CHAPTER I
INTRODUCTION AND DESIGN OF THE STUDY

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CHAPTER I
INTRODUCTION AND DESIGN OF THE STUDY

1.1 INTRODUCTION

Technology has been one of the most important factors for the development of mankind. Information and Communication Technology is the major advent in the field of technology which is used for access, process, storage and dissemination of information electronically. The trend in banking has evolved from cash economy and transformed to cheque economy which has further been converted to plastic card economy. Fierce competition from inter and intra bank groups along with the global forces have compelled the banks to adopt the technological changes to face the electronic age. The influence of technology over product innovations in banks is enormous. Banks gain competitive advantage over their rivals by providing electronic banking services as technology induced services reduce cost of operations, remove geographical barriers, provide 24 hours banking, extended hours of business and efficiency in daily banking processes. Without even interacting with the bankers, customers can transact banking activity from any corner of the world. On June 27, 1967 (Manpreet Kaur, 2013)¹ the first “cash machine” colloquially called as “Hole on the Walls” and described as “Mini-Banks” which was designed to allow customers access to cash 24 hours a day, outside of the restrictive opening times of banks. This is the origin of the alternative delivery channel for bank services, ATM which is the first such delivery channel banks started using. Forty years ago, cash was only

available from Monday to Friday from 9 am to 3 pm and on Saturdays from 9.00 am - to 12.30 pm and long queues outside branches on a Saturday morning to get week end money were common. Now the practice is quite different as the customer can get money anytime and anywhere through ATM Services.

In modern ATM the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip, that contains a unique card number and some security information such as an expiration data or Card Verification Value Code (CVVC). Authentication is provided by the customer entering a Personal Identification Number (PIN). The newest ATM of Royal Bank of Scotland operates with a card to withdraw cash upto $100 were in the customer should register first their mobile phone number and the bank will give a six-digit code to enter into ATM to withdraw the cash.

An ATM, enables the customers to access their bank accounts in order to make cash withdrawals, debit card cash advances, and check their account balances as well as purchase prepaid cell phone credit, if the currency being withdrawn from the ATM is different from that which the bank account is denominated in (e.g. withdrawing Japanese Yen from a bank account containing US Dollars). The money will be converted according to an official wholesale exchange rate. Thus, ATMs often provide one of the best possible official exchange rates for foreign travellers and are also widely used for this purpose.

1.1.1 Need for ATM Banking

The change in banking in the last few decades is magnanimous when compared to the entire period of history of banking in India. Profitability, which
remained a taboo for bankers for a long time since independence has become a buzzword today. Thus, competition driven by technology fuels banking today. It is becoming clear that “technology” can make bankers sail through the sea of competition. Computerization of branches, introduction of cash management products, remote access logins for corporate mobile banking, internet banking and ATM banking are a few ways by which bankers beat competition.

The plastic card is replacing cheque, personal attendance of the customer, banking hour’s restrictions and paper based verification. ATMs are used as spring board for Electronic Fund Transfer. ATM itself can provide information about customers’ account and also receive instructions from customers. ATM is an Electronic Fund Transfer terminal, capable of handling cash deposits, transfer between accounts, balance enquiries, cash withdrawals and pay bills. In many parts of the world, the majority of bank customers regularly use ATMs and today’s western youth have not known a world without them. For them, the prevailing perception of a cash machine is that of a tool providing a familiar functionality of basic financial information and dispensing cash. The technology is hidden from sight as the computer is invisible. It has taken approximately 30 years to establish ATMs as ubiquitous examples of public walk-up-and-use devices. The adoption has not been straightforward, requiring trust in the technology and willingness to modify behavioral strategies in the very sensitive domain of personal finance. Financial institutions have played a major, sometime coercive, role in encouraging ATM adoption. The ATM flourishes within societies where time is precious and money readily available. This culture is composed of individuals, who have personal bank accounts and access to a wide range of technology. In India, ATMs are being
introduced on a large scale. It concentrates mainly on urban India. Indian Banking industry is witnessing an unprecedented competition. To stay ahead, banks are coming up with a plethora of services to lure customers.

1.1.2 ATM History

In simultaneous and independent efforts, engineers in Japan, Sweden and Britain, developed their own cash, machines during the early 1960’s. The first of these that was put into use was by Barclays bank in Enfield town in North London, UK on 27th June 1967. This machine was then introduced first in the UK and was used by English comedy actor Reg Varney, at the time so as to ensure maximum publicity for the machines that were soon to become mainstream in the UK. This stance of the invention has been credited to John Shepherd-Barron of printing firm De La Rue, who was awarded an OBE in the 2005 New Year Honours.

