate cost components in e-banking and traditional channels were analysed in this work. (See Annextures). The various operation cost components of the transaction channels are enlisted in the following table 7.38.

Table 7.38

Cost Components of Transaction Channels of SBI in Kerala.

Sl.No	Channel	Operation cost components
1	Traditional banking	Staff wages, Electricity, Telephone, Rent&Tax, Stationery, Repairs & Maintenance
2	ATM	Machine cost, Rent, Electricity, Air conditioning, Cash replenishment, Annual Maintenance contract charges.
3	CDM	Machine cost, Electricity, Annual Maintenance contract charges.
4	Recycler	Machine cost, Rent, Electricity, Annual Maintenance contract charges.
5	I.B	Cost per user, Active users, cost per transaction, Transaction per user.
6	M.B	Cost per user, Active users, cost per transaction, Transaction per user.

Source: Survey Data

For Traditional banking, the most important part of expenses is associated with staff wages. For ATM,CDM & Recycler services, machine cost is the highest cost element, but it was incurred in the initial years only. It was actually impossible to calculate the operational expenses with sufficient quality for internet and Mobile banking services. Software installation and IT expenses are incurred on all India level. On the basis of the actual users of SBI branches in Kerala, the proportionate cost measurement can be conducted.

In order to draw conclusion on cost side from the bank's point of view, the most cost effective channel of SBI , the internet banking costs 86.11 times less than cost in traditional banking services. Mobile banking comes to 24.7 times less than traditional channels and ATM, CDM & Recycler services are around 9.3 times less than traditional channels.

To summarise these assumptions the following can be stated:-

1. It is possible to implement ABC in the banking sector, although the calculation system can become overly detailed to manage.
2. Electronic channels provide cost saving for banks. In the case of SBI, e-banking channels are 6.28 times cheaper than the traditional banking channels.
3. The reduction in transaction costs is slower than expected. The reason is that the existing channels can not be closed at the same speed as new distribution channels are introduced and funds invested in their development and maintenance.

If the detailed information furnished by SBI in terms of direct and indirect cost components, it can help branches of SBI to regulate and reduce some cost components by the ABC technique. Therefore each branches of SBI can create pre conditions for cost saving. It may be concluded that e-channels will probably become more cost efficient for banks in a few year's time.

References

Indian Institute, O. B. (2010). *Bank Financial Management.* Mumbai: Macmillan Publishers,India Ltd.

Indian Instiute, O. B. (2010). *Advanced Bank Management.* Mumbai: Macmillan Publishers India Ltd.

Kendall, M. (1971). *Cost Benefit Analysis.* London: The English University Press Ltd.

Mishan, E. (1972). *Elements of Cost Benefit Analysis.* London: George Allen and Unwin Ltd.

Richard, L. (1972). *Cost Benefit Analysis.* England: Penguin Books Ltd.

Chapter 8

Summary of Findings, Conclusions and Suggestions

Contents **Page No.**

Chapter 8

Summary of Findings, Conclusions and Suggestions

Information Technology is very powerful in today's world and financial institutions are the backbone of the Indian economy. Banking sector plays a significant role in the development of Indian economy. Today Indian banking industry is in the midst of an IT revolution. Nearly all the banks in India are going for information technology based solutions. The application of IT in banks has reduced the scope of traditional or conventional banking with manual operations. Banks are using new tools and techniques to find out their customers need and offer them tailor made products and services. So banks need to leverage technology to increase penetration, improve their productivity and efficiency, deliver cost effective products and services, provide faster efficient and convenient customer service and thereby contribute to the overall growth and development of the country.

Banking system of twenty first century is full of tech- savvy based with lots of products and processes. Technology enables increased penetration of the banking system, increases cost multiplier effect on growth and development. India is one of the countries that have effectively tackled huge volumes of paper instruments in cost effective manner. Development in the field of IT strongly supports in the growth and inclusiveness of the banking sector by facilitating inclusive economic growth. IT improves the front end operations with back end and helps in bringing down the transaction costs for the customers.

Use of technology in expanding banking is one of the key focus areas of banks. The banks in India are using IT not only to improve their own internal processes but also to increase facilities and services to their customers. Efficient use of technology has facilitated accurate and timely management of increased transaction volume of banks of that comes with larger customer base. By designing and offering simple safe and secure technology, banks reach at doorstep of customer with delight customer satisfaction.

8.1 The Research Problem in Brief

Banking is a key industry in the service sector and the Indian banking system has the largest branch network spread over a vast area. In the cut throat competition, the

survival of any bank depends upon the satisfied customers. The efficiency of a banking sector depends upon how best it can deliver services to its target customers. In order to survive in this competitive environment and provide continual customer satisfaction, the providers of banking services are now required to continually improve the quality of services. Therefore it is crucial for banks to understand the effectiveness of e-banking strategy and should realize the importance of cost saving from the opportunities emerging from the digital revolution.

In the emerging market scenario, survival and growth is critical for bank to align its vision, mission, goals and objectives of customer's satisfaction. In order to retain the customers, banks have to provide better quality services. More than that, the cost structure of e-banking strategy to be evaluated for analyzing the efficiency of banks. Therefore, one of the problems emerging in the changing banking scenario is, whether the huge investments made in providing e-banking services are justifiable with the benefits or return aspects of e-banking services. From the bank's point of view, cost saving of electronic transactions is much lower than that of traditional channels. But for some reasons, banks do not want to lose the traditional channels. Banks can save a large amount of cost on the transactions effected via electronic channels. Therefore to be able to draw conclusions about cost saving aspect of e-banking services, some investigation into the transaction cost level is required. In this background, the cost-benefit analysis of e-banking services is relevant.

In this background it is highly relevant to investigate the following major research issues:-

- What is the Average hit per day per ATM machine?
- Find out the Actual Number of users of internet banking & Mobile banking services?
- To what extent the level of cost per user and cost per transaction is varied between internet banking and mobile banking services?
- What are the relevant costs associated with Traditional and e-banking Services?
- What is the nature of usage pattern of e-banking services of SBI?
- Whether the e-banking services are cost effective than traditional banking services?

Thus the present investigation is a humble attempt to accomplish this.

8.2 Significance of the Study

The future of banking business very much depends upon the ability of the banks to develop close relationship with the customers. In order to develop close relationship with the customers the banking industry has to focus on the technology oriented innovations that offer convenience to the customers. Today customers are offered ATM services, access to internet banking, phone banking facilities and credit cards. These have elevated banking beyond the barriers of time and space. Customer centric approach coupled with effective use of technology and resources speaks of encouraging signs for the growth in this sector. Therefore the significance of this study lies in its attempt to examine the cost-benefit analysis in e- banking transactions which may be useful to the banking industry in Kerala.

8.3 Objectives of the Study

The main objective of the study is to make a comparison between electronic channels and traditional channels of State Bank of India Operating in the state of Kerala with regard to the following:

1. To assess the transaction cost of ATM, CDM & RECYCLER services
2. To examine the transaction cost of Internet banking & Mobile banking services
3. To analyze and compare Average hit of ATM/CDM/RECYCLER services
4. To measure and compare the usage pattern of Internet and Mobile banking services
5. To make a comparative analysis on the transaction cost of e-banking services with Traditional banking service

8.4 Methodology Adopted for the Study

The study is focused on the cost-benefit analysis of e-banking transactions in the banking sector. State Bank of India was selected for the research investigation because, it is more advanced in terms of technology adoption than the other banks in Kerala. Moreover, in the current environment where technologies are rapidly improving, SBI maintain up-to-date information in technological services. The

present investigation aims to analyze empirically the cost dimension of e-banking services of SBI in Kerala. This research should be considered the first of its kind conducted in the area of banking sector by using the variable transaction cost. Furthermore, in the data collection process, the semi structured interview schedule was found suitable to collect the required data from different branches of SBI in Kerala. The study is based on both the primary as well as secondary data. All the basic source of data were collected from the MBPM Department, Local Head Office of State Bank of India Thiruvananthapuram, and 13 Regional Business offices spread all over the state of Kerala. The use of several other data collection techniques was not possible in the case of this research as banks do not usually provide information to the public as they keep sensitive information of their customers. To study the cost structure of traditional banking and e-banking services of SBI from the bank's point of view, entire branches (463) of SBI in Kerala were taken into consideration. The State bank group's internet banking initiative launched in 2011. But the data related to e-banking services are available only from 2013 onwards from MBPM department, LHO, TVM. Therefore the period of reference for cost analysis were taken from March, 2013 to March, 2016.

For the cost structure analysis of e-banking and traditional banking services of SBI in Kerala, depository transactions are only taken in to consideration. Among the depository transactions, bifurcation can be done on the basis of energy utilization of employees for calculating the traditional level transaction cost. Thus the Transaction cost can be analyzed on the following respects:-

$$\text{Transaction cost (Footfall)} = \frac{\text{Bifurcated Operation cost}}{\text{Bifurcated total No. of Transactions}}$$

- Bifurcated operation cost=On the basis of energy utilization of employees.(65:35 or70:30)
- Bifurcated total Number Of transaction=On the basis of depository transactions ($2/3^{rd}$)*total no. Of working days.

In the case of Alternate channels or Any time channels, cost analysis were made on ATM,CDM,RECYCLER,Mobile banking and internet banking only. For the cost analysis of SWAYAM and Self supporting Kiosks, consistent four years data

could not be available and so they were excluded from this study. Thus the Transaction cost on Anytime channels can be analyzed on the following respects:-

$$\text{Transaction cost} = \frac{\text{Overall Monthly Total Cost}}{\text{Overall monthly No. of Transactions}}$$

Thus, the total number of the population constitutes 463 branches of SBI in Kerala. The collected data were analysed by using statistical tools like Mean, Standard Deviation, Chi-square test of independence, Kruskal Wallis test, Mann Whitney U test,Wilcoxon w test, Index number and simple linear regression. The software used for the analysis is SPSS 22.0 and Mini Tab 14.

8.5 Presentation of the Study

The report of the work has been presented in Eight chapters as detailed below:

1. The first chapter is the Introduction. It presents the significance of the study, research problem, scope of the study, objectives, hypotheses, methodological design, conceptual model, limitations and chapterisation of the study.

2. Review of Literature is the second chapter. It contains the relevant previous studies relating to the topic. Accordingly the chapter is divided into three sections. They are studies relating to e-banking services, Cost-benefit Analysis and Activity Based Costing.

3. The third Chapter is Digitalization of e-banking services-An Overview. The chapter is divided into two sections- Digitalization in banking industry, which consists of concept, History and role of e-banking services and Digitalization profile of State Bank Of India.

4. The fourth chapter contains the cost structure analysis of ATM, CDM & Recycler services. It is named as Cost Structure Analysis-1.It also covers the comparison of transaction cost of ATM,CDM & Recycler services in volume,RBO, Module and Network levels of SBI in Kerala circle.

5. The fifth chapter is the analysis on Internet and Mobile banking services. It covers the analytical details of transaction cost of internet and mobile

banking services in four levels of State Bank of India operating in the state of Kerala.

6. The sixth chapter deals with the Usage pattern of e-banking services. The chapter is divided into two sections. Section A deals with the usage pattern of ATM, CDM & Recycler services on the basis of average hit and section B covers the usage pattern of Internet and Mobile banking services on the basis of Active users.

7. The seventh chapter deals with the Comparative Transaction Cost Analysis of SBI in Kerala. The chapter is divided into five sections. Section A deals with the Traditional banking services, Section B deals with e- banking services, Section C Traditional & e-banking services, section D is concerned with the Comparative Cost Analysis and section E is that of ABC in Banking Industry.

8. The Eighth and last chapter presents the major findings of the study, the conclusions based on the findings, suggestions and scope for further research.

For the purpose of discussion, the chapter is divided into three sections. Section A presents major findings and that of B is concerned with the conclusions drawn from the findings. Section C deals with the suggestions based on the findings and conclusions of the study.

Section A

8.6 Summary of Findings

Based on the analysis of the data collected from the MBPM Department of State Bank of India, Local Head Office, Thiruvananthapuram, 13 regional business offices of SBI operating in Kerala circle and discussions with branch managers, the study turns up some valuable findings, which are shown under different heads in the following pages.

8.6.1 e-Banking Services

The cost-benefit analysis of e-banking services of SBI in Kerala is determined on the basis of the most prominent variable ‘Transaction Cost’. Transaction cost is the

term used for the calculation of the unit cost of each bank service. The cost of a bank's product or service varies mainly according to the channel where it is effected. It can assume major differences to occur in the branch and online bank channel cost structure for a single payment. Electronic banking is the newest delivery channel of banking services. The definition of e-banking varies amongst researchers but in the present work e- banking defined as the following platforms:-

- ATM
- CDM
- Recycler
- Internet banking
- Mobile banking

The summary of findings of the cost structure analysis of these electronic services is listed below:-

A. ATM services

1. Transaction cost of ATM services is calculated by taking the formula operation cost divided by the number of transactions. For the computation of operation cost, six cost elements like, Machine cost,Rent, Electricity,Air conditioning charges, Replenishment and Annual Maintenance contract charges are used. In banking terminology, number of transactions of ATM service is known as number of hits also. The cost structure analysis is carried on by way of four dimensions like volume wise, RBO wise, Module wise and Network wise of SBI in Kerala circle.

2. The researcher identified the dimension of volume wise comparison through Low volume, Medium volume and High volume branches. The Volume wise comparison shows that:-

- 54.21% of SBI branches (251/463) are included in the category of Low volume branches, 42.98 % (199/463) of branches of SBI in Kerala are Medium volume branches and the remaining 2.81 %(13/463) of branches are High Volume Branches for the cost computation of ATM services.

- Operation cost is higher in High volume branches (Mean value = 35033.31) as compared with Medium volume branches (Mean value = 32991.37) and Low volume branches (Mean value = 31639.31).

- Highest percentage of Number of transactions in High volume branches is (38%) as that of Medium volume branches (32%) and Low volume branches (30%) respectively.

- Transaction cost is lower in High volume branches as the mean value is only 4.3620, but in the Medium volume branches, it was 5.1642 and in the Low volume branches, it is 5.4036. Hence it is concluded that, High volume branches are the most cost effective in volume wise transaction cost of ATM services of SBI in Kerala circle.

- Kruskal Wallis test result shows that there is significant variation in the Volume wise transaction cost of ATM services during the period of study.

- The survey result shows that the volume wise average hit rate is 235 transactions per day per ATM in Kerala circle.

3. The dimension of RBO wise comparison of ATM services is focussed on 13 regional Business Offices of SBI in Keralanamely, TVM, KLM, APA, EKM1, 2,3, KTM, PKD, TSR, CLT1, 2, 3, KNR and SHR. The important observations are:-

- It is seen that 13 Regional Business Offices of SBI are operating in the state of Kerala. Highest number of branches (51) is included in TVM RBO and lowest number of branches 26 in number in EKM-3 RBO.

- Highest percentage of operation cost 12% occur in TVM RBO and the lowest 3% in Shornur RBO. It is also found that, the RBO level operation cost is same (8%) in Kollam, Alappuzha, EKM-1, 2, 3 and Calicut-1 RBO.

- It is observed that the number of transactions is higher in TVM RBO (12%) and lowest number of transactions in Shornur RBO only 3%.

- The average transaction cost of RBO level shows that the highest mean value is at Shornur RBO (5.5715) followed by Thrissur (5.4938) and EKM-2(5.4594). Lowest mean value (4.9536) in Kannur RBO followed by EKM-3 (5.0460) and Alappuzha (5.1261). It is also found that the number of transactions is increasing year by year whereas transaction cost is being reduced from year to year. Therefore it is concluded that, 'number of transactions' is the major determinant of reducing transaction cost.

- Kruskal Wallis test result shows that there is no significant variation in the transaction cost of ATM service in RBO level of SBI in Kerala.

4. The study identified Module wise comparison of ATM services into four classifications like Thiruvananthapuram, Ernakulum, Thrissur and Calicut. The result shows that:-

- It is evident that, 30% branches are in the Ernakulum Module, 28% branches of SBI come under TVM module, 22% branches are in Calicut module and only 20% are included in Thrissur Module.

- Module wise operation cost is highest (Mean value=12749583) in Ernakulum Module, followed by Thiruvananthapuram (Mean value=11391390), Calicut (Mean value=9218139) and lowest operation cost in Thrissur module (Mean value7804314).

- In the case of number of transactions, it was highest (29%) in TVM Module and lowest (19%) in Thrissur Module.

- Module wise transaction cost analysis shows that, highest mean value 5.4900 inThrissur Module and lowest mean value 5.1281 is in Calicut module. Therefore, Calicut module is considered to be the most cost effective module for ATM services of SBI in Kerala.

- Kruskal Wallis test proved that there is significant difference in the average transaction cost of ATM services in Module level.

5. Two categories of Network wise comparison of ATM services are identified namely, Network-1 and Network-2. The observations are:-

- 58% of SBI branches are included in network-1 and 42% branches are come under the Network-2 Category. The SBI branches from Thiruvananthapuram to Ernakulum comes under Network-1 and branches from Thrissur to Kasargod includes Network-2 category.
- Network level operation cost of ATM is higher in Network-1 as the mean value (24131973) is more than that of the mean value of network-2(17022453)
- It is seen that the number of transactions of ATM services are more in Network-1 (57%) than in Network-2(43%)
- Mann Whitney U test proved that, there is no significant variation in the transaction cost of ATM services in network level.

6. The result of analysis disclosed that there is significant variation in the Volume wise and Module wise transaction cost of ATM services during the period of study ranging from 2013 to 2016. At the same time there is no significant variation is found in RBO wise and Network wise transaction cost of ATM services of SBI in Kerala circle. It is also inferred that there is an inverse relationship between number of transactions and transaction cost of ATM services of SBI in Kerala. If the number of transactions is increased, the transaction cost will be decreased or vice versa.

B. CDM Service

CDM service has not been available in all the branches of SBI in Kerala up to 31st March, 2016. The dimension of study regarding CDMs were focused on 167 machines in volume wise and 170 machines in RBO, Module and Network wise comparison. Due to the uneven distribution of CDMs in various branches, it is not reliable for statistical analysis. However, on the basis of the average transaction cost of CDM services, a comparative statistical analysis has been conducted. The summary of findings of the cost structure analysis of the CDM service is listed below:-

1. Transaction cost of CDM services is calculated by taking the same formula of ATM services as the operation cost divided by the number of transactions. As CDMs

are situated in the same room of ATMs, the cost elements of rent and air conditioning charges can be saved. CDMs are fully automatic and so replenishment charges not needed for its clearing of currency. Therefore, three cost elements like, Machine cost, Electricity and Annual Maintenance contract charges are only usedfor the computation of operation cost. The cost structure analysis of CDM services is carried on by way of four dimensions like volume wise, RBO wise, Module wise and Network wise of SBI in Kerala circle.

2. Volume wise dimension revealed that, out of 463 branches, CDMs are operating only in 167 branches of SBI in Kerala up to 31st March, 2016. Out of these 167CDM installed branches,25 in Low Volume category, 106 in Medium volume category and 36 in High Volume Branches. Volume wise comparison of CDM services shows that:-

- Average operation cost of CDM is Rs.21066 which was comparatively lesser than ATM services of Rs.32316.
- Highest number of transactions in MVBs as the mean value is 5236 followed by HVBs (Mean value=4900) and lowest transactions in LVBs as the mean value is 2940.
- The study revealed that the average volume hit rate of CDM services in Kerala circle is 145 transactions per day which is comparatively lower than ATM which stands for 235 transactions per day. The reason is that the customers are not using CDM services frequently.
- The average volume wise transaction cost per CDM stood at Rs.5. Volume wise transaction cost of CDM services is larger in LVBs(Rs.7) followed by Rs.4.25 in HVBs and lower in MVBs Rs.4. Hence it is concluded that, MVBs (Medium volume branches) are the most cost effective in transaction cost of CDM services of SBI in Kerala circle.

3. The dimension of RBO wise comparison of CDM services is focussed on 170 Cash Deposit Machines in 13 Regional Business Offices of SBI in Kerala,namely,TVM,KLM,APA,EKM-1,2,3,KTM,PKD,TSR,CLT1,2,KNR and SHR. The important disseminations are:-

- It is seen that highest number of CDMs are included in EKM-1RBO and Thrissur RBO (18machines each) followed by TVM and Kannur RBOs (17 machines each), CLT-2 & APA (15 machines each), EKM-2 & PKD (13 machines each), KTM & CLT-1 (12 machines each), KLM (10 machines), EKM-3 (8machines) and only 2 machines at SHR RBO.

- The operation cost is highest in EKM-1 and Thrissur RBO (11%) followed by TVM and Kannur RBO (10%). The operation cost is lowest in Shornur RBO (1%).The RBO wise average operation cost is amounted to Rs.69328.

- It is observed that highest percentage of CDM transactions are in EKM-2 RBO (13%) and lowest in Shornur RBO (3%).

- It is found that RBO wise average transaction cost of CDM service is Rs.6.

4. Module wise dimension of study provides evidence that 30 % of CDMs are distributed in EKM module and 26% come under Calicut module, 25% are in TVM module and only 19% are included in Thrissur module. Module wise comparison shows that:-

- Highest operation cost in EKM Module as the mean value is 269586 followed by Calicut module (Mean value=233832) and TVM (Mean value=222480) whereas lowest operation cost in Thrissur module as the mean value is 175374.

- While considering the number of transactions, it was highest in EKM module as the mean value is 57825 followed by Calicut (40995), TVM (30975) whereas lowest number of CDM transactions in Thrissur module as the mean value is 25837.

- Highest mean value of the transaction cost of CDM service of Rs. 7 each in Thiruvananthapuram and Thrissur module andCalicut Module has lowest transaction cost as its mean value is Rs.5.The module wise comparison of CDM services revealed that, Calicut module is the most cost effective in CDM services of SBI in Kerala .

5. Network wise dimension shows that 55% of CDMs are distributed in Network -1 and 45% of CDMs come under Network-2 category. It means more number of CDMs were found from the districts of Thiruvananthapuram to Ernakulum than from Thrissur to Kasargode. Some of its dimensions are:-

- Highest operation cost (55% and Mean value 492066) of CDM services can be observed in Network-1 and only 45% of operation cost (Mean value=409206) in Network-2. Moreover, the number of transactions were also high in Network-1 (57% & Mean value=88800) than in Network-2 (43% and Mean value 66832).

- It is seen that the highest average transaction cost of CDM service in network-1 (Rs.6.5) than in netwotk-2(Rs.6.35).

6. The four dimensional study of CDM services perceived that, Medium volume branches are the cost effective in volume wise dimension, Shornur RBO shows reduced transaction cost in RBO level, Calicut module is the cost effective in module wise dimension and Network-2 shows the reduced transaction cost in Network dimension. However, the significant variation in transaction cost can be found only in Volume and Module wise dimensions of study.

7. The study of CDM service provides evidence that transaction cost depends upon variables like operation cost and number of transactions. If the number of transactions is higher, then transaction cost will be reduced. At the same time if the number of transactions and operation cost are both in lower level, then transaction cost will automatically be in lower level.

C. Recycler services

SBI has distributed only 151 Recycler machines within two years beginning from 2015 and in 2016 as a trial basis. The dimension of study regarding Recyclers were focused on 146 machines in volume wise and 151 machines in RBO, Module and Network wise comparison. All the branches of SBI in Kerala did not possess the Recycler machines and therefore it is not reliable for statistical analysis. However, on the basis of the average transaction cost of Recycler services, a comparative statistical analysis has been conducted. The summary of findings of the cost structure analysis of the Recycler service is listed below:-

1. It is found that four cost elements like machine cost, electricity, rent, AMC are used for the calculation of operation cost of Recycler services. Only 32% of branches were distributed Recycler machines.

2. Volume wise dimension revealed that, average operation cost per Recycler machine is Rs. 27357 which is comparatively lesser than ATM service of Rs.32316 but higher than CDM of Rs.21066. As the Recycler machines enjoys both deposit and withdrawal facility, average hit rate is touched to 280 per day which shows highest usage of Recycler machines than that of ATMs and CDMs. It is also found out that the volume wise average transaction cost of Recycler machine is Rs.3.

3. It is seen that more number of Recycler machines are in TVM and Alappuzha RBO(17 machines each) and lesser number in EKM-2 RBO(only 7). The RBO wise average operation cost is found out to be Rs. 317570. The highest percentage (11%) of Recycler transactions are in Kannur RBO and lowest number of transactions (5%) can be observed in EKM-2 and Shornur RBO. It is shown that the RBO wise transaction cost of Recycler service of SBI in Kerala stands at Rs.4.

4. Regarding the Module wise comparison, it is evident that 32% of Recycler machines are distributed in Thiruvananthapuram module, 26% in Calicut module, 24% in Ernakulam and only 18% are distributed in Thrissur module. It also revealed that, highest operation cost in Thiruvananthapuram module (32% and Mean value=1312344) and lowest in Thrissur module (18% and Mean value=765534). It is also found that, module wise average operation cost of Recycler services are Rs.1032104. In the case of number of transactions, highest percentage and mean value in Calicut module (29% & Mean value=302475) and lowest in Thrissur module (17% & Mean value=181920). The module wise average transaction cost is higher (Rs.4.7) in Thiruvananthapuram module and lower in Calicut module (Rs.4.1). Hence it is concluded that, Calicut module is the most cost effective in Recycler services.

5. It is clear from the Network wise comparison of Recycler services, 56% of Recycler machines are in Network-1 category and 44% Recyclers are in

Network-2 category. It means that more number of Recycler machines lies from Thiruvavananthapuram to Ernakulam districts. The operation cost of Recycler services is higher in Network-1 (56% & Mean value=2296602) than in Network-2 (44% & Mean value=1831814). Similarly, highest number of transactions in network-1 (53%& Mean value=555405) compared to network-2 (47%& Mean value=484395).It is found that the average transaction cost per Recycler in network level is Rs.4.

6. Kruskal Wallis test result proved that the average transaction cost of ATM, CDM & Recycler services has no significant difference.

D. Internet Banking

1. The survey of the study reveals that, Total users, Total transactions and Total cost are the major cost elements used for the transaction cost analysis of internet banking services. The cost per user, cost per transaction and the transaction per user are the important variables used for the cost computation of internet banking services of 463 branches of SBI operating in the state of Kerala.

2. It is found that, Total Users and Total transactions are increasing from year to year but at the same time, the Total cost isreduced nature from year to year. Similarly, the variables like cost/user and cost/transaction are in decreasing nature but Transaction per user is in an increasing trend. This shows a healthy symptom for the growth of internet banking services of State Bank of India.

3. Transaction cost of Internet banking services is calculated by the following two methods.

Method 1: (Cost/user x Active Users)/12 OR

Method 2: (Active Users x Transaction/user x Cost/ transaction)/12

4. The volume wise cost analysis reveals that mean value is highest in HVBs (1.2662) followed by MVBs (.6896) and the lowest mean value in LVBs (.3734). So, it is inferred that LVBs are the most cost effective branches in internet banking services of SBI in Kerala. The result of Kruskal Wallis test

also reveals thatthere is significant difference in the transaction cost of Internet banking services in Volume level.

5. RBO wise analysis of internet banking service shows that the highest mean value in Kottayam (Mean value=.7000) and Alappuzha (Mean value=.6762) RBOs and Lowest mean value is shown at Palakkad (Mean value=.4043) and Shornur (Mean value=.4178) RBOs. This proves the cost effectiveness of Internet banking services in Palakkad and Shornur RBOs. It is also found that, there is significant difference in the transaction cost of Internet banking services of SBI in Kerala.

6. Module wise analysis of internet service provesthat highest mean value is in Thiruvananthapuram module (.6079) followed by Ernakulam (.5352), Calicut (.5274) and lowest mean value in Thrissur module. Hence it is concluded that, Thrissur module is the cost effective module in the transaction cost of Internet banking services of SBI in Kerala. The Kruskal Wallis test result shows that, there is significant difference in the transaction cost of internet banking services in Module level.

7. The network wise comparison of Internet banking services showed that, Network-2 is the cost effective as the mean value is lower (.4848) than the Network-1 (Mean value=.5705). Mann-Whitney U test result revealed that, there is significant difference in the transaction cost of internet banking services in Network level of SBI in Kerala.

E. Mobile Banking

1. The study indicates that, cost per user, cost per transaction and transaction per user are the important variables for the computation of transaction cost of Mobile banking services.

2. The study ascertained that, with the help of the variables like cost per user, cost per transaction and transaction per user, transaction cost of each branch is calculated by using the formulae.:-(Cost/user x Active users)/12 or (Active users x transaction/user x cost/transaction)/12.

3. The mobile banking cost structure analysis shows that, Total Users and Total transactions are increasing from year to year but at the same time, the Total cost is reduced from year to year. Similarly, the variables like cost/user and cost/transaction are in decreasing nature but Transaction per user is having an increasing trend. This shows a healthy symptom for the growth of mobile banking services of State Bank of India. At the same time, this growth in cost elements and variables are comparatively lower than that of Internet banking.

4. Volume wise analysis of Mobile banking makes clear that mean value is highest in HVBs (5.5269) whereas mean value is 2.2793 in MVBs and lowest mean value in LVBs as1.3628. It is inferred from the analysis that, LVBs are the most cost effective in Mobile banking services of SBI in Kerala. The Kruskal Wallis test result shows that,there is significant difference in the volume wise transaction cost of Mobile banking services of SBI in Kerala circle.

5. RBO wise analysis of Mobile banking services proves that highest mean value in Palakkad RBO (3.5090) and lowest mean value (.7688) in EKM-3 RBO. Hence, it is concluded that the most cost effective RBO is EKM-3 of SBI. It is also found that, there is significant difference in the RBO wise transaction cost of Mobile banking services.

6. In the case of Module wise comparison of mobile banking services, it is evidenced that highest mean value (2.5842) at Thiruvananthapuram module and lowest is in Ernakulam module (1.2615). From this test result it is also inferred that, the most cost effective module in mobile banking servicesof SBI is Ernakulam Module.

7. Mann-Whitney U test result shows that, there is no significant difference in the transaction cost of mobile banking services in Network level.

8. The variable wise analysis of Internet and Mobile banking services of SBI indicates that, the average transaction cost of Internet banking is Rs.0.54 whereas in Mobile banking services it is Rs.1.88. Therefore, it is clear that,

the most cost effective channel of State Bank of India is internet banking services in comparison with mobile banking services.

9. The statistical analysis of the transaction cost of mobile banking service in various levels reveals that there is significant difference in volume, RBO, Module levels whereas there is no significant difference can be found in network level mobile banking transaction cost.

8.6.2 **Traditional Banking Services**

The present investigation of the cost-benefit analysis of e-banking services of SBI in Kerala is completed only by the evaluation of traditional banking services also. Whatever may be the upgraded technology, it is not possible for the banks to eliminate the traditional channels. The summary of findings of traditional banking services is listed below:-

1. The evaluation of traditional banking services of SBI in Kerala is determined on the basis of the most prominent variable 'Transaction Cost'. In banking terminology, the transaction cost of traditional banking activity is known as footfall which is calculated by using the formula cost per transaction = (bifurcated operation cost)/ (bifurcated total number of transactions.). It is observed that All India Level SBI rate of footfall is Rs.45/- Generally it may vary from Rs.40/- to Rs.60/- in Kerala circle.

2. The study make it clear that the cost elements taken for computing transaction cost of traditional banking services are staff wages, electricity, telephone, rent/tax, stationary and repairs/maintenance.

3. The Volume wise transaction cost analysis of traditional banking services shows that Mean transaction cost of traditional banking services is almost larger in HVBs (86.8833) as compared to MVBs (45.5937) and lowestMean transaction cost (45.3388) in LVBs. Therefore, LVBs are the most cost effective branches in the volume wise transaction cost analysis of traditional services. Kruskal Wallis test result revealed that, there is significant variation in the transaction cost of traditional banking services in volume level.

4. The RBO wise analysis of traditional banking services detected that Alappuzha RBO is the cost effective one as the mean value is lower (42.12592) than that of the other 12 RBOs. Kruskal Wallis test result shows that, there is significant variation in the RBO wise transaction cost of traditional services during the period of the study ranging from 2013 to 2016.

5. Module wise analysis reveals that highest mean value (48.4582) in Calicut Module and lowest mean value (44.5362) in Thrissur module. It is inferred from the analysis that, Thrissur module is the cost effective module in the transaction cost analysis of the traditional services. The test result shows that there is significant variation in the module wise transaction cost of traditional services.

6. Network wise analysis shows that mean value of transaction cost of traditional channels is highest in Network-1(46.6492) whereas mean value is 46.5676 in Network-2. However, the Mann-Whitney U test proved that, the network wise variation of transaction cost is not significant at all.

7. The study has assessed the transaction cost of traditional services in various dimensions like Volume, RBO, Module and Network. It is inferred from the analysis that, there is significant variation in the transaction cost of traditional banking services in volume level, RBO level, Module level whereas no significant variation in network level of SBI in the state of Kerala.

8.6.3 **Usage pattern**

Apart from the cost dimension, it is also worthwhile to examine the Usage pattern for the background of the current investigation of the cost-benefit analysis of e-banking services of SBI in Kerala. Survey result highlighted that, different variables are used for the usage pattern of e-banking services. So, in order to check the association among these electronic services four dimensional analysis of Volume, RBO, Module and Network wise is to be analysed.The summary of findings of the usage pattern of e-banking services is shown under different heads as follows:-

A.ATM, CDM & Recycler Services

1. The study result showed that SBI has one of the largest ATM networks with 48493 Machines including Cash Deposit Machines and Recyclers as on 31st March, 2016. Out of this 48493 machines, Kerala circle possess only 1831 machines. It stands only a small percentage (3.77%).

2. The variable wise analysisindicates that, 'Average hit' is the most prominent variable for analyzing the usage pattern of ATM, CDM & RECYCLER Services of SBI in Kerala.

3. It is found that the average hit per day per ATM is 206 hits, CDM is137 and for Recycler it is 293 hits. The survey discussions made it clear that the minimum standard for average hit is 100, which is covered by all services except CDM in 2013 due to its installation only in the middle of the year 2013.

4. As the CDM & Recyclers are the new trends, it cannot catch the transactions as well in the case of ATMs. It is also found that, CDMs are reducing from year to year, so it influences the total number of transactions. The total number of Recycler transactions indicates that, it is not used commonly by the public like ATMs.

5. The Chi-square test result shows that, there is significant association in the average hit of ATM, CDM & Recycler services and four dimensions of study like volume, RBO, Module and Network levels of SBI operating in the state of Kerala.

B. Internet and Mobile Banking Services

1. It is observed that the various elements for the usage pattern of Internet banking services were registered users, active users, number of retail transactions and number of corporate transactions and log in success count. Among these elements, number of active users is the actual parameter for internet banking cost calculations and statistical analysis.