The first modern ATM came into use in the year December 1972 in the UK. The IBM 2984 was designed at the request of Lloyds bank. The 2984 CIT (Cash Issuing Terminal) was the first true cash point, similar in function to today’s machines; cash point is still a registered trademark of Llyods TSB in the UK. All transactions were online and issued a variable amount which was immediately deducted from the account. A small number of 2984s was supplied to a US bank. In 1967 John Shepherd Barron, invented and installed an ATM in Barclay's Bank in London. The machine was made by De La Rue Instruments and it used paper vouchers that had to be purchased from tellers in advance. The machine was named De La Rue Automatic Cash System (DACS).
1.1.3 ATM History in India

In India, the development of information technology had an enormous effect of more flexible payment methods and more user friendly banking services. Online banking and other electronic payment systems are new and the diffusion of these technologies by financial institutions is expected to result in a more efficient banking system. This technology offers to the institutions a alternative or non-traditional delivery channel through which banking products and services can be delivered to customers more conveniently and economically without diminishing the existing service levels. However the entry of private sector has posed the challenge of competitive environment to the public sector banks in India. These private sector banks have brought with them the advanced banking technology with alternate delivery channels such as Mobile banking, Internet Banking, ATM and so on. Out of all these e-banking services, the ever demanding and fulfilling the requirement of the customers is automated teller machines. So the efforts of the banks are to manufacture and install as much ATMs which could render its services to the entire customers of the nation, be it rural people or urban people. To suit the needs of rural people, additional security device innovations are being made in the form of providing camera a inside the ATM which could compare the records with the thumb impression (Bio-Metric) of the client for identification. The management of ATM includes loading of ATM with cash, arranging of money with the bank from which cash is loaded, service of car that delivers cash if it is offsite situated, providing insurance for all areas like theft of cash from ATM. Due to the large expenses involved in setting and situating an ATM at a particular place, these services are nowadays offered by independent service providers like privately owned ATMs.
1.1.4 Benefits of ATM Banking to the Customers

The benefits of ATM banking are Convenience to transact whenever and wherever required, Consistency of service, Variety of service at one point, Easy availability, Security of transaction due to use of PIN, Sense of security due to less cash holding, Availability of good quality currency notes and Enhanced interest earnings.

1.1.5 Benefits of ATM Banking to Bankers

The benefits of ATM banking to bankers are Competitive edge/improved image, Reduction in workload and drudgery for the staff, Rationalization of staff strength with freed staff who can focus on marketing, cross selling and customer relationship, Reduction in transaction costs and overhead, Thinning of crowds in banking halls resulting in improved buying satisfaction and lesser need for space, Improved customer satisfaction, Improved housekeeping, Increased customer base, Advertising possibility on the screen of ATM through display of promotional material, Provision of product information at the ATMs, Increase in miscellaneous business and Substitutes branch banking.

1.1.6 Other beneficiaries

The other beneficiaries of ATMs are Concerns like airways/railways whose tickets are marketed and sold economically, Electricity boards/telephone departments who improve their image by providing easy options for their bill payment, and to economy at large due to less circulation of cash.
1.1.7 Number of ATM of Scheduled Commercial Banks in India

The scheduled commercial banks in India are classified into public sector banks (Nationalised banks and State Bank Group), private sector banks (old private sector and new private sector), and foreign banks. The location of ATMs are classified into rural, semi-urban, urban and metro politan cities. The number of ATM of SCB at various locations during 2011-12 are presented in Table 1.1.

Table 1.1

Number of ATMs of SCBs in Various Locations

<table>
<thead>
<tr>
<th>Bank group</th>
<th>(as on 31st March 2012)</th>
<th>Rural</th>
<th>Semi-urban</th>
<th>Urban</th>
<th>Metropolitan</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public sector banks</td>
<td></td>
<td>6673</td>
<td>15135</td>
<td>19213</td>
<td>17172</td>
<td>58193</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(11.5)</td>
<td>(26.0)</td>
<td>(31)</td>
<td>(29.5)</td>
<td>(100)</td>
</tr>
<tr>
<td>Nationalized banks</td>
<td></td>
<td>3383</td>
<td>6800</td>
<td>10186</td>
<td>10681</td>
<td>24836</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(10.9)</td>
<td>(21.9)</td>
<td>(32.8)</td>
<td>(34.4)</td>
<td>(100)</td>
</tr>
<tr>
<td>State Bank Group</td>
<td></td>
<td>3290</td>
<td>8335</td>
<td>9027</td>
<td>6491</td>
<td>27143</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(12.3)</td>
<td>(30.7)</td>
<td>(33.3)</td>
<td>(23.9)</td>
<td>(100)</td>
</tr>
<tr>
<td>Private sector banks</td>
<td></td>
<td>1937</td>
<td>7520</td>
<td>11525</td>
<td>15097</td>
<td>36079</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5.4)</td>
<td>(20.8)</td>
<td>(31.90)</td>
<td>(41.8)</td>
<td>(100)</td>
</tr>
<tr>
<td>Old private sector banks</td>
<td></td>
<td>523</td>
<td>2025</td>
<td>1876</td>
<td>1347</td>
<td>5771</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(9.1)</td>
<td>(35.1)</td>
<td>(32.5)</td>
<td>(23.3)</td>
<td>(100)</td>
</tr>
<tr>
<td>New private sector banks</td>
<td></td>
<td>1414</td>
<td>5495</td>
<td>9649</td>
<td>13750</td>
<td>30308</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.7)</td>
<td>(18.1)</td>
<td>(31.8)</td>
<td>(45.4)</td>
<td>(100)</td>
</tr>
<tr>
<td>Foreign banks</td>
<td></td>
<td>29</td>
<td>22</td>
<td>268</td>
<td>1095</td>
<td>1414</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.1)</td>
<td>(1.6)</td>
<td>(19.0)</td>
<td>(77.4)</td>
<td>(100)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>8639</td>
<td>22677</td>
<td>31006</td>
<td>33364</td>
<td>95688</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(9.0)</td>
<td>(23.7)</td>
<td>(32.4)</td>
<td>(34.9)</td>
<td>(100.0)</td>
</tr>
</tbody>
</table>

Growth over previous year  

|                            |                         |       |            |       |              |       |
|                            |                         | (20.7)| (25.4)     | (28.9)| (32.4)       | (28.4)|

In total, the ATMs established by SCBs are 95688, out of which 34.9 per cent are located in Metro cities, followed by 32.40 per cent in urban areas. Only 9 per cent of the ATMs are located in rural areas in India. Out of the total ATMs, the number of ATMs established by State Bank Group is of 27143 which constitute 28.37 per cent of the total. A maximum of 37.70 per cent of ATMs are established by private sector banks. The analysis reveals that most of the ATMs in India are located at urban, metro and semi urban areas in order of priority.

1.1.8 Service Quality in ATM

Numerous models have been developed to measure customer perceptions of service quality. Most of these models utilized face-to-face interaction between customers and the employees of service providers to conceptualise a service quality measurement model. However, developments of information and communications technology have provided a platform by which companies can design, develop and deliver services that can be perceived by customers as superior (Iqbal et al., 2003). There are several competitive advantages associated with the adoption of technology in service organization, some of which include the creation of entry barriers, enhancement of productivity and increase of revenue generation from new services (Fitzsimmons & Fitzsimmons 1997). Service quality is one of the main factors that determine the success or failure of electronic commerce (Santos 2003). Automated service quality has tended to lag behind because practitioners have focused mainly on issues of usability and measurement of use, with little or no considerations to the issues of service quality (Buckley 2003).

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It has been proposed that customer perceptions and preferences of service quality have a significant impact on a bank’s success (Mouawad & Kleiner, 1996)\(^5\) is to develop a comprehensive conceptual model to measure customer perception of automated service quality in the banking sector. Automated service quality is defined as the customers’ overall evaluation of the excellence of the provision of services through electronic networks such as the internet, Automated Teller Machine (ATM), and telephone banking (Hway and Yu, 2003)\(^6\). Analysing markets based on customer perceptions, designing a service delivery system that meets customer needs, and enhancing the level of service performance are pertinent objectives for banks to gain and retain a competitive advantage (Brown & Swartz 1989)\(^7\). Service quality has received much attention because of its obvious relationship with cost, financial performance, customer satisfaction and customer retention.

### 1.1.9 ATM Banking and Customer Satisfaction

The evolution of Information and Communication Technology (ICT) has brought development and adoption of advanced technologies in commerce and industry. One such modern technology in the banking sector is the Automated Teller Machine (ATM) system. ATM system is an inter-organisational system that links banks and other financial institutions to retail banking customers for several types of routine banking transactions. These include inquiries, deposits, cash withdrawals, cash transfers and payments (Dos Santos and Peffers, 1993)\(^8\). ATMs

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were introduced in banking in America in the early 1970s (Dos Santos and Peffers, 1993), and in Malawi early 2000. A decade later, all commercial banks in Malawi came to own a network of ATMs for the delivery of banking products/services.

ATM banking has received customer preference to become the second most popular channel for accessing banking products/services behind branch banking. ATMs provide bank customers with 24 hour access to banking products/services; they are easy to use and are faster than human tellers in the banking halls. ATM systems are believed to have improved the operational efficiency of banks and customer service in the banking sector (Banker and Kauffman, 1988\(^9\); Glaser, 1988\(^{10}\); Laderman, 1990\(^{11}\)). Although ATM systems have high fixed costs, they have lower variable transaction processing costs according to research. With that proficiency ATMs could be substituted for employees to provide services on demand, deposits accounts thereby be able to reduce the number of transactions processed by human tellers. That would allow banks to reduce direct customer service employment (Kantrow, 1989\(^{12}\)). ATMs have therefore become strategic technology in the banking sector in delivering banking products/services and are expected to offer competitive advantage to banks investing in ATM technologies over those that do not.