2. The various elements for the usage pattern of Mobile banking services were Registration, Deregistration, Net registration, Application based transaction and Non application based transactions. Among these usage

pattern elements, the number of net registration is the real users of mobile banking services of each branch, which was considered for the mobile banking cost calculation and statistical analysis purposes.

3. The usage pattern variables of Internet banking services highlighted that out of the total registered users of internet banking, only 15% of the people are active users. In the case of total transactions, 82% contributes to retail transactions which mean individual dealings. The balance of 18% contributes to corporate transactions which mean dealing with firms. The internet banking service facility of State Bank of India can be predicted as a smart one by looking over the counts of Log in success variable. It reached to more than 2 crores in an average of four years in Kerala circle.

4. The variable wise analysis of the usage pattern of Mobile banking services showed that, out of the total registration of mobile banking services 85% of the people are active users and the balance of 15% have not used well and so they become deregistered. In the case of total transactions, 75% contributes to Application based transactions, which means, Mobile banking facility is used by filling application with the banks. The balance of 25% contributes to non application based transactions, which means, mobile banking facility is used by downloading software or any other mode of application software.

5. The Chi-square test result proves that there is significant association in the active users of Internet and Mobile banking services in four dimensions like volume, RBO, Module and network levels of SBI operating in the state of Kerala.

8.6.4 Comparative Transaction Cost Analysis

1. The transaction cost of all transaction channels of SBI is compared in four dimensions like Volume, RBO, Module and Network. The volume wise dimension revealed that, Low Volume Branches (LVBs) are the most cost effective branches in the traditional services, e-banking services and in total of all transaction channels of SBI in Kerala. In the case of RBO wise analysis, Shornur RBO is the most cost effective RBO in all transaction channels of SBI,

but in traditional services Alappuzha RBO shows reduced transaction cost and EKM-3 RBO is the cost effective one in e-banking services. Module wise dimension disclosed that, Thiruvananthapuram Module is generally, the most cost effective one in all transactional services of SBI and Ernakulam module is the cost effective module in e-banking services of SBI. At the same time, Thrissur module shows reduced transaction cost in traditional services of SBI in Kerala. Network wise dimension proves that, there is no significant variation in the transaction cost of traditional services, e-banking services and in total of all transaction channels of SBI in Kerala. Therefore, it is realized from the analysis that, there is significant variation in the transaction cost of all transaction channels of SBI in Volume level, RBO level and Module level whereas no significant variation in the transaction cost of Network level of operations.

2. Kruskal Wallis test proved that there is significant variation in the comparative transaction cost of the various banking services like, Traditional, Mobile banking, Internet banking, ATM, CDM and Recycler services of SBI in Kerala.

3. Mann Whitney U test disclosed that, cost effectiveness is ensured in all types of banking services or transaction channels of SBI in Kerala circle.

3. The study revealed that the most cost effective banking service of SBI is internet banking service (Mean value=0.5344) followed by Mobile banking (Mean value=1.8737), Recycler services (Mean value=4.3563), ATM services (Mean value=5.2715), CDM (Mean value=7.7841) and least cost effective one is Traditional banking services as its mean value is 46.6149.

8.6.5. Research Model

The research model analysis provides the functional relationship of cost per transaction of e-banking services with traditional banking services. Even though all banking services are independent, there exists some logical relationship which is explained through regression analysis. It proves that, the average cost per transaction of Internet service (0.5344ps) is lowest followed by that of Mobile banking (Rs.1.8737), Recycler (4.3563 Rs), ATM (Rs.5.2715), CDM (Rs.7.7841) whereas cost

of traditional banking service is very large (Rs.46.6149). It is also revealed that, the functional relationship of CDM & Recycler services are insignificant than that of ATM, Internet and Mobile banking services.

8.6.6. ABC in Banking Industry

1. TheActivity BasedCosting can depict the unit cost structure of various transaction channels of SBI in Kerala. That means,it shows how much cost is incurred by bank for each transaction channel for conducting one unit of transaction. To be able to draw conclusions about profitability and complete unit measurement, some investigation into the income side has to be made as well. There being no information available about the proportion of different client segments and their behavior statistics. Hence, the cost dimension of depository transactions is only analyzed in this research work. Accordingly, an average of Rs. 46.50 is incurred by bank for making one transaction in traditional channel. In the case of ATM, CDM & Recycler transactions cost incurred by bank will become Rs.5, Rs.5.5 and Rs.5 respectively. The cost per unit of transaction of internet banking is Rs. 0.54 and in the case of mobile banking, it is Rs.1.88. The ABC also makes it clear that, the most cost effective channel of SBI during the period of 2013-2016 is internet banking.

2. Cost allocation chain of SBI discloses that, operation cost is the cost pool and Number of transactions is the cost driver for the computation of the transaction cost of each banking service. For traditional banking, the most important part of expenses is associated with staff wages. For ATM, CDM & Recycler services, machine cost is the highest cost element, but it was incurred in the initial years only. In the case of internet and mobile banking all types of expenseslike Software installation and IT expensesare directly entered in to total cost. The major cost component for electronic channels lies in IT operational expenses. Various components of IT operational expenses are listed below:-

- Servers &Communication
- Software cost
- Storage cost (includes cost of information volumes available online to clients)

- Internal IT maintenance cost(System administration, IT service maintenance, IT helpdesk, monitoring departments)

3. The cost dynamics of SBI proved that, the most cost effective channel of SBI, the internet banking costs 86.11 times less than cost in traditional banking services. Mobile banking comes to 24.7 times less than traditional banking services and ATM, CDM & Recycler services are around 9.3 times less than traditional channels. It is also found that, electronic channels are the most effective cost saving channels than traditional lines. In the case of SBI, e-banking channels are 6.28 times cheaper than the traditional banking channels.

Section B

8.7 Conclusions

The study provides a conceptual model which explains and predicts variables that influence various transaction channels of SBI in Kerala.Electronic banking is the newest delivery channel of banking services. e- banking defined as a variety of the platforms like ATM, CDM, RecyclerInternet banking and Mobile banking services.

The transaction cost of various banking services of SBI is compared in four dimensions like Volume, RBO, Module and Network.The four dimensional analysis reveals that, there is significant variation in the Transaction cost of all Transaction channels of SBI in Volume level, RBO level and Module level whereas no significant variation in the transaction cost of Network level of operations. However, bank's attention is needed in the area of high transaction cost of HVBs in Volume level, CLT-1 RBO in RBO level and Calicut Module in the Module wise comparison. The researcher also proposes a research model using regression analysis for comparing the overall transaction cost of various banking services of SBI in Kerala.It proves that, the average cost per transaction of Internet service (Rs.0.5344) is lowest followed by that of Mobile banking (Rs.1.8737), Recycler (Rs.4.3563), ATM (Rs.5.2715), CDM (Rs.7.7841) whereas cost of traditional banking service is very large (Rs.46.6149). It is also revealed that, the functional relationship of CDM & Recycler services are insignificant than that of ATM, Internet and Mobile banking services. Moreover,the cost dynamics of SBI proved that, the most cost effective channel of SBI, the internet banking costs 86.11 times less than cost in traditional banking services. Mobile

banking comes to 24.7 times less than traditional banking services and ATM, CDM & Recycler services are around 9.3 times less than traditional channels. It is also found that, electronic channels are the most effective cost saving channels than traditional lines as e-banking channels are 6.28 times cheaper than the traditional banking channels. While considering the usage pattern, it has been found that except for ATMs, the acceptance and continued use of a product or service of other channels like Internet and Mobile banking are yet to pick up in a big way among the bank customers.

Recycler machines are the upgraded version of ATM services which offers both depositing and withdrawing facility. However, these are not using popularly by the public and bankers fail in providing awareness of such upgraded tech savvy services. The study shows that transaction cost in branch is much higher than the cost of alternative delivery channel and there will be no significance of the branch in coming time, on account of growing use of these channels. The spread of any time channels or alternative delivery channels has really pulled out the crowd from the branches and will help the banks in saving cost of operation and enhance profit. The biggest advantage of digitalization of banking is that process flow will be smooth, systematic, transparent and less time consuming. This would save cost and time for the banks. The branch staff would be able to invest their excess time in other services like consultancy, cross selling, relationship building and recovery. Efficient use of technology has facilitated accurate and timely management of the increased transaction volume of banks that comes with larger customer base. Finally, it is worthy to mention that comparative study based on transaction cost of various banking services will be an enriching vector for this work.

Section C

8.8 Suggestions

The study gives following suggestions to improve the performance of banking services in Kerala, based on the research findings and observation of the researcher.

1. Transaction cost is found to be the most important parameter for the cost measurement of various transaction channels. The study makes it clear that, operation cost and Number of transactions are the influencing variables of

the transaction cost. To make the transaction cost more cost effective the following measures are useful:

- Encouraging more and more number of transactions in each banking service will reduce transaction cost.
- It is suggested to focus on digital literacy and partnership to co-operate & compete with other banks for minimizing operation cost.
- In the high cost infrastructure of physical banking locations, bank should adopt the strategy of Managing Distribution instead of Managing Branches.
- Spread of anytime channels or alternative delivery channels will help the banks in saving cost of operation and enhance profit.
- It is suggested to have effective and regular follow up of the end use of funds.

2. The transaction cost of various banking services of SBI is compared in four dimensions like Volume, RBO, Module and Network levels. The four dimensional analysis reveals that,HVBs in Volume level, CLT-1 RBO in RBO level and Calicut Module in the Module wise have highest transaction cost and it is found that no significant variation in network wise comparison..Therefore, bank's attention is needed in these areas of highest transaction cost and banks should plan their marketing campaigns taking in to consideration this factor of reducing transaction cost.

3. As the number of transactions in branches has been steadily decreasing, the unit cost expenses related to branch transactions will increase. Hence the transaction cost in branch is much higher than the cost of anytime channels and there will be no significance of the branch in comingtime, on account of growing use of these channels. During this context, the branches will become more focussed on consulting and problem solving than in regular transaction processing (payments, cash operation). The branch staff should be able to invest the excess time in other services like consultancy, cross selling, relationship building and recovery.

4. The findings show thatelectronic channels are the most effective cost saving channels than traditional lines as e-banking channels are 6.28 times cheaper than the traditional banking channels. Thus, providing e-banking is increasingly becoming a matter of need to banks, to continue to compete in a globalised work and gain market competitive advantage. In order to increase the usage of e-banking services, bank should give more emphasis on:

   - Providing practical training sessions for customers at their branches on usage of electronic banking services.
   - Proper marketing communications which would increase consumer awareness would result in better acceptance of e-banking services.
   - Banks should try to develop their internet banking site and interface easier to use. Customers would increase e-banking usage when they find it easier to use.
   - Launch campaigns to raise awareness to more people about time saving, convenience at anywhere anytime, low costs and information availability.
   - Boost the general computer self-efficacy of the online customers through demonstrations at bank branches using a one-on-one consultancy system.

5. It is found that, Recycler machines are the upgraded version of ATMs which facilitate both deposits and withdrawals. Encourage more and more usage of Recycler machines, will help in reduction in cost of servicing customers at bank counters leading to significant savings for bank. Thus installing Recycler machines is an income generating, cost reducing and productivity enhancing activity. It is suggested to install Recyclers instead of ATM machines for the cost benefit of the bank.

6. Bank should constantly revive its existing tailor made technology based alternate delivery channels and consider in bringing up value additions to such channels, to meet the changing customer expectation and cope up with changing requirement of banking industry.

7. As most of the activities and operations are driven by considerations of higher returns or better profitability, the search for return exposes the business to higher risks. Banks have to ensure that they hold adequate capital and reserves so that the solvency and stability are not threatened. Then the challenge for bank is to turn cost centre in to profit centre.Then, the Bank will have to develop a fresh business model to succeed and tackling risks associated with technology and cash management.

8. The branch wise observation of e-banking services indicates that, there are a number of branches showing poor performance in providing electronic banking services. Hence, it is not possible to blindly state that e-banking is always profitable to all branches of SBI in Kerala. At this situation, it is suggested to extend the e-corner strategy to all branches of SBI. The e-corner is a technology driven one-stop banking service centre housing multiple ATMs,CDM,SSK,CVM which can be used for cash withdrawal, cash deposit, pass book updation, receiving coins etc. Customers can avail basic banking services 24*7 at their own convenience without going to the branch.

9. Banks would have adopted the effective, practical and competitive strategies to survive in the high tech banking environment. Besides, the value of services provided should be measured in terms of quantity and quality. To be successful a bank needs to be not just high tech but high touch as well.

10. For developing an effective cost measurement system, the bank management should identify the 'indirect cost' separately for each of the bank services where Activity Based Costing(ABC) would prove beneficial to the banking sector.The detailed information provided by the ABC technique can help banks to regulate and reduce some cost components. Therefore, it is suggested to the bank authorities that, they must realise the need and importance ABC system in banking industry and should set up a separate division for the same.

11. The findings of the study will be useful for Indian banks in planning and upgrading their e-banking services. Banks would have primarily adopted

the branch wise effective practical and competitive strategies to survive in the high tech banking environment. Simply sitting and watching will not help banks. They have to figure out way to get more and more digital in quick time. For the improvement of digitalization, following measures are useful for any bank branch:

- Needs a 'Digital Agenda' and a flexible strategy.
- Must find a balance between existing strengths and new types of banking business.
- Must be aware of the problem of IT security and must also pass this awareness on to its customers.
- Must modernise its IT infrastructure as necessary and ensure that the system are secure.
- At the same time, customer education is the need of the hour to avail banking services without much difficulty which are going to be delivered through e-banking mode.

Although, the initial investments in e-channels are high, providing e-banking is increasingly becoming a matter of need for banks to continue to compete in a globalised work and gain market competitive advantage. Banking has come a long way from the time of ledger cards and another manual filing system. SBI today has electronic system to handle their daily voluminous tasks of information, retrieval, storage and processing. It provides various facilities to its customers like ATM, CDM, Recyclers, Internet banking, Mobile banking, SWAYAM, Self supporting kiosks, EFT, Bill payments etc. However, the present investigation is based on ATM, CDM, Recycler, Internet and Mobile banking services only. Therefore, the insight gained in this study may offer a foundation for future research on self service technology and provide useful recommendations to the bankers for improving the upgraded technological services in modern millennium era.

8.9 Scope for Further Research

Based on the present investigation, the following topics are found relevant for further research.

1. Performance evaluation of Digital village initiatives in the banking scenario.
2. The impact of Sbi INTOUCH branches in Kerala.
3. An investigation into smart initiatives of banking sector in Kerala.
4. Role and Acceptance of State Bank Buddy among various customer groups.
5. The influence of merging and amalgamation of banks in the economy of the nation.

Bibliography

Abhay, J., & Hundal, B. (2006). Barriers in Mobile Banking Adoption in India. *The IUP Journal of Bank Management,Issue 3* , 64-73.

Abushanab, E., & Pearson, J. (2007). Internet Banking in Jordan; The Unified Theory of Acceptance and use of Technology(UTAUT)perspective'. *Journal of Systems and Information Technology,vol.9,issue-1* , 78-97.

Ahamed Audu, S. s. (2010). Effects of Electronic Banking Facilities,Employment sector and Age group on customer's choice of banks in Nigeria. *Journal of Internet Banking & commerce,vol 15,No.1* .

AhamedZakaria, Z. (2006). Role of the Electronic Banking Services on the profits of Jordanian Banks. *American Journal of Applied Sciences 3(9)* , 1999-2004.

Aki, O. (2002). Impact of Technology in Banking sector. *Management of Technology in Banking Internet Research,vol.14,no.3* , 213-223.

Al-Ashban, A., & Burney, M. (2001). Customer Adoption of Telebanking Technology:The case of Saudi Arabia. *International Journal of Bank Marketing* , 191-200.

Ambrose, E. (2012). Level of Efficiency and Effectiveness of Electronic Banking in Nigeria. *International Journal of Marketing and Technology,Vol.2,Issue.5* , 34-44.

Amin, H. (2007). Internet Banking Among Young Intellectuals in Malaysia. *Journal of Internet Banking and Commerce,vol.12,No.3* .

Anitha, S. (2010). Mobile Banking. *Professional Banker* , 32.

Anna s, P. k. (2012, May 20). *Open Access Journal.* Retrieved from SpringerLink.com.

Arunachalam L, S. M. (n.d.). The Future of Internet Banking in India. *Academic Open Internet Journal,vol.20* .

Ashish, D. (2009). *Customers Providing Benefit to Banks Through Usage of ATMs and EDC Machines.* USA: The University of Akren,Ohio.

Athul, B. (2014). Cost Benefit Analysis; AStudyof Selected Nationalised Banks in India. *Journal of Department of Management &Research,Integral University,Lucknow,Vol.3,Issue.1* .

Atkinson, A., kaplan, R., Matsumura, E., & Young, S. (2012). *Management Accounting:Information for Decision Making and Strategy Execution.* Essex:Pearson.

B. o. (2012). *Consumers and Mobile Financial Services.* Washington: Board of Governors of the Federal Reserve System.

Bajpai, N. (2011). *Business Research Methods.* chennai: Pearson publishers.

Basu, C. (1970). *The Rof Commercial Banking in the Planned Economy of India.* Burdwan University.

Blake, J. (1996). Consmption Profile Costing;An Enhancement to Activity Based Costing. *Journal of Bank Cost and Management Accounting,Vol.11,No.2* , p.5-43.

Boardman, N. (2006). *Cost Benefit Analysis,Concepts and Practice3rd edition.* Upper saddle River,NJ;Prentice Hall.

Boot, A. (2000). Relationship Banking: What Do we Know? *Journal of Financial Intermediation* , 7-25.

Brown, R., Myring, M., & Gard, C. (1999). Activity Based Costing in Govt; Possiilities and pitfalls. *Public Budgeting and Finance,19 (2)* , 3-21.

BurnhamT.A, F. (2003). Consumer switching costs:A Typology,Antecedents and Consequences. *Journal of the Academy of Marketing science,Vol.31,No.2* , 109-126.

Burr, W. (1996). Wie Informations technik die bank organisation ve randern konnte. *Bank and Market,vol.11* , 28-31.

Carmona J, s. X. (2008). Costing the Banking services: A Management Accounting Approach. *Journal of Money,Investment and Banking,Issue 6.*

Celent, C. (2000). *Is internet banking profitable?A study of Digital Insight's Offering.* www.celent .com.

Celent, R. (2014). A Crucial Strategy for Bank Branches in 2014. *Bank Technology,April 17* .

Chiemeke S.C, E. A. (2006). The Adoption of Internet Banking in Nigeria: An Empirical Investigation. *Journal of Internet Banking and Commerce,vol.11,No.3* .

Chowdhary. (2004). Privatisation,Performance and Efficiency: A Study of Indian Banks. *Vikalpa,Vol.30,No.1* , 7.

Cooper, R., & Kaplan, R. (1992). Activity Based Systems, Measuring the Costs of Resource Usage. *Accounting Horizons,September* , 1-13.

Cyril E.U, J. M. (2011). Factors Affecting Internet Banking Adoption Among Young Adults: Evidence from Malaysia. *International Conference on Social Science and Humanity*, (pp. 377-381).

Daniel, E. (1999). Provision of Electronic Banking in the U.K and the Republic of Ireland. *International Journal of Bank Marketing 17(2)* , 78-82.

DeepjyotiChoudhary, D. (2015). Salaried Employees and Adoption of e-Banking Delivery Channel. *International Journal of e-Education,e-Business,e-Management and e-Learning,vol.5,no.3* , 153-164.

Degryse, H., & steven, O. (2007). The Impact of Bank Competition on Bank Orientation. *Journal of Financial Intermediation,Vol.16 (3)* , 399-424.

DeyoungR. (2001). The Financial Performance of Pure Play Internet Banks. *Economic Perspectives25(1)* , 60-75.

Dhandayuthapani, S. (2012). *E-banking Practices and Customer Satisfaction in Thanjavur District Tamilnadu:An Empirical Study.* Bharathidasan University.

Dhekra, A. (2009). The Adoption of Electronic Banking in Tunisia: An Exploratory Study. *Journal of Internet Banking and Commerce,vol.14,No.3* .

Divya singhal, P. V. (2008). A study on Customer Perception towards Internet Banking:Identifying Major Contributing Factors. *Journal of Nepalese Business Studies,Vol.5,No.1* .

Dr.Manmindersinghsaluja, M. (2015). Impact of e-Banking on Profitabilityof Commercialbanks in India. *International Journal in Management and Social Science,vol.3,issue 2.*

Dr.RanjanJSabhaya, M. (2014). Study on Pre and Post Impact ofe-Banking on Banking Operation. *Galaxy International Interdisciplinary Research Journal,vol.2(3)* .

Drury, C. (2004). *Management and Cost Accounting.* New Delhi: Thomson Learning.

Durkin G.M, H. B. (2003). Relationship Marketing in Banking sector:The impact of new Technologies. *Marketing Intelligence and Planning* , 61-71.

Elisha, M. (2010). E- banking in Developing economy:Empirical Evidence from Nigeria. *Journal of Applied Quantitative Methods,Vol.5,No.2* .

EmanuelOrangiNyapara. (2013). *The Relationship betweenInformation CommunicationTechnology Usage on Efficiency Among CommercialBanks in Kenya.* kenya: University of Nairobi.

Emor. (March -May2002). *E-monitoring Report in Estonian.*

Essinger, J. (1999). *The Virtual Banking Revolution, The Customer,the Bank and the Future.* London,U.K: International Thomson Business Press.

Fida, H. C. (2011). *Studying Acceptance of Online Banking Information System-A structural Equation Model.* London: Brunel University.

Gareth, J. P. (2010). *Usability Design of (SMS)Short Message Service Mobile phone banking.* the University of Edinburgh.

Geetika, N. T., & Upadhhyay, A. (2008). Internet banking in India:Issues &Prospectus. *The ICFAI Journal of Bank Management,Vol.7,No.2* , 47-61.

Gerrard, P., & Cunningham, J. (2003). The diffusion of internet banking among singapore consumers. *International Journal of Bank Marketing,vol.21,No.1* , 16-24.

Gow, K. (1997). Risk Vs Opportunity. *The Premier 100 supplement to computer world* , 24.

Gregory, D. W. (2006). Enhanced Profitability in Online banking. *Journal of Economic Crime Management,vol.4,issue.2* .

Gunasekaran. (2011). *An Empirical Investigationof e-banking/Internet banking from Bank customers Perspective.* Bharathi Dasan University.

GuptaS, V. (2008). Changing Paradigm in Indian Banking. *Professional Banker,May* , 21-25.

Hartfeil, G. (1996). Bank one Measures Profitability of Customers,Not just products. *Journal of Retail Banking services,summer XVIII(2)* , 23.

Hawari M, W. (2006). The Effect of Automated Service Qualityon Australian Banks Financial Performance and the Mediating Role of a Customer Satisfaction. *Market Intelligence Planning,Vol.24* , 127-147.

Helmi, M. N. (1996). Activity Based Costing in Banking: A big challenge. *The journal of Bank Cost and Management Accounting,Vol.9,No.2* , p.5-19.

HenkBroeders, S. (2015). Strategic Choices for Banks in the Digital Age. *Mckinsey Quarterly Journal,January* .

Hua, G. (2009). An Experimental Investigation of Online Banking Acceptance in China. *Journal of Internet Banking and Commerce 14(1)* .

Hway, B. O., & Yu, C. (2003). Success Factors in e-Channels;Malaysian Banking scenario. *International Journal of Bank Marketing* , 369-377.

IBA. (2009, July). ATM usage free. *Reserve Bank Of India Bulletin* .

Indian Institute, O. B. (2010). *Bank Financial Management.* Mumbai: Macmillan Publishers,India Ltd.

Indian Instiute, o. B. (2010). *Advanced Bank Management.* Mumbai: Macmillan Publishers India Ltd.

Innes, J., & Mitchell, F. (1990). Activity Based Costing Research. *Management Accounting* , 20-29.

Joseph M, M. C. (1999). Service Quality in Banking sector:The Impact of Technology on Service Delivery. *International Journal of Bank Marketing* , 182-191.

Joseph M, S. G. (2003). An Empirical Evaluation of US Bank Customer Perception of the Impact of Technology on Service Delivery in Banking Sector. *International Journal of Retail and Distriution Management,Vol.31,No.4* , 190-202.

Joshua, A. (2009). *Adoption of Technology Enabled banking self services,Antecedents and Consequences.* Cochin University of Science and Technology.

K.Gunasekaran. (2011). *An Empirical Investigation of e-Banking/Internetbanking from Bank Customer's Perspective.* Bharathi Dasan University.

kamath, K. (2015). Contours of Future Indian Banking Landscape. *Banking Finance* , 36-43.

KamesamV. (2001, November). Information Technology Challenges In Banks. *RBI Bullettin,vol.5,No.11* , pp. 1225-1228.

Kaminisingh. (2011). Innovated Technology in Banking Services. *Jounrnal of Internet Bankig and Commerce,Vol.16 No.2* .

Kaplan, R., & Anderson, S. (2004). Time Driven Activity Based Costing. *Harvard Business Review* , 82.

KarjaLuoto H., M. M. (2002). Factors Underlying Attitude Formation towards Online Banking in Finland. *International Journal of Bank Marketing 20(6)* , 261-272.

Kendall, M. (1971). *Cost Benefit Analysis.* London: The English University Press Ltd.

Kerem K, L. O. (2003). "Development of e-banking in a EU candidate country:An Estonian Case". *Proceedings of International Atlantic Economic Society Conference.* Vienna.

Khalfan A, Y. S. (2006). FFactors Influencing the Adoption of Internet Banking in Oman: A Descriptive Case Study Analysis. *International Journal of Financial Services Management,1(2)* , 155-172.

Khan M.S, M. S. (2009). Service Quality Evaluation in Internet Banking;An Empirical Study in India. *International Journal of Indian Culture and Business Management,vol.2* , pp.30-46.

Khrais, L. (2013). The Effectiveness of e-Banking Environment in Customer Life Service-An Empirical Study. *Polish Journal of Management Studies,vol.8* , 112-114.

Klapper, D.-K. (2012). *Measuring Financial Inclusion: The Global Index Database.* Washington.

Kothari, C. (2008). *Research Methodology, Methodology and Techniques.* New Age International Publishers.

Laukkanen T, L. J. (2005). Consumer Value Creation in Mobile Banking Services. *International Journal of Mobile Communications,vol.3,No.4* , 325-338.

Lee, M. (2000). Consumer Adoption in Internet Banking:Need based and /or Skill based. *Marketing Management JournalmVol.11,No.1* , 101-113.

Lee, M. (2009). Factors Influencing the Adoption of Internet Banking:An Integration of TAM and TPB with Perceived Risk and Perceived Benefit. *Electronic Commerce Research and Applications* .

Liyenage, M., Noopehewa, P., Perrera, & Gunarethne, N. (2014). Implimenting ABC; The case of a Central Bank in a south Asian Country. *International Journal of Information Technology and Business Management,vol.25,No.1* .

Luis V.Casala, C. F. (2008). The Role of Satisfaction and Website Usability in Developing Customer Loyaltyand Positive Word of Mouth in the e-Banking Services. *International Journal of Bank Marketing,vol.26,issue 6* , 399-417.

Lurther, J. P. (1977). *Productivity,Efficiency and Profitability of Comercial Banks.* Reserve Bank of India.

M, R. (2008, January). Organization Retailing in India. *Business Line* , pp. 44-49.

M.A, A.-A. A. (2001). Customer Adoption of Telebanking Technology,The Case of Saudi Arabia. *International Journal of Bank Marketing,vol.19,No.5* , 191-200.

Machauer, A., & Morgner, s. (2001). Segmentation of Bank Customers by Expected Benefits and Attitudes. *International Journal of Bank Marketing,vol.19,n0.1* , 61.

Maheswari, N. (2011). *Comparative study on e-banking services between nationalised and private banks in Thiruchirappalli District.* Bharathi Dasan University,Thiruchirappalli.

Maiyaki, A. (2011). The Practicability of Activity Based Costing in the Nigerian Retail Bank. *Business Intelligence Journa,Vol.4,No.2l* .

Malhotra, P., & Singh, B. (2009). The Impact of Internet Banking on Bank Performance and Risk:The Indian Experience. *Eurasian Journal of Business and Economics,vol.2,No.4* , 43-62.

Manminder, S. s., & Tripti, w. (February,2015). Impact of e-Banking on Profitability of Commercial Banks in India. *International Journal in Management and Social Science,Vol.3,Issue 2* .

Margherio, L. (2003). *The Emerging Digital Economy.* Retrieved from http://www.ecommercecommission.org/document/EmergingDig.pdf.

Mart sorg, O. L. (2004). *Banking Business in Transition Period may be Highly Profitable-Estonian Experience.* Estonia: amazonaws.com.

Megha, T. (2010). *A study on Internet Banking Services in SBI with Special Significance on the Quality.* Thrissur: College of Co-operation Banking and Management,Vellanikkara.

Michel R., A. N. (2009). An Examination of the Relationship between Service Quality Dimensions,Overall Internet Banking Service Quality and Customer Satisfaction. *Marketing Intelligence & Planning27(1)* , 103-126.

Mike, C., Christopher, G., Visit, L., & Amy, w. (2006). A Logic Analysis of Electronic Banking in Newzealand. *International Journal of Bank Marketing,vol.24,issue-6* , 360-383.

MiniJoseph. (2011). *Policy Changes and its Impact on Demand and Supplyof Bank Credit.* Mahatma Gandhi University,Kottayam.

Mishan, E. (1972). *Elements of Cost Benefit Analysis.* London: George Allen and Unwin Ltd.

MishraA.K. (2005). *www.banknetindia.com.* Retrieved from http://www.banknetindia.com/banking/ibkg.html5.

MorgnerS., M. A. (2001). Segmentation of Bank Customers by Expected Benefits and Attitudes. *International Journal of Bank Marketing 19(1)* , 61.

Murali, S. (2006, March). Measurement Customer Satisfaction: Need of the hour. *The Professional Banker* , pp. 1-7.

Muthumani A, P. R. (2012). e-CRM in Indian Banking Sector. *Banking Finance,Vol xxv,No.10* , 32-35.

Neeraj, S. (2011, May 18). Retrieved from http://hdl.handle.net/10603/2076.

NOIE. (2000). *Banking on the Net National Office for the Information Economy Australia.* Australia: National Office for the Information Economy.

o, L. (2003). *Hansabank ABC Handbook,Hansabank.*

Ojo-Agbodu, A. A. (2012). The Adoption of e-Banking in Nigeria; Problems and Prospects. *International Journal of Marketing and Technology,Vol 2,issue 6* .

Olga, L. (2004). *Can e-Banking Services are profitable?* Estonia: Tartu University Press.

Oyeleye O, S. M. (2015). An Investigation of the Effects of Customer's Educational Attainment on their Adoption of e-Banking in Nigeria. *Journal of Internet Banking and Commerce,vol.20,No.3* .

Petersonobaramaguter, m. B. (2011). E-commerce Products and Services in the Banking Industry;The Adoption and Usage in Commercial Banks in Kenya. *Journal of Electronic Banking systems.* , Article ID678961.

Pham, L. (2010). A Conceptual Framework for e-Banking Service Quality in Vietnam. *The Business Studies Journal* .

Philip C James. (July 2013). An Analysis of the Factors Influencing the Adoption of ABC in the Financial Sector in Jamaica. *Intnernational Journal of Business and Social Research,Volume 3,No.7* .

Pramod, D. (2006). *A Study of Infotech(IT)SecurityTraining Imparted in Indian Banks.* University of Pune.

Prendergast G, M. N. (1994). The Future of Self Service Technologies in Retail Banking. *The Service Industries Journal,14(1)* , 94-114.

puri, K. (2004). Indian Banks: Bigger,Better and Remote controlled. *usiness Intelligence Journal,Vol. 2,No.2* , 279.

Qureshi, T., Zafar, M., & Khan, M. (2008). Customer Acceptance of Online banking in Developing Economies. *Journal of Internet Banking and Commerce,Vol 13,No.1* .

Radhakrishnan. (2008). Organisation Retailing in India. *Business Line* , 44-49.

Raffish, N., & Turney, P. (1991). The CAM-1,Glossary of ABM. *Arlington Tex.CAM-1* .

Ranjan, J. S., Ankita, B., & Paral, C. (2014). A Study on Pre and Post Impact of e-Banking on Banking Operation. *Galaxy international interdisciplinary Research journal,Vol.2,No.3* .

RBI. (2007). *ATMs of Banks: Fair pricing and Enhanced Access-Draft Approach.* RBI.

RBI. (2007). *Report of the working group to formulate a scheme for ensuring reasonableness of bank charges.* RBI.

RebeccaTMcgregor. (2013). *Mobile Banking:Increasing Access to Financial Services.* Washington DC: George Town University.

Reibston, D. (2002). What Attracts Customers to Online Stores and What Keeps Them Coming Back? *Journal of the Academy of Marketing Science,Vol 30* , 465-473.

Renil, R. (2011). *A Comparative Analysis of SBI Deposit Products.* Thrissur: College of Co-operation ,Banking & Management,Vellanikkara.

Richard Nyangosi, S. s. (2009). E-banking in Kenya. *International Journal of Electronic Finance,vol.3,No.2* , 149-165.

Richard, L. (1972). *Cost Benefit Analysis.* England: Penguin Books Ltd.

Ross, E. (1987). Manage Customers for Profits(Not just sales). *Harvard Business Review* .

Sabate, J., & Punte, E. (2003). The Concept and Measurement of Corporate Reputation: An Application to Spanish Financial Intermediaries. *Corporate Reputation Review5(4)* , 280-301.

safeena, A. (2010). Customer Perspectives on e-Business Value:Case study on Internet Banking. *Journal of Internet Banking and Commerce,Vol.15 No.1* .

Salehi, M. (2010). e-Banking in Emerging Economy: Empirical Evidence of Iran. *International Journal of Economics and Finance* .

Sandeep, B. (2012). Will Mobile Companies Leave the Banking Business to Banks? *Banking Finance,vol.xxv No.11* , 25-28.

SankaranM. (1999). Creating and Sustaining Competitive Advantageof Financial Service Industry inIndia. *Indian Management* , 83-89.

Santha Vaidhyalingam, M. N. (2006). Key Drivers for Soundness of the Banking Sector:Lessons for Developing Countries. *Journal of Global business and Technology,Vol.2,No.1* .

sathye. (1999). Security Concerns and Lack of Awareness about Internet Banking and its Benefits. *International journal 0f Bank Marketing* .

SchumpeterJ.A. (1911). *A Theory of Ecoomic Development.* Hardward University Press.