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Today, investment in ATM technologies remains strategic as banks continue to invest in newer and more efficient ATM technologies to bolster delivery of an efficient banking experience. The customer satisfaction on ATM banking includes a range of services, accuracy of transactions, speed of transaction, perfect working condition, system usability, ease of access, all time cash availability, quick replacement of lost ATM cards, minimum waiting time, fast return of swallowed ATM cards, employees’ speed in disposing of ATM problems, employee effectiveness in solving ATM problems, privacy, ATM usage and security advice, security at ATM stations, employee friendliness, ATM fees, ease of ATM card application process and employee accessibility to solve ATM issues Al Hawari et al., (2006), Athanassopulos (2000)\textsuperscript{13}, Davies et al., (1996)\textsuperscript{14}; Howcroft, (1991)\textsuperscript{15}; Joseph and Stone (2003)\textsuperscript{16} Moutinho and Brownlie (1989)\textsuperscript{17} Patricio et al. (2003)\textsuperscript{18} and Yavas et al., (2004)\textsuperscript{19}.

1.2 NEED FOR THE STUDY

In India, the usage of ATMs is slowly increasing day by day in rural areas. The banks must understand the difficulties of the new users who live within a culture, which may bring new factors into the adoption curve. This study mainly

\begin{itemize}
\end{itemize}
concentrates the Kanyakumari District and ATM adoption but the approach can be
generalized to cover other public (and personal) technologies, as well as other
developing markets. Indian Banking Industry is witnessing an unprecedented
competition. To stay ahead, banks are coming up with a plethora of services to lure
customers. Services like 24 hours banking, service at the doorstep, telephone
banking, internet banking, Extended Business Hours (EBH), speedy processing and
so on. Today’s bank transactions take place somewhere else other than in bank
premises. This shows the growth of “virtual” banks in India with convenience,
speed, efficiency and effectiveness. These virtual banks, in effect have opened up a
new world of possibilities and brought major changes in providing a broad range of
services. Virtual banks are now seen as an answer to the challenge of designing a
new service channel that is fully secure, functional and which customers can
readily learn to use and trust. Virtual banking—a powerful value added tool has
become the focal point for banks to attract and retain customers.

Though, the aim of these services is to satisfy customers, there is a need to
understand customer awareness, perception and especially the level of satisfaction.
Efforts are directed to attract and retain customers by offering them ATMs. The
whole exercise is helping banks to serve their customers fast and avoid human
intervention totally. The banks offer ATMs to customers for hassle-free cash
withdrawal. No more fighting with the bank’s teller for change and fresh notes. The
total cash movement through ATMs in India is already around millions of rupees
(local currency) every year. In future, things are going to be even more different
and challenging. The ATM has become a medium for non-cash transactions such as
payment of bills, insurance payments, printing of statements or even accessing the
internet (Rama Krishna and Venkoba Rao, 2006). Hence it is essential to analyse
the customers’ attitude towards the ATM services and the problems in the usage of ATM services in order to generate the future policy implications.

1.3 STATEMENT OF THE PROBLEM

The banking business in India is vast and constantly expanding. No organization can remain happy with the existing products to cope with the competitors. Banks are no exception to this situation. The bank has identified enhancing technology as a vital driver for its growth. Today the banks are to be well equipped with developed technology in order to retain its customers as well as to attract more new customers. Providing automatic teller machine is one of the technical facilities offered by the banks to its valued customers. ATM is a part of the electronic financial transactions system that can mechanically accept deposit, issue withdrawals, transfer funds between accounts, collect bills and make small loans.

As the user of ATM is increasing day by day it is important to make a study to gain insight on the customer satisfaction level with respect to the various aspects of ATM services offered. It is the need of the era to satisfy the customers and also to reduce congestion in the banks.

1.4 SCOPE OF THE STUDY

The study is confined to ATM cardholders of SBI branches at 9 blocks and 4 municipalities in Kanyakumari district. The study also helps to know the factors leading to the usage of ATM Services, level of the usage of ATM Services, customer satisfaction in service quality and the problems in the usage of ATM Services. The period of the study is 2016-17.
1.5 OBJECTIVES OF THE STUDY

Based on the proposed research model, the objectives of the present study are confined to the following:

1. To reveal the profile of the respondents and their personality traits.
2. To study the pattern and the level of the usage of ATM services among the respondents.
3. To examine the factors leading to the usage of ATM services and their impact on the usage of ATM services.
4. To measure the level of the customer satisfaction on ATM services and its determinants.
5. To evaluate the level of the service quality and its gap in ATM services and its impact on customer satisfaction on ATM services and
6. To study the problems in the usage of ATM services and its impact on customer satisfaction on ATM services.

1.6 HYPOTHESES OF THE STUDY

Based on the objectives of the present study, the following null hypotheses are drawn.

1. There is no significant difference among the urban and rural respondents regarding their usage of ATM services, view on the service attributes, service quality of ATM services, problems in the usage of ATM services,
factors leading to the usage of ATM services and customer satisfaction on ATM services.

2. There is no significant association between the profile of the respondents and their view on the various aspects related to ATM services.

3. There is no significant impact of the factors leading to the usage of ATM services on the rate of usage of ATM services on the respondents.

4. There is no significant impact of the views on the various service attributes of ATM service on the level of customer satisfaction on ATM services.

5. There is no significant impact of the factors leading to customer satisfaction on ATM services on the level of customer satisfaction on ATM services and

6. There is no significant impact of the problems in the usage of ATM services on the level of customer satisfaction on ATM services among the respondents.

1.7 RESEARCH METHODOLOGY

It represents the way in which the research problem is solved through a systematic and scientific way. The methodology is the blueprint of the way through which the research will be conducted. The researcher gathers knowledge on the identification of research problem, objectives, research design, population, sampling procedure, data collection and process of data to fulfill the objectives through the methodology. In the present study, it includes research design, population, determination of sample size, sampling procedure, data collection procedure, instrumentation, data collection, framework of analysis and limitations.
1.8 RESEARCH DESIGN OF THE STUDY

It is the overall plan or the scheme of the research work. It is the management of conditions for collection and analysis of data in a manner that aims at relevance to the research purpose with simple and economical in procedure. It is a conceptual structure within which the research is to be conducted.

In the present study, an attempt has been made to explain the profile of the customers in banks, their rate of usage of ATM services and their attitude on various aspects in ATM banking. Apart from this, the study has its own objectives and preplanned methodology to fulfill the objectives. It also examines the causal relationship between the customer satisfaction and its determinants. Hence, it is also diagnostic in nature. Hence the applied research design of the study is descriptive and diagnostic in nature.

1.9 SAMPLE DESIGN

The sample design of the proposed study is given below:

1.9.1 POPULATION OF THE STUDY

The population of the study is the number of ATM cardholders of various SBI branches in Kanyakumari district. The number of SBI branches, number of customers of various branches and the number of ATM cardholders at various SBI branches in 9 blocks and 4 municipalities of the district were collected from the annual credit plan, IOB during 2016-17. These are presented in Table 1.2.
### Table 1.2
Population of the Study

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Blocks and municipalities</th>
<th>Number of branches</th>
<th>Number of customers</th>
<th>Number of ATM cardholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agasteeswaram</td>
<td>2</td>
<td>2632</td>
<td>2149</td>
</tr>
<tr>
<td>2.</td>
<td>Killiyoor</td>
<td>3</td>
<td>4107</td>
<td>3823</td>
</tr>
<tr>
<td>3.</td>
<td>Kurunthencode</td>
<td>2</td>
<td>2526</td>
<td>2411</td>
</tr>
<tr>
<td>4.</td>
<td>Melpuram</td>
<td>3</td>
<td>4354</td>
<td>4082</td>
</tr>
<tr>
<td>5.</td>
<td>Munchirai</td>
<td>3</td>
<td>4354</td>
<td>4082</td>
</tr>
<tr>
<td>6.</td>
<td>Rajakkamangam</td>
<td>2</td>
<td>2804</td>
<td>2436</td>
</tr>
<tr>
<td>7.</td>
<td>Thiruvattar</td>
<td>2</td>
<td>2511</td>
<td>2342</td>
</tr>
<tr>
<td>8.</td>
<td>Thovalai</td>
<td>3</td>
<td>4686</td>
<td>4209</td>
</tr>
<tr>
<td>9.</td>
<td>Thuckalay</td>
<td>4</td>
<td>6101</td>
<td>5773</td>
</tr>
<tr>
<td>10.</td>
<td>Nagercoil municipality</td>
<td>5</td>
<td>8604</td>
<td>8436</td>
</tr>
<tr>
<td>11.</td>
<td>Kuzhithurai municipality</td>
<td>2</td>
<td>2883</td>
<td>2711</td>
</tr>
<tr>
<td>12.</td>
<td>Padmanabapuram municipality</td>
<td>2</td>
<td>2419</td>
<td>2342</td>
</tr>
<tr>
<td>13.</td>
<td>Colachel municipality</td>
<td>1</td>
<td>1184</td>
<td>1099</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>34</strong></td>
<td><strong>48908</strong></td>
<td><strong>45677</strong></td>
</tr>
</tbody>
</table>

**Source:** Annual Credit Plan, 2016-17 (IOB).

In total, there are 34 SBI branches in the Kanyakumari district. Most number of SBI branches is noticed in Nagercoil municipality. In total, the total number of SBI customers in this district is 48908, out of which, 93.39 per cent of the are having ATM cards. Hence, the population of the study is 45677 customers spread in various SBI branches in Kanyakumari district.