Seward, S. &. (1999). *ABC,The Balance Score Card and EVA,Distinguishing the means from the End,Volume.1,Issue2.*

Shahzeb, A. M. (2010). *On the use of Customer Relationship Management in the Banking Industry: A Qualitative case Analysis between the banks in Pakistan and the U.K.* London: Manchester Business School.

Sheshunoff, A. (2000). Internet banking: An update from the frontlines. *American Bankers Association Banking journal92(1)* , 51-53.

ShiYu. (2009). *Factors influencing the use of mobile banking:The case of SMS based mobile banking.* Auckland University of Technology.

Simhan, R. (2003, April 29). Shared ATM networks Gain favours. *Business Time,Internet edition* .

SivaRamaPrasad, P. (April-June 2004). Product Innovation,A suggestion from Reader. *Bank Quest* , 30.

Sohali, M., & Shanmugham, B. (2003). E-banking and customer preferences in Malaysia: An empirical investigation. *Information Sciences,150(1)* , 2017-217.

Srivastava, R. (2014). A cost/Benefit/Risk(CBR) Analysis Methodology and its application in a computing system. *International Journal of Enhanced Research in Science technology & Engineering,Vol.3,Issue 1* , 491-492.

Srivastava, R. (2007). Consumers perception on usage of Internet banking. *Innovative Marketing,Vol.3,Issue.4* .

Subbiah A, j. S. (2008, October-December,volXXIX,No.3). Customer service in commercial banks in India:Astudy with reference to core banking.

Sudeep, S. (2008). Adoption and Usage of Internet banking in India. *Banking in the Era of Diverse Development Paradigms:From Financial Inclusion to Special Economic Zones* (pp. 5-10). Kochi: Department of Applied Economics,CUSAT.

Suganthi, Balachandher, & Balachandran. (2001). Internet Banking : An Empirical Investigation of Malaysia. *Journal of Internet Banking and Commerce,vol.6,No.1* .

Sultansingh, M. (2009). Impact of ATM on customer Satisfaction,A comparative study of SBI,ICICI & HDFC bank. *Business Intelligence Journal,vol.2,No.2* , 277.

Sunitha, B. (2013). Customer perception towards ATM/Debit cards. *Integral review-A journal of Management,vol.6,No.1* , 47-60.

Suresh Chandra, B. (2011). Internet Technology and Customer Profitablity in Banks. *Journal of Contemporary Research in Management* .

system, B. o. (2012). *Consumers and Mobile Financial Services.* Washington: Board of Governors of the Federal Reserve System.

Tagreed, A. S. (2013). *Framework for the Adoption of Online Banking.* United Kingdom: Demontfort University.

Tan, M., & Teo, T. (2000). Factors Influencing the Adoption of Internet Banking. *Journal of Association of Information Systems,vol.1,No.5* , 1-42.

TaotingLi. (2013). *Applying The IS success Model to Mobile Banking Apps.* Canada: University of Lethbridge.

Lustsik,O.(2001). *The Dynamo of e-Banking.* Business Week Online,April 16.

Unnithan, C., & Swatman, P. (2001). *e-Banking Adoption and Dot.com Viability; A Comparison of Australian and Indian Experiences in the Banking Sector.* U.S.A: Deakin University.

Uppal, R. (January,2011). e-Delivery Channels in Banks. *A Fresh Outlook,International Referred Research Journal.vol-2,isue-1* , 181-191.

Urvashi, K. (2007). ATM: The Power of Cash. *Dataquest:IT Giant* .

Weiner, J. (1995). Activity Based Costing for Financial Institutions. *The Journal of Bank Cost and Management Accounting,Vol.8,No.3* , p.19-44.

weinninger. (2000). The Emerging Role of Banks in e-Commerce. *Current Issues in Economics & Finance,vol.6,No.3* , 1-6.

wendy w.n.wan, c.-L. L. (2005). Customer's Adoption of Banking Channels in Hongkong. *International Journal of Bank Marketing,vol.23,issue.3* , 255-272.

Williams, C., & Melhuish, W. (1999). Is ABCM Destined for success or Failure in the Federal Government. *Public Budgeting and Financing 19(2)* , 22-36.

Yereli, A. (2009). *Activity Based Costing and its Application ina Turkish UniversityHospital.* Association of Perioperative Registered Nurses,Turkey.

ZachariasThomas. (1997). *Performance Effectiveness of Nationalised Bank-A Case Study of Syndicate Bank.* Kochi: Cochin University of Science and Technology.

Electronic Sources

https://www.banknetindia.com

https://www.iba.org.in

https://www. Bcsbi.org.in

https://www.helpdit@rbi.org.in

https://www.helpdpss@rbi.org.in

https://www.helpdsacs@rbi.org.in
https://www.helpdeap@rbi.org.in
https://www.helpdbod@rbi.org.in
https://www.internetworldstats.com
https://www.sbi.co.in
https://www.businessresearchguide.com
https://www.economictimes.indiatimes.com
https://www.ithandbook.ffiec.gov
https://www.rbi.org.in//scripts/paymentsystem
https://www.indianresearchjournals.com
https://www.onlinesbi.com
https://www.bankrate.com


Appendix

Appendix

SCHEDULE FOR COST BENEFIT ANALYSIS OF E-BANKING SEVICES OF SBI IN KERALA

1. Basic Information

a. Serial No.

b. Region

c. Name/code of the b

d. Type of bank:* *

*Low Volume Branch *Medium Volume Branch *High Volume Branch

2. Please indicate the values of efficiency parametres in your branch.

Efficiency parametres	2010	2011	2012	2013	2014	2015	2016
Avge business/employee							
Netprofit/employee							
Gross rate of return(%)							
Expense Ratio(%)							
Avge yield on Advances(%)							
Avge cost of deposits(%)							
Avge interest spread(%)							
Other income/Total income(%)							
Transaction cost(%)							
No.of employees							

3. How is the position of e-banking services in your bank in recent years?

e-banking services	No.of transactions in 2013	No. of transactions in 2014	No. of transactions in 2015	Growing/declining/stagnant position
ATM				
CDM				

ATM Recycler				
SSK				
SWAYAM				
IB				
MB				

4. State the total amount of the following expenditure per month /quarter/year occurred in your branch

Expenditure	Total amount/month/quarter/year
a. Staff wages	
b. Electricity charges	
c. Building rent	
d. Repairs and maintenance	
e. Insurance	
f. Telephone charges	
g. Stationary and printing	
h. Any other direct cost	

5. How many employees are working in your branch?

6. How many employees are engaged in cash transaction or in depository transactions?

7. What is the total number of transactions occurred in your branch per day?

8. From the total number of transactions, how many depository transactions are occurred?

9. How many working days are obtained in your branch per month?

10. Do you know all India level SBI average rates per transaction as footfall?

11. What is the average level of operation cost/ transaction cost per month in your branch**?**

12. Please give the amount of expenditure per month/quarter/year for maintaining ATM in your branch

Expenditure	Amount/month/qurter/year		
	ATM	CDM	ATM+CDM
a. Cost of the machine			
b. Rent			
c. Electricity			
d. Cost replenishment charges			
e. Annual maintenance charges: Hardware AMC Software AMC			

13. How many average hits per day in your ATM?

14. How many average transactions/day are occurred in your CDM?

15. What is the total number of transactions occurred per day in your ATM Recycler?

16. Do you know All India Level Operation cost of ATM in SBI?

17. What is the average operation cost per ATM or CDM in your branch?

18. Please Tick Mark the services offered through SSK

a. Transfer Transactions ☐

b. RTGS ☐

c. NEFT ☐

d. Passbook printing ☐

e. others if any specify ☐

19. Please give the amount of expenditure for the following charges per month in maintaining SSK

Operation Cost	Amount/month/quarter/year
a. Machine Cost	
b. Electricity Charges	
c. Annual Maintenance Contract Charges	

20.How many average transactions per day are occurred through SSK facility in your branch?

21.Please give the amount of expenditure for the following charges per month in maintaining SWAYAM PASS BOOK.

Sl.no.	**Operation cost**	**Amount/month/year.**
1.	Machine Cost	

2.	Electricity Charges	
3.	AMC	
4.	Consumable cost	

22. How many transactions per day occurred trough SWAYAM PASS BOOK in your branch?

23. How many transactions are being carried out through Internet in your branch per day?

24. Please give the average amount per month for the following expenses for internet banking transactions in your branch?

Sl.no	Expenses/cost	Amount/month/year
1.	Internet kitcharges	
2.	Other charges if any specify	
3.		
4.		
5.		

25. What are the services / facilities offered through Internet Banking?

- ☐ Enquiry
- ☐ create deposits
- ☐ Transfer money
- ☐ Apply for ATM PINs
- ☐ Utility bill payment
- ☐ Others

26. Do you know All India average transaction cost for Internet Banking in SBI?

27. What is the amount of transaction cost of Internet Banking in your branch per day?

28. How many Mobile Banking transactions occurred per day in your branch?

29. What are the services/facilities extended through Mobile Banking?

- ☐ Enquiry
- ☐ create deposits
- ☐ Transfer money
- ☐ Apply for ATM PINs
- ☐ Utility bill payment
- ☐ Others

30. Please give the average amount per month for the following cost for Mobile Banking transactions in your branch

Sl.no	Cost	Amount/month/year
1	Kitcharges	
2	SMS charges	
3	Other charges if any specify	

4		
5		
6		
7		
8		
9		

31. Please rank the following alternate channels promoted by your branch in the order of preference.

a.ATM ☐

b.CDM ☐

c. ATM Recycler ☐

d. SSK ☐

e. SWAYAM ☐

f. IB ☐

g. MB ☐

32. State the reason for this preference----------

----------33. Identify the average number of complaints received from the following e-banking services in a month

a.ATM ☐

b.CDM ☐

c. ATM Recycler ☐

d. SSK ☐

e. SWAYAM ☐

f. IB ☐

g. MB ☐

34. What are the major reasons for these complaints? ----------

---

---

35 . Please make suggestions if any regarding alternate channel services----------

---

Annexures

Annexure-1

Transaction Cost Calculation of Mobile Banking Services

MB COST

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
SL. NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
1	HVB	EKM	EKM1	1	3	5	3	3	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.14	0.06	0.03
2	HVB	EKM	KTM	1	32	190	183	491	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.45	5.46	3.91	5.43
3	HVB	EKM	EKM1	1	10	321	530	866	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	9.22	11.32	9.58
4	MVB	EKM	EKM1	1	2	5	3	3	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.14	0.06	0.03
5	LVB	EKM	EKM1	1	2	12	8	21	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.34	0.17	0.23
6	MVB	EKM	EKM1	1	6	224	427	1353	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	6.43	9.12	14.97
7	LVB	EKM	EKM1	1	3	32	36	221	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.92	0.77	2.45
8	MVB	EKM	EKM1	1	21	113	105	291	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.95	3.25	2.24	3.22
9	MVB	EKM	EKM1	1	1	18	10	17	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.52	0.21	0.19
10	MVB	EKM	EKM1	1	2	24	5	21	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.69	0.11	0.23
11	MVB	EKM	EKM1	1	5	110	106	456	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	3.16	2.26	5.05
12	MVB	EKM	EKM1	1	47	525	523	422	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.12	15.08	11.17	4.67
13	MVB	EKM	EKM1	1	9	82	71	329	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	2.35	1.52	3.64
14	MVB	EKM	EKM1	1	4	180	171	214	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	5.17	3.65	2.37
15	LVB	EKM	EKM1	1	8	50	49	97	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	1.44	1.05	1.07
16	LVB	EKM	EKM1	1	10	82	60	87	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	2.35	1.28	0.96
17	MVB	EKM	EKM1	1	4	85	80	404	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	2.44	1.71	4.47
18	LVB	EKM	EKM1	1	2	70	69	187	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	2.01	1.47	2.07
19	LVB	EKM	EKM1	1	1	4	2	1	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.11	0.04	0.01
20	LVB	EKM	EKM1	1	1	54	53	109	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	1.55	1.13	1.21
21	MVB	EKM	EKM1	1	50	340	336	526	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.26	9.76	7.17	5.82
22	LVB	EKM	EKM1	1	5	25	23	28	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.72	0.49	0.31
23	LVB	EKM	EKM1	1	16	83	64	121	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	2.38	1.37	1.34
24	LVB	EKM	EKM1	1	35	182	190	658	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.58	5.23	4.06	7.28
25	LVB	EKM	EKM1	1	5	24	29	31	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.69	0.62	0.34
26	LVB	EKM	EKM1	1	16	72	78	232	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	2.07	1.67	2.57
27	LVB	EKM	EKM1	1	1	22	11	34	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.63	0.23	0.38
28	LVB	EKM	EKM1	1	2	15	17	52	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.43	0.36	0.58
29	LVB	EKM	EKM1	1	9	16	18	52	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.46	0.38	0.58
30	LVB	EKM	EKM1	1	2	21	36	88	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.60	0.77	0.97
31	LVB	EKM	EKM1	1	7	28	37	63	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.80	0.79	0.70
32	LVB	EKM	EKM1	1	4	18	29	20	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.52	0.62	0.22
33	LVB	EKM	EKM1	1	6	5	5	10	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.14	0.11	0.11
34	LVB	EKM	EKM1	1	2	2	2	5	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.06	0.04	0.06
35	LVB	EKM	EKM1	1	16	3	3	16	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	0.09	0.06	0.18
36	LVB	EKM	EKM1	1	6	12	8	46	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.34	0.17	0.51
37	LVB	EKM	EKM1	1	7	27	28	37	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.78	0.60	0.41
38	MVB	EKM	EKM1	1	16	90	94	130	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	2.58	2.01	1.44
39	LVB	EKM	EKM2	1	43	54	156	228	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.94	1.55	3.33	2.52

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
40	LVB	EKM	EKM2	1	15	175	188	281	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	5.03	4.01	3.11
41	MVB	EKM	EKM2	1	15	75	81	459	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	2.15	1.73	5.08
42	MVB	EKM	EKM2	1	91	100	210	190	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	4.11	2.87	4.48	2.10
43	MVB	EKM	EKM2	1	19	119	141	717	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	3.42	3.01	7.93
44	LVB	EKM	EKM2	1	15	54	65	226	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	1.55	1.39	2.50
45	MVB	EKM	EKM2	1	35	98	106	750	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.58	2.81	2.26	8.30
46	LVB	EKM	EKM2	1	1	26	32	60	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.75	0.68	0.66
47	LVB	EKM	EKM2	1	8	45	54	286	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	1.29	1.15	3.16
48	LVB	EKM	EKM2	1	12	20	23	62	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.57	0.49	0.69
49	LVB	EKM	EKM2	1	2	15	21	12	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.43	0.45	0.13
50	MVB	EKM	EKM2	1	2	10	14	16	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.29	0.30	0.18
51	LVB	EKM	EKM2	1	2	24	52	27	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.69	1.11	0.30
52	LVB	EKM	EKM2	1	6	9	12	11	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.26	0.26	0.12
53	LVB	EKM	EKM2	1	4	8	12	69	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.23	0.26	0.76
54	LVB	EKM	EKM2	1	2	20	34	54	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.57	0.73	0.60
55	LVB	EKM	EKM2	1	3	3	3	20	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.09	0.06	0.22
56	LVB	EKM	EKM2	1	8	44	58	225	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	1.26	1.24	2.49
57	LVB	EKM	EKM2	1	8	18	25	68	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.52	0.53	0.75
58	LVB	EKM	EKM2	1	29	30	76	54	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.31	0.86	1.62	0.60
59	LVB	EKM	EKM2	1	18	25	47	54	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	0.72	1.00	0.60
60	LVB	EKM	EKM2	1	2	12	20	14	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.34	0.43	0.15
61	LVB	EKM	EKM2	1	27	37	67	127	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.22	1.06	1.43	1.41
62	LVB	EKM	EKM2	1	8	26	56	226	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.75	1.20	2.50
63	LVB	EKM	EKM2	1	13	15	67	28	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.43	1.43	0.31
64	LVB	EKM	EKM2	1	7	12	15	20	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.34	0.32	0.22
65	LVB	EKM	EKM2	1	11	15	25	28	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	0.43	0.53	0.31
66	LVB	EKM	EKM2	1	17	12	19	15	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.34	0.41	0.17
67	MVB	EKM	EKM2	1	24	122	201	351	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.08	3.50	4.29	3.88
68	LVB	EKM	EKM2	1	7	12	13	27	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.34	0.28	0.30
69	MVB	EKM	EKM2	1	26	34	98	297	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.17	0.98	2.09	3.29
70	MVB	EKM	EKM2	1	8	68	91	381	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	1.95	1.94	4.22
71	LVB	EKM	EKM2	1	6	36	45	110	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	1.03	0.96	1.22
72	LVB	EKM	EKM2	1	12	14	40	35	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.40	0.85	0.39
73	LVB	EKM	EKM2	1	13	14	14	50	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.40	0.30	0.55
74	LVB	EKM	EKM2	1	6	16	17	41	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.46	0.36	0.45
75	LVB	EKM	EKM2	1	7	17	42	194	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.49	0.90	2.15
76	LVB	EKM	EKM1	1	6	3	3	6	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.09	0.06	0.07
77	LVB	EKM	EKM2	1	27	127	240	382	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.22	3.65	5.12	4.23
78	LVB	EKM	EKM2	1	17	25	54	32	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.72	1.15	0.35
79	LVB	EKM	EKM2	1	5	12	14	25	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.34	0.30	0.28
80	LVB	EKM	EKM2	1	4	24	24	29	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.69	0.51	0.32

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
81	MVB	EKM	EKM2	1	36	65	131	82	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.63	1.87	2.80	0.91
82	MVB	EKM	EKM2	1	6	14	15	24	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.40	0.32	0.27
83	LVB	EKM	EKM2	1	12	22	31	75	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.63	0.66	0.83
84	LVB	EKM	EKM2	1	7	6	6	14	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.17	0.13	0.15
85	MVB	EKM	EKM3	1	6	15	27	50	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.43	0.58	0.55
86	MVB	EKM	EKM3	1	3	42	52	121	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	1.21	1.11	1.34
87	MVB	EKM	EKM3	1	20	23	56	517	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.90	0.66	1.20	5.72
88	LVB	EKM	EKM3	1	3	5	6	8	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.14	0.13	0.09
89	LVB	EKM	EKM3	1	4	5	8	8	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.14	0.17	0.09
90	MVB	EKM	EKM3	1	3	30	51	169	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.86	1.09	1.87
91	LVB	EKM	EKM3	1	6	26	64	27	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.75	1.37	0.30
92	MVB	EKM	EKM3	1	10	12	40	19	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.34	0.85	0.21
93	LVB	EKM	EKM3	1	2	8	10	42	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.23	0.21	0.46
94	MVB	EKM	EKM3	1	17	26	40	328	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.75	0.85	3.63
95	LVB	EKM	EKM3	1	4	12	23	22	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.34	0.49	0.24
96	MVB	EKM	EKM3	1	18	48	150	1083	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	1.38	3.20	11.98
97	MVB	EKM	EKM3	1	11	12	14	14	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	0.34	0.30	0.15
98	HVB	EKM	EKM3	1	36	32	87	404	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.63	0.92	1.86	4.47
99	LVB	EKM	EKM3	1	6	10	31	13	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.29	0.66	0.14
100	LVB	EKM	EKM3	1	2	4	20	6	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.11	0.43	0.07
101	LVB	EKM	EKM3	1	1	3	13	3	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.09	0.28	0.03
102	LVB	EKM	EKM3	1	3	5	7	10	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.14	0.15	0.11
103	MVB	EKM	EKM3	1	23	32	53	332	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.04	0.92	1.13	3.67
104	MVB	EKM	EKM3	1	2	22	43	41	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.63	0.92	0.45
105	LVB	EKM	EKM3	1	2	12	12	12	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.34	0.26	0.13
106	LVB	EKM	EKM3	1	5	14	14	21	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.40	0.30	0.23
107	MVB	EKM	EKM3	1	14	8	18	7	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.63	0.23	0.38	0.08
108	MVB	EKM	EKM3	1	20	21	29	22	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.90	0.60	0.62	0.24
109	LVB	EKM	EKM3	1	16	10	8	20	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	0.29	0.17	0.22
110	LVB	EKM	EKM3	1	1	20	24	39	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.57	0.51	0.43
111	MVB	EKM	KTM	1	3	121	132	512	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	3.48	2.82	5.67
112	LVB	EKM	KTM	1	19	28	61	169	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	0.80	1.30	1.87
113	MVB	EKM	KTM	1	5	15	60	371	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.43	1.28	4.11
114	MVB	EKM	KTM	1	1	6	56	109	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.17	1.20	1.21
115	MVB	EKM	KTM	1	18	23	52	255	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	0.66	1.11	2.82
116	MVB	EKM	KTM	1	6	56	79	101	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	1.61	1.69	1.12
117	LVB	EKM	KTM	1	3	21	36	141	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.60	0.77	1.56
118	LVB	EKM	KTM	1	1	12	23	77	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.34	0.49	0.85
119	MVB	EKM	KTM	1	17	118	164	565	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	3.39	3.50	6.25
120	MVB	EKM	KTM	1	10	12	28	111	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.34	0.60	1.23
121	MVB	EKM	KTM	1	5	14	19	64	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.40	0.41	0.71

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
122	MVB	EKM	KTM	1	2	17	27	67	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.49	0.58	0.74
123	MVB	EKM	KTM	1	42	134	264	752	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.90	3.85	5.64	8.32
124	MVB	EKM	KTM	1	5	45	59	116	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	1.29	1.26	1.28
125	MVB	EKM	KTM	1	23	112	139	135	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.04	3.22	2.97	1.49
126	MVB	EKM	KTM	1	29	52	108	184	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.31	1.49	2.31	2.04
127	MVB	EKM	KTM	1	4	25	48	69	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.72	1.02	0.76
128	LVB	EKM	KTM	1	7	28	32	235	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.80	0.68	2.60
129	LVB	EKM	KTM	1	17	18	23	70	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.52	0.49	0.77
130	LVB	EKM	KTM	1	18	22	34	40	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	0.63	0.73	0.44
131	LVB	EKM	KTM	1	7	14	47	140	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.40	1.00	1.55
132	LVB	EKM	KTM	1	1	6	22	8	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.17	0.47	0.09
133	LVB	EKM	KTM	1	53	42	166	43	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.39	1.21	3.54	0.48
134	MVB	EKM	KTM	1	9	18	32	301	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.52	0.68	3.33
135	MVB	EKM	KTM	1	1	2	7	5	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.06	0.15	0.06
136	LVB	EKM	KTM	1	10	12	32	104	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.34	0.68	1.15
137	LVB	EKM	KTM	1	5	24	65	302	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.69	1.39	3.34
138	MVB	EKM	KTM	1	2	2	5	11	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.06	0.11	0.12
139	HVB	TVM	TVM	1	111	122	930	2317	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	5.02	3.50	19.86	25.64
140	HVB	TVM	TVM	1	168	154	959	1683	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	7.59	4.42	20.48	18.62
141	MVB	TVM	TVM	1	1	2	1	2	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.06	0.02	0.02
142	HVB	TVM	TVM	1	1	2	2	3	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.06	0.04	0.03
143	LVB	TVM	TVM	1	5	24	40	392	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.69	0.85	4.34
144	MVB	TVM	TVM	1	3	21	54	128	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.60	1.15	1.42
145	MVB	TVM	TVM	1	11	121	470	690	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	3.48	10.04	7.63
146	LVB	TVM	TVM	1	10	112	116	252	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	3.22	2.48	2.79
147	LVB	TVM	TVM	1	19	116	182	445	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	3.33	3.89	4.92
148	LVB	TVM	TVM	1	5	26	34	174	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.75	0.73	1.93
149	MVB	TVM	TVM	1	17	827	1399	4154	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	23.75	29.87	45.96
150	LVB	TVM	TVM	1	22	63	81	196	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	1.81	1.73	2.17
151	LVB	TVM	TVM	1	42	143	450	333	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.90	4.11	9.61	3.68
152	LVB	TVM	TVM	1	11	42	53	222	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	1.21	1.13	2.46
153	LVB	TVM	TVM	1	13	21	46	151	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.60	0.98	1.67
154	LVB	TVM	TVM	1	7	26	62	489	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.75	1.32	5.41
155	MVB	TVM	TVM	1	21	82	107	116	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.95	2.35	2.28	1.28
156	MVB	TVM	TVM	1	35	132	168	659	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.58	3.79	3.59	7.29
157	MVB	TVM	TVM	1	4	125	173	421	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	3.59	3.69	4.66
158	MVB	TVM	TVM	1	5	12	52	82	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.34	1.11	0.91
159	LVB	TVM	TVM	1	16	26	55	97	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	0.75	1.17	1.07
160	MVB	TVM	TVM	1	4	12	43	76	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.34	0.92	0.84
161	MVB	TVM	TVM	1	1	2	1	4	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.06	0.02	0.04
162	MVB	TVM	TVM	1	13	94	110	349	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	2.70	2.35	3.86

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
163	LVB	TVM	TVM	1	2	15	35	51	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.43	0.75	0.56
164	MVB	TVM	TVM	1	89	80	80	467	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	4.02	2.30	1.71	5.17
165	MVB	TVM	TVM	1	1	2	4	5	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.06	0.09	0.06
166	MVB	TVM	TVM	1	66	65	312	485	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.98	1.87	6.66	5.37
167	MVB	TVM	TVM	1	2	21	24	289	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.60	0.51	3.20
168	MVB	TVM	TVM	1	42	143	354	1034	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.90	4.11	7.56	11.44
169	MVB	TVM	TVM	1	22	73	92	293	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	2.10	1.96	3.24
170	LVB	TVM	TVM	1	14	32	41	154	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.63	0.92	0.88	1.70
171	MVB	TVM	TVM	1	14	22	35	180	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.63	0.63	0.75	1.99
172	MVB	TVM	TVM	1	3	112	548	935	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	3.22	11.70	10.35
173	LVB	TVM	TVM	1	5	52	60	153	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	1.49	1.28	1.69
174	LVB	TVM	TVM	1	10	20	35	141	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.57	0.75	1.56
175	LVB	TVM	TVM	1	11	42	55	143	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	1.21	1.17	1.58
176	MVB	TVM	TVM	1	6	17	51	90	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.49	1.09	1.00
177	LVB	TVM	TVM	1	4	121	134	410	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	3.48	2.86	4.54
178	LVB	TVM	TVM	1	137	120	604	84	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	6.19	3.45	12.90	0.93
179	LVB	TVM	TVM	1	6	32	41	291	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.92	0.88	3.22
180	LVB	TVM	TVM	1	5	21	39	117	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.60	0.83	1.29
181	LVB	TVM	TVM	1	11	52	73	252	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	1.49	1.56	2.79
182	LVB	TVM	TVM	1	2	34	61	180	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.98	1.30	1.99
183	LVB	TVM	TVM	1	8	58	84	260	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	1.67	1.79	2.88
184	LVB	TVM	TVM	1	4	4	3	5	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.11	0.06	0.06
185	LVB	TVM	TVM	1	8	92	157	166	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	2.64	3.35	1.84
186	LVB	TVM	TVM	1	4	64	145	100	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	1.84	3.10	1.11
187	LVB	TVM	TVM	1	4	12	34	24	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.34	0.73	0.27
188	LVB	TVM	TVM	1	6	12	15	21	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.34	0.32	0.23
189	LVB	TVM	TVM	1	19	52	61	114	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	1.49	1.30	1.26
190	MVB	TVM	KLM	1	81	92	236	274	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	3.66	2.64	5.04	3.03
191	MVB	TVM	KLM	1	61	122	255	555	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.76	3.50	5.44	6.14
192	MVB	TVM	KLM	1	66	77	297	711	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.98	2.21	6.34	7.87
193	MVB	TVM	KLM	1	31	32	36	74	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.40	0.92	0.77	0.82
194	LVB	TVM	KLM	1	124	128	397	1681	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	5.60	3.68	8.48	18.60
195	LVB	TVM	KLM	1	2	14	34	36	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.40	0.73	0.40
196	LVB	TVM	KLM	1	3	13	31	53	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.37	0.66	0.59
197	MVB	TVM	KLM	1	79	120	173	289	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	3.57	3.45	3.69	3.20
198	LVB	TVM	KLM	1	3	112	226	662	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	3.22	4.83	7.32
199	LVB	TVM	KLM	1	28	30	38	44	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.27	0.86	0.81	0.49
200	LVB	TVM	KLM	1	31	58	184	829	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.40	1.67	3.93	9.17
201	MVB	TVM	KLM	1	30	90	103	197	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.36	2.58	2.20	2.18
202	LVB	TVM	KLM	1	32	121	234	837	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.45	3.48	5.00	9.26
203	LVB	TVM	KLM	1	15	16	22	35	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	0.46	0.47	0.39

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
204	LVB	TVM	KLM	1	7	58	105	384	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	1.67	2.24	4.25
205	MVB	TVM	KLM	1	270	210	360	95	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	12.20	6.03	7.69	1.05
206	LVB	TVM	KLM	1	40	136	262	314	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.81	3.91	5.59	3.47
207	LVB	TVM	KLM	1	4	35	42	251	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	1.01	0.90	2.78
208	LVB	TVM	KLM	1	12	32	49	82	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.92	1.05	0.91
209	LVB	TVM	KLM	1	39	126	181	355	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.76	3.62	3.86	3.93
210	LVB	TVM	KLM	1	35	210	534	1305	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.58	6.03	11.40	14.44
211	LVB	TVM	KLM	1	14	32	72	75	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.63	0.92	1.54	0.83
212	LVB	TVM	KLM	1	19	26	36	34	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	0.75	0.77	0.38
213	LVB	TVM	KLM	1	15	24	82	74	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	0.69	1.75	0.82
214	LVB	TVM	KLM	1	39	40	47	401	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.76	1.15	1.00	4.44
215	LVB	TVM	KLM	1	22	42	88	543	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	1.21	1.88	6.01
216	LVB	TVM	KLM	1	55	50	50	280	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.49	1.44	1.07	3.10
217	LVB	TVM	KLM	1	18	16	27	16	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	0.46	0.58	0.18
218	LVB	TVM	KLM	1	46	40	86	88	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.08	1.15	1.84	0.97
219	LVB	TVM	KLM	1	22	24	26	30	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	0.69	0.56	0.33
220	LVB	TVM	KLM	1	16	25	52	52	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	0.72	1.11	0.58
221	LVB	TVM	KLM	1	8	127	142	234	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	3.65	3.03	2.59
222	MVB	TVM	KLM	1	5	14	16	157	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.40	0.34	1.74
223	LVB	TVM	KLM	1	62	73	186	162	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.80	2.10	3.97	1.79
224	LVB	TVM	KLM	1	25	57	109	213	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.13	1.64	2.33	2.36
225	LVB	TVM	KLM	1	14	42	86	290	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.63	1.21	1.84	3.21
226	MVB	TVM	KLM	1	12	21	26	33	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.60	0.56	0.37
227	LVB	TVM	KLM	1	83	42	91	61	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	3.75	1.21	1.94	0.67
228	MVB	TVM	APA	1	12	21	38	100	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.60	0.81	1.11
229	MVB	TVM	KLM	1	20	112	141	842	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.90	3.22	3.01	9.32
230	MVB	TVM	APA	1	42	124	261	308	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.90	3.56	5.57	3.41
231	MVB	TVM	APA	1	16	125	153	401	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	3.59	3.27	4.44
232	MVB	TVM	APA	1	26	324	865	1450	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.17	9.31	18.47	16.04
233	LVB	TVM	APA	1	18	127	173	333	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	3.65	3.69	3.68
234	MVB	TVM	APA	1	31	125	510	682	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.40	3.59	10.89	7.55
235	MVB	TVM	APA	1	47	326	477	1254	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.12	9.36	10.18	13.88
236	MVB	TVM	APA	1	46	54	94	141	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.08	1.55	2.01	1.56
237	MVB	TVM	APA	1	8	16	26	64	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.46	0.56	0.71
238	MVB	TVM	APA	1	7	126	173	337	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	3.62	3.69	3.73
239	MVB	TVM	APA	1	7	29	67	117	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.83	1.43	1.29
240	MVB	TVM	APA	1	1	12	21	39	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.34	0.45	0.43
241	MVB	TVM	APA	1	29	32	90	217	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.31	0.92	1.92	2.40
242	LVB	TVM	APA	1	8	126	169	136	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	3.62	3.61	1.50
243	MVB	TVM	APA	1	59	112	240	326	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.67	3.22	5.12	3.61
244	MVB	TVM	APA	1	8	104	128	290	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	2.99	2.73	3.21

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
245	MVB	TVM	APA	1	93	192	383	973	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	4.20	5.51	8.18	10.77
246	LVB	TVM	APA	1	1	22	44	181	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.63	0.94	2.00
247	MVB	TVM	APA	1	8	42	120	217	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	1.21	2.56	2.40
248	MVB	TVM	APA	1	38	124	197	589	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.72	3.56	4.21	6.52
249	MVB	TVM	APA	1	24	56	78	87	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.08	1.61	1.67	0.96
250	MVB	TVM	APA	1	5	103	121	227	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	2.96	2.58	2.51
251	MVB	TVM	APA	1	123	62	87	404	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	5.56	1.78	1.86	4.47
252	LVB	TVM	APA	1	57	65	581	115	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.58	1.87	12.41	1.27
253	LVB	TVM	APA	1	25	32	49	85	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.13	0.92	1.05	0.94
254	MVB	TVM	APA	1	17	25	85	230	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.72	1.81	2.54
255	MVB	TVM	APA	1	1	110	129	198	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	3.16	2.75	2.19
256	LVB	TVM	APA	1	4	12	37	237	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.34	0.79	2.62
257	LVB	TVM	APA	1	2	7	9	29	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.20	0.19	0.32
258	LVB	TVM	APA	1	1	1	1	1	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.03	0.02	0.01
259	LVB	TVM	APA	1	4	13	45	25	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.37	0.96	0.28
260	MVB	TVM	APA	1	6	7	5	10	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.20	0.11	0.11
261	MVB	TVM	APA	1	1	12	85	180	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.34	1.81	1.99
262	MVB	TVM	APA	1	16	105	194	338	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	3.02	4.14	3.74
263	MVB	TVM	APA	1	16	116	204	367	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	3.33	4.36	4.06
264	MVB	TVM	APA	1	22	42	86	124	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	1.21	1.84	1.37
265	LVB	TVM	APA	1	18	31	53	114	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	0.89	1.13	1.26
266	LVB	TVM	APA	1	13	22	34	60	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.63	0.73	0.66
267	MVB	TVM	APA	1	9	27	54	136	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.78	1.15	1.50
268	LVB	TVM	APA	1	33	126	146	169	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.49	3.62	3.12	1.87
269	HVB	KOD	KNR	2	103	201	427	805	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	4.65	5.77	9.12	8.91
270	HVB	KOD	CLT-2	2	42	42	173	341	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.90	1.21	3.69	3.77
271	HVB	KOD	CLT-1	2	12	210	217	1808	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	6.03	4.63	20.01
272	LVB	KOD	CLT-2	2	7	12	24	28	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.34	0.51	0.31
273	MVB	KOD	CLT-1	2	26	42	155	899	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.17	1.21	3.31	9.95
274	MVB	KOD	CLT-2	2	36	112	125	186	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.63	3.22	2.67	2.06
275	MVB	KOD	CLT-1	2	2	103	211	264	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	2.96	4.51	2.92
276	MVB	KOD	CLT-1	2	47	123	160	206	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.12	3.53	3.42	2.28
277	MVB	KOD	CLT-1	2	58	125	165	332	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.62	3.59	3.52	3.67
278	MVB	KOD	CLT-2	2	81	122	129	230	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	3.66	3.50	2.75	2.54
279	MVB	KOD	CLT-2	2	10	25	47	126	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.72	1.00	1.39
280	MVB	KOD	CLT-1	2	3	12	14	73	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.34	0.30	0.81
281	LVB	KOD	CLT-1	2	4	6	9	24	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.17	0.19	0.27
282	MVB	KOD	CLT-1	2	23	54	69	84	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.04	1.55	1.47	0.93
283	MVB	KOD	CLT-2	2	6	12	37	22	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.34	0.79	0.24
284	LVB	KOD	CLT-2	2	11	23	47	104	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	0.66	1.00	1.15
285	MVB	KOD	CLT-2	2	63	142	172	219	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.85	4.08	3.67	2.42