#### 1.9.2 Sample size of the Study

The sample size of the study was determined with the given formula.

\[
 n = \frac{N}{N e^2 + 1}
\]
where \( n \) – Sample size
\( N \) – Population
\( e \) – error of acceptance

In the present study,

\[
n = \frac{45677}{45677(.04)^2 + 1} = \frac{45677}{74.08} = 616.50 = 617 \text{ customers}
\]

The number of sample size of the present study is 617 customers.

1.9.3 Sampling Procedure of the Study

The stratified proportionate sampling was adopted to distribute the samples from various SBI branches in the various blocks and municipalities in Kanyakumari district. The start included for the study is the blocks/ municipalities in the district. The distribution of samples in different blocks is presented in the Table 1.3.

**Table 1.3**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Blocks/municipality</th>
<th>Number of ATM cardholders</th>
<th>Number of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agasteeswaram</td>
<td>2149</td>
<td>29</td>
</tr>
<tr>
<td>2</td>
<td>Killiyoor</td>
<td>3823</td>
<td>52</td>
</tr>
<tr>
<td>3</td>
<td>Kurunthencode</td>
<td>2411</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>Melpuram</td>
<td>4082</td>
<td>55</td>
</tr>
<tr>
<td>5</td>
<td>Munchirai</td>
<td>3864</td>
<td>52</td>
</tr>
<tr>
<td>6</td>
<td>Rajakkamangam</td>
<td>2436</td>
<td>33</td>
</tr>
<tr>
<td>7</td>
<td>Tiruvattar</td>
<td>2342</td>
<td>31</td>
</tr>
<tr>
<td>8</td>
<td>Thovalai</td>
<td>4209</td>
<td>57</td>
</tr>
<tr>
<td>9</td>
<td>Thuckalay</td>
<td>5773</td>
<td>78</td>
</tr>
<tr>
<td>10</td>
<td>Nagercoil municipality</td>
<td>8436</td>
<td>114</td>
</tr>
<tr>
<td>11</td>
<td>Kuzhithurai municipality</td>
<td>2711</td>
<td>37</td>
</tr>
<tr>
<td>12</td>
<td>Padmanabapuram municipality</td>
<td>2342</td>
<td>32</td>
</tr>
<tr>
<td>13</td>
<td>Colachel municipality</td>
<td>1099</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>45677</td>
<td>617</td>
</tr>
</tbody>
</table>

Source: Primary Data
Higher numbers of samples are selected from Nagercoil municipality and Thuckalay block since there are more number of ATM cardholders here. Lesser number of samples are from Colachel municipality and Agasteeswaram block viz 15 and 29 respectively. The customers in each block/municipality are equally distributed over the number of SBI branches in the respective area. The sample unit was identified with the help of the respective bank branch manager.

1.10 COLLECTION OF DATA

The required data from the respondents have been collected with the help of a pre-structured interview schedule. The interview schedule consists of four parts. The first part of the schedule has the profile of respondents and their personality traits, pattern and usage of ATM services the factors leading to the usage of ATM services and the factors leading to customer satisfaction on ATM services. The third part of the schedule examines the customers’ view on the various service attributes and service qualities of ATM services. The final part of the schedule focuses on the problems in the usage of ATM services. The relevant variables were drawn from the reviews. A pilot study was conducted among 25 customers of rural and 25 customers of urban branches in Kanyakumari district. The second part covers the customer satisfaction on ATM services. Based on the feedback, certain additions, deletions, modifications and simplifications were carried out to prepare a final interview schedule for collection of the primary data.

1.10.1 Reliability and validity Test

It shows the concepts included in the present study, their measurements, reliability and validity. The reliability and validity of variables in each concept are examined with the help of cronbach alpha and split half run test. The result of the
pilot study conducted to test the reliability and validity of the instruments are summarized below in Table 1.4.