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
286	LVB	KOD	CLT-2	2	13	22	37	187	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.63	0.79	2.07
287	LVB	KOD	KNR	2	7	12	13	42	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.34	0.28	0.46
288	LVB	KOD	CLT-1	2	9	21	37	37	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.60	0.79	0.41
289	LVB	KOD	CLT-1	2	12	24	54	120	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.69	1.15	1.33
290	LVB	KOD	CLT-1	2	15	32	53	406	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	0.92	1.13	4.49
291	LVB	KOD	CLT-2	2	6	25	75	254	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.72	1.60	2.81
292	LVB	KOD	CLT-1	2	13	20	44	24	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.57	0.94	0.27
293	LVB	KOD	CLT-2	2	8	82	98	120	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	2.35	2.09	1.33
294	LVB	KOD	CLT-1	2	2	12	20	8	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.34	0.43	0.09
295	LVB	KOD	CLT-2	2	27	20	22	29	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.22	0.57	0.47	0.32
296	MVB	KOD	CLT-1	2	4	21	60	69	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.60	1.28	0.76
297	MVB	KOD	CLT-1	2	15	28	78	128	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	0.80	1.67	1.42
298	MVB	KOD	CLT-1	2	55	124	217	330	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.49	3.56	4.63	3.65
299	LVB	KOD	CLT-1	2	25	52	82	156	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.13	1.49	1.75	1.73
300	MVB	KOD	CLT-1	2	13	16	20	246	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.46	0.43	2.72
301	MVB	KOD	CLT-1	2	43	134	243	400	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.94	3.85	5.19	4.43
302	MVB	KOD	CLT-1	2	1	1	1	5	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.03	0.02	0.06
303	LVB	KOD	CLT-1	2	19	22	45	96	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	0.63	0.96	1.06
304	LVB	KOD	CLT-1	2	14	102	105	559	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.63	2.93	2.24	6.19
305	LVB	KOD	CLT-1	2	7	16	28	56	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	0.46	0.60	0.62
306	MVB	KOD	CLT-1	2	1	5	6	49	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.14	0.13	0.54
307	MVB	KOD	CLT-1	2	4	21	36	69	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.60	0.77	0.76
308	LVB	KOD	CLT-1	2	35	42	88	86	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.58	1.21	1.88	0.95
309	LVB	KOD	CLT-1	2	4	13	17	95	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.37	0.36	1.05
310	LVB	KOD	CLT-1	2	6	9	30	10	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.26	0.64	0.11
311	LVB	KOD	CLT-1	2	6	14	26	30	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	0.40	0.56	0.33
312	LVB	KOD	CLT-1	2	17	48	95	195	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	1.38	2.03	2.16
313	MVB	KOD	CLT-2	2	39	132	199	646	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.76	3.79	4.25	7.15
314	MVB	KOD	CLT-2	2	4	26	50	261	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.75	1.07	2.89
315	MVB	KOD	CLT-1	2	59	121	127	208	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.67	3.48	2.71	2.30
316	LVB	KOD	CLT-2	2	26	43	62	168	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.17	1.23	1.32	1.86
317	MVB	KOD	CLT-2	2	1	80	141	190	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	2.30	3.01	2.10
318	LVB	KOD	CLT-1	2	19	42	57	138	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	1.21	1.22	1.53
319	MVB	KOD	CLT-2	2	11	72	91	648	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	2.07	1.94	7.17
320	MVB	KOD	CLT-2	2	33	42	100	68	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.49	1.21	2.14	0.75
321	MVB	KOD	CLT-1	2	22	31	61	47	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	0.89	1.30	0.52
322	LVB	KOD	CLT-1	2	4	8	12	43	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.23	0.26	0.48
323	MVB	KOD	CLT-2	2	18	22	31	38	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	0.63	0.66	0.42
324	MVB	KOD	CLT-2	2	19	105	226	974	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	3.02	4.83	10.78
325	MVB	KOD	CLT-2	2	9	34	89	395	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.98	1.90	4.37
326	MVB	KOD	CLT-2	2	5	46	69	494	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	1.32	1.47	5.47

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
327	LVB	KOD	CLT-2	2	13	20	26	80	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.57	0.56	0.89
328	LVB	KOD	CLT-2	2	15	23	53	283	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	0.66	1.13	3.13
329	LVB	KOD	CLT-1	2	12	38	48	90	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	1.09	1.02	1.00
330	LVB	KOD	CLT-2	2	17	22	51	98	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.63	1.09	1.08
331	MVB	KOD	CLT-2	2	52	98	126	208	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.35	2.81	2.69	2.30
332	LVB	KOD	CLT-2	2	3	24	42	52	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.69	0.90	0.58
333	LVB	KOD	CLT-1	2	18	32	48	44	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	0.92	1.02	0.49
334	LVB	KOD	CLT-2	2	20	41	62	197	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.90	1.18	1.32	2.18
335	LVB	KOD	CLT-2	2	8	27	38	143	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.78	0.81	1.58
336	MVB	KOD	CLT-2	2	10	12	8	22	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.34	0.17	0.24
337	LVB	KOD	CLT-2	2	5	14	50	224	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.40	1.07	2.48
338	LVB	KOD	CLT-2	2	1	23	37	411	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.66	0.79	4.55
339	LVB	KOD	CLT-2	2	5	14	51	218	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.40	1.09	2.41
340	MVB	KOD	CLT-2	2	3	13	21	25	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.37	0.45	0.28
341	LVB	KOD	CLT-1	2	12	24	40	75	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.69	0.85	0.83
342	LVB	KOD	CLT-1	2	28	52	74	155	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.27	1.49	1.58	1.72
343	LVB	KOD	CLT-1	2	12	22	41	50	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.63	0.88	0.55
344	LVB	KOD	KNR	2	19	30	53	39	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	0.86	1.13	0.43
345	MVB	KOD	KNR	2	86	125	321	251	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	3.89	3.59	6.85	2.78
346	MVB	KOD	KNR	2	70	104	123	239	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	3.16	2.99	2.63	2.64
347	LVB	KOD	KNR	2	39	30	24	30	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.76	0.86	0.51	0.33
348	MVB	KOD	KNR	2	19	75	103	133	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.86	2.15	2.20	1.47
349	MVB	KOD	KNR	2	65	124	271	454	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.94	3.56	5.79	5.02
350	MVB	KOD	KNR	2	22	40	74	407	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	1.15	1.58	4.50
351	HVB	KOD	KNR	2	34	128	131	162	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.54	3.68	2.80	1.79
352	MVB	KOD	KNR	2	3	10	11	40	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	0.29	0.23	0.44
353	MVB	KOD	KNR	2	22	31	43	96	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	0.89	0.92	1.06
354	MVB	KOD	KNR	2	52	64	73	539	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.35	1.84	1.56	5.96
355	LVB	KOD	KNR	2	10	14	24	73	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.40	0.51	0.81
356	LVB	KOD	KNR	2	26	32	59	162	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.17	0.92	1.26	1.79
357	MVB	KOD	KNR	2	22	30	35	43	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	0.86	0.75	0.48
358	LVB	KOD	KNR	2	14	6	4	6	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.63	0.17	0.09	0.07
359	LVB	KOD	KNR	2	9	20	25	51	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.57	0.53	0.56
360	LVB	KOD	KNR	2	22	23	29	235	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.99	0.66	0.62	2.60
361	LVB	KOD	KNR	2	1	25	27	30	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.72	0.58	0.33
362	MVB	KOD	KNR	2	1	4	5	21	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.11	0.11	0.23
363	LVB	KOD	KNR	2	4	12	14	23	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.34	0.30	0.25
364	LVB	KOD	KNR	2	13	24	46	50	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.69	0.98	0.55
365	LVB	KOD	KNR	2	11	20	25	42	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	0.57	0.53	0.46
366	LVB	KOD	KNR	2	2	12	33	110	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.34	0.70	1.22
367	LVB	KOD	KNR	2	33	42	85	58	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.49	1.21	1.81	0.64

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
368	LVB	KOD	KNR	2	34	87	114	138	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.54	2.50	2.43	1.53
369	MVB	KOD	KNR	2	27	52	76	201	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.22	1.49	1.62	2.22
370	LVB	KOD	KNR	2	30	34	51	54	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.36	0.98	1.09	0.60
371	HVB	TCR	PKD	2	61	160	211	1131	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.76	4.60	4.51	12.51
372	HVB	TCR	TCR	2	88	123	496	328	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	3.98	3.53	10.59	3.63
373	LVB	TCR	TCR	2	33	82	106	541	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.49	2.35	2.26	5.99
374	LVB	TCR	TCR	2	13	102	119	178	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	2.93	2.54	1.97
375	LVB	TCR	TCR	2	9	26	47	164	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.75	1.00	1.81
376	MVB	TCR	TCR	2	10	21	28	73	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.60	0.60	0.81
377	MVB	TCR	TCR	2	15	86	124	276	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	2.47	2.65	3.05
378	LVB	TCR	TCR	2	1	9	11	91	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.26	0.23	1.01
379	MVB	TCR	TCR	2	11	31	79	161	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	0.89	1.69	1.78
380	MVB	TCR	TCR	2	16	25	103	253	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	0.72	2.20	2.80
381	MVB	TCR	TCR	2	9	18	22	36	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.52	0.47	0.40
382	MVB	TCR	TCR	2	1	16	18	96	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.46	0.38	1.06
383	LVB	TCR	TCR	2	1	15	19	43	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.43	0.41	0.48
384	MVB	TCR	TCR	2	10	12	20	95	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.34	0.43	1.05
385	LVB	TCR	TCR	2	8	21	34	191	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.60	0.73	2.11
386	LVB	TCR	TCR	2	9	12	14	28	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.34	0.30	0.31
387	LVB	TCR	TCR	2	2	21	41	69	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.60	0.88	0.76
388	MVB	TCR	TCR	2	16	102	243	490	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	2.93	5.19	5.42
389	LVB	TCR	TCR	2	6	42	119	215	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	1.21	2.54	2.38
390	LVB	TCR	TCR	2	8	10	27	206	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.29	0.58	2.28
391	MVB	TCR	TCR	2	13	15	26	47	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.43	0.56	0.52
392	MVB	TCR	TCR	2	16	26	79	188	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.72	0.75	1.69	2.08
393	LVB	TCR	TCR	2	38	45	97	189	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.72	1.29	2.07	2.09
394	MVB	TCR	TCR	2	7	46	92	130	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.32	1.32	1.96	1.44
395	LVB	TCR	TCR	2	44	8	155	90	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.99	0.23	3.31	1.00
396	MVB	TCR	TCR	2	17	17	302	402	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.49	6.45	4.45
397	LVB	TCR	TCR	2	53	53	325	431	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.39	1.52	6.94	4.77
398	LVB	TCR	TCR	2	20	82	241	826	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.90	2.35	5.15	9.14
399	LVB	TCR	TCR	2	13	14	27	161	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.40	0.58	1.78
400	MVB	TCR	TCR	2	4	6	4	20	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.17	0.09	0.22
401	LVB	TCR	TCR	2	1	21	56	116	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.60	1.20	1.28
402	MVB	TCR	TCR	2	2	20	39	90	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.57	0.83	1.00
403	LVB	TCR	TCR	2	8	8	39	62	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.23	0.83	0.69
404	LVB	TCR	TCR	2	5	24	40	68	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	0.69	0.85	0.75
405	LVB	TCR	TCR	2	1	1	2	4	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.03	0.04	0.04
406	LVB	TCR	PKD	2	4	26	92	932	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.75	1.96	10.31
407	LVB	TCR	PKD	2	141	240	798	526	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	6.37	6.89	17.04	5.82
408	MVB	TCR	PKD	2	2	21	31	176	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.60	0.66	1.95

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
409	MVB	TCR	PKD	2	8	92	122	125	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	2.64	2.60	1.38
410	MVB	TCR	PKD	2	25	103	129	299	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.13	2.96	2.75	3.31
411	LVB	TCR	PKD	2	18	29	57	314	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	0.83	1.22	3.47
412	MVB	TCR	PKD	2	9	42	76	208	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	1.21	1.62	2.30
413	MVB	TCR	PKD	2	62	104	159	255	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.80	2.99	3.39	2.82
414	MVB	TCR	PKD	2	62	210	1071	402	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.80	6.03	22.87	4.45
415	LVB	TCR	PKD	2	53	142	260	887	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.39	4.08	5.55	9.81
416	MVB	TCR	SHR	2	30	85	103	149	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.36	2.44	2.20	1.65
417	LVB	TCR	PKD	2	9	9	9	31	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	0.26	0.19	0.34
418	LVB	TCR	PKD	2	43	124	193	180	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.94	3.56	4.12	1.99
419	LVB	TCR	PKD	2	28	54	83	773	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.27	1.55	1.77	8.55
420	LVB	TCR	PKD	2	94	136	193	337	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	4.25	3.91	4.12	3.73
421	LVB	TCR	PKD	2	38	124	217	150	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.72	3.56	4.63	1.66
422	LVB	TCR	PKD	2	135	250	1233	1930	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	6.10	7.18	26.33	21.36
423	LVB	TCR	PKD	2	10	16	20	20	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.46	0.43	0.22
424	MVB	TCR	PKD	2	3	92	107	373	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.14	2.64	2.28	4.13
425	MVB	TCR	PKD	2	24	132	378	286	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.08	3.79	8.07	3.16
426	MVB	TCR	PKD	2	13	54	62	221	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	1.55	1.32	2.45
427	LVB	TCR	PKD	2	73	98	185	651	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	3.30	2.81	3.95	7.20
428	LVB	TCR	PKD	2	25	54	64	123	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.13	1.55	1.37	1.36
429	MVB	TCR	PKD	2	64	182	244	291	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.89	5.23	5.21	3.22
430	LVB	TCR	PKD	2	9	112	127	398	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.41	3.22	2.71	4.40
431	LVB	TCR	PKD	2	29	120	174	234	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.31	3.45	3.72	2.59
432	LVB	TCR	PKD	2	36	84	114	183	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.63	2.41	2.43	2.02
433	MVB	TCR	PKD	2	1	2	1	4	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.06	0.02	0.04
434	LVB	TCR	PKD	2	50	120	285	746	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.26	3.45	6.09	8.25
435	LVB	TCR	PKD	2	37	95	109	123	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.67	2.73	2.33	1.36
436	LVB	TCR	SHR	2	4	16	24	52	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.18	0.46	0.51	0.58
437	LVB	TCR	SHR	2	18	38	67	77	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	1.09	1.43	0.85
438	MVB	TCR	SHR	2	17	20	26	41	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.57	0.56	0.45
439	MVB	TCR	SHR	2	51	154	415	567	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	2.30	4.42	8.86	6.27
440	MVB	TCR	SHR	2	5	53	261	670	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.23	1.52	5.57	7.41
441	MVB	TCR	SHR	2	23	122	149	238	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.04	3.50	3.18	2.63
442	MVB	TCR	SHR	2	15	42	56	947	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	1.21	1.20	10.48
443	MVB	TCR	SHR	2	13	24	54	102	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.59	0.69	1.15	1.13
444	MVB	TCR	SHR	2	6	74	102	809	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.27	2.13	2.18	8.95
445	LVB	TCR	SHR	2	8	24	38	147	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.69	0.81	1.63
446	MVB	TCR	SHR	2	17	112	134	283	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	3.22	2.86	3.13
447	MVB	TCR	SHR	2	12	20	51	147	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.54	0.57	1.09	1.63
448	MVB	TCR	SHR	2	36	89	115	107	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.63	2.56	2.46	1.18
449	MVB	TCR	SHR	2	2	10	12	67	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.29	0.26	0.74

MOBILE BANKING COST CALCULATION					Active users				cost/user				Cost/Transaction				Transaction/user				Transaction cost			
450	MVB	TCR	SHR	2	8	25	62	134	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.36	0.72	1.32	1.48
451	LVB	TCR	SHR	2	1	12	29	127	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.34	0.62	1.41
452	MVB	TCR	SHR	2	17	29	45	92	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.77	0.83	0.96	1.02
453	MVB	TCR	SHR	2	20	36	59	41	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.90	1.03	1.26	0.45
454	MVB	TCR	SHR	2	20	54	123	89	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.90	1.55	2.63	0.98
455	LVB	TCR	TCR	2	10	32	82	105	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.45	0.92	1.75	1.16
456	MVB	TCR	SHR	2	21	91	103	267	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.95	2.61	2.20	2.95
457	MVB	TCR	SHR	2	15	112	210	638	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	3.22	4.48	7.06
458	MVB	TCR	SHR	2	15	45	61	140	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.68	1.29	1.30	1.55
459	MVB	TCR	SHR	2	18	68	103	146	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.81	1.95	2.20	1.62
460	LVB	TCR	SHR	2	2	12	50	93	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.09	0.34	1.07	1.03
461	MVB	TCR	SHR	2	1	2	3	6	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.05	0.06	0.06	0.07
462	LVB	TCR	SHR	2	24	12	50	15	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	1.08	0.34	1.07	0.17
463	LVB	TCR	TCR	2	11	42	177	246	0.542258065	0.344631579	0.256222222	0.132777778	0.10126506	0.057038328	0.044863813	0.024878557	5	6	6	5	0.50	1.21	3.78	2.72

Annexure-2

Transaction Cost Calculation of Internet Banking Services

IB COST

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
1	HVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	72	76	81	145	1.89	1.48	1.09	1.36	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.89	1.48	1.09	1.36
2	HVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	50	54	85	168	1.31	1.05	1.14	1.57	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.31	1.05	1.14	1.57
3	HVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	76	81	84	128	1.99	1.58	1.13	1.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.99	1.58	1.13	1.20
4	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	38	43	55	65	1.00	0.84	0.74	0.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.84	0.74	0.61
5	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	22	38	0.26	0.20	0.30	0.36	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.30	0.36
6	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	53	54	87	210	1.39	1.05	1.17	1.97	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.39	1.05	1.17	1.97
7	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	9	9	19	36	0.24	0.18	0.25	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.18	0.25	0.34
8	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	30	32	35	49	0.79	0.62	0.47	0.46	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.79	0.62	0.47	0.46
9	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	25	25	48	105	0.66	0.49	0.64	0.98	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.66	0.49	0.64	0.98
10	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	24	26	34	55	0.63	0.51	0.46	0.52	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.51	0.46	0.52
11	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	32	40	52	92	0.84	0.78	0.70	0.86	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.78	0.70	0.86
12	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	30	35	50	91	0.79	0.68	0.67	0.85	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.79	0.68	0.67	0.85
13	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	28	51	46	58	0.73	0.99	0.62	0.54	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.73	0.99	0.62	0.54
14	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	31	50	84	72	0.81	0.98	1.13	0.67	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.81	0.98	1.13	0.67
15	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	10	16	25	46	0.26	0.31	0.34	0.43	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.31	0.34	0.43
16	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	7	12	18	71	0.18	0.23	0.24	0.67	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.18	0.23	0.24	0.67
17	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	12	20	21	40	0.31	0.39	0.28	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.39	0.28	0.37
18	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	24	35	0.31	0.23	0.32	0.33	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.32	0.33
19	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	6	6	12	32	0.16	0.12	0.16	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.16	0.12	0.16	0.30
20	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	9	9	26	30	0.24	0.18	0.35	0.28	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.18	0.35	0.28
21	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	32	36	43	55	0.84	0.70	0.58	0.52	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.70	0.58	0.52
22	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	12	10	0.26	0.20	0.16	0.09	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.16	0.09
23	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	8	10	16	36	0.21	0.20	0.21	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.20	0.21	0.34
24	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	12	15	21	106	0.31	0.29	0.28	0.99	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.28	0.99
25	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	13	15	24	42	0.34	0.29	0.32	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.29	0.32	0.39
26	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	11	14	18	56	0.29	0.27	0.24	0.52	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.29	0.27	0.24	0.52
27	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	8	8	20	62	0.21	0.16	0.27	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.16	0.27	0.58
28	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	10	11	14	71	0.26	0.21	0.19	0.67	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.21	0.19	0.67
29	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	25	93	0.31	0.23	0.34	0.87	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.34	0.87
30	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	8	8	16	23	0.21	0.16	0.21	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.16	0.21	0.22
31	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	12	14	0.26	0.20	0.16	0.13	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.16	0.13
32	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	20	21	26	28	0.52	0.41	0.35	0.26	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.35	0.26
33	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	15	14	18	36	0.39	0.27	0.24	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.27	0.24	0.34
34	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	15	25	0.31	0.23	0.20	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.20	0.23
35	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	12	14	0.26	0.20	0.16	0.13	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.16	0.13
36	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	13	12	19	25	0.34	0.23	0.25	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.23	0.25	0.23
37	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	12	10	22	42	0.31	0.20	0.30	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.20	0.30	0.39
38	MVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	50	52	72	64	1.31	1.01	0.97	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.31	1.01	0.97	0.60
39	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	12	12	0.26	0.20	0.16	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.16	0.11

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
40	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	14	21	32	0.31	0.27	0.28	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.28	0.30
41	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	52	51	82	112	1.36	0.99	1.10	1.05	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.36	0.99	1.10	1.05
42	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	38	43	52	63	1.00	0.84	0.70	0.59	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.84	0.70	0.59
43	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	42	40	48	87	1.10	0.78	0.64	0.82	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.78	0.64	0.82
44	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	32	28	65	48	0.84	0.55	0.87	0.45	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.55	0.87	0.45
45	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	52	50	82	86	1.36	0.98	1.10	0.81	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.36	0.98	1.10	0.81
46	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	32	28	54	68	0.84	0.55	0.72	0.64	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.55	0.72	0.64
47	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	31	37	52	73	0.81	0.72	0.70	0.68	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.81	0.72	0.70	0.68
48	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	10	22	38	0.31	0.20	0.30	0.36	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.20	0.30	0.36
49	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	18	16	21	42	0.47	0.31	0.28	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.31	0.28	0.39
50	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	26	25	44	85	0.68	0.49	0.59	0.80	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.68	0.49	0.59	0.80
51	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	30	32	40	42	0.79	0.62	0.54	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.79	0.62	0.54	0.39
52	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	21	18	24	68	0.55	0.35	0.32	0.64	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.35	0.32	0.64
53	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	15	10	14	32	0.39	0.20	0.19	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.20	0.19	0.30
54	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	13	15	30	0.31	0.25	0.20	0.28	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.25	0.20	0.28
55	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	9	8	14	21	0.24	0.16	0.19	0.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.16	0.19	0.20
56	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	10	12	14	12	0.26	0.23	0.19	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.19	0.11
57	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	15	10	18	38	0.39	0.20	0.24	0.36	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.20	0.24	0.36
58	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	15	28	101	0.31	0.29	0.38	0.95	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.38	0.95
59	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	14	14	19	36	0.37	0.27	0.25	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.27	0.25	0.34
60	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	20	45	0.31	0.23	0.27	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.27	0.42
61	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	8	8	11	68	0.21	0.16	0.15	0.64	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.16	0.15	0.64
62	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	10	12	24	73	0.26	0.23	0.32	0.68	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.32	0.68
63	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	21	32	112	0.31	0.41	0.43	1.05	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.41	0.43	1.05
64	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	32	34	51	123	0.84	0.66	0.68	1.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.66	0.68	1.15
65	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	14	12	16	37	0.37	0.23	0.21	0.35	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.23	0.21	0.35
66	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	8	6	12	31	0.21	0.12	0.16	0.29	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.12	0.16	0.29
67	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	40	42	74	124	1.05	0.82	0.99	1.16	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.82	0.99	1.16
68	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	10	13	10	0.31	0.20	0.17	0.09	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.20	0.17	0.09
69	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	42	44	52	107	1.10	0.86	0.70	1.00	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.86	0.70	1.00
70	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	10	10	23	0.31	0.20	0.13	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.20	0.13	0.22
71	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	9	6	15	24	0.24	0.12	0.20	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.12	0.20	0.22
72	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	11	16	25	0.31	0.21	0.21	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.21	0.21	0.23
73	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	10	12	12	12	0.26	0.23	0.16	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.16	0.11
74	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	11	15	10	0.31	0.21	0.20	0.09	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.21	0.20	0.09
75	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	13	11	0.31	0.23	0.17	0.10	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.17	0.10
76	LVB	EKM	EKM1	1	0.314615385	0.234011299	0.161045455	0.112470588	15	16	18	9	0.39	0.31	0.24	0.08	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.31	0.24	0.08
77	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	18	21	22	36	0.47	0.41	0.30	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.41	0.30	0.34
78	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	13	13	18	23	0.34	0.25	0.24	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.25	0.24	0.22
79	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	12	10	14	34	0.31	0.20	0.19	0.32	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.20	0.19	0.32

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
80	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	12	31	0.26	0.20	0.16	0.29	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.16	0.29
81	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	42	43	45	48	1.10	0.84	0.60	0.45	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.84	0.60	0.45
82	MVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	50	51	82	89	1.31	0.99	1.10	0.83	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.31	0.99	1.10	0.83
83	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	21	21	24	50	0.55	0.41	0.32	0.47	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.41	0.32	0.47
84	LVB	EKM	EKM2	1	0.314615385	0.234011299	0.161045455	0.112470588	22	26	36	45	0.58	0.51	0.48	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.51	0.48	0.42
85	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	35	40	54	91	0.92	0.78	0.72	0.85	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.92	0.78	0.72	0.85
86	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	45	50	84	82	1.18	0.98	1.13	0.77	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.18	0.98	1.13	0.77
87	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	40	43	58	90	1.05	0.84	0.78	0.84	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.84	0.78	0.84
88	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	20	21	25	42	0.52	0.41	0.34	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.34	0.39
89	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	37	40	45	67	0.97	0.78	0.60	0.63	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.97	0.78	0.60	0.63
90	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	31	34	41	82	0.81	0.66	0.55	0.77	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.81	0.66	0.55	0.77
91	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	22	21	26	39	0.58	0.41	0.35	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.41	0.35	0.37
92	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	20	24	34	83	0.52	0.47	0.46	0.78	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.47	0.46	0.78
93	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	19	21	25	76	0.50	0.41	0.34	0.71	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.50	0.41	0.34	0.71
94	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	26	32	42	82	0.68	0.62	0.56	0.77	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.68	0.62	0.56	0.77
95	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	9	10	14	36	0.24	0.20	0.19	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.20	0.19	0.34
96	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	42	52	80	108	1.10	1.01	1.07	1.01	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	1.01	1.07	1.01
97	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	37	44	57	64	0.97	0.86	0.76	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.97	0.86	0.76	0.60
98	HVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	23	42	50	119	0.60	0.82	0.67	1.12	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.60	0.82	0.67	1.12
99	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	14	15	18	32	0.37	0.29	0.24	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.29	0.24	0.30
100	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	12	14	21	36	0.31	0.27	0.28	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.28	0.34
101	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	8	7	21	27	0.21	0.14	0.28	0.25	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.14	0.28	0.25
102	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	16	21	24	43	0.42	0.41	0.32	0.40	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.42	0.41	0.32	0.40
103	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	31	32	45	95	0.81	0.62	0.60	0.89	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.81	0.62	0.60	0.89
104	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	10	12	24	34	0.26	0.23	0.32	0.32	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.32	0.32
105	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	8	6	12	21	0.21	0.12	0.16	0.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.12	0.16	0.20
106	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	7	9	11	13	0.18	0.18	0.15	0.12	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.18	0.18	0.15	0.12
107	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	38	40	42	112	1.00	0.78	0.56	1.05	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.78	0.56	1.05
108	MVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	15	15	20	20	0.39	0.29	0.27	0.19	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.29	0.27	0.19
109	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	14	32	0.26	0.20	0.19	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.19	0.30
110	LVB	EKM	EKM3	1	0.314615385	0.234011299	0.161045455	0.112470588	12	10	12	30	0.31	0.20	0.16	0.28	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.20	0.16	0.28
111	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	15	20	42	0.31	0.29	0.27	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.27	0.39
112	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	13	14	14	38	0.34	0.27	0.19	0.36	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.27	0.19	0.36
113	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	42	44	46	64	1.10	0.86	0.62	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.86	0.62	0.60
114	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	54	51	84	98	1.42	0.99	1.13	0.92	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.42	0.99	1.13	0.92
115	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	44	43	54	62	1.15	0.84	0.72	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.15	0.84	0.72	0.58
116	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	38	40	45	76	1.00	0.78	0.60	0.71	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.78	0.60	0.71
117	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	16	23	58	0.31	0.31	0.31	0.54	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.31	0.31	0.54
118	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	13	14	23	123	0.34	0.27	0.31	1.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.27	0.31	1.15
119	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	42	54	42	58	1.10	1.05	0.56	0.54	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	1.05	0.56	0.54

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
120	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	54	54	76	112	1.42	1.05	1.02	1.05	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.42	1.05	1.02	1.05
121	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	45	41	46	68	1.18	0.80	0.62	0.64	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.18	0.80	0.62	0.64
122	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	47	48	84	49	1.23	0.94	1.13	0.46	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.23	0.94	1.13	0.46
123	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	36	40	54	102	0.94	0.78	0.72	0.96	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	0.78	0.72	0.96
124	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	32	35	52	51	0.84	0.68	0.70	0.48	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.68	0.70	0.48
125	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	40	51	76	84	1.05	0.99	1.02	0.79	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.99	1.02	0.79
126	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	42	50	84	90	1.10	0.98	1.13	0.84	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.98	1.13	0.84
127	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	40	43	54	61	1.05	0.84	0.72	0.57	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.84	0.72	0.57
128	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	38	40	45	117	1.00	0.78	0.60	1.10	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.78	0.60	1.10
129	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	32	28	74	123	0.84	0.55	0.99	1.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.55	0.99	1.15
130	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	29	37	42	79	0.76	0.72	0.56	0.74	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.76	0.72	0.56	0.74
131	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	10	12	12	0.31	0.20	0.16	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.20	0.16	0.11
132	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	13	16	23	112	0.34	0.31	0.31	1.05	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.31	0.31	1.05
133	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	11	12	14	97	0.29	0.23	0.19	0.91	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.29	0.23	0.19	0.91
134	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	41	42	78	105	1.07	0.82	1.05	0.98	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.07	0.82	1.05	0.98
135	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	32	38	53	62	0.84	0.74	0.71	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.74	0.71	0.58
136	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	10	14	0.26	0.20	0.13	0.13	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.13	0.13
137	LVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	14	22	36	0.31	0.27	0.30	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.30	0.34
138	MVB	EKM	KTM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	12	24	44	0.26	0.23	0.32	0.41	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.32	0.41
139	HVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	44	81	87	162	1.15	1.58	1.17	1.52	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.15	1.58	1.17	1.52
140	HVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	48	88	92	172	1.26	1.72	1.23	1.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.26	1.72	1.23	1.61
141	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	15	20	46	0.31	0.29	0.27	0.43	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.27	0.43
142	HVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	65	83	83	130	1.70	1.62	1.11	1.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.70	1.62	1.11	1.22
143	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	12	20	41	0.26	0.23	0.27	0.38	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.27	0.38
144	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	32	74	42	68	0.84	1.44	0.56	0.64	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	1.44	0.56	0.64
145	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	45	52	76	109	1.18	1.01	1.02	1.02	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.18	1.01	1.02	1.02
146	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	40	45	46	50	1.05	0.88	0.62	0.47	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.88	0.62	0.47
147	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	25	28	38	77	0.66	0.55	0.51	0.72	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.66	0.55	0.51	0.72
148	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	14	14	37	0.31	0.27	0.19	0.35	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.19	0.35
149	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	42	44	48	134	1.10	0.86	0.64	1.26	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.86	0.64	1.26
150	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	20	21	25	126	0.52	0.41	0.34	1.18	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.34	1.18
151	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	31	34	52	118	0.81	0.66	0.70	1.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.81	0.66	0.70	1.11
152	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	12	18	34	0.26	0.23	0.24	0.32	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.24	0.32
153	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	8	6	10	31	0.21	0.12	0.13	0.29	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.12	0.13	0.29
154	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	9	9	9	16	0.24	0.18	0.12	0.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.18	0.12	0.15
155	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	42	46	46	65	1.10	0.90	0.62	0.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.90	0.62	0.61
156	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	48	52	84	89	1.26	1.01	1.13	0.83	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.26	1.01	1.13	0.83
157	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	40	44	54	84	1.05	0.86	0.72	0.79	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.86	0.72	0.79
158	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	41	42	45	62	1.07	0.82	0.60	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.07	0.82	0.60	0.58
159	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	9	11	15	0.26	0.18	0.15	0.14	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.18	0.15	0.14