Table 1.4
Result of Pre-test on Instrumentation

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Instruments</th>
<th>1st attempt</th>
<th></th>
<th></th>
<th>2nd attempt</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number of</td>
<td>Cronbach</td>
<td>Split half run test</td>
<td>Number of</td>
<td>Cronbach</td>
<td>Split half run test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>variables</td>
<td>alpha</td>
<td></td>
<td>variables</td>
<td>alpha</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Usage of ATM services</td>
<td>10</td>
<td>0.3041</td>
<td>0.4517</td>
<td>14</td>
<td>0.6881</td>
<td>0.6117</td>
</tr>
<tr>
<td>2.</td>
<td>Factors leading to the adoption of ATM services</td>
<td>11</td>
<td>0.3664</td>
<td>0.4099</td>
<td>16</td>
<td>0.6903</td>
<td>0.6209</td>
</tr>
<tr>
<td>3.</td>
<td>ATM service quality</td>
<td>16</td>
<td>0.3771</td>
<td>0.4293</td>
<td>24</td>
<td>0.7699</td>
<td>0.7318</td>
</tr>
<tr>
<td>4.</td>
<td>Service attributes in ATMs</td>
<td>12</td>
<td>0.3417</td>
<td>0.4154</td>
<td>18</td>
<td>0.7244</td>
<td>0.7211</td>
</tr>
<tr>
<td>5.</td>
<td>Customer satisfaction on ATMs</td>
<td>10</td>
<td>0.3218</td>
<td>0.3996</td>
<td>14</td>
<td>0.6799</td>
<td>0.7099</td>
</tr>
<tr>
<td>6.</td>
<td>Factors leading to customer satisfaction</td>
<td>17</td>
<td>0.4081</td>
<td>0.4357</td>
<td>28</td>
<td>0.7396</td>
<td>0.6818</td>
</tr>
<tr>
<td>7.</td>
<td>Problem in usage of ATMs</td>
<td>18</td>
<td>0.4249</td>
<td>0.4676</td>
<td>24</td>
<td>0.7117</td>
<td>0.6909</td>
</tr>
</tbody>
</table>

Source : Primary Data

The cronbach alpha of all seven concepts (instruments) included for the present study at the first attempt of pre-test is found vary from 0.3041 to 0.4249 which are less than the standard minimum of 0.60 whereas the included variables vary from 10 to 18. The correlation co-efficient from the split half run test among 25 rural and 25 urban customers in all concepts vary from 0.3996 to 0.4676 which are less than the minimum threshold of 0.50.
At the second attempt of the pilot study, the number of variables in all seven concepts has been increased. It ranges from 14 to 28 variables whereas the cronbach alpha of variables in all instruments is found to be varying from 0.6881 to 0.7396 which reveals the internal consistency. The correlation co-efficient of all seven concepts at the second attempt varies from 0.6117 to 0.7318 which justify the reliability and validity of variables in all seven concepts included for the study.

1.11 FRAMEWORK OF ANALYSIS

In order to analyze the data collected from the customers, the appropriate statistical tools have been selected on the basis of the objectives of the study and the nature of data. The included statistical analyses are given below:

1.11.1 Exploratory Factor Analysis

Exploratory factor analysis identifies the common dimensions of factors from the observed variables that link together the seemingly unrelated variables and provides insight into the underlying structure of the data. Varimax rotation is one of the most popular methods used in the study to simplify the factor structure by maximizing the variance of a column of the pattern matrix. The common factors themselves are expressed as linear combinations of the observed variables (Nalini, 2006)

Factor Model

\[
\text{Factor Score } = W_{i1}X_1 + W_{i2}X_2 + \ldots + W_{ik}X_k
\]

where

\[F_i = \text{Estimate of } i^{th} \text{ factor}\]

\( W_i \) = Weight or factor score coefficient
\( X_i \) = Variables included
\( K \) = Number of variables included

In this study, factor analysis has been applied to narrate the variables into the important factors influencing customer satisfaction, service quality factors, service attributes and problems in the usage of ATM services.

1.11.2 Confirmatory Factor Analysis (CFA)

The confirmatory factor analysis has been used to analyze the reliability and validity of the variables included in each factor. The convergent-validity of the factor is assessed by three measures: item reliability, construct (composite) reliability and average variance extracted (Fornell and Larcker, 1981)\(^{21}\). Item reliability is evaluated by the size of the standardized factor loading of the variables on their corresponding factors. The loading should be at least 0.60 and ideally at 0.7 or above (Chin, 1998)\(^{22}\). Composite reliability is assessed on the basis of internal consistency. It is similar to Cronbach alpha. The minimum acceptable level of composite reliability is 0.5 (Gerbing and Anderson, 1980)\(^{23}\). The convergent validity is assessed with the help of AVE which is at least 0.50 (Fornell and Lancher, 1981) and the significance of ‘t’ statistics of the standardized factor loading of the variables in each construct.

In the present study, the CFA has been used to analyze the validity and reliability of variables included in service quality of ATM services, customer satisfaction, service attributes and problems in the usage of ATM services.

---

1.11.3 Two Group Discriminant Analysis

Discriminant analysis is a technique for analysis of data when the dependent variable is categorical and the independent variables are internal in nature. When the dependent variable has two categories, the technique is known as two-group discriminant analysis. When three or more categories are involved, the technique is referred to as multiple discriminant analysis (Malhotra, 2003). The discriminant analysis model involves linear combinations of the following form:

$$Z = b_0 + b_1X_1 + b_2X_2 + \ldots + b_nX_n,$$

where

- $Z$ = Discriminant score
- $b_n$ = Discriminant co-efficient on weight
- $X$ = Discriminant variables
- $b_o$ = Constant

The Wilk's Lambda is calculated as a multi variant measure of group difference over discriminating variables. (Shajahan, 2005). The relative discriminating power of the variables is calculated by

$$I_j = K_j(X_{j1} - X_{j2})$$

where

- $I_j$ = The important value of the $j^{th}$ variable
- $K_j$ = Unstandardized discriminant co-efficient for the $j^{th}$ variable
- $X_{jk}$ = Mean of the $j^{th}$ variable for the $K^{th}$ group

---

The relative importance of a variable $R_j$ is given by

$$R_j = \frac{I_j}{\sum_{j=1}^{n} I_j}$$

In this study, two group discriminant analysis is used to find out the important discriminant factors leading to customer satisfaction, service quality factors, service attributes and problems in the usage of ATM services among customers in rural and urban areas.

**1.11.4 Reliability Test**

The reliability of the variables included in each construct has been tested with the help of Cronbach alpha. The minimum threshold of Cronbach alpha is 0.60 (Nunnally, 1978)\(^{26}\). In the present study, the Cronbach alpha has been computed to test the reliability of variables in each construct related to service attributes, service quality in ATM services, customer satisfaction and problems in the usage of ATM services.

**1.11.5 Multiple Regression Analysis**

When a variable is dependent on more than one independent variable, one analysis will not reveal the relationship. For this purpose, the multiple regression analysis is administered. The cause and effect relationship between dependent and independent variables is brought out by the multiple regression analysis. The general form of the regression model is:

$$Y = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n + \epsilon,$$

where

\[ Y = \text{Dependent variable} \]
\[ X_1, X_2, \ldots, X_n = \text{Independent Variables} \]
\[ b_1, b_2, \ldots, b_n = \text{Regression co-efficient of independent variables} \]
\[ a = \text{Constant and} \]
\[ e = \text{error term} \]

In this study, the multiple regression analysis has been used to find out the following:

1. The impact of factor leading to the usage of ATM services on the rate of usage of ATM services.
2. The impact of service quality factors on customer satisfaction on ATM services.
3. The impact of service attributes on the customer satisfaction on ATM services.
4. The impact of problems in the usage of ATM services on the customer satisfaction on ATM services.

1.11.6 One Way Analysis of Variance

One Way Analysis of Variance is used for examining the differences in the mean value of the dependent variable associated with the effect of the controlled independent variables, after taking into account the influence of the uncontrolled independent variables. One Way Analysis of Variance involves only one dependent variable or a single factor. The null hypothesis may be tested by the F statistics based on the ratio between these two estimates.

\[
F = \frac{SS_x/(c - 1)}{SS_{error}/(N - c)} = \frac{MS_x}{MS_{error}}
\]
where $SS_X = \sum_{j=1}^{c} n(\bar{Y}_j - \bar{Y})^2$

where $SS_{error} = \sum_{j=1}^{c} \sum_{j=1}^{n} (\bar{Y}_j - \bar{Y})^2$

where

$Y_j$ = Individual observation
$Y_j$ = Mean for category (j)
$Y$ = Mean over the whole sample, or grand mean
$Y_{ij}$ = $i^{th}$ observation in the $j^{th}$ category
$C$ = Number of independent variables or groups
$N$ = Total sample size (nxc)

The ‘F’ statistics follows the ‘F’ distribution, with c-l and N-c degree of freedom.

In this study, the One-Way Analysis of Variance has been administered to find out the association between the profile of customers and their usage of ATM services, view on service attributes, service quality and problems in the usage of ATM services.

1.12 LIMITATIONS OF THE STUDY

The present study is subjected with the following limitations.

1. The scope of the study is confined to SBI-ATM card holders in Kanyakumari district only;
2. The customers attitude on ATM banking is only discussed,
3. The descriptive variables in the present study are converted into quantitative variable with the help of likert five point scale,
4. The linear relationship between the dependent and independent variables is assured,
5. Even though, the sample size is determined scientifically and the samples are distributed on the basis of probabilistic sampling procedure, the samples are identified purposively with the help of the bank branch manager and

6. The total study is subjected to the memory bias of the bank customers.

1.13 CHAPTER SCHEME

The present study is classified into chapters for a clear and neat presentation.

Chapter-I presents the introduction, need for the study, statement of the problem, proposed research model, objectives of the study, hypotheses of the study, research methodology, limitations and chapterisation.

Chapter-II discusses the various reviews of previous studies.

Chapter-III gives the historical background of SBI and its Services and usage of ATM Services.

Chapter-IV includes the profile of the respondents, their personality traits, pattern and rate of usage of ATM services and the factors leading to the usage of ATM services and also the impact of the factors on the rate of usage of ATM services.

Chapter-V explains the level of customer satisfaction on ATM services, factors leading to the customer satisfaction on ATM services, customers’ view on the attributes of ATM services, service quality of ATM services, impact of service attributes and service quality on customer satisfaction, problems in the usage of ATM services and its impact on customer satisfaction.

Chapter-VI summarises the findings of the study, suggestions, conclusion, and scope for future study.