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
160	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	42	45	46	56	1.10	0.88	0.62	0.52	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.88	0.62	0.52
161	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	28	30	32	51	0.73	0.59	0.43	0.48	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.73	0.59	0.43	0.48
162	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	42	48	74	76	1.10	0.94	0.99	0.71	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.94	0.99	0.71
163	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	15	14	16	57	0.39	0.27	0.21	0.53	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.27	0.21	0.53
164	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	63	65	70	72	1.65	1.27	0.94	0.67	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.65	1.27	0.94	0.67
165	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	41	44	54	52	1.07	0.86	0.72	0.49	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.07	0.86	0.72	0.49
166	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	50	59	78	109	1.31	1.15	1.05	1.02	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.31	1.15	1.05	1.02
167	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	40	42	53	57	1.05	0.82	0.71	0.53	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.82	0.71	0.53
168	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	64	75	85	94	1.68	1.46	1.14	0.88	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.68	1.46	1.14	0.88
169	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	48	52	78	98	1.26	1.01	1.05	0.92	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.26	1.01	1.05	0.92
170	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	15	18	16	32	0.39	0.35	0.21	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.35	0.21	0.30
171	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	47	56	60	62	1.23	1.09	0.81	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.23	1.09	0.81	0.58
172	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	49	53	54	121	1.28	1.03	0.72	1.13	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.28	1.03	0.72	1.13
173	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	17	21	23	63	0.45	0.41	0.31	0.59	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.45	0.41	0.31	0.59
174	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	14	16	14	69	0.37	0.31	0.19	0.65	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.31	0.19	0.65
175	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	15	16	76	0.31	0.29	0.21	0.71	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.21	0.71
176	MVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	36	42	44	67	0.94	0.82	0.59	0.63	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	0.82	0.59	0.63
177	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	22	26	24	120	0.58	0.51	0.32	1.12	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.51	0.32	1.12
178	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	24	40	42	101	0.63	0.78	0.56	0.95	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.78	0.56	0.95
179	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	15	18	23	84	0.39	0.35	0.31	0.79	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.35	0.31	0.79
180	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	9	10	12	14	0.24	0.20	0.16	0.13	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.20	0.16	0.13
181	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	13	14	54	0.31	0.25	0.19	0.51	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.25	0.19	0.51
182	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	8	8	12	23	0.21	0.16	0.16	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.16	0.16	0.22
183	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	18	20	93	0.31	0.35	0.27	0.87	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.35	0.27	0.87
184	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	14	13	0.26	0.20	0.19	0.12	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.19	0.12
185	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	15	25	126	0.31	0.29	0.34	1.18	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.34	1.18
186	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	13	14	14	114	0.34	0.27	0.19	1.07	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.27	0.19	1.07
187	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	8	8	18	50	0.21	0.16	0.24	0.47	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.16	0.24	0.47
188	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	11	12	16	0.26	0.21	0.16	0.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.21	0.16	0.15
189	LVB	TVM	TVM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	22	45	0.31	0.23	0.30	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.30	0.42
190	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	11	11	25	62	0.29	0.21	0.34	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.29	0.21	0.34	0.58
191	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	35	40	43	54	0.92	0.78	0.58	0.51	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.92	0.78	0.58	0.51
192	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	61	63	64	78	1.60	1.23	0.86	0.73	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.60	1.23	0.86	0.73
193	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	42	44	72	82	1.10	0.86	0.97	0.77	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.86	0.97	0.77
194	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	15	14	16	44	0.39	0.27	0.21	0.41	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.27	0.21	0.41
195	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	20	21	23	52	0.52	0.41	0.31	0.49	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.31	0.49
196	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	24	26	36	75	0.63	0.51	0.48	0.70	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.51	0.48	0.70
197	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	38	41	52	50	1.00	0.80	0.70	0.47	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.80	0.70	0.47
198	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	24	128	0.31	0.23	0.32	1.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.32	1.20
199	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	12	12	64	0.26	0.23	0.16	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.16	0.60

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
200	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	14	16	44	0.31	0.27	0.21	0.41	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.21	0.41
201	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	40	45	51	58	1.05	0.88	0.68	0.54	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.88	0.68	0.54
202	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	20	22	24	60	0.52	0.43	0.32	0.56	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.43	0.32	0.56
203	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	8	9	16	64	0.21	0.18	0.21	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.18	0.21	0.60
204	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	13	14	69	0.31	0.25	0.19	0.65	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.25	0.19	0.65
205	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	36	40	42	71	0.94	0.78	0.56	0.67	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	0.78	0.56	0.67
206	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	22	23	22	123	0.58	0.45	0.30	1.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.45	0.30	1.15
207	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	32	38	40	102	0.84	0.74	0.54	0.96	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.74	0.54	0.96
208	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	15	16	22	80	0.39	0.31	0.30	0.75	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.31	0.30	0.75
209	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	12	12	0.26	0.20	0.16	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.16	0.11
210	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	11	13	15	123	0.29	0.25	0.20	1.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.29	0.25	0.20	1.15
211	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	13	14	16	102	0.34	0.27	0.21	0.96	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.27	0.21	0.96
212	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	16	18	21	95	0.42	0.35	0.28	0.89	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.42	0.35	0.28	0.89
213	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	11	12	0.26	0.20	0.15	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.15	0.11
214	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	22	21	21	123	0.58	0.41	0.28	1.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.41	0.28	1.15
215	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	14	15	110	0.31	0.27	0.20	1.03	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.20	1.03
216	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	14	15	18	52	0.37	0.29	0.24	0.49	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.29	0.24	0.49
217	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	12	10	0.26	0.20	0.16	0.09	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.16	0.09
218	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	22	44	0.31	0.23	0.30	0.41	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.30	0.41
219	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	11	11	21	56	0.29	0.21	0.28	0.52	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.29	0.21	0.28	0.52
220	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	20	24	20	82	0.52	0.47	0.27	0.77	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.47	0.27	0.77
221	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	12	32	0.31	0.23	0.16	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.16	0.30
222	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	38	42	43	60	1.00	0.82	0.58	0.56	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.82	0.58	0.56
223	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	16	18	21	73	0.42	0.35	0.28	0.68	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.42	0.35	0.28	0.68
224	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	10	9	10	12	0.26	0.18	0.13	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.18	0.13	0.11
225	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	8	8	14	104	0.21	0.16	0.19	0.97	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.16	0.19	0.97
226	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	32	35	43	62	0.84	0.68	0.58	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.68	0.58	0.58
227	LVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	12	8	14	100	0.31	0.16	0.19	0.94	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.16	0.19	0.94
228	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	32	36	42	62	0.84	0.70	0.56	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.70	0.56	0.58
229	MVB	TVM	KLM	1	0.314615385	0.234011299	0.161045455	0.112470588	30	32	41	54	0.79	0.62	0.55	0.51	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.79	0.62	0.55	0.51
230	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	54	61	62	75	1.42	1.19	0.83	0.70	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.42	1.19	0.83	0.70
231	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	42	46	71	76	1.10	0.90	0.95	0.71	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.90	0.95	0.71
232	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	40	45	50	80	1.05	0.88	0.67	0.75	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.88	0.67	0.75
233	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	16	42	0.31	0.23	0.21	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.21	0.39
234	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	32	38	42	50	0.84	0.74	0.56	0.47	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.74	0.56	0.47
235	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	24	26	38	48	0.63	0.51	0.51	0.45	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.51	0.51	0.45
236	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	36	40	45	69	0.94	0.78	0.60	0.65	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	0.78	0.60	0.65
237	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	15	14	28	54	0.39	0.27	0.38	0.51	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.27	0.38	0.51
238	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	43	45	71	67	1.13	0.88	0.95	0.63	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.13	0.88	0.95	0.63
239	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	38	41	43	50	1.00	0.80	0.58	0.47	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.80	0.58	0.47

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
240	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	56	64	65	93	1.47	1.25	0.87	0.87	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.47	1.25	0.87	0.87
241	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	37	45	43	54	0.97	0.88	0.58	0.51	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.97	0.88	0.58	0.51
242	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	20	21	35	127	0.52	0.41	0.47	1.19	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.47	1.19
243	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	35	52	63	92	0.92	1.01	0.85	0.86	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.92	1.01	0.85	0.86
244	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	36	52	74	87	0.94	1.01	0.99	0.82	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	1.01	0.99	0.82
245	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	21	41	43	45	0.55	0.80	0.58	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.80	0.58	0.42
246	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	12	15	21	62	0.31	0.29	0.28	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.28	0.58
247	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	54	65	56	48	1.42	1.27	0.75	0.45	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.42	1.27	0.75	0.45
248	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	42	44	44	53	1.10	0.86	0.59	0.50	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.86	0.59	0.50
249	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	14	10	0.31	0.23	0.19	0.09	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.19	0.09
250	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	40	42	55	64	1.05	0.82	0.74	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.82	0.74	0.60
251	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	65	70	72	65	1.70	1.37	0.97	0.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.70	1.37	0.97	0.61
252	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	16	15	23	70	0.42	0.29	0.31	0.66	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.42	0.29	0.31	0.66
253	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	12	10	0.26	0.20	0.16	0.09	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.16	0.09
254	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	21	40	44	54	0.55	0.78	0.59	0.51	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.78	0.59	0.51
255	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	20	40	32	55	0.52	0.78	0.43	0.52	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.78	0.43	0.52
256	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	18	21	25	118	0.47	0.41	0.34	1.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.41	0.34	1.11
257	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	13	14	16	92	0.34	0.27	0.21	0.86	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.27	0.21	0.86
258	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	12	15	20	82	0.31	0.29	0.27	0.77	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.27	0.77
259	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	10	10	14	14	0.26	0.20	0.19	0.13	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.19	0.13
260	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	9	11	20	43	0.24	0.21	0.27	0.40	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.21	0.27	0.40
261	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	32	40	45	110	0.84	0.78	0.60	1.03	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.78	0.60	1.03
262	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	54	60	62	103	1.42	1.17	0.83	0.97	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.42	1.17	0.83	0.97
263	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	43	45	70	90	1.13	0.88	0.94	0.84	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.13	0.88	0.94	0.84
264	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	57	60	80	236	1.49	1.17	1.07	2.21	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.49	1.17	1.07	2.21
265	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	20	24	26	124	0.52	0.47	0.35	1.16	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.47	0.35	1.16
266	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	12	12	31	75	0.31	0.23	0.42	0.70	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.42	0.70
267	MVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	32	40	44	62	0.84	0.78	0.59	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.78	0.59	0.58
268	LVB	TVM	APA	1	0.314615385	0.234011299	0.161045455	0.112470588	14	15	25	75	0.37	0.29	0.34	0.70	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.29	0.34	0.70
269	HVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	64	76	82	142	1.68	1.48	1.10	1.33	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.68	1.48	1.10	1.33
270	HVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	52	54	86	126	1.36	1.05	1.15	1.18	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.36	1.05	1.15	1.18
271	HVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	40	48	78	132	1.05	0.94	1.05	1.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.94	1.05	1.24
272	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	18	20	20	38	0.47	0.39	0.27	0.36	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.39	0.27	0.36
273	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	20	22	15	45	0.52	0.43	0.20	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.43	0.20	0.42
274	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	24	46	74	97	0.63	0.90	0.99	0.91	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.90	0.99	0.91
275	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	31	42	36	88	0.81	0.82	0.48	0.82	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.81	0.82	0.48	0.82
276	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	27	30	32	110	0.71	0.59	0.43	1.03	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.71	0.59	0.43	1.03
277	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	20	22	22	42	0.52	0.43	0.30	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.43	0.30	0.39
278	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	25	41	30	60	0.66	0.80	0.40	0.56	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.66	0.80	0.40	0.56
279	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	36	70	42	119	0.94	1.37	0.56	1.12	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	1.37	0.56	1.12

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
280	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	14	15	15	20	0.37	0.29	0.20	0.19	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.29	0.20	0.19
281	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	13	13	21	31	0.34	0.25	0.28	0.29	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.25	0.28	0.29
282	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	52	54	74	120	1.36	1.05	0.99	1.12	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.36	1.05	0.99	1.12
283	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	10	10	15	29	0.26	0.20	0.20	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.20	0.27
284	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	12	12	14	16	0.31	0.23	0.19	0.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.19	0.15
285	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	14	20	22	87	0.37	0.39	0.30	0.82	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.39	0.30	0.82
286	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	15	19	31	38	0.39	0.37	0.42	0.36	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.37	0.42	0.36
287	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	21	30	30	41	0.55	0.59	0.40	0.38	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.59	0.40	0.38
288	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	14	20	14	93	0.37	0.39	0.19	0.87	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.39	0.19	0.87
289	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	20	21	21	36	0.52	0.41	0.28	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.28	0.34
290	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	12	16	12	32	0.31	0.31	0.16	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.31	0.16	0.30
291	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	20	30	22	48	0.52	0.59	0.30	0.45	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.59	0.30	0.45
292	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	14	17	16	92	0.37	0.33	0.21	0.86	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.33	0.21	0.86
293	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	13	20	15	31	0.34	0.39	0.20	0.29	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.39	0.20	0.29
294	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	14	25	0.26	0.23	0.19	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.19	0.23
295	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	52	78	80	130	1.36	1.52	1.07	1.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.36	1.52	1.07	1.22
296	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	18	22	16	45	0.47	0.43	0.21	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.43	0.21	0.42
297	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	32	43	75	90	0.84	0.84	1.01	0.84	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.84	1.01	0.84
298	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	10	28	0.26	0.23	0.13	0.26	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.13	0.26
299	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	9	14	9	32	0.24	0.27	0.12	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.27	0.12	0.30
300	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	14	23	17	45	0.37	0.45	0.23	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.45	0.23	0.42
301	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	42	42	76	93	1.10	0.82	1.02	0.87	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.82	1.02	0.87
302	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	20	22	32	64	0.52	0.43	0.43	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.43	0.43	0.60
303	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	12	23	12	40	0.31	0.45	0.16	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.45	0.16	0.37
304	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	10	10	15	20	0.26	0.20	0.20	0.19	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.20	0.19
305	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	12	15	13	25	0.31	0.29	0.17	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.17	0.23
306	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	38	40	42	102	1.00	0.78	0.56	0.96	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.78	0.56	0.96
307	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	12	12	14	26	0.31	0.23	0.19	0.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.19	0.24
308	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	11	13	15	25	0.29	0.25	0.20	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.29	0.25	0.20	0.23
309	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	75	80	83	130	1.97	1.56	1.11	1.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.97	1.56	1.11	1.22
310	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	20	21	36	65	0.52	0.41	0.48	0.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.48	0.61
311	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	12	15	15	25	0.31	0.29	0.20	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.20	0.23
312	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	13	14	16	26	0.34	0.27	0.21	0.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.27	0.21	0.24
313	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	35	42	44	120	0.92	0.82	0.59	1.12	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.92	0.82	0.59	1.12
314	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	42	45	76	94	1.10	0.88	1.02	0.88	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.88	1.02	0.88
315	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	36	44	72	87	0.94	0.86	0.97	0.82	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	0.86	0.97	0.82
316	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	21	22	36	65	0.55	0.43	0.48	0.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.43	0.48	0.61
317	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	40	42	65	86	1.05	0.82	0.87	0.81	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.82	0.87	0.81
318	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	38	40	32	65	1.00	0.78	0.43	0.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.78	0.43	0.61
319	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	22	25	14	30	0.58	0.49	0.19	0.28	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.49	0.19	0.28

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
320	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	8	9	10	42	0.21	0.18	0.13	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.18	0.13	0.39
321	MVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	14	26	0.26	0.23	0.19	0.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.19	0.24
322	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	8	10	13	15	0.21	0.20	0.17	0.14	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.20	0.17	0.14
323	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	14	26	0.26	0.23	0.19	0.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.19	0.24
324	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	38	46	76	93	1.00	0.90	1.02	0.87	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.90	1.02	0.87
325	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	40	43	63	91	1.05	0.84	0.85	0.85	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.84	0.85	0.85
326	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	14	34	0.26	0.23	0.19	0.32	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.19	0.32
327	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	12	22	36	62	0.31	0.43	0.48	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.43	0.48	0.58
328	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	18	20	28	21	0.47	0.39	0.38	0.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.39	0.38	0.20
329	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	15	26	0.26	0.23	0.20	0.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.20	0.24
330	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	54	65	80	124	1.42	1.27	1.07	1.16	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.42	1.27	1.07	1.16
331	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	32	38	40	96	0.84	0.74	0.54	0.90	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.74	0.54	0.90
332	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	20	21	32	65	0.52	0.41	0.43	0.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.43	0.61
333	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	8	5	10	20	0.21	0.10	0.13	0.19	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.10	0.13	0.19
334	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	6	6	12	22	0.16	0.12	0.16	0.21	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.16	0.12	0.16	0.21
335	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	5	7	10	25	0.13	0.14	0.13	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.13	0.14	0.13	0.23
336	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	16	30	0.26	0.23	0.21	0.28	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.21	0.28
337	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	14	21	36	65	0.37	0.41	0.48	0.61	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.41	0.48	0.61
338	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	18	24	28	21	0.47	0.47	0.38	0.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.47	0.38	0.20
339	LVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	12	14	15	26	0.31	0.27	0.20	0.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.20	0.24
340	MVB	KOD	CLT-2	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	16	27	0.26	0.23	0.21	0.25	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.21	0.25
341	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	12	24	30	64	0.31	0.47	0.40	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.47	0.40	0.60
342	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	20	21	25	20	0.52	0.41	0.34	0.19	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.34	0.19
343	LVB	KOD	CLT-1	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	15	26	0.26	0.23	0.20	0.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.20	0.24
344	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	12	14	29	0.31	0.23	0.19	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.23	0.19	0.27
345	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	32	42	72	86	0.84	0.82	0.97	0.81	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.82	0.97	0.81
346	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	38	45	78	92	1.00	0.88	1.05	0.86	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.88	1.05	0.86
347	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	15	35	0.26	0.23	0.20	0.33	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.20	0.33
348	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	35	40	46	115	0.92	0.78	0.62	1.08	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.92	0.78	0.62	1.08
349	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	38	45	75	89	1.00	0.88	1.01	0.83	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.00	0.88	1.01	0.83
350	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	40	44	70	82	1.05	0.86	0.94	0.77	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.86	0.94	0.77
351	HVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	52	54	88	121	1.36	1.05	1.18	1.13	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.36	1.05	1.18	1.13
352	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	42	46	72	87	1.10	0.90	0.97	0.82	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.90	0.97	0.82
353	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	40	43	68	89	1.05	0.84	0.91	0.83	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.05	0.84	0.91	0.83
354	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	21	39	0.26	0.23	0.28	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.28	0.37
355	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	22	24	30	59	0.58	0.47	0.40	0.55	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.47	0.40	0.55
356	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	10	15	21	0.26	0.20	0.20	0.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.20	0.20
357	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	18	20	26	82	0.47	0.39	0.35	0.77	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.39	0.35	0.77
358	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	20	22	30	61	0.52	0.43	0.40	0.57	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.43	0.40	0.57
359	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	8	8	12	16	0.21	0.16	0.16	0.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.16	0.16	0.15

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
360	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	6	6	14	17	0.16	0.12	0.19	0.16	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.16	0.12	0.19	0.16
361	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	8	10	21	0.26	0.16	0.13	0.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.16	0.13	0.20
362	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	24	32	35	91	0.63	0.62	0.47	0.85	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.62	0.47	0.85
363	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	20	22	28	59	0.52	0.43	0.38	0.55	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.43	0.38	0.55
364	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	18	20	22	24	0.47	0.39	0.30	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.39	0.30	0.22
365	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	9	15	28	0.31	0.18	0.20	0.26	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.18	0.20	0.26
366	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	63	75	76	125	1.65	1.46	1.02	1.17	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.65	1.46	1.02	1.17
367	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	20	22	35	62	0.52	0.43	0.47	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.43	0.47	0.58
368	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	14	22	0.26	0.23	0.19	0.21	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.19	0.21
369	MVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	14	20	15	40	0.37	0.39	0.20	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.39	0.20	0.37
370	LVB	KOD	KNR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	12	23	0.26	0.23	0.16	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.16	0.22
371	HVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	43	51	85	110	1.13	0.99	1.14	1.03	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.13	0.99	1.14	1.03
372	HVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	54	81	83	135	1.42	1.58	1.11	1.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.42	1.58	1.11	1.27
373	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	16	23	36	70	0.42	0.45	0.48	0.66	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.42	0.45	0.48	0.66
374	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	32	45	37	92	0.84	0.88	0.50	0.86	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.88	0.50	0.86
375	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	26	33	25	115	0.68	0.64	0.34	1.08	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.68	0.64	0.34	1.08
376	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	21	24	17	47	0.55	0.47	0.23	0.44	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.47	0.23	0.44
377	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	43	48	76	100	1.13	0.94	1.02	0.94	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.13	0.94	1.02	0.94
378	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	15	9	33	0.26	0.29	0.12	0.31	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.29	0.12	0.31
379	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	30	43	32	62	0.79	0.84	0.43	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.79	0.84	0.43	0.58
380	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	42	74	44	122	1.10	1.44	0.59	1.14	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	1.44	0.59	1.14
381	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	17	15	23	0.31	0.33	0.20	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.33	0.20	0.22
382	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	13	10	25	0.26	0.25	0.13	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.25	0.13	0.23
383	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	8	6	15	34	0.21	0.12	0.20	0.32	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.12	0.20	0.32
384	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	11	16	31	0.26	0.21	0.21	0.29	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.21	0.21	0.29
385	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	25	12	45	0.31	0.49	0.16	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.49	0.16	0.42
386	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	11	15	18	0.26	0.21	0.20	0.17	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.21	0.20	0.17
387	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	15	17	13	29	0.39	0.33	0.17	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.33	0.17	0.27
388	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	43	71	42	108	1.13	1.38	0.56	1.01	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.13	1.38	0.56	1.01
389	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	20	21	22	40	0.52	0.41	0.30	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.30	0.37
390	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	6	4	10	23	0.16	0.08	0.13	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.16	0.08	0.13	0.22
391	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	26	14	29	0.31	0.51	0.19	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.51	0.19	0.27
392	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	14	15	10	44	0.37	0.29	0.13	0.41	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.29	0.13	0.41
393	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	13	18	10	35	0.34	0.35	0.13	0.33	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.35	0.13	0.33
394	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	42	50	44	37	1.10	0.98	0.59	0.35	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.10	0.98	0.59	0.35
395	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	24	39	28	90	0.63	0.76	0.38	0.84	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.76	0.38	0.84
396	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	41	59	76	123	1.07	1.15	1.02	1.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.07	1.15	1.02	1.15
397	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	21	33	22	46	0.55	0.64	0.30	0.43	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.64	0.30	0.43
398	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	20	21	15	96	0.52	0.41	0.20	0.90	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.41	0.20	0.90
399	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	22	23	16	35	0.58	0.45	0.21	0.33	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.45	0.21	0.33

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
400	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	22	10	12	0.31	0.43	0.13	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.43	0.13	0.11
401	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	21	37	22	29	0.55	0.72	0.30	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.72	0.30	0.27
402	MVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	20	26	22	18	0.52	0.51	0.30	0.17	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.52	0.51	0.30	0.17
403	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	14	36	15	36	0.37	0.70	0.20	0.34	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.70	0.20	0.34
404	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	23	28	23	0.31	0.45	0.38	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.45	0.38	0.22
405	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	13	15	28	0.26	0.25	0.20	0.26	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.25	0.20	0.26
406	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	14	16	20	35	0.37	0.31	0.27	0.33	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.31	0.27	0.33
407	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	21	23	36	70	0.55	0.45	0.48	0.66	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.45	0.48	0.66
408	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	26	45	37	92	0.68	0.88	0.50	0.86	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.68	0.88	0.50	0.86
409	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	28	33	25	115	0.73	0.64	0.34	1.08	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.73	0.64	0.34	1.08
410	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	16	24	17	47	0.42	0.47	0.23	0.44	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.42	0.47	0.23	0.44
411	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	10	11	15	18	0.26	0.21	0.20	0.17	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.21	0.20	0.17
412	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	9	15	9	33	0.24	0.29	0.12	0.31	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.29	0.12	0.31
413	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	31	43	32	62	0.81	0.84	0.43	0.58	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.81	0.84	0.43	0.58
414	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	28	34	44	122	0.73	0.66	0.59	1.14	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.73	0.66	0.59	1.14
415	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	12	14	15	23	0.31	0.27	0.20	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.20	0.22
416	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	10	10	25	0.26	0.20	0.13	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.20	0.13	0.23
417	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	13	6	15	34	0.34	0.12	0.20	0.32	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.12	0.20	0.32
418	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	10	11	16	31	0.26	0.21	0.21	0.29	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.21	0.21	0.29
419	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	11	12	12	45	0.29	0.23	0.16	0.42	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.29	0.23	0.16	0.42
420	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	10	11	15	18	0.26	0.21	0.20	0.17	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.21	0.20	0.17
421	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	9	17	13	29	0.24	0.33	0.17	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.33	0.17	0.27
422	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	21	37	22	29	0.55	0.72	0.30	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.72	0.30	0.27
423	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	17	21	22	40	0.45	0.41	0.30	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.45	0.41	0.30	0.37
424	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	21	24	24	23	0.55	0.47	0.32	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.47	0.32	0.22
425	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	22	26	26	29	0.58	0.51	0.35	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.58	0.51	0.35	0.27
426	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	14	15	10	44	0.37	0.29	0.13	0.41	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.29	0.13	0.41
427	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	16	18	10	35	0.42	0.35	0.13	0.33	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.42	0.35	0.13	0.33
428	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	12	11	15	18	0.31	0.21	0.20	0.17	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.21	0.20	0.17
429	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	24	29	28	90	0.63	0.57	0.38	0.84	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.57	0.38	0.84
430	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	14	13	15	123	0.37	0.25	0.20	1.15	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.25	0.20	1.15
431	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	8	4	10	23	0.21	0.08	0.13	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.08	0.13	0.22
432	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	12	11	15	96	0.31	0.21	0.20	0.90	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.21	0.20	0.90
433	MVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	13	12	16	35	0.34	0.23	0.21	0.33	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.23	0.21	0.33
434	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	12	22	10	12	0.31	0.43	0.13	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.43	0.13	0.11
435	LVB	TCR	PKD	2	0.314615385	0.234011299	0.161045455	0.112470588	16	17	22	29	0.42	0.33	0.30	0.27	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.42	0.33	0.30	0.27
436	LVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	14	15	15	15	0.37	0.29	0.20	0.14	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.29	0.20	0.14
437	LVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	22	22	27	0.31	0.43	0.30	0.25	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.43	0.30	0.25
438	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	21	23	25	25	0.55	0.45	0.34	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.45	0.34	0.23
439	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	18	23	22	24	0.47	0.45	0.30	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.47	0.45	0.30	0.22

INTERNET BANKING COST CALCULATION					cost/user				Active users				Transaction cost				Cost/Transaction				Transaction/user				Transaction cost			
SL.NO.	TYPE	MODULE	RBO	NETWORK	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
440	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	15	24	17	42	0.39	0.47	0.23	0.39	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.39	0.47	0.23	0.39
441	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	23	33	32	56	0.60	0.64	0.43	0.52	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.60	0.64	0.43	0.52
442	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	36	44	44	110	0.94	0.86	0.59	1.03	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	0.86	0.59	1.03
443	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	13	14	15	24	0.34	0.27	0.20	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.27	0.20	0.22
444	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	12	10	22	0.26	0.23	0.13	0.21	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.23	0.13	0.21
445	LVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	21	23	25	108	0.55	0.45	0.34	1.01	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.45	0.34	1.01
446	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	10	9	9	32	0.26	0.18	0.12	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.26	0.18	0.12	0.30
447	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	21	32	32	58	0.55	0.62	0.43	0.54	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.55	0.62	0.43	0.54
448	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	24	44	44	74	0.63	0.86	0.59	0.69	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.63	0.86	0.59	0.69
449	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	32	40	44	40	0.84	0.78	0.59	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.84	0.78	0.59	0.37
450	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	36	41	42	52	0.94	0.80	0.56	0.49	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.94	0.80	0.56	0.49
451	LVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	19	21	22	32	0.50	0.41	0.30	0.30	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.50	0.41	0.30	0.30
452	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	14	16	14	25	0.37	0.31	0.19	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.31	0.19	0.23
453	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	15	10	40	0.31	0.29	0.13	0.37	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.13	0.37
454	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	46	59	62	64	1.21	1.15	0.83	0.60	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.21	1.15	0.83	0.60
455	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	13	14	15	22	0.34	0.27	0.20	0.21	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.34	0.27	0.20	0.21
456	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	41	44	44	51	1.07	0.86	0.59	0.48	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	1.07	0.86	0.59	0.48
457	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	14	14	26	0.31	0.27	0.19	0.24	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.27	0.19	0.24
458	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	9	10	10	44	0.24	0.20	0.13	0.41	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.24	0.20	0.13	0.41
459	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	8	12	10	12	0.21	0.23	0.13	0.11	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.21	0.23	0.13	0.11
460	LVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	12	15	16	24	0.31	0.29	0.21	0.22	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.31	0.29	0.21	0.22
461	MVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	11	13	18	21	0.29	0.25	0.24	0.20	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.29	0.25	0.24	0.20
462	LVB	TCR	SHR	2	0.314615385	0.234011299	0.161045455	0.112470588	14	17	22	25	0.37	0.33	0.30	0.23	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.37	0.33	0.30	0.23
463	LVB	TCR	TCR	2	0.314615385	0.234011299	0.161045455	0.112470588	7	4	10	20	0.18	0.08	0.13	0.19	0.097380952	0.06471875	0.039366667	0.023129032	3	4	4	5	0.18	0.08	0.13	0.19

Annexure-3

Transaction Cost Calculation of ATM,CDM & RECYCLER Services

ATM COST

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
1	LVB	EKM	EKM1	1	6333	8000	5000	800	6500	4700	31333	152	4560	7	186	5580	6	205	6150	5	223	6690	5
2	LVB	EKM	EKM1	1	6333	8000	5100	800	6500	4700	31433	168	5040	6	187	5610	6	208	6240	5	234	7020	4
3	LVB	EKM	EKM1	1	6333	8000	5000	800	6500	4700	31333	156	4680	7	165	4950	6	210	6300	5	242	7260	4
4	LVB	EKM	EKM1	1	6333	8000	5200	800	6500	4700	31533	175	5250	6	186	5580	6	198	5940	5	232	6960	5
5	LVB	EKM	EKM1	1	6333	5600	4600	800	6500	4700	28533	120	3600	8	156	4680	6	220	6600	4	256	7680	4
6	LVB	EKM	EKM1	1	6333	5100	4200	800	6500	4700	27633	88	2640	10	146	4380	6	158	4740	6	186	5580	5
7	LVB	EKM	EKM1	1	6333	11000	5800	800	6500	4700	35133	238	7140	5	258	7740	5	261	7830	4	288	8640	4
8	LVB	EKM	EKM1	1	6333	11000	5900	800	6500	4700	35233	245	7350	5	270	8100	4	275	8250	4	301	9030	4
9	LVB	EKM	EKM1	1	6333	7000	4800	800	6500	4700	30133	142	4260	7	161	4830	6	198	5940	5	237	7110	4
10	LVB	EKM	EKM1	1	6333	7950	5500	800	6500	4700	31783	196	5880	5	196	5880	5	230	6900	5	275	8250	4
11	LVB	EKM	EKM1	1	6333	5000	4000	800	6500	4700	27333	48	1440	19	123	3690	7	175	5250	5	186	5580	5
12	LVB	EKM	EKM1	1	6333	8200	5500	800	6500	4700	32033	201	6030	5	215	6450	5	276	8280	4	265	7950	4
13	LVB	EKM	EKM1	1	6333	8000	5000	800	6500	4700	31333	156	4680	7	220	6600	5	275	8250	4	270	8100	4
14	LVB	EKM	EKM1	1	6333	8250	5500	800	6500	4700	32083	205	6150	5	241	7230	4	256	7680	4	282	8460	4
15	LVB	EKM	EKM1	1	6333	9000	5400	800	6500	4700	32733	188	5640	6	254	7620	4	272	8160	4	298	8940	4
16	LVB	EKM	EKM1	1	6333	8200	5500	800	6500	4700	32033	201	6030	5	205	6150	5	231	6930	5	250	7500	4
17	LVB	EKM	EKM1	1	6333	5800	5000	800	6500	4700	29133	144	4320	7	181	5430	5	201	6030	5	218	6540	4
18	LVB	EKM	EKM1	1	6333	5600	4600	800	6500	4700	28533	129	3870	7	189	5670	5	245	7350	4	251	7530	4
19	LVB	EKM	EKM1	1	6333	8000	5000	800	6500	4700	31333	156	4680	7	195	5850	5	251	7530	4	275	8250	4
20	LVB	EKM	EKM1	1	6333	10500	6000	800	6500	4700	34833	248	7440	5	252	7560	5	263	7890	4	292	8760	4
21	LVB	EKM	EKM1	1	6333	5650	4600	800	6500	4700	28583	132	3960	7	146	4380	7	173	5190	6	185	5550	5
22	LVB	EKM	EKM1	1	6333	11000	5700	800	6500	4700	35033	234	7020	5	258	7740	5	268	8040	4	301	9030	4
23	LVB	EKM	EKM1	1	6333	11000	6000	800	6500	4700	35333	250	7500	5	270	8100	4	275	8250	4	298	8940	4
24	LVB	EKM	EKM1	1	6333	5700	4600	800	6500	4700	28633	126	3780	8	161	4830	6	189	5670	5	210	6300	5
25	LVB	EKM	EKM2	1	6333	8000	5200	800	6500	4700	31533	175	5250	6	196	5880	5	205	6150	5	225	6750	5
26	LVB	EKM	EKM2	1	6333	5200	4500	800	6500	4700	28033	118	3540	8	127	3810	7	146	4380	6	142	4260	7
27	LVB	EKM	EKM2	1	6333	10000	5500	800	6500	4700	33833	200	6000	6	215	6450	5	231	6930	5	248	7440	5
28	LVB	EKM	EKM2	1	6333	9000	5300	800	6500	4700	32633	188	5640	6	220	6600	5	248	7440	4	256	7680	4
29	LVB	EKM	EKM2	1	6333	9000	5350	800	6500	4700	32683	184	5520	6	241	7230	5	262	7860	4	298	8940	4
30	LVB	EKM	EKM2	1	6333	5800	4500	800	6500	4700	28633	118	3540	8	254	7620	4	267	8010	4	296	8880	3
31	LVB	EKM	EKM2	1	6333	9000	5300	800	6500	4700	32633	185	5550	6	205	6150	5	263	7890	4	271	8130	4
32	LVB	EKM	EKM2	1	6333	5400	4800	800	6500	4700	28533	130	3900	7	181	5430	5	205	6150	5	225	6750	4
33	LVB	EKM	EKM2	1	6333	5500	5000	800	6500	4700	28833	145	4350	7	189	5670	5	238	7140	4	241	7230	4
34	LVB	EKM	EKM2	1	6333	8000	5200	800	6500	4700	31533	168	5040	6	195	5850	5	243	7290	4	289	8670	4
35	LVB	EKM	EKM2	1	6333	10000	5700	800	6500	4700	34033	225	6750	5	252	7560	5	275	8250	4	294	8820	4
36	LVB	EKM	EKM2	1	6333	9000	5400	800	6500	4700	32733	192	5760	6	223	6690	5	268	8040	4	279	8370	4
37	LVB	EKM	EKM2	1	6333	9000	5400	800	6500	4700	32733	195	5850	6	208	6240	5	247	7410	4	286	8580	4

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
38	LVB	EKM	EKM2	1	6333	6000	4500	800	6500	4700	28833	104	3120	9	175	5250	5	192	5760	5	223	6690	4
39	LVB	EKM	EKM2	1	6333	8800	5700	800	6500	4700	32833	221	6630	5	236	7080	5	221	6630	5	278	8340	4
40	LVB	EKM	EKM2	1	6333	5800	4600	800	6500	4700	28733	125	3750	8	154	4620	6	198	5940	5	201	6030	5
41	LVB	EKM	EKM2	1	6333	5000	4200	800	6500	4700	27533	85	2550	11	118	3540	8	120	3600	8	154	4620	6
42	LVB	EKM	EKM2	1	6333	9000	5400	800	6500	4700	32733	195	5850	6	210	6300	5	230	6900	5	250	7500	4
43	LVB	EKM	EKM2	1	6333	5000	4400	800	6500	4700	27733	93	2790	10	126	3780	7	165	4950	6	187	5610	5
44	LVB	EKM	EKM2	1	6333	5100	4500	800	6500	4700	27933	96	2880	10	142	4260	7	158	4740	6	164	4920	6
45	LVB	EKM	EKM2	1	6333	5500	4600	800	6500	4700	28433	134	4020	7	148	4440	6	165	4950	6	213	6390	4
46	LVB	EKM	EKM2	1	6333	11000	5700	800	6500	4700	35033	228	6840	5	256	7680	5	237	7110	5	262	7860	4
47	LVB	EKM	EKM2	1	6333	5000	4200	800	6500	4700	27533	61	1830	15	132	3960	7	152	4560	6	179	5370	5
48	LVB	EKM	EKM2	1	6333	5800	4600	800	6500	4700	28733	123	3690	8	187	5610	5	201	6030	5	236	7080	4
49	LVB	EKM	EKM2	1	6333	5000	4500	800	6500	4700	27833	95	2850	10	198	5940	5	216	6480	4	251	7530	4
50	LVB	EKM	EKM2	1	6333	8000	5000	800	6500	4700	31333	155	4650	7	189	5670	6	258	7740	4	321	9630	3
51	LVB	EKM	EKM2	1	6333	5000	4400	800	6500	4700	27733	87	2610	11	135	4050	7	156	4680	6	198	5940	5
52	LVB	EKM	EKM2	1	6333	6000	4600	800	6500	4700	28933	120	3600	8	145	4350	7	167	5010	6	176	5280	5
53	LVB	EKM	EKM2	1	6333	7000	5000	800	6500	4700	30333	149	4470	7	156	4680	6	182	5460	6	195	5850	5
54	LVB	EKM	EKM2	1	6333	7000	4700	800	6500	4700	30033	136	4080	7	185	5550	5	203	6090	5	218	6540	5
55	LVB	EKM	EKM2	1	6333	8000	5000	800	6500	4700	31333	158	4740	7	223	6690	5	245	7350	4	263	7890	4
56	LVB	EKM	EKM2	1	6333	6000	4600	800	6500	4700	28933	124	3720	8	198	5940	5	234	7020	4	251	7530	4
57	LVB	EKM	EKM2	1	6333	6000	4500	800	6500	4700	28833	115	3450	8	186	5580	5	215	6450	4	238	7140	4
58	LVB	EKM	EKM2	1	6333	8000	5000	800	6500	4700	31333	154	4620	7	215	6450	5	253	7590	4	292	8760	4
59	LVB	EKM	EKM2	1	6333	8000	5100	800	6500	4700	31433	168	5040	6	182	5460	6	208	6240	5	314	9420	3
60	LVB	EKM	EKM3	1	6333	10000	5500	800	6500	4700	33833	205	6150	6	228	6840	5	273	8190	4	292	8760	4
61	LVB	EKM	EKM3	1	6333	5000	4400	800	6500	4700	27733	93	2790	10	156	4680	6	185	5550	5	198	5940	5
62	LVB	EKM	EKM3	1	6333	7000	4600	800	6500	4700	29933	126	3780	8	185	5550	5	204	6120	5	231	6930	4
63	LVB	EKM	EKM3	1	6333	8000	5100	800	6500	4700	31433	165	4950	6	198	5940	5	221	6630	5	278	8340	4
64	LVB	EKM	EKM3	1	6333	9000	5200	800	6500	4700	32533	178	5340	6	258	7740	4	258	7740	4	286	8580	4
65	LVB	EKM	EKM3	1	6333	9000	5300	800	6500	4700	32633	189	5670	6	225	6750	5	265	7950	4	273	8190	4
66	LVB	EKM	EKM3	1	6333	9000	5300	800	6500	4700	32633	185	5550	6	205	6150	5	216	6480	5	285	8550	4
67	LVB	EKM	EKM3	1	6333	9000	5400	800	6500	4700	32733	190	5700	6	217	6510	5	237	7110	5	292	8760	4
68	LVB	EKM	EKM3	1	6333	10000	5500	800	6500	4700	33833	201	6030	6	223	6690	5	265	7950	4	274	8220	4
69	LVB	EKM	EKM3	1	6333	10000	5600	800	6500	4700	33933	212	6360	5	235	7050	5	254	7620	4	268	8040	4
70	LVB	EKM	EKM3	1	6333	7000	4700	800	6500	4700	30033	132	3960	8	185	5550	5	218	6540	5	243	7290	4
71	LVB	EKM	EKM3	1	6333	8000	5300	800	6500	4700	31633	175	5250	6	218	6540	5	245	7350	4	267	8010	4
72	LVB	EKM	EKM3	1	6333	8000	5000	800	6500	4700	31333	158	4740	7	195	5850	5	226	6780	5	238	7140	4
73	LVB	EKM	KTM	1	6333	9000	5300	800	6500	4700	32633	183	5490	6	210	6300	5	235	7050	5	265	7950	4
74	LVB	EKM	KTM	1	6333	8000	5000	800	6500	4700	31333	156	4680	7	200	6000	5	231	6930	5	276	8280	4
75	LVB	EKM	KTM	1	6333	7000	4600	800	6500	4700	29933	125	3750	8	154	4620	6	175	5250	6	186	5580	5

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
76	LVB	EKM	KTM	1	6333	6000	4500	800	6500	4700	28833	108	3240	9	182	5460	5	201	6030	5	234	7020	4
77	LVB	EKM	KTM	1	6333	5000	4300	800	6500	4700	27633	85	2550	11	110	3300	8	135	4050	7	158	4740	6
78	LVB	EKM	KTM	1	6333	6000	4500	800	6500	4700	28833	107	3210	9	145	4350	7	158	4740	6	169	5070	6
79	LVB	EKM	KTM	1	6333	10000	5500	800	6500	4700	33833	206	6180	5	251	7530	4	263	7890	4	274	8220	4
80	LVB	EKM	KTM	1	6333	9000	5300	800	6500	4700	32633	187	5610	6	228	6840	5	245	7350	4	258	7740	4
81	LVB	EKM	KTM	1	6333	8000	5100	800	6500	4700	31433	165	4950	6	231	6930	5	254	7620	4	262	7860	4
82	LVB	EKM	KTM	1	6333	9000	5400	800	6500	4700	32733	198	5940	6	254	7620	4	275	8250	4	283	8490	4
83	LVB	EKM	KTM	1	6333	7000	4800	800	6500	4700	30133	145	4350	7	253	7590	4	274	8220	4	286	8580	4
84	LVB	TVM	TVM	1	6333	9000	5300	800	6500	4700	32633	185	5550	6	198	5940	5	292	8760	4	301	9030	4
85	LVB	TVM	TVM	1	6333	10000	5500	800	6500	4700	33833	201	6030	6	238	7140	5	256	7680	4	268	8040	4
86	LVB	TVM	TVM	1	6333	11000	5800	800	6500	4700	35133	235	7050	5	241	7230	5	258	7740	5	288	8640	4
87	LVB	TVM	TVM	1	6333	10000	5700	800	6500	4700	34033	221	6630	5	245	7350	5	263	7890	4	274	8220	4
88	LVB	TVM	TVM	1	6333	9000	5300	800	6500	4700	32633	186	5580	6	201	6030	5	225	6750	5	289	8670	4
89	LVB	TVM	TVM	1	6333	5000	5000	800	6500	4700	28333	98	2940	10	145	4350	7	172	5160	5	245	7350	4
90	LVB	TVM	TVM	1	6333	9000	5300	800	6500	4700	32633	187	5610	6	225	6750	5	246	7380	4	269	8070	4
91	LVB	TVM	TVM	1	6333	7000	4700	800	6500	4700	30033	135	4050	7	172	5160	6	183	5490	5	218	6540	5
92	LVB	TVM	TVM	1	6333	7000	4600	800	6500	4700	29933	128	3840	8	163	4890	6	182	5460	5	209	6270	5
93	LVB	TVM	TVM	1	6333	10000	5500	800	6500	4700	33833	206	6180	5	245	7350	5	251	7530	4	293	8790	4
94	LVB	TVM	TVM	1	6333	10000	5600	800	6500	4700	33933	218	6540	5	251	7530	5	243	7290	5	275	8250	4
95	LVB	TVM	TVM	1	6333	10000	5600	800	6500	4700	33933	219	6570	5	225	6750	5	261	7830	4	283	8490	4
96	LVB	TVM	TVM	1	6333	8000	5000	800	6500	4700	31333	156	4680	7	184	5520	6	198	5940	5	210	6300	5
97	LVB	TVM	TVM	1	6333	10000	5600	800	6500	4700	33933	214	6420	5	235	7050	5	248	7440	5	251	7530	5
98	LVB	TVM	TVM	1	6333	9000	5400	800	6500	4700	32733	198	5940	6	221	6630	5	235	7050	5	267	8010	4
99	LVB	TVM	TVM	1	6333	8000	5200	800	6500	4700	31533	164	4920	6	182	5460	6	201	6030	5	231	6930	5
100	LVB	TVM	TVM	1	6333	9000	5300	800	6500	4700	32633	188	5640	6	201	6030	5	215	6450	5	227	6810	5
101	LVB	TVM	TVM	1	6333	10000	5700	800	6500	4700	34033	213	6390	5	253	7590	4	274	8220	4	298	8940	4
102	LVB	TVM	TVM	1	6333	7000	4800	800	6500	4700	30133	132	3960	8	186	5580	5	213	6390	5	235	7050	4
103	LVB	TVM	TVM	1	6333	8000	5000	800	6500	4700	31333	156	4680	7	216	6480	5	243	7290	4	258	7740	4
104	LVB	TVM	TVM	1	6333	7000	5000	800	6500	4700	30333	148	4440	7	135	4050	7	154	4620	7	187	5610	5
105	LVB	TVM	TVM	1	6333	6000	4600	800	6500	4700	28933	122	3660	8	118	3540	8	160	4800	6	175	5250	6
106	LVB	TVM	TVM	1	6333	5000	4300	800	6500	4700	27633	85	2550	11	123	3690	7	158	4740	6	167	5010	6
107	LVB	TVM	TVM	1	6333	5000	4500	800	6500	4700	27833	98	2940	9	126	3780	7	149	4470	6	223	6690	4
108	LVB	TVM	TVM	1	6333	6000	4500	800	6500	4700	28833	102	3060	9	143	4290	7	168	5040	6	210	6300	5
109	LVB	TVM	TVM	1	6333	6000	4600	800	6500	4700	28933	112	3360	9	138	4140	7	165	4950	6	230	6900	4
110	LVB	TVM	TVM	1	6333	6000	4500	800	6500	4700	28833	106	3180	9	115	3450	8	136	4080	7	208	6240	5
111	LVB	TVM	TVM	1	6333	5000	4200	800	6500	4700	27533	75	2250	12	101	3030	9	151	4530	6	185	5550	5
112	LVB	TVM	KLM	1	6333	9000	5400	800	6500	4700	32733	198	5940	6	236	7080	5	285	8550	4	266	7980	4
113	LVB	TVM	KLM	1	6333	6000	4600	800	6500	4700	28933	125	3750	8	186	5580	5	213	6390	5	225	6750	4

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
114	LVB	TVM	KLM	1	6333	10000	5600	800	6500	4700	33933	218	6540	5	225	6750	5	238	7140	5	297	8910	4
115	LVB	TVM	KLM	1	6333	10000	5700	800	6500	4700	34033	223	6690	5	264	7920	4	268	8040	4	298	8940	4
116	LVB	TVM	KLM	1	6333	12000	6100	800	6500	4700	36433	267	8010	5	272	8160	4	265	7950	5	302	9060	4
117	LVB	TVM	KLM	1	6333	11000	6000	800	6500	4700	35333	250	7500	5	248	7440	5	259	7770	5	296	8880	4
118	LVB	TVM	KLM	1	6333	10000	5500	800	6500	4700	33833	201	6030	6	256	7680	4	275	8250	4	288	8640	4
119	LVB	TVM	KLM	1	6333	11000	5800	800	6500	4700	35133	232	6960	5	264	7920	4	273	8190	4	301	9030	4
120	LVB	TVM	KLM	1	6333	9000	5300	800	6500	4700	32633	185	5550	6	198	5940	5	216	6480	5	225	6750	5
121	LVB	TVM	KLM	1	6333	8000	5000	800	6500	4700	31333	156	4680	7	186	5580	6	207	6210	5	246	7380	4
122	LVB	TVM	KLM	1	6333	9000	5200	800	6500	4700	32533	178	5340	6	210	6300	5	231	6930	5	253	7590	4
123	LVB	TVM	KLM	1	6333	6000	4700	800	6500	4700	29033	123	3690	8	185	5550	5	205	6150	5	247	7410	4
124	LVB	TVM	KLM	1	6333	9000	5300	800	6500	4700	32633	182	5460	6	167	5010	7	182	5460	6	218	6540	5
125	LVB	TVM	KLM	1	6333	9000	5350	800	6500	4700	32683	187	5610	6	198	5940	6	213	6390	5	234	7020	5
126	LVB	TVM	KLM	1	6333	10000	5700	800	6500	4700	34033	224	6720	5	210	6300	5	245	7350	5	268	8040	4
127	LVB	TVM	KLM	1	6333	10000	5700	800	6500	4700	34033	220	6600	5	226	6780	5	251	7530	5	275	8250	4
128	LVB	TVM	KLM	1	6333	10000	5600	800	6500	4700	33933	218	6540	5	235	7050	5	268	8040	4	284	8520	4
129	LVB	TVM	KLM	1	6333	11000	5800	800	6500	4700	35133	232	6960	5	250	7500	5	275	8250	4	292	8760	4
130	LVB	TVM	KLM	1	6333	10000	5500	800	6500	4700	33833	208	6240	5	237	7110	5	251	7530	4	286	8580	4
131	LVB	TVM	KLM	1	6333	9000	5300	800	6500	4700	32633	189	5670	6	210	6300	5	228	6840	5	237	7110	5
132	LVB	TVM	KLM	1	6333	7000	4700	800	6500	4700	30033	128	3840	8	184	5520	5	215	6450	5	243	7290	4
133	LVB	TVM	KLM	1	6333	8000	5000	800	6500	4700	31333	154	4620	7	169	5070	6	184	5520	6	204	6120	5
134	LVB	TVM	KLM	1	6333	7000	4700	800	6500	4700	30033	129	3870	8	154	4620	7	168	5040	6	187	5610	5
135	LVB	TVM	KLM	1	6333	7000	4800	800	6500	4700	30133	132	3960	8	149	4470	7	175	5250	6	182	5460	6
136	LVB	TVM	KLM	1	6333	10000	5600	800	6500	4700	33933	215	6450	5	265	7950	4	289	8670	4	291	8730	4
137	LVB	TVM	KLM	1	6333	6000	4650	800	6500	4700	28983	122	3660	8	189	5670	5	201	6030	5	228	6840	4
138	LVB	TVM	KLM	1	6333	5000	4500	800	6500	4700	27833	98	2940	9	132	3960	7	147	4410	6	165	4950	6
139	LVB	TVM	KLM	1	6333	6000	4500	800	6500	4700	28833	101	3030	10	137	4110	7	163	4890	6	178	5340	5
140	LVB	TVM	KLM	1	6333	6000	4550	800	6500	4700	28883	115	3450	8	128	3840	8	149	4470	6	154	4620	6
141	LVB	TVM	APA	1	6333	9000	5300	800	6500	4700	32633	187	5610	6	213	6390	5	235	7050	5	256	7680	4
142	LVB	TVM	APA	1	6333	11000	5800	800	6500	4700	35133	235	7050	5	256	7680	5	265	7950	4	278	8340	4
143	LVB	TVM	APA	1	6333	12000	6000	800	6500	4700	36333	254	7620	5	268	8040	5	268	8040	5	272	8160	4
144	LVB	TVM	APA	1	6333	11000	5800	800	6500	4700	35133	235	7050	5	248	7440	5	238	7140	5	286	8580	4
145	LVB	TVM	APA	1	6333	11000	5900	800	6500	4700	35233	248	7440	5	265	7950	4	267	8010	4	294	8820	4
146	LVB	TVM	APA	1	6333	10000	5700	800	6500	4700	34033	225	6750	5	258	7740	4	275	8250	4	288	8640	4
147	LVB	TVM	APA	1	6333	11000	5700	800	6500	4700	35033	228	6840	5	264	7920	4	256	7680	5	292	8760	4
148	LVB	TVM	APA	1	6333	8000	5100	800	6500	4700	31433	165	4950	6	193	5790	5	223	6690	5	253	7590	4
149	LVB	TVM	APA	1	6333	8000	5100	800	6500	4700	31433	158	4740	7	201	6030	5	231	6930	5	261	7830	4
150	LVB	TVM	APA	1	6333	7000	5000	800	6500	4700	30333	147	4410	7	198	5940	5	243	7290	4	268	8040	4
151	LVB	TVM	APA	1	6333	5000	4400	800	6500	4700	27733	92	2760	10	125	3750	7	156	4680	6	174	5220	5

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
152	LVB	TVM	APA	1	6333	6000	4500	800	6500	4700	28833	108	3240	9	123	3690	8	134	4020	7	197	5910	5
153	LVB	KOD	CLT-1	2	6333	10000	5600	800	6500	4700	33933	211	6330	5	234	7020	5	252	7560	4	267	8010	4
154	LVB	KOD	CLT-1	2	6333	10000	5500	800	6500	4700	33833	208	6240	5	237	7110	5	256	7680	4	274	8220	4
155	LVB	KOD	CLT-1	2	6333	11000	5800	800	6500	4700	35133	234	7020	5	256	7680	5	273	8190	4	268	8040	4
156	LVB	KOD	CLT-1	2	6333	12000	6000	800	6500	4700	36333	259	7770	5	268	8040	5	258	7740	5	267	8010	5
157	LVB	KOD	CLT-1	2	6333	12000	6200	800	6500	4700	36533	264	7920	5	265	7950	5	266	7980	5	271	8130	4
158	LVB	KOD	CLT-1	2	6333	11000	5800	800	6500	4700	35133	238	7140	5	249	7470	5	264	7920	4	278	8340	4
159	LVB	KOD	CLT-1	2	6333	9000	5400	800	6500	4700	32733	196	5880	6	215	6450	5	228	6840	5	256	7680	4
160	LVB	KOD	CLT-1	2	6333	11000	5900	800	6500	4700	35233	240	7200	5	262	7860	4	253	7590	5	263	7890	4
161	LVB	KOD	CLT-1	2	6333	9000	5400	800	6500	4700	32733	193	5790	6	203	6090	5	219	6570	5	224	6720	5
162	LVB	KOD	CLT-1	2	6333	9000	5300	800	6500	4700	32633	187	5610	6	156	4680	7	181	5430	6	203	6090	5
163	LVB	KOD	CLT-1	2	6333	9000	5400	800	6500	4700	32733	192	5760	6	178	5340	6	192	5760	6	221	6630	5
164	LVB	KOD	CLT-1	2	6333	11000	5800	800	6500	4700	35133	234	7020	5	275	8250	4	278	8340	4	265	7950	4
165	LVB	KOD	CLT-1	2	6333	11000	5900	800	6500	4700	35233	240	7200	5	251	7530	5	234	7020	5	265	7950	4
166	LVB	KOD	CLT-1	2	6333	9000	5300	800	6500	4700	32633	187	5610	6	221	6630	5	247	7410	4	261	7830	4
167	LVB	KOD	CLT-1	2	6333	8000	5100	800	6500	4700	31433	158	4740	7	185	5550	6	201	6030	5	216	6480	5
168	LVB	KOD	CLT-1	2	6333	7000	4800	800	6500	4700	30133	135	4050	7	158	4740	6	175	5250	6	189	5670	5
169	LVB	KOD	CLT-1	2	6333	7000	4700	800	6500	4700	30033	128	3840	8	164	4920	6	182	5460	6	191	5730	5
170	LVB	KOD	CLT-1	2	6333	5000	4500	800	6500	4700	27833	99	2970	9	132	3960	7	148	4440	6	157	4710	6
171	LVB	KOD	CLT-1	2	6333	6000	4600	800	6500	4700	28933	110	3300	9	125	3750	8	141	4230	7	215	6450	4
172	LVB	KOD	CLT-1	2	6333	6000	4650	800	6500	4700	28983	123	3690	8	148	4440	7	157	4710	6	220	6600	4
173	LVB	KOD	CLT-1	2	6333	7000	5000	800	6500	4700	30333	148	4440	7	163	4890	6	185	5550	5	243	7290	4
174	LVB	KOD	CLT-1	2	6333	7000	4900	800	6500	4700	30233	139	4170	7	158	4740	6	165	4950	6	210	6300	5
175	LVB	KOD	CLT-2	2	6333	10000	5500	800	6500	4700	33833	202	6060	6	231	6930	5	249	7470	5	262	7860	4
176	LVB	KOD	CLT-2	2	6333	9000	5300	800	6500	4700	32633	186	5580	6	254	7620	4	260	7800	4	270	8100	4
177	LVB	KOD	CLT-2	2	6333	11000	5800	800	6500	4700	35133	235	7050	5	276	8280	4	265	7950	4	273	8190	4
178	LVB	KOD	CLT-2	2	6333	7000	4850	800	6500	4700	30183	143	4290	7	189	5670	5	203	6090	5	241	7230	4
179	LVB	KOD	CLT-2	2	6333	9000	5300	800	6500	4700	32633	187	5610	6	231	6930	5	240	7200	5	268	8040	4
180	LVB	KOD	CLT-2	2	6333	10000	5700	800	6500	4700	34033	223	6690	5	238	7140	5	269	8070	4	257	7710	4
181	LVB	KOD	CLT-2	2	6333	9000	5300	800	6500	4700	32633	187	5610	6	214	6420	5	231	6930	5	265	7950	4
182	LVB	KOD	CLT-2	2	6333	10000	5400	800	6500	4700	33733	192	5760	6	246	7380	5	265	7950	4	266	7980	4
183	LVB	KOD	CLT-2	2	6333	10000	5600	800	6500	4700	33933	210	6300	5	234	7020	5	261	7830	4	274	8220	4
184	LVB	KOD	CLT-2	2	6333	7000	4800	800	6500	4700	30133	135	4050	7	164	4920	6	176	5280	6	188	5640	5
185	LVB	KOD	CLT-2	2	6333	7000	4650	800	6500	4700	29983	129	3870	8	138	4140	7	145	4350	7	164	4920	6
186	LVB	KOD	CLT-2	2	6333	6000	4600	800	6500	4700	28933	122	3660	8	147	4410	7	156	4680	6	178	5340	5
187	LVB	KOD	CLT-2	2	6333	6000	4500	800	6500	4700	28833	105	3150	9	148	4440	6	189	5670	5	203	6090	5
188	LVB	KOD	CLT-2	2	6333	6000	4550	800	6500	4700	28883	108	3240	9	182	5460	5	237	7110	4	241	7230	4
189	LVB	KOD	CLT-2	2	6333	6000	4500	800	6500	4700	28833	103	3090	9	162	4860	6	198	5940	5	225	6750	4

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
190	LVB	KOD	KNR	2	6333	11000	5800	800	6500	4700	35133	238	7140	5	267	8010	4	256	7680	5	268	8040	4
191	LVB	KOD	KNR	2	6333	11000	5900	800	6500	4700	35233	242	7260	5	269	8070	4	265	7950	4	265	7950	4
192	LVB	KOD	KNR	2	6333	11000	5900	800	6500	4700	35233	245	7350	5	261	7830	4	268	8040	4	268	8040	4
193	LVB	KOD	KNR	2	6333	7000	4600	800	6500	4700	29933	128	3840	8	231	6930	4	265	7950	4	247	7410	4
194	LVB	KOD	KNR	2	6333	9000	5300	800	6500	4700	32633	186	5580	6	247	7410	4	248	7440	4	257	7710	4
195	LVB	KOD	KNR	2	6333	11000	5800	800	6500	4700	35133	238	7140	5	265	7950	4	275	8250	4	275	8250	4
196	LVB	KOD	KNR	2	6333	11000	5800	800	6500	4700	35133	239	7170	5	245	7350	5	258	7740	5	265	7950	4
197	LVB	KOD	KNR	2	6333	11000	5900	800	6500	4700	35233	242	7260	5	254	7620	5	253	7590	5	264	7920	4
198	LVB	KOD	KNR	2	6333	9000	5300	800	6500	4700	32633	186	5580	6	198	5940	5	221	6630	5	230	6900	5
199	LVB	KOD	KNR	2	6333	7000	4700	800	6500	4700	30033	138	4140	7	145	4350	7	156	4680	6	164	4920	6
200	LVB	KOD	KNR	2	6333	10000	5700	800	6500	4700	34033	220	6600	5	234	7020	5	259	7770	4	268	8040	4
201	LVB	KOD	KNR	2	6333	9000	5300	800	6500	4700	32633	187	5610	6	201	6030	5	230	6900	5	265	7950	4
202	LVB	KOD	KNR	2	6333	9000	5200	800	6500	4700	32533	176	5280	6	200	6000	5	223	6690	5	267	8010	4
203	LVB	KOD	KNR	2	6333	8000	5100	800	6500	4700	31433	159	4770	7	175	5250	6	191	5730	5	240	7200	4
204	LVB	KOD	KNR	2	6333	7000	4600	800	6500	4700	29933	126	3780	8	149	4470	7	165	4950	6	273	8190	4
205	LVB	KOD	KNR	2	6333	7000	4700	800	6500	4700	30033	138	4140	7	156	4680	6	221	6630	5	245	7350	4
206	LVB	TCR	TCR	2	6333	5000	4500	800	6500	4700	27833	88	2640	11	146	4380	6	217	6510	4	237	7110	4
207	LVB	TCR	TCR	2	6333	11000	5900	800	6500	4700	35233	248	7440	5	258	7740	5	265	7950	4	271	8130	4
208	LVB	TCR	TCR	2	6333	12000	6200	800	6500	4700	36533	260	7800	5	270	8100	5	248	7440	5	256	7680	5
209	LVB	TCR	TCR	2	6333	7000	5000	800	6500	4700	30333	142	4260	7	161	4830	6	202	6060	5	210	6300	5
210	LVB	TCR	TCR	2	6333	9000	5400	800	6500	4700	32733	196	5880	6	196	5880	6	200	6000	5	234	7020	5
211	LVB	TCR	TCR	2	6333	5000	4000	800	6500	4700	27333	54	1620	17	127	3810	7	185	5550	5	192	5760	5
212	LVB	TCR	TCR	2	6333	10000	5500	800	6500	4700	33833	201	6030	6	215	6450	5	247	7410	5	253	7590	4
213	LVB	TCR	TCR	2	6333	8000	5000	800	6500	4700	31333	156	4680	7	220	6600	5	220	6600	5	265	7950	4
214	LVB	TCR	TCR	2	6333	10000	5500	800	6500	4700	33833	205	6150	6	241	7230	5	188	5640	6	235	7050	5
215	LVB	TCR	TCR	2	6333	9000	5300	800	6500	4700	32633	188	5640	6	193	5790	6	209	6270	5	215	6450	5
216	LVB	TCR	TCR	2	6333	10000	5500	800	6500	4700	33833	201	6030	6	205	6150	6	216	6480	5	228	6840	5
217	LVB	TCR	TCR	2	6333	7000	4900	800	6500	4700	30233	144	4320	7	181	5430	6	204	6120	5	231	6930	4
218	LVB	TCR	TCR	2	6333	6000	4600	800	6500	4700	28933	129	3870	7	189	5670	5	215	6450	4	228	6840	4
219	LVB	TCR	TCR	2	6333	8000	5000	800	6500	4700	31333	156	4680	7	195	5850	5	262	7860	4	271	8130	4
220	LVB	TCR	TCR	2	6333	11000	6000	800	6500	4700	35333	248	7440	5	252	7560	5	261	7830	5	270	8100	4
221	LVB	TCR	TCR	2	6333	5000	4300	800	6500	4700	27633	86	2580	11	106	3180	9	165	4950	6	173	5190	5
222	LVB	TCR	TCR	2	6333	9000	5400	800	6500	4700	32733	192	5760	6	195	5850	6	198	5940	6	200	6000	5
223	LVB	TCR	TCR	2	6333	9000	5400	800	6500	4700	32733	195	5850	6	240	7200	5	224	6720	5	252	7560	4
224	LVB	TCR	TCR	2	6333	6000	4500	800	6500	4700	28833	104	3120	9	200	6000	5	248	7440	4	238	7140	4
225	LVB	TCR	TCR	2	6333	10000	5700	800	6500	4700	34033	221	6630	5	215	6450	5	234	7020	5	256	7680	4
226	LVB	TCR	TCR	2	6333	6000	4600	800	6500	4700	28933	125	3750	8	155	4650	6	196	5880	5	231	6930	4
227	LVB	TCR	TCR	2	6333	5000	4400	800	6500	4700	27733	85	2550	11	135	4050	7	230	6900	4	268	8040	3

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
228	LVB	TCR	PKD	2	6333	12000	6000	800	6500	4700	36333	256	7680	5	248	7440	5	251	7530	5	267	8010	5
229	LVB	TCR	PKD	2	6333	12000	6100	800	6500	4700	36433	264	7920	5	268	8040	5	268	8040	5	270	8100	4
230	LVB	TCR	PKD	2	6333	11000	5800	800	6500	4700	35133	231	6930	5	158	4740	7	186	5580	6	199	5970	6
231	LVB	TCR	PKD	2	6333	9000	5300	800	6500	4700	32633	189	5670	6	201	6030	5	213	6390	5	231	6930	5
232	LVB	TCR	PKD	2	6333	7000	4600	800	6500	4700	29933	127	3810	8	148	4440	7	156	4680	6	188	5640	5
233	LVB	TCR	PKD	2	6333	10000	5000	800	6500	4700	33333	148	4440	8	163	4890	7	175	5250	6	203	6090	5
234	LVB	TCR	PKD	2	6333	8000	5000	800	6500	4700	31333	152	4560	7	169	5070	6	186	5580	6	210	6300	5
235	LVB	TCR	PKD	2	6333	7000	4600	800	6500	4700	29933	127	3810	8	154	4620	6	179	5370	6	221	6630	5
236	LVB	TCR	PKD	2	6333	7000	4700	800	6500	4700	30033	138	4140	7	204	6120	5	231	6930	4	267	8010	4
237	LVB	TCR	PKD	2	6333	10000	5700	800	6500	4700	34033	221	6630	5	238	7140	5	239	7170	5	242	7260	5
238	LVB	TCR	PKD	2	6333	10000	5500	800	6500	4700	33833	204	6120	6	235	7050	5	245	7350	5	257	7710	4
239	LVB	TCR	PKD	2	6333	9000	5200	800	6500	4700	32533	175	5250	6	187	5610	6	208	6240	5	220	6600	5
240	LVB	TCR	PKD	2	6333	7000	4600	800	6500	4700	29933	128	3840	8	145	4350	7	216	6480	5	246	7380	4
241	LVB	TCR	PKD	2	6333	7000	4700	800	6500	4700	30033	136	4080	7	152	4560	7	167	5010	6	188	5640	5
242	LVB	TCR	PKD	2	6333	6000	4500	800	6500	4700	28833	103	3090	9	115	3450	8	154	4620	6	164	4920	6
243	LVB	TCR	PKD	2	6333	6000	4600	800	6500	4700	28933	121	3630	8	178	5340	5	192	5760	5	216	6480	4
244	LVB	TCR	PKD	2	6333	7000	4650	800	6500	4700	29983	134	4020	7	172	5160	6	198	5940	5	220	6600	5
245	LVB	TCR	PKD	2	6333	6000	4500	800	6500	4700	28833	106	3180	9	158	4740	6	201	6030	5	218	6540	4
246	LVB	TCR	SHR	2	6333	9000	5400	800	6500	4700	32733	195	5850	6	238	7140	5	257	7710	4	268	8040	4
247	LVB	TCR	SHR	2	6333	5000	4500	800	6500	4700	27833	93	2790	10	225	6750	4	234	7020	4	248	7440	4
248	LVB	TCR	SHR	2	6333	5000	4500	800	6500	4700	27833	96	2880	10	228	6840	4	229	6870	4	254	7620	4
249	LVB	TCR	SHR	2	6333	7000	4800	800	6500	4700	30133	134	4020	7	178	5340	6	193	5790	5	208	6240	5
250	LVB	TCR	SHR	2	6333	11000	5700	800	6500	4700	35033	228	6840	5	296	8880	4	276	8280	4	292	8760	4
251	LVB	TCR	SHR	1	6333	5000	4100	800	6500	4700	27433	61	1830	15	134	4020	7	183	5490	5	197	5910	5
252	MVB	TVM	TVM	1	6333	6000	4500	800	6500	4700	28833	108	3240	9	153	4590	6	192	5760	5	213	6390	5
253	MVB	TVM	TVM	1	6333	8000	5000	800	6500	4700	31333	155	4650	7	201	6030	5	218	6540	5	226	6780	5
254	MVB	TVM	TVM	1	6333	9000	5400	800	6500	4700	32733	196	5880	6	238	7140	5	247	7410	4	253	7590	4
255	MVB	TVM	TVM	1	6333	9000	5400	800	6500	4700	32733	190	5700	6	227	6810	5	251	7530	4	268	8040	4
256	MVB	TVM	TVM	1	6333	9000	5300	800	6500	4700	32633	184	5520	6	231	6930	5	240	7200	5	256	7680	4
257	MVB	TVM	TVM	1	6333	5000	4200	800	6500	4700	27533	80	2400	11	148	4440	6	180	5400	5	204	6120	4
258	MVB	TVM	TVM	1	6333	7000	4400	800	6500	4700	29733	147	4410	7	156	4680	6	204	6120	5	287	8610	3
259	MVB	TVM	TVM	1	6333	7000	4500	800	6500	4700	29833	149	4470	7	163	4890	6	189	5670	5	235	7050	4
260	MVB	TVM	TVM	1	6333	12000	6000	800	6500	4700	36333	251	7530	5	263	7890	5	265	7950	5	270	8100	4
261	MVB	TVM	TVM	1	6333	10000	5700	800	6500	4700	34033	225	6750	5	276	8280	4	274	8220	4	270	8100	4
262	MVB	TVM	TVM	1	6333	6000	4200	800	6500	4700	28533	120	3600	8	185	5550	5	231	6930	4	267	8010	4
263	MVB	TVM	TVM	1	6333	10000	5500	800	6500	4700	33833	205	6150	6	216	6480	5	231	6930	5	278	8340	4
264	MVB	TVM	TVM	1	6333	9000	5400	800	6500	4700	32733	196	5880	6	223	6690	5	238	7140	5	256	7680	4
265	MVB	TVM	TVM	1	6333	8000	5000	800	6500	4700	31333	157	4710	7	189	5670	6	195	5850	5	218	6540	5

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
266	MVB	TVM	TVM	1	6333	11000	5700	800	6500	4700	35033	228	6840	5	243	7290	5	271	8130	4	275	8250	4
267	MVB	TVM	TVM	1	6333	11000	5700	800	6500	4700	35033	228	6840	5	228	6840	5	264	7920	4	287	8610	4
268	MVB	TVM	TVM	1	6333	12000	6100	800	6500	4700	36433	260	7800	5	273	8190	4	277	8310	4	276	8280	4
269	MVB	TVM	TVM	1	6333	11000	5700	800	6500	4700	35033	228	6840	5	247	7410	5	245	7350	5	253	7590	5
270	MVB	TVM	TVM	1	6333	10000	5700	800	6500	4700	34033	223	6690	5	243	7290	5	265	7950	4	270	8100	4
271	MVB	TVM	TVM	1	6333	10000	5700	800	6500	4700	34033	223	6690	5	256	7680	4	264	7920	4	268	8040	4
272	MVB	TVM	KLM	1	6333	9000	5300	800	6500	4700	32633	189	5670	6	210	6300	5	246	7380	4	256	7680	4
273	MVB	TVM	KLM	1	6333	11000	5800	800	6500	4700	35133	238	7140	5	256	7680	5	261	7830	4	278	8340	4
274	MVB	TVM	KLM	1	6333	10000	5600	800	6500	4700	33933	216	6480	5	223	6690	5	237	7110	5	265	7950	4
275	MVB	TVM	KLM	1	6333	8000	5000	800	6500	4700	31333	150	4500	7	187	5610	6	248	7440	4	253	7590	4
276	MVB	TVM	KLM	1	6333	11000	5800	800	6500	4700	35133	234	7020	5	251	7530	5	275	8250	4	282	8460	4
277	MVB	TVM	KLM	1	6333	11000	5900	800	6500	4700	35233	248	7440	5	273	8190	4	258	7740	5	263	7890	4
278	MVB	TVM	KLM	1	6333	11000	5900	800	6500	4700	35233	243	7290	5	271	8130	4	256	7680	5	280	8400	4
279	MVB	TVM	KLM	1	6333	9000	5300	800	6500	4700	32633	187	5610	6	168	5040	6	203	6090	5	234	7020	5
280	MVB	TVM	KLM	1	6333	6000	4600	800	6500	4700	28933	128	3840	8	175	5250	6	195	5850	5	208	6240	5
281	MVB	TVM	KLM	1	6333	5000	4500	800	6500	4700	27833	98	2940	9	139	4170	7	167	5010	6	173	5190	5
282	MVB	EKM	KTM	1	6333	9000	5300	800	6500	4700	32633	187	5610	6	203	6090	5	218	6540	5	265	7950	4
283	MVB	EKM	KTM	1	6333	10000	5500	800	6500	4700	33833	201	6030	6	240	7200	5	265	7950	4	278	8340	4
284	MVB	EKM	KTM	1	6333	8000	5000	800	6500	4700	31333	154	4620	7	198	5940	5	217	6510	5	228	6840	5
285	MVB	EKM	KTM	1	6333	10000	5600	800	6500	4700	33933	216	6480	5	235	7050	5	254	7620	4	268	8040	4
286	MVB	EKM	KTM	1	6333	11000	5800	800	6500	4700	35133	235	7050	5	221	6630	5	243	7290	5	252	7560	5
287	MVB	EKM	KTM	1	6333	12000	6000	800	6500	4700	36333	250	7500	5	265	7950	5	265	7950	5	269	8070	5
288	MVB	EKM	KTM	1	6333	12000	6000	800	6500	4700	36333	256	7680	5	268	8040	5	273	8190	4	274	8220	4
289	MVB	EKM	KTM	1	6333	11000	5800	800	6500	4700	35133	238	7140	5	259	7770	5	261	7830	4	265	7950	4
290	MVB	EKM	KTM	1	6333	11000	5900	800	6500	4700	35233	241	7230	5	239	7170	5	257	7710	5	265	7950	4
291	MVB	EKM	KTM	1	6333	9000	5300	800	6500	4700	32633	186	5580	6	225	6750	5	248	7440	4	312	9360	3
292	MVB	EKM	KTM	1	6333	9000	5400	800	6500	4700	32733	198	5940	6	223	6690	5	245	7350	4	276	8280	4
293	MVB	EKM	KTM	1	6333	8000	5100	800	6500	4700	31433	169	5070	6	175	5250	6	187	5610	6	204	6120	5
294	MVB	EKM	KTM	1	6333	8000	5000	800	6500	4700	31333	156	4680	7	168	5040	6	179	5370	6	188	5640	6
295	MVB	EKM	KTM	1	6333	7000	4800	800	6500	4700	30133	138	4140	7	153	4590	7	165	4950	6	213	6390	5
296	MVB	EKM	KTM	1	6333	6000	4600	800	6500	4700	28933	120	3600	8	174	5220	6	201	6030	5	267	8010	4
297	MVB	EKM	KTM	1	6333	6000	4550	800	6500	4700	28883	113	3390	9	182	5460	5	220	6600	4	256	7680	4
298	MVB	EKM	KTM	1	6333	6000	4500	800	6500	4700	28833	102	3060	9	190	5700	5	225	6750	4	255	7650	4
299	MVB	TVM	APA	1	6333	12000	6000	800	6500	4700	36333	256	7680	5	273	8190	4	265	7950	5	278	8340	4
300	MVB	TVM	APA	1	6333	10000	5700	800	6500	4700	34033	221	6630	5	256	7680	4	253	7590	4	267	8010	4
301	MVB	TVM	APA	1	6333	11000	6000	800	6500	4700	35333	249	7470	5	268	8040	4	258	7740	5	269	8070	4
302	MVB	TVM	APA	1	6333	9000	5300	800	6500	4700	32633	182	5460	6	230	6900	5	256	7680	4	264	7920	4
303	MVB	TVM	APA	1	6333	11000	5800	800	6500	4700	35133	231	6930	5	245	7350	5	253	7590	5	265	7950	4

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
304	MVB	TVM	APA	1	6333	9000	5300	800	6500	4700	32633	184	5520	6	203	6090	5	219	6570	5	290	8700	4
305	MVB	TVM	APA	1	6333	9000	5400	800	6500	4700	32733	192	5760	6	231	6930	5	258	7740	4	279	8370	4
306	MVB	TVM	APA	1	6333	11000	5800	800	6500	4700	35133	236	7080	5	254	7620	5	262	7860	4	273	8190	4
307	MVB	TVM	APA	1	6333	10000	5600	800	6500	4700	33933	218	6540	5	263	7890	4	272	8160	4	274	8220	4
308	MVB	TVM	APA	1	6333	12000	6000	800	6500	4700	36333	253	7590	5	268	8040	5	269	8070	5	265	7950	5
309	MVB	TVM	APA	1	6333	12000	6200	800	6500	4700	36533	273	8190	4	256	7680	5	262	7860	5	274	8220	4
310	MVB	TVM	APA	1	6333	12000	6100	800	6500	4700	36433	267	8010	5	258	7740	5	258	7740	5	265	7950	5
311	MVB	TVM	APA	1	6333	10000	5200	800	6500	4700	33533	225	6750	5	243	7290	5	267	8010	4	254	7620	4
312	MVB	TVM	APA	1	6333	11000	5800	800	6500	4700	35133	230	6900	5	264	7920	5	255	7650	5	262	7860	4
313	MVB	TVM	APA	1	6333	9000	5300	800	6500	4700	32633	183	5490	6	201	6030	5	201	6030	5	215	6450	5
314	MVB	TVM	APA	1	6333	8000	5200	800	6500	4700	31533	162	4860	6	178	5340	6	179	5370	6	192	5760	5
315	MVB	TVM	APA	1	6333	8000	5300	800	6500	4700	31633	173	5190	6	192	5760	5	256	7680	4	279	8370	4
316	MVB	TVM	APA	1	6333	9000	5350	800	6500	4700	32683	182	5460	6	217	6510	5	228	6840	5	256	7680	4
317	MVB	TVM	APA	1	6333	7000	5000	800	6500	4700	30333	149	4470	7	231	6930	4	259	7770	4	278	8340	4
318	MVB	TVM	APA	1	6333	8000	5000	800	6500	4700	31333	158	4740	7	201	6030	5	236	7080	4	245	7350	4
319	MVB	TVM	APA	1	6333	7000	4700	800	6500	4700	30033	137	4110	7	149	4470	7	158	4740	6	169	5070	6
320	MVB	TVM	APA	1	6333	6000	4600	800	6500	4700	28933	123	3690	8	142	4260	7	182	5460	5	2310	69300	0
321	MVB	TVM	APA	1	6333	5000	4400	800	6500	4700	27733	92	2760	10	156	4680	6	173	5190	5	242	7260	4
322	MVB	TVM	APA	1	6333	7000	4600	800	6500	4700	29933	128	3840	8	163	4890	6	181	5430	6	231	6930	4
323	MVB	TVM	APA	1	6333	10000	5500	800	6500	4700	33833	201	6030	6	230	6900	5	225	6750	5	238	7140	5
324	MVB	TVM	APA	1	6333	9000	5400	800	6500	4700	32733	198	5940	6	186	5580	6	201	6030	5	220	6600	5
325	MVB	TVM	APA	1	6333	9000	5300	800	6500	4700	32633	184	5520	6	164	4920	7	179	5370	6	200	6000	5
326	MVB	TVM	APA	1	6333	6000	4500	800	6500	4700	28833	104	3120	9	115	3450	8	154	4620	6	200	6000	5
327	MVB	EKM	EKM1	1	6333	11000	6000	800	6500	4700	35333	248	7440	5	263	7890	4	264	7920	4	268	8040	4
328	MVB	EKM	EKM1	1	6333	12000	6100	800	6500	4700	36433	259	7770	5	274	8220	4	270	8100	4	274	8220	4
329	MVB	EKM	EKM1	1	6333	11000	5700	800	6500	4700	35033	228	6840	5	251	7530	5	262	7860	4	268	8040	4
330	MVB	EKM	EKM1	1	6333	11000	5900	800	6500	4700	35233	245	7350	5	263	7890	4	268	8040	4	258	7740	5
331	MVB	EKM	EKM1	1	6333	7000	4600	800	6500	4700	29933	127	3810	8	85	2550	12	108	3240	9	106	3180	9
332	MVB	EKM	EKM1	1	6333	11000	5800	800	6500	4700	35133	231	6930	5	248	7440	5	254	7620	5	268	8040	4
333	MVB	EKM	EKM1	1	6333	9000	5300	800	6500	4700	32633	186	5580	6	225	6750	5	265	7950	4	268	8040	4
334	MVB	EKM	EKM1	1	6333	11000	5800	800	6500	4700	35133	231	6930	5	248	7440	5	271	8130	4	274	8220	4
335	MVB	EKM	EKM1	1	6333	11000	5900	800	6500	4700	35233	243	7290	5	253	7590	5	254	7620	5	248	7440	5
336	MVB	EKM	EKM1	1	6333	11000	5900	800	6500	4700	35233	248	7440	5	265	7950	4	276	8280	4	285	8550	4
337	MVB	EKM	EKM1	1	6333	9000	5300	800	6500	4700	32633	189	5670	6	217	6510	5	219	6570	5	222	6660	5
338	MVB	EKM	EKM1	1	6333	6000	4500	800	6500	4700	28833	104	3120	9	112	3360	9	163	4890	6	176	5280	5
339	MVB	EKM	EKM2	1	6333	12000	6100	800	6500	4700	36433	265	7950	5	273	8190	4	267	8010	5	273	8190	4
340	MVB	EKM	EKM2	1	6333	12000	6100	800	6500	4700	36433	259	7770	5	267	8010	5	265	7950	5	264	7920	5
341	MVB	EKM	EKM2	1	6333	11000	5900	800	6500	4700	35233	241	7230	5	273	8190	4	234	7020	5	253	7590	5

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
342	MVB	EKM	EKM2	1	6333	10000	5700	800	6500	4700	34033	220	6600	5	256	7680	4	270	8100	4	268	8040	4
343	MVB	EKM	EKM2	1	6333	9000	5300	800	6500	4700	32633	187	5610	6	198	5940	5	203	6090	5	230	6900	5
344	MVB	EKM	EKM2	1	6333	7000	4600	800	6500	4700	29933	128	3840	8	132	3960	8	158	4740	6	183	5490	5
345	MVB	EKM	EKM2	1	6333	9000	5300	800	6500	4700	32633	182	5460	6	196	5880	6	216	6480	5	156	4680	7
346	MVB	EKM	EKM2	1	6333	10000	5700	800	6500	4700	34033	228	6840	5	232	6960	5	275	8250	4	281	8430	4
347	MVB	EKM	EKM2	1	6333	10000	5500	800	6500	4700	33833	204	6120	6	246	7380	5	252	7560	4	251	7530	4
348	MVB	EKM	EKM2	1	6333	6000	4500	800	6500	4700	28833	105	3150	9	182	5460	5	205	6150	5	228	6840	4
349	MVB	EKM	EKM3	1	6333	10000	5500	800	6500	4700	33833	208	6240	5	220	6600	5	245	7350	5	256	7680	4
350	MVB	EKM	EKM3	1	6333	10000	5500	800	6500	4700	33833	203	6090	6	234	7020	5	221	6630	5	254	7620	4
351	MVB	EKM	EKM3	1	6333	8000	5200	800	6500	4700	31533	175	5250	6	196	5880	5	217	6510	5	228	6840	5
352	MVB	EKM	EKM3	1	6333	9000	5400	800	6500	4700	32733	198	5940	6	204	6120	5	210	6300	5	250	7500	4
353	MVB	EKM	EKM3	1	6333	9000	5300	800	6500	4700	32633	183	5490	6	231	6930	5	264	7920	4	285	8550	4
354	MVB	EKM	EKM3	1	6333	10000	5500	800	6500	4700	33833	208	6240	5	214	6420	5	224	6720	5	236	7080	5
355	MVB	EKM	EKM3	1	6333	10000	5600	800	6500	4700	33933	218	6540	5	225	6750	5	238	7140	5	246	7380	5
356	MVB	EKM	EKM3	1	6333	11000	5700	800	6500	4700	35033	229	6870	5	245	7350	5	259	7770	5	269	8070	4
357	MVB	EKM	EKM3	1	6333	11000	5900	800	6500	4700	35233	243	7290	5	234	7020	5	248	7440	5	256	7680	5
358	MVB	EKM	EKM3	1	6333	9000	5300	800	6500	4700	32633	187	5610	6	217	6510	5	225	6750	5	289	8670	4
359	MVB	EKM	EKM3	1	6333	8000	5200	800	6500	4700	31533	173	5190	6	184	5520	6	205	6150	5	235	7050	4
360	MVB	EKM	EKM3	2	6333	10000	5000	800	6500	4700	33333	148	4440	8	163	4890	7	182	5460	6	201	6030	6
361	MVB	TCR	TCR	2	6333	6000	4500	800	6500	4700	28833	108	3240	9	163	4890	6	195	5850	5	204	6120	5
362	MVB	TCR	TCR	2	6333	8000	5000	800	6500	4700	31333	155	4650	7	240	7200	4	263	7890	4	265	7950	4
363	MVB	TCR	TCR	2	6333	9000	5400	800	6500	4700	32733	196	5880	6	196	5880	6	203	6090	5	256	7680	4
364	MVB	TCR	TCR	2	6333	9000	5400	800	6500	4700	32733	190	5700	6	183	5490	6	195	5850	6	207	6210	5
365	MVB	TCR	TCR	2	6333	9000	5300	800	6500	4700	32633	184	5520	6	205	6150	5	258	7740	4	255	7650	4
366	MVB	TCR	TCR	2	6333	5000	4300	800	6500	4700	27633	80	2400	12	92	2760	10	114	3420	8	131	3930	7
367	MVB	TCR	TCR	2	6333	10000	4900	800	6500	4700	33233	147	4410	8	163	4890	7	218	6540	5	225	6750	5
368	MVB	TCR	TCR	2	6333	10000	4950	800	6500	4700	33283	149	4470	7	174	5220	6	204	6120	5	231	6930	5
369	MVB	TCR	TCR	2	6333	12000	5600	800	6500	4700	35933	261	7830	5	257	7710	5	247	7410	5	265	7950	5
370	MVB	TCR	TCR	2	6333	10000	5200	800	6500	4700	33533	225	6750	5	248	7440	5	227	6810	5	249	7470	4
371	MVB	TCR	TCR	2	6333	6000	4600	800	6500	4700	28933	120	3600	8	193	5790	5	202	6060	5	212	6360	5
372	MVB	TCR	TCR	2	6333	10000	5500	800	6500	4700	33833	205	6150	6	263	7890	4	259	7770	4	269	8070	4
373	MVB	TCR	TCR	2	6333	9000	5400	800	6500	4700	32733	196	5880	6	196	5880	6	204	6120	5	218	6540	5
374	MVB	TCR	TCR	2	6333	8000	5000	800	6500	4700	31333	157	4710	7	264	7920	4	217	6510	5	263	7890	4
375	MVB	TCR	SHR	2	6333	10000	5500	800	6500	4700	33833	201	6030	6	263	7890	4	258	7740	4	278	8340	4
376	MVB	TCR	SHR	2	6333	11000	5800	800	6500	4700	35133	236	7080	5	248	7440	5	261	7830	4	272	8160	4
377	MVB	TCR	SHR	2	6333	11000	5800	800	6500	4700	35133	237	7110	5	243	7290	5	248	7440	5	256	7680	5
378	MVB	TCR	SHR	2	6333	10000	5700	800	6500	4700	34033	221	6630	5	264	7920	4	268	8040	4	273	8190	4
379	MVB	TCR	SHR	2	6333	9000	5400	800	6500	4700	32733	198	5940	6	217	6510	5	234	7020	5	251	7530	4

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
380	MVB	TCR	SHR	2	6333	10000	5600	800	6500	4700	33933	213	6390	5	239	7170	5	258	7740	4	265	7950	4
381	MVB	TCR	SHR	2	6333	9000	5300	800	6500	4700	32633	187	5610	6	206	6180	5	210	6300	5	248	7440	4
382	MVB	TCR	SHR	2	6333	8000	5200	800	6500	4700	31533	169	5070	6	186	5580	6	192	5760	5	201	6030	5
383	MVB	TCR	SHR	2	6333	9000	5400	800	6500	4700	32733	198	5940	6	188	5640	6	198	5940	6	205	6150	5
384	MVB	TCR	SHR	2	6333	6000	4600	800	6500	4700	28933	123	3690	8	86	2580	11	126	3780	8	179	5370	5
385	MVB	TCR	SHR	2	6333	8000	5100	800	6500	4700	31433	161	4830	7	181	5430	6	218	6540	5	226	6780	5
386	MVB	TCR	SHR	2	6333	10000	5500	800	6500	4700	33833	201	6030	6	168	5040	7	189	5670	6	190	5700	6
387	MVB	TCR	SHR	2	6333	7000	4900	800	6500	4700	30233	145	4350	7	124	3720	8	158	4740	6	180	5400	6
388	MVB	TCR	SHR	2	6333	6000	4600	800	6500	4700	28933	127	3810	8	183	5490	5	185	5550	5	190	5700	5
389	MVB	TCR	SHR	2	6333	11000	5800	800	6500	4700	35133	235	7050	5	248	7440	5	259	7770	5	276	8280	4
390	MVB	TCR	SHR	2	6333	9000	5400	800	6500	4700	32733	198	5940	6	203	6090	5	218	6540	5	220	6600	5
391	MVB	TCR	SHR	2	6333	8000	5100	800	6500	4700	31433	159	4770	7	192	5760	5	231	6930	5	278	8340	4
392	MVB	TCR	SHR	2	6333	8000	5100	800	6500	4700	31433	156	4680	7	184	5520	6	210	6300	5	243	7290	4
393	MVB	TCR	SHR	2	6333	6000	4500	800	6500	4700	28833	108	3240	9	139	4170	7	143	4290	7	178	5340	5
394	MVB	TCR	SHR	2	6333	6000	4600	800	6500	4700	28933	121	3630	8	120	3600	8	152	4560	6	263	7890	4
395	MVB	TCR	SHR	2	6333	6000	4550	800	6500	4700	28883	115	3450	8	136	4080	7	145	4350	7	187	5610	5
396	MVB	TCR	PKD	2	6333	12000	6000	800	6500	4700	36333	256	7680	5	264	7920	5	274	8220	4	268	8040	5
397	MVB	TCR	PKD	2	6333	11000	5800	800	6500	4700	35133	231	6930	5	243	7290	5	252	7560	5	265	7950	4
398	MVB	TCR	PKD	2	6333	9000	5300	800	6500	4700	32633	178	5340	6	225	6750	5	248	7440	4	262	7860	4
399	MVB	TCR	PKD	2	6333	8000	5000	800	6500	4700	31333	153	4590	7	194	5820	5	223	6690	5	256	7680	4
400	MVB	TCR	PKD	2	6333	11000	6000	800	6500	4700	35333	248	7440	5	251	7530	5	270	8100	4	274	8220	4
401	MVB	TCR	PKD	2	6333	10000	5500	800	6500	4700	33833	202	6060	6	231	6930	5	265	7950	4	278	8340	4
402	MVB	TCR	PKD	2	6333	11000	5800	800	6500	4700	35133	235	7050	5	268	8040	4	275	8250	4	274	8220	4
403	MVB	TCR	PKD	2	6333	10000	5600	800	6500	4700	33933	210	6300	5	251	7530	5	265	7950	4	272	8160	4
404	MVB	TCR	PKD	2	6333	9000	5300	800	6500	4700	32633	187	5610	6	205	6150	5	218	6540	5	226	6780	5
405	MVB	TCR	PKD	2	6333	10000	4900	800	6500	4700	33233	142	4260	8	198	5940	6	205	6150	5	231	6930	5
406	MVB	TCR	PKD	2	6333	7000	4600	800	6500	4700	29933	128	3840	8	187	5610	5	210	6300	5	225	6750	4
407	MVB	KOD	CLT-1	2	6333	12000	6000	800	6500	4700	36333	256	7680	5	262	7860	5	258	7740	5	270	8100	4
408	MVB	KOD	CLT-1	2	6333	9000	5300	800	6500	4700	32633	185	5550	6	221	6630	5	236	7080	5	247	7410	4
409	MVB	KOD	CLT-1	2	6333	12000	6000	800	6500	4700	36333	251	7530	5	258	7740	5	262	7860	5	268	8040	5
410	MVB	KOD	CLT-1	2	6333	9000	5400	800	6500	4700	32733	198	5940	6	233	6990	5	248	7440	4	257	7710	4
411	MVB	KOD	CLT-1	2	6333	10000	5500	800	6500	4700	33833	201	6030	6	242	7260	5	254	7620	4	258	7740	4
412	MVB	KOD	CLT-1	2	6333	11000	5800	800	6500	4700	35133	239	7170	5	251	7530	5	265	7950	4	268	8040	4
413	MVB	KOD	CLT-1	2	6333	12000	6000	800	6500	4700	36333	256	7680	5	263	7890	5	258	7740	5	264	7920	5
414	MVB	KOD	CLT-1	2	6333	12000	6100	800	6500	4700	36433	261	7830	5	254	7620	5	258	7740	5	289	8670	4
415	MVB	KOD	CLT-1	2	6333	9000	5300	800	6500	4700	32633	184	5520	6	192	5760	6	195	5850	6	206	6180	5
416	MVB	KOD	CLT-1	2	6333	9000	5200	800	6500	4700	32533	178	5340	6	191	5730	6	201	6030	5	208	6240	5
417	MVB	KOD	CLT-1	2	6333	11000	6000	800	6500	4700	35333	248	7440	5	245	7350	5	254	7620	5	265	7950	4

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
418	MVB	KOD	CLT-1	2	6333	12000	6200	800	6500	4700	36533	275	8250	4	268	8040	5	265	7950	5	273	8190	4
419	MVB	KOD	CLT-1	2	6333	9000	5300	800	6500	4700	32633	187	5610	6	226	6780	5	234	7020	5	247	7410	4
420	MVB	KOD	CLT-1	2	6333	11000	5800	800	6500	4700	35133	237	7110	5	228	6840	5	247	7410	5	265	7950	4
421	MVB	KOD	CLT-1	2	6333	9000	5400	800	6500	4700	32733	194	5820	6	203	6090	5	218	6540	5	220	6600	5
422	MVB	KOD	CLT-1	2	6333	7000	4600	800	6500	4700	29933	126	3780	8	174	5220	6	206	6180	5	218	6540	5
423	MVB	KOD	CLT-2	2	6333	11000	6000	800	6500	4700	35333	241	7230	5	256	7680	5	245	7350	5	262	7860	4
424	MVB	KOD	CLT-2	2	6333	11000	5800	800	6500	4700	35133	238	7140	5	267	8010	4	275	8250	4	275	8250	4
425	MVB	KOD	CLT-2	2	6333	12000	6200	800	6500	4700	36533	273	8190	4	265	7950	5	258	7740	5	262	7860	5
426	MVB	KOD	CLT-2	2	6333	10000	5500	800	6500	4700	33833	203	6090	6	251	7530	4	258	7740	4	264	7920	4
427	MVB	KOD	CLT-2	2	6333	10000	5700	800	6500	4700	34033	221	6630	5	234	7020	5	258	7740	4	263	7890	4
428	MVB	KOD	CLT-2	2	6333	9000	5300	800	6500	4700	32633	189	5670	6	198	5940	5	206	6180	5	265	7950	4
429	MVB	KOD	CLT-2	2	6333	9000	5400	800	6500	4700	32733	192	5760	6	205	6150	5	218	6540	5	227	6810	5
430	MVB	KOD	CLT-2	2	6333	10000	5500	800	6500	4700	33833	203	6090	6	236	7080	5	257	7710	4	262	7860	4
431	MVB	KOD	CLT-2	2	6333	12000	6300	800	6500	4700	36633	275	8250	4	267	8010	5	268	8040	5	275	8250	4
432	MVB	KOD	CLT-2	2	6333	10000	5700	800	6500	4700	34033	223	6690	5	248	7440	5	259	7770	4	287	8610	4
433	MVB	KOD	CLT-2	2	6333	10000	5600	800	6500	4700	33933	217	6510	5	231	6930	5	254	7620	4	269	8070	4
434	MVB	KOD	CLT-2	2	6333	10000	5500	800	6500	4700	33833	204	6120	6	217	6510	5	243	7290	5	265	7950	4
435	MVB	KOD	CLT-2	2	6333	7000	4900	800	6500	4700	30233	145	4350	7	182	5460	6	210	6300	5	225	6750	4
436	MVB	KOD	CLT-2	2	6333	7000	4600	800	6500	4700	29933	127	3810	8	156	4680	6	175	5250	6	187	5610	5
437	MVB	KOD	CLT-2	2	6333	6000	4600	800	6500	4700	28933	120	3600	8	142	4260	7	158	4740	6	192	5760	5
438	MVB	KOD	CLT-2	2	6333	6000	4550	800	6500	4700	28883	110	3300	9	159	4770	6	186	5580	5	201	6030	5
439	MVB	KOD	CLT-2	2	6333	6000	4500	800	6500	4700	28833	102	3060	9	153	4590	6	178	5340	5	188	5640	5
440	MVB	KOD	KNR	2	6333	12000	6000	800	6500	4700	36333	258	7740	5	274	8220	4	295	8850	4	290	8700	4
441	MVB	KOD	KNR	2	6333	12000	6200	800	6500	4700	36533	276	8280	4	276	8280	4	290	8700	4	281	8430	4
442	MVB	KOD	KNR	2	6333	9000	5400	800	6500	4700	32733	198	5940	6	216	6480	5	235	7050	5	265	7950	4
443	MVB	KOD	KNR	2	6333	12000	6000	800	6500	4700	36333	254	7620	5	269	8070	5	276	8280	4	288	8640	4
444	MVB	KOD	KNR	2	6333	10000	5700	800	6500	4700	34033	210	6300	5	231	6930	5	221	6630	5	247	7410	5
445	MVB	KOD	KNR	2	6333	11000	5900	800	6500	4700	35233	248	7440	5	256	7680	5	274	8220	4	286	8580	4
446	MVB	KOD	KNR	2	6333	11000	5800	800	6500	4700	35133	231	6930	5	242	7260	5	259	7770	5	263	7890	4
447	MVB	KOD	KNR	2	6333	9000	5400	800	6500	4700	32733	198	5940	6	216	6480	5	226	6780	5	285	8550	4
448	MVB	KOD	KNR	2	6333	10000	5500	800	6500	4700	33833	209	6270	5	231	6930	5	256	7680	4	277	8310	4
449	MVB	KOD	KNR	2	6333	7000	4700	800	6500	4700	30033	134	4020	7	154	4620	7	185	5550	5	204	6120	5
450	MVB	KOD	KNR	2	6333	6000	4600	800	6500	4700	28933	120	3600	8	148	4440	7	167	5010	6	190	5700	5
451	HVB	KOD	KNR	2	6333	12000	6300	800	6500	4700	36633	275	8250	4	278	8340	4	298	8940	4	288	8640	4
452	HVB	KOD	CLT-1	2	6333	12000	6200	800	6500	4700	36533	267	8010	5	256	7680	5	272	8160	4	278	8340	4
453	HVB	TCR	PKD	1	6333	12000	6000	800	6500	4700	36333	256	7680	5	238	7140	5	259	7770	5	267	8010	5
454	HVB	TVM	TVM	2	6333	10000	5600	800	6500	4700	33933	223	6690	5	229	6870	5	245	7350	5	253	7590	4
455	HVB	KOD	CLT-2	2	6333	11000	5800	800	6500	4700	35133	230	6900	5	287	8610	4	292	8760	4	298	8940	4

SL.NO.	TYPE	MODULE	RBO	NETWORK	Machine cost	Rent	Electricity	Airconditioning	replenishment	AMC	Total cost	Hit/day2013	Hits*W.D	T.C.2013	hit/day2014	hits*w.d	T.C.2014	hit/day2015	hits*w.d	T.C.2015	hit/day2016	hit*w.d	T.C.2016
456	HVB	TCR	TCR	1	6333	12000	7000	800	6500	4700	37333	312	9360	4	326	9780	4	353	10590	4	321	9630	4
457	HVB	TVM	TVM	1	6333	10000	5600	800	6500	4700	33933	223	6690	5	276	8280	4	287	8610	4	302	9060	4
458	HVB	EKM	EKM1	1	6333	11000	5800	800	6500	4700	35133	234	7020	5	289	8670	4	298	8940	4	301	9030	4
459	HVB	EKM	KTM	1	6333	9000	5000	800	6500	4700	32333	199	5970	5	251	7530	4	278	8340	4	290	8700	4
460	HVB	EKM	EKM1	2	6333	11000	5800	800	6500	4700	35133	234	7020	5	268	8040	4	285	8550	4	292	8760	4
461	HVB	KOD	KNR	1	6333	11000	5900	800	6500	4700	35233	242	7260	5	275	8250	4	292	8760	4	300	9000	4
462	HVB	EKM	EKM3	1	6333	10000	5500	800	6500	4700	33833	205	6150	6	239	7170	5	275	8250	4	283	8490	4
463	HVB	TVM	TVM	1	6333	10000	5600	800	6500	4700	33933	223	6690	5	268	8040	4	280	8400	4	298	8940	4

RBO WISE ATM

			2013						2014				2015				2016	
RBO	NETWORK	MODULE	Total cost	avge hit	Hit* W.D	T.C	Total cost	Avge hit	Hit*W.D	T.C	Total cost	Avge hit	Hit*W.D	T.C	Total cost	Avge hit	Hit*W.D	T.C
TVM	1	TVM	2746860	18955	568650	5	5235192	30618	918540	6	5364456	33532	1005960	5	6398568	41580	1247400	5
KLM	1	TVM	1615800	12500	375000	4	3199284	21582	647460	5	3360864	25792	773760	4	3974868	30750	922500	4
ALP	1	TVM	1745064	12798	383940	5	3651708	18984	569520	6	3748656	24012	720360	5	4524240	30800	924000	5
EKM-1	1	EKM	1680432	12168	365040	5	3263916	20604	618120	5	3910236	24684	740520	5	4394976	28832	864960	5
EKM-2	1	EKM	1777380	12375	371250	5	3425496	17172	515160	7	3813288	21830	654900	6	4265712	26004	780120	5
EKM-3	1	EKM	1615800	10250	307500	5	3425496	13568	407040	8	3554760	16500	495000	7	4039500	20250	607500	7
KTM	1	EKM	1648116	10149	304470	5	3134652	16684	500520	6	3263916	16261	487830	7	3748656	19952	598560	6
PKD	2	TSR	1971276	15616	468480	4	3619392	23072	692160	5	3910236	25894	776820	5	4685820	32625	978750	5
TSR	2	TSR	1615800	9800	294000	5	3070020	16055	481650	6	3490128	17928	537840	6	3748656	20648	619440	6
CLT-1	2	CLT-1	2100540	17355	520650	4	3360864	25064	751920	4	3684024	26676	800280	5	3877920	29520	885600	4
CLT-2	2	CLT-2	1357272	9660	289800	5	2359068	14965	448950	5	2359068	16644	499320	5	2585280	19200	576000	4
KNR	2	CLT-3	2035908	15246	457380	4	4104132	22606	678180	6	4265712	22968	689040	6	4782768	28416	852480	6
SHR	2	TSR	……	……	……	……		……	…….	…….	2456016	14668	440040	6	2649912	16236	487080	5

CDM COST

AL.NO.	TYPE	MODULE	RBO	NETWORK	Hit/day2013	Machine cost	Electricity	AMC	Total cost	Hits*W.D	T.C.2013
1	MVB	TVM	TVM	1	176	14667	1800	2200	18667	5280	4
2	MVB	TVM	TVM	1	85	14667	1500	2200	18367	2550	7
3	MVB	TVM	KLM	1	199	14667	2000	2200	18867	5970	3
4	MVB	EKM	EKM1	1	112	14667	1600	2200	18467	3360	5
5	MVB	EKM	EKM1	1	130	14667	1660	2200	18527	3900	5
6	MVB	EKM	EKM2	1	90	14667	1500	2200	18367	2700	7
7	MVB	EKM	EKM2	1	120	14667	1620	2200	18487	3600	5
8	MVB	EKM	EKM3	1	179	14667	1830	2200	18697	5370	3
9	MVB	TCR	SHR	2	87	14667	1500	2200	18367	2610	7
10	MVB	KOD	CLT-2	2	206	14667	2000	2200	18867	6180	3
11	HVB	KOD	KNR	2	247	14667	2000	2200	18867	7410	3
12	HVB	KOD	CLT-1	2	249	14667	2000	2200	18867	7470	3
13	HVB	TCR	PKD	1	208	14667	2000	2200	18867	6240	3
14	HVB	TVM	TVM	2	165	14667	1800	2200	18667	4950	4
15	HVB	KOD	CLT-2	2	80	14667	1500	2200	18367	2400	8
16	HVB	TCR	TCR	1	104	14667	2000	2200	18867	3120	6
17	HVB	TVM	TVM	1	159	14667	1800	2200	18667	4770	4
18	HVB	EKM	KTM	1	112	14667	1600	2200	18467	3360	5
19	HVB	EKM	EKM1	2	91	14667	1500	2200	18367	2730	7
CDM COST CALCULATION-2014											
20	TYPE	MODULE	RBO	NETWORK	Hit/day2014	Machine cost	Electricity	AMC	Total cost	Hits*W.D	T.C.2014
21	LVB	EKM	EKM1	1	148	14667	1660	5200	21527	4440	5

22	LVB	EKM	EKM2	1	146	14667	1660	5200	21527	4380	5
23	LVB	EKM	EKM2	1	93	14667	1500	5200	21367	2790	8
24	LVB	EKM	EKM2	1	91	14667	1500	5200	21367	2730	8
25	LVB	EKM	KTM	1	93	14667	1500	5200	21367	2790	8
26	LVB	TVM	KLM	1	108	14667	1600	5200	21467	3240	7
27	LVB	TVM	KLM	1	146	14667	1660	5200	21527	4380	5
28	LVB	TVM	KLM	1	134	14667	1600	5200	21467	4020	5
29	LVB	TVM	APA	1	53	14667	1500	5200	21367	1590	13
30	LVB	KOD	CLT-2	2	193	14667	1830	5200	21697	5790	4
31	LVB	KOD	CLT-2	2	165	14667	1800	5200	21667	4950	4
32	LVB	KOD	CLT-2	2	166	14667	1800	5200	21667	4980	4
33	LVB	KOD	KNR	2	58	14667	1500	5200	21367	1740	12
34	LVB	KOD	KNR	2	107	14667	1600	5200	21467	3210	7
35	LVB	KOD	KNR	2	53	14667	1500	5200	21367	1590	13
36	LVB	KOD	KNR	2	56	14667	1500	5200	21367	1680	13
37	LVB	KOD	KNR	2	85	14667	1500	5200	21367	2550	8
38	LVB	TCR	TCR	2	50	14667	1500	5200	21367	1500	14
39	LVB	TCR	TCR	2	32	14667	1500	5200	21367	960	22
40	LVB	TCR	TCR	2	66	14667	1500	5200	21367	1980	11
41	LVB	TCR	TCR	2	26	14667	1500	5200	21367	780	27
42	LVB	TCR	PKD	2	104	14667	1600	5200	21467	3120	7
43	LVB	TCR	PKD	2	114	14667	1600	5200	21467	3420	6
44	LVB	TCR	PKD	2	119	14667	1600	5200	21467	3570	6
45	LVB	TCR	SHR	1	44	14667	1500	5200	21367	1320	16
46	MVB	TVM	TVM	1	121	14667	1600	5200	21467	3630	6
47	MVB	TVM	TVM	1	250	14667	2000	5200	21867	7500	3
48	MVB	TVM	TVM	1	151	14667	1800	5200	21667	4530	5
49	MVB	TVM	TVM	1	115	14667	1600	5200	21467	3450	6
50	MVB	TVM	TVM	1	54	14667	1500	5200	21367	1620	13
51	MVB	TVM	TVM	1	73	14667	1500	5200	21367	2190	10
52	MVB	TVM	KLM	1	100	14667	1600	5200	21467	3000	7
53	MVB	TVM	KLM	1	103	14667	1600	5200	21467	3090	7
54	MVB	TVM	KLM	1	92	14667	1500	5200	21367	2760	8
55	MVB	TVM	KLM	1	65	14667	1500	5200	21367	1950	11
56	MVB	EKM	KTM	1	183	14667	1800	5200	21667	5490	4
57	MVB	EKM	KTM	1	126	14667	1600	5200	21467	3780	6
58	MVB	EKM	KTM	1	257	14667	2000	5200	21867	7710	3
59	MVB	EKM	KTM	1	133	14667	1600	5200	21467	3990	5
60	MVB	EKM	KTM	1	171	14667	1800	5200	21667	5130	4
61	MVB	EKM	KTM	1	88	14667	1500	5200	21367	2640	8
62	MVB	EKM	KTM	1	133	14667	1600	5200	21467	3990	5
63	MVB	TVM	APA	1	87	14667	1500	5200	21367	2610	8

64	MVB	TVM	APA	1	61	14667	1500	5200	21367	1830	12
65	MVB	TVM	APA	1	73	14667	1500	5200	21367	2190	10
66	MVB	TVM	APA	1	77	14667	1500	5200	21367	2310	9
67	MVB	TVM	APA	1	50	14667	1500	5200	21367	1500	14
68	MVB	TVM	APA	1	112	14667	1600	5200	21467	3360	6
69	MVB	TVM	APA	1	103	14667	1600	5200	21467	3090	7
70	MVB	TVM	APA	1	43	14667	1500	5200	21367	1290	17
71	MVB	TVM	APA	1	101	14667	1600	5200	21467	3030	7
72	MVB	TVM	APA	1	52	14667	1500	5200	21367	1560	14
73	MVB	TVM	APA	1	47	14667	1500	5200	21367	1410	15
74	MVB	EKM	EKM1	1	147	14667	1660	5200	21527	4410	5
75	MVB	EKM	EKM1	1	45	14667	1500	5200	21367	1350	16
76	MVB	EKM	EKM1	1	209	14667	2000	5200	21867	6270	3
77	MVB	EKM	EKM1	1	188	14667	1800	5200	21667	5640	4
78	MVB	EKM	EKM1	1	134	14667	1600	5200	21467	4020	5
79	MVB	EKM	EKM1	1	134	14667	1600	5200	21467	4020	5
80	MVB	EKM	EKM1	1	23	14667	1500	5200	21367	690	31
81	MVB	EKM	EKM2	1	127	14667	1600	5200	21467	3810	6
82	MVB	EKM	EKM2	1	200	14667	2000	5200	21867	6000	4
83	MVB	EKM	EKM2	1	142	14667	1660	5200	21527	4260	5
84	MVB	EKM	EKM2	1	191	14667	1830	5200	21697	5730	4
85	MVB	EKM	EKM3	1	142	14667	1660	5200	21527	4260	5
86	MVB	EKM	EKM3	1	89	14667	1500	5200	21367	2670	8
87	MVB	EKM	EKM3	1	138	14667	1600	5200	21467	4140	5
88	MVB	EKM	EKM3	1	92	14667	1500	5200	21367	2760	8
89	MVB	EKM	EKM3	1	115	14667	1600	5200	21467	3450	6
90	MVB	TCR	TCR	2	111	14667	1600	5200	21467	3330	6
91	MVB	TCR	TCR	2	59	14667	1500	5200	21367	1770	12
92	MVB	TCR	TCR	2	87	14667	1500	5200	21367	2610	8
93	MVB	TCR	TCR	2	77	14667	1500	5200	21367	2310	9
94	MVB	TCR	SHR	2	145	14667	1660	5200	21527	4350	5
95	MVB	TCR	SHR	2	84	14667	1500	5200	21367	2520	8
96	MVB	TCR	SHR	2	89	14667	1500	5200	21367	2670	8
97	MVB	TCR	SHR	2	128	14667	1600	5200	21467	3840	6
98	MVB	TCR	SHR	2	29	14667	1500	5200	21367	870	25
99	MVB	TCR	SHR	2	67	14667	1500	5200	21367	2010	11
100	MVB	TCR	PKD	2	55	14667	1500	5200	21367	1650	13
101	MVB	TCR	PKD	2	82	14667	1500	5200	21367	2460	9
102	MVB	TCR	PKD	2	65	14667	1500	5200	21367	1950	11
103	MVB	KOD	CLT-1	2	101	14667	1500	5200	21367	3030	7
104	MVB	KOD	CLT-1	2	74	14667	1500	5200	21367	2220	10
105	MVB	KOD	CLT-1	2	72	14667	1500	5200	21367	2160	10

106	MVB	KOD	CLT-1	2	81	14667	1500	5200	21367	2430	9
107	MVB	KOD	CLT-1	2	99	14667	1500	5200	21367	2970	7
108	MVB	KOD	CLT-1	2	85	14667	1500	5200	21367	2550	8
109	MVB	KOD	CLT-1	2	177	14667	1800	5200	21667	5310	4
110	MVB	KOD	CLT-2	2	205	14667	2000	5200	21867	6150	4
111	MVB	KOD	CLT-2	2	129	14667	1600	5200	21467	3870	6
112	MVB	KOD	CLT-2	2	183	14667	1800	5200	21667	5490	4
113	MVB	KOD	CLT-2	2	163	14667	1800	5200	21667	4890	4
114	MVB	KOD	CLT-2	2	156	14667	1800	5200	21667	4680	5
115	MVB	KOD	CLT-2	2	223	14667	2000	5200	21867	6690	3
116	MVB	KOD	CLT-2	2	153	14667	1800	5200	21667	4590	5
117	MVB	KOD	CLT-2	2	173	14667	1800	5200	21667	5190	4
118	MVB	KOD	KNR	2	56	14667	1500	5200	21367	1680	13
119	MVB	KOD	KNR	2	119	14667	1600	5200	21467	3570	6
120	MVB	KOD	KNR	2	28	14667	1500	5200	21367	840	25
121	MVB	KOD	KNR	2	41	14667	1500	5200	21367	1230	17
122	HVB	KOD	KNR	2	100	14667	1600	5200	21467	3000	7
123	HVB	KOD	CLT-1	2	260	14667	2000	5200	21867	7800	3
124	HVB	TCR	PKD	1	88	14667	1500	5200	21367	2640	8
125	HVB	TVM	TVM	2	158	14667	1800	5200	21667	4740	5
126	HVB	KOD	CLT-2	2	156	14667	1800	5200	21667	4680	5
127	HVB	TCR	TCR	1	147	14667	1660	5200	21527	4410	5
128	HVB	TVM	TVM	1	126	14667	1600	5200	21467	3780	6
129	HVB	EKM	KTM	1	128	14667	1600	5200	21467	3840	6
130	HVB	EKM	EKM1	2	60	14667	1500	5200	21367	1800	12
CDM COST CALCULATION-2015											
131	TYPE	MODULE	RBO	NETWORK	Hit/day2015	Machine cost	Electricity	AMC	Total cost	Hits*W.D	T.C.2015
132	MVB	TVM	TVM	1	187	14667	1800	5200	21667	5610	4
133	MVB	TVM	TVM	1	209	14667	2000	5200	21867	6270	3
134	MVB	TVM	KLM	1	132	14667	1600	5200	21467	3960	5
135	MVB	EKM	EKM1	1	255	14667	2000	5200	21867	7650	3
136	MVB	EKM	EKM1	1	165	14667	1800	5200	21667	4950	4
137	MVB	EKM	EKM2	1	294	14667	2000	5200	21867	8820	2
138	MVB	EKM	EKM2	1	339	14667	2000	5200	21867	10170	2
139	MVB	EKM	EKM3	1	191	14667	1830	5200	21697	5730	4
140	MVB	TCR	SHR	2	159	14667	1800	5200	21667	4770	5
141	MVB	KOD	CLT-2	2	302	14667	2000	5200	21867	9060	2
142	HVB	KOD	KNR	2	129	14667	1600	5200	21467	3870	6
143	HVB	KOD	CLT-1	2	151	14667	1800	5200	21667	4530	5
144	HVB	TCR	PKD	1	165	14667	1800	5200	21667	4950	4
145	HVB	TVM	TVM	2	183	14667	1800	5200	21667	5490	4
146	HVB	KOD	CLT-2	2	122	14667	1500	5200	21367	3660	6

147	HVB	TCR	TCR	1	188	14667	1800	5200	21667	5640	4
148	HVB	TVM	TVM	1	161	14667	1800	5200	21667	4830	4
149	HVB	EKM	KTM	1	218	14667	2000	5200	21867	6540	3
150	HVB	EKM	EKM1	2	254	14667	2000	5200	21867	7620	3
CDM COST CALCULATION-2016											
151	TYPE	MODULE	RBO	NETWORK	Hit/day2016	Machine cost	Electricity	AMC	Total cost	Hits*W.D	T.C.2016
152	MVB	TVM	TVM	1	173	14667	1800	5200	21667	5190	4
153	MVB	TVM	TVM	1	162	14667	1800	5200	21667	4860	4
154	MVB	TVM	KLM	1	44	14667	1500	5200	21367	1320	16
155	MVB	EKM	EKM1	1	114	14667	1600	5200	21467	3420	6
156	MVB	EKM	EKM1	1	210	14667	2000	5200	21867	6300	3
157	MVB	EKM	EKM2	1	385	14667	2000	5200	21867	11550	2
158	MVB	EKM	EKM2	1	500	14667	2000	5200	21867	15000	1
159	MVB	EKM	EKM3	1	242	14667	2000	5200	21867	7260	3
160	MVB	TCR	SHR	2	289	14667	2000	5200	21867	8670	3
161	MVB	KOD	CLT-2	2	123	14667	1600	5200	21467	3690	6
162	HVB	KOD	KNR	2	141	14667	1600	5200	21467	4230	5
163	HVB	KOD	CLT-1	2	153	14667	1800	5200	21667	4590	5
164	HVB	TCR	PKD	1	134	14667	1600	5200	21467	4020	5
165	HVB	TVM	TVM	2	144	14667	1600	5200	21467	4320	5
166	HVB	KOD	CLT-2	2	183	14667	1800	5200	21667	5490	4
167	HVB	TCR	TCR	1	307	14667	2000	5200	21867	9210	2
168	HVB	TVM	TVM	1	215	14667	2000	5200	21867	6450	3
169	HVB	EKM	KTM	1	253	14667	2000	5200	21867	7590	3
170	HVB	EKM	EKM1	2	140	14667	1600	5200	21467	4200	5

RECYCLER COST

SL.NO.	TYPE	MODULE	RBO	NETWORK	Hit/day2015	Hit/day2016	Machine cost	Elctrty2015	Elctrty2016	Rent	AMC	Total cost	Hit*W.D	T.C.2015	Total cost	Hit*W.D	T.C.2016
1	LVB	EKM	EKM1	1	10	120	18478	1500	1600	2900	3700	26578	300	89	26678	3600	7
2	LVB	EKM	EKM1	1	405	408	18478	2000	2000	4000	3700	28178	12150	2	28178	12240	2
3	LVB	EKM	EKM2	1	453	455	18478	2000	2000	4000	3700	28178	13590	2	28178	13650	2
4	LVB	EKM	EKM2	1	297	301	18478	1800	2000	3300	3700	27278	8910	3	27478	9030	3
5	LVB	EKM	EKM2	1	351	367	18478	2000	2000	3300	3700	27478	10530	3	27478	11010	2
6	LVB	EKM	EKM2	1	216	235	18478	1800	1800	3300	3700	27278	6480	4	27278	7050	4
7	LVB	EKM	KTM	1	154	188	18478	1600	1600	2600	3700	26378	4620	6	26378	5640	5
8	LVB	TVM	TVM	1	167	175	18478	1600	1600	2600	3700	26378	5010	5	26378	5250	5
9	LVB	TVM	TVM	1	10	105	18478	1500	1500	2600	3700	26278	300	88	26278	3150	8
10	LVB	TVM	TVM	1	68	136	18478	1500	1600	2600	3700	26278	2040	13	26378	4080	6
11	LVB	TVM	TVM	1	74	148	18478	1500	1600	2600	3700	26278	2220	12	26378	4440	6
12	LVB	TVM	TVM	1	148	160	18478	1600	1600	2600	3700	26378	4440	6	26378	4800	5
13	LVB	TVM	TVM	1	52	117	18478	1500	1600	2600	3700	26278	1560	17	26378	3510	8
14	LVB	TVM	TVM	1	172	185	18478	1600	1800	2600	3700	26378	5160	5	26578	5550	5
15	LVB	TVM	TVM	1	87	142	18478	1500	1600	2600	3700	26278	2610	10	26378	4260	6
16	LVB	TVM	KLM	1	213	226	18478	1800	1800	3300	3700	27278	6390	4	27278	6780	4
17	LVB	TVM	KLM	1	219	235	18478	1800	1800	3300	3700	27278	6570	4	27278	7050	4
18	LVB	TVM	KLM	1	89	151	18478	1500	1600	2600	3700	26278	2670	10	26378	4530	6
19	LVB	TVM	KLM	1	354	348	18478	2000	2000	4000	3700	28178	10620	3	28178	10440	3
20	LVB	TVM	KLM	1	132	176	18478	1600	1700	2600	3700	26378	3960	7	26478	5280	5
21	LVB	TVM	KLM	1	346	328	18478	2000	2000	4000	3700	28178	10380	3	28178	9840	3
22	LVB	TVM	KLM	1	380	356	18478	2000	2000	4000	3700	28178	11400	2	28178	10680	3
23	LVB	TVM	APA	1	207	235	18478	1800	1800	3300	3700	27278	6210	4	27278	7050	4
24	LVB	TVM	APA	1	143	201	18478	1600	1600	2600	3700	26378	4290	6	26378	6030	4
25	LVB	KOD	CLT-1	2	298	304	18478	1800	2000	3300	3700	27278	8940	3	27478	9120	3
26	LVB	KOD	CLT-1	2	262	287	18478	1800	1800	3300	3700	27278	7860	3	27278	8610	3
27	LVB	KOD	CLT-1	2	225	248	18478	1800	1800	3300	3700	27278	6750	4	27278	7440	4
28	LVB	KOD	CLT-2	2	484	456	18478	2000	2000	4000	3700	28178	14520	2	28178	13680	2
29	LVB	KOD	CLT-2	2	615	510	18478	2000	2000	4000	3700	28178	18450	2	28178	15300	2
30	LVB	KOD	CLT-2	2	455	523	18478	2000	2000	4000	3700	28178	13650	2	28178	15690	2
31	LVB	KOD	KNR	2	395	428	18478	2000	2000	4000	3700	28178	11850	2	28178	12840	2
32	LVB	KOD	KNR	2	373	382	18478	2000	2000	4000	3700	28178	11190	3	28178	11460	2
33	LVB	KOD	KNR	2	128	164	18478	1600	1600	2600	3700	26378	3840	7	26378	4920	5
34	LVB	KOD	KNR	2	397	428	18478	2000	2000	4000	3700	28178	11910	2	28178	12840	2
35	LVB	KOD	KNR	2	339	376	18478	2000	2000	4000	3700	28178	10170	3	28178	11280	2
36	LVB	KOD	KNR	2	192	283	18478	1600	1800	3300	3700	27078	5760	5	27278	8490	3
37	LVB	KOD	KNR	2	80	167	18478	1500	1600	2600	3700	26278	2400	11	26378	5010	5
38	LVB	TCR	TCR	2	203	251	18478	1800	1800	3300	3700	27278	6090	4	27278	7530	4
39	LVB	TCR	TCR	2	174	198	18478	1600	1600	2600	3700	26378	5220	5	26378	5940	4
40	LVB	TCR	TCR	2	242	256	18478	1800	1800	3300	3700	27278	7260	4	27278	7680	4

41	LVB	TCR	TCR	2	221	278	18478	1800	2000	3300	3700	27278	6630	4	27478	8340	3
42	LVB	TCR	TCR	2	86	167	18478	1500	1600	2600	3700	26278	2580	10	26378	5010	5
43	LVB	TCR	TCR	2	291	301	18478	1800	2000	4000	3700	27978	8730	3	28178	9030	3
44	LVB	TCR	TCR	2	253	264	18478	1800	1800	3300	3700	27278	7590	4	27278	7920	3
45	LVB	TCR	TCR	2	139	176	18478	1600	1600	2600	3700	26378	4170	6	26378	5280	5
46	LVB	TCR	PKD	2	182	208	18478	1600	1800	2600	3700	26378	5460	5	26578	6240	4
47	LVB	TCR	PKD	2	279	281	18478	1800	1800	2600	3700	26578	8370	3	26578	8430	3
48	LVB	TCR	PKD	2	196	243	18478	1600	1800	2600	3700	26378	5880	4	26578	7290	4
49	LVB	TCR	PKD	2	192	268	18478	1600	1800	2600	3700	26378	5760	5	26578	8040	3
50	LVB	TCR	SHR	1	236	254	18478	1800	1800	2600	3700	26578	7080	4	26578	7620	3
51	MVB	TVM	TVM	1	342	328	18478	2000	2000	4000	3700	28178	10260	3	28178	9840	3
52	MVB	TVM	TVM	1	369	345	18478	2000	2000	4000	3700	28178	11070	3	28178	10350	3
53	MVB	TVM	TVM	1	10	164	18478	1500	1600	1600	3700	25278	300	84	25378	4920	5
54	MVB	TVM	TVM	1	113	192	18478	1600	1600	2600	3700	26378	3390	8	26378	5760	5
55	MVB	TVM	TVM	1	226	246	18478	2000	1800	3300	3700	27478	6780	4	27278	7380	4
56	MVB	TVM	TVM	1	229	253	18478	2000	1800	3300	3700	27478	6870	4	27278	7590	4
57	MVB	TVM	TVM	1	200	261	18478	1600	1600	3300	3700	27078	6000	5	27078	7830	3
58	MVB	TVM	TVM	1	169	190	18478	1600	1600	2600	3700	26378	5070	5	26378	5700	5
59	MVB	TVM	KLM	1	196	218	18478	1600	1800	2600	3700	26378	5880	4	26578	6540	4
60	MVB	TVM	KLM	1	322	310	18478	2000	2000	3300	3700	27478	9660	3	27478	9300	3
61	MVB	TVM	KLM	1	168	216	18478	1600	1800	2600	3700	26378	5040	5	26578	6480	4
62	MVB	TVM	KLM	1	38	107	18478	1500	1600	1600	3700	25278	1140	22	25378	3210	8
63	MVB	TVM	KLM	1	117	164	18478	1600	1600	1600	3700	25378	3510	7	25378	4920	5
64	MVB	TVM	KLM	1	260	282	18478	1800	1800	3300	3700	27278	7800	3	27278	8460	3
65	MVB	TVM	KLM	1	180	245	18478	1600	1800	3300	3700	27078	5400	5	27278	7350	4
66	MVB	EKM	KTM	1	250	274	18478	1800	1800	3300	3700	27278	7500	4	27278	8220	3
67	MVB	EKM	KTM	1	436	395	18478	2000	2000	4000	3700	28178	13080	2	28178	11850	2
68	MVB	EKM	KTM	1	366	368	18478	2000	2000	4000	3700	28178	10980	3	28178	11040	3
69	MVB	EKM	KTM	1	515	502	18478	2000	2000	4000	3700	28178	15450	2	28178	15060	2
70	MVB	EKM	KTM	1	510	501	18478	2000	2000	4000	3700	28178	15300	2	28178	15030	2
71	MVB	EKM	KTM	1	423	425	18478	2000	2000	4000	3700	28178	12690	2	28178	12750	2
72	MVB	EKM	KTM	1	163	192	18478	1600	1600	2600	3700	26378	4890	5	26378	5760	5
73	MVB	EKM	KTM	1	321	307	18478	2000	2000	4000	3700	28178	9630	3	28178	9210	3
74	MVB	EKM	KTM	1	257	281	18478	1800	1800	3300	3700	27278	7710	4	27278	8430	3
75	MVB	TVM	APA	1	138	165	18478	1600	1600	2600	3700	26378	4140	6	26378	4950	5
76	MVB	TVM	APA	1	199	217	18478	1600	1800	3300	3700	27078	5970	5	27278	6510	4
77	MVB	TVM	APA	1	294	321	18478	1800	2000	4000	3700	27978	8820	3	28178	9630	3
78	MVB	TVM	APA	1	88	167	18478	1500	1600	2600	3700	26278	2640	10	26378	5010	5
79	MVB	TVM	APA	1	392	402	18478	2000	2000	4000	3700	28178	11760	2	28178	12060	2
80	MVB	TVM	APA	1	324	352	18478	2000	2000	4000	3700	28178	9720	3	28178	10560	3
81	MVB	TVM	APA	1	256	288	18478	1800	1800	3300	3700	27278	7680	4	27278	8640	3
82	MVB	TVM	APA	1	328	325	18478	2000	2000	4000	3700	28178	9840	3	28178	9750	3

83	MVB	TVM	APA	1	511	501	18478	2000	2000	4000	3700	28178	15330	2	28178	15030	2
84	MVB	TVM	APA	1	91	165	18478	1500	1600	2600	3700	26278	2730	10	26378	4950	5
85	MVB	TVM	APA	1	292	288	18478	1800	1800	3300	3700	27278	8760	3	27278	8640	3
86	MVB	TVM	APA	1	38	143	18478	1500	1600	1600	3700	25278	1140	22	25378	4290	6
87	MVB	TVM	APA	1	186	203	18478	1600	1800	2600	3700	26378	5580	5	26578	6090	4
88	MVB	TVM	APA	1	102	164	18478	1600	1600	2600	3700	26378	3060	9	26378	4920	5
89	MVB	EKM	EKM1	1	506	498	18478	2000	2000	4000	3700	28178	15180	2	28178	14940	2
90	MVB	EKM	EKM1	1	314	305	18478	2000	2000	4000	3700	28178	9420	3	28178	9150	3
91	MVB	EKM	EKM1	1	371	356	18478	2000	2000	4000	3700	28178	11130	3	28178	10680	3
92	MVB	EKM	EKM1	1	289	321	18478	1800	2000	4000	3700	27978	8670	3	28178	9630	3
93	MVB	EKM	EKM1	1	437	438	18478	2000	2000	4000	3700	28178	13110	2	28178	13140	2
94	MVB	EKM	EKM1	1	292	290	18478	1800	1800	3300	3700	27278	8760	3	27278	8700	3
95	MVB	EKM	EKM2	1	339	335	18478	2000	2000	4000	3700	28178	10170	3	28178	10050	3
96	MVB	EKM	EKM2	1	414	410	18478	2000	2000	4000	3700	28178	12420	2	28178	12300	2
97	MVB	EKM	EKM2	1	169	192	18478	1600	1600	2600	3700	26378	5070	5	26378	5760	5
98	MVB	EKM	EKM3	1	130	165	18478	1600	1600	2600	3700	26378	3900	7	26378	4950	5
99	MVB	EKM	EKM3	1	403	410	18478	2000	2000	4000	3700	28178	12090	2	28178	12300	2
100	MVB	EKM	EKM3	1	284	292	18478	1800	1800	3300	3700	27278	8520	3	27278	8760	3
101	MVB	EKM	EKM3	1	382	380	18478	2000	2000	4000	3700	28178	11460	2	28178	11400	2
102	MVB	EKM	EKM3	1	311	328	18478	2000	2000	4000	3700	28178	9330	3	28178	9840	3
103	MVB	EKM	EKM3	1	342	351	18478	2000	2000	4000	3700	28178	10260	3	28178	10530	3
104	MVB	TCR	TCR	2	386	388	18478	2000	2000	4000	3700	28178	11580	2	28178	11640	2
105	MVB	TCR	TCR	2	165	206	18478	1600	1800	2600	3700	26378	4950	5	26578	6180	4
106	MVB	TCR	TCR	2	383	398	18478	2000	2000	4000	3700	28178	11490	2	28178	11940	2
107	MVB	TCR	TCR	2	158	218	18478	1600	1800	2600	3700	26378	4740	6	26578	6540	4
108	MVB	TCR	SHR	2	203	231	18478	1800	1800	3300	3700	27278	6090	4	27278	6930	4
109	MVB	TCR	SHR	2	362	368	18478	2000	2000	4000	3700	28178	10860	3	28178	11040	3
110	MVB	TCR	SHR	2	347	352	18478	2000	2000	4000	3700	28178	10410	3	28178	10560	3
111	MVB	TCR	SHR	2	284	303	18478	1800	2000	4000	3700	27978	8520	3	28178	9090	3
112	MVB	TCR	SHR	2	50	156	18478	1500	1600	1600	3700	25278	1500	17	25378	4680	5
113	MVB	TCR	SHR	2	219	228	18478	1800	1800	3300	3700	27278	6570	4	27278	6840	4
114	MVB	TCR	SHR	2	155	182	18478	1600	1600	2600	3700	26378	4650	6	26378	5460	5
115	MVB	TCR	PKD	2	162	194	18478	1600	1600	2600	3700	26378	4860	5	26378	5820	5
116	MVB	TCR	PKD	2	414	410	18478	2000	2000	4000	3700	28178	12420	2	28178	12300	2
117	MVB	TCR	PKD	2	403	408	18478	2000	2000	4000	3700	28178	12090	2	28178	12240	2
118	MVB	KOD	CLT-1	2	417	420	18478	2000	2000	4000	3700	28178	12510	2	28178	12600	2
119	MVB	KOD	CLT-1	2	523	524	18478	2000	2000	4000	3700	28178	15690	2	28178	15720	2
120	MVB	KOD	CLT-1	2	390	388	18478	2000	2000	4000	3700	28178	11700	2	28178	11640	2
121	MVB	KOD	CLT-1	2	351	352	18478	2000	2000	4000	3700	28178	10530	3	28178	10560	3
122	MVB	KOD	CLT-1	2	390	380	18478	2000	2000	4000	3700	28178	11700	2	28178	11400	2
123	MVB	KOD	CLT-1	2	337	340	18478	2000	2000	4000	3700	28178	10110	3	28178	10200	3
124	MVB	KOD	CLT-1	2	394	395	18478	2000	2000	4000	3700	28178	11820	2	28178	11850	2

125	MVB	KOD	CLT-1	2	482	480	18478	2000	2000	4000	3700	28178	14460	2	28178	14400	2
126	MVB	KOD	CLT-2	2	442	440	18478	2000	2000	4000	3700	28178	13260	2	28178	13200	2
127	MVB	KOD	CLT-2	2	443	437	18478	2000	2000	4000	3700	28178	13290	2	28178	13110	2
128	MVB	KOD	CLT-2	2	449	453	18478	2000	2000	4000	3700	28178	13470	2	28178	13590	2
129	MVB	KOD	CLT-2	2	73	149	18478	1500	1600	1600	3700	25278	2190	12	25378	4470	6
130	MVB	KOD	CLT-2	2	624	602	18478	2000	2000	4000	3700	28178	18720	2	28178	18060	2
131	MVB	KOD	CLT-2	2	360	387	18478	2000	2000	4000	3700	28178	10800	3	28178	11610	2
132	MVB	KOD	CLT-2	2	195	223	18478	1600	1800	3300	3700	27078	5850	5	27278	6690	4
133	MVB	KOD	KNR	2	275	287	18478	1800	1800	3300	3700	27278	8250	3	27278	8610	3
134	MVB	KOD	KNR	2	214	261	18478	1800	1800	3300	3700	27278	6420	4	27278	7830	3
135	MVB	KOD	KNR	2	415	421	18478	2000	2000	4000	3700	28178	12450	2	28178	12630	2
136	MVB	KOD	KNR	2	232	254	18478	1800	1800	3300	3700	27278	6960	4	27278	7620	4
137	MVB	KOD	KNR	2	377	380	18478	2000	2000	4000	3700	28178	11310	2	28178	11400	2
138	MVB	KOD	KNR	2	222	243	18478	1800	1800	3300	3700	27278	6660	4	27278	7290	4
139	HVB	KOD	KNR	2	296	298	18478	1800	1800	3300	3700	27278	8880	3	27278	8940	3
140	HVB	KOD	CLT-1	2	273	284	18478	1800	1800	3300	3700	27278	8190	3	27278	8520	3
141	HVB	TCR	PKD	1	413	410	18478	2000	2000	4000	3700	28178	12390	2	28178	12300	2
142	HVB	TVM	TVM	2	253	292	18478	1800	1800	3300	3700	27278	7590	4	27278	8760	3
143	HVB	TVM	TVM	1	339	340	18478	2000	2000	4000	3700	28178	10170	3	28178	10200	3
144	HVB	EKM	KTM	1	147	167	18478	1600	1600	2600	3700	26378	4410	6	26378	5010	5
145	HVB	KOD	KNR	1	205	218	18478	1800	1800	3300	3700	27278	6150	4	27278	6540	4
146	HVB	EKM	EKM3	1	342	361	18478	2000	2000	4000	3700	28178	10260	3	28178	10830	3

RBO WISE RECYCLER COST

			2015				2016			
RBO	**NETWORK**	**MODULE**	**Total cost**	**Avge hit**	**Hit*W.D**	**T.C**	**Total cost**	**Avge hit**	**Hit*W.D**	**T.C**
TVM	1	TVM	464491	2754	82620	6	465086	3774	113220	4
KLM	1	TVM	382522	2268	68040	6	383012	3360	100800	4
ALP	1	TVM	464491	2754	82620	6	465086	4386	131580	4
EKM-1	1	EKM	218584	1296	38880	6	218864	2736	82080	3
EKM-2	1	EKM	191261	1134	34020	6	191506	2296	68880	3
EKM-3	1	EKM	273230	1620	48600	6	273580	3270	98100	3
KTM	1	EKM	300553	1782	53460	6	300938	3597	107910	3
PKD	2	TSR	218584	1296	38880	6	218864	2424	72720	3
TSR	2	TSR	327876	1944	58320	6	328296	3096	92880	4
CLT-1	2	CLT-1	355199	2106	63180	6	355654	4771	143130	2
CLT-2	2	CLT-2	273230	1620	48600	6	273580	4180	125400	2
KNR	2	CLT-3	437168	2592	77760	6	437728	4896	146880	3
SHR	2	TSR	218584	1296	38880	6	218864	2072	62160	